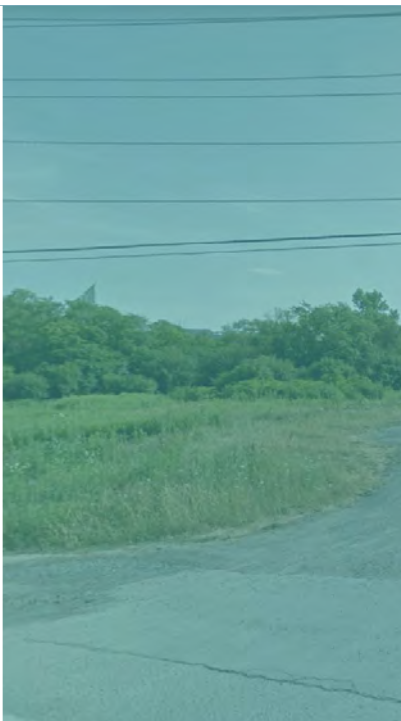




1098 Ogilvie Road

TIA Report





TIA Plan Reports

On 14 June 2017, the Council of the City of Ottawa adopted new Transportation Impact Assessment (TIA) Guidelines. In adopting the guidelines, Council established a requirement for those preparing and delivering transportation impact assessments and reports to sign a letter of certification.

Individuals submitting TIA reports will be responsible for all aspects of development-related transportation assessment and reporting, and undertaking such work, in accordance and compliance with the City of Ottawa's Official Plan, the Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines.

By submitting the attached TIA report (and any associated documents) and signing this document, the individual acknowledges that s/he meets the four criteria listed below.

CERTIFICATION

1. I have reviewed and have a sound understanding of the objectives, needs and requirements of the City of Ottawa's Official Plan, Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines;
2. I have a sound knowledge of industry standard practice with respect to the preparation of transportation impact assessment reports, including multi modal level of service review;
3. I have substantial experience (more than 5 years) in undertaking and delivering transportation impact studies (analysis, reporting and geometric design) with strong background knowledge in transportation planning, engineering or traffic operations; and
4. I am either a licensed¹ or registered² professional in good standing, whose field of expertise [check ☒ appropriate field(s)] is either transportation engineering ☒ or transportation planning ☐.

^{1,2} **License of registration body that oversees the profession is required to have a code of conduct and ethics guidelines that will ensure appropriate conduct and representation for transportation planning and/or transportation engineering works.**

City Of Ottawa
Infrastructure Services and Community
Sustainability
Planning and Growth Management
110 Laurier Avenue West, 4th fl.
Ottawa, ON K1P 1J1
Tel. : 613-580-2424
Fax: 613-560-6006

Ville d'Ottawa
Services d'infrastructure et Viabilité des
collectivités
Urbanisme et Gestion de la croissance
110, avenue Laurier Ouest
Ottawa (Ontario) K1P 1J1
Tél. : 613-580-2424
Télécopieur: 613-560-6006

Dated at Ottawa this 24 day of September, 2019.
(City)

Name: Mark Baker, P.Eng.
(Please Print)

Professional Title: Senior Transportation Engineer


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

Office Contact Information (Please Print)
Address: 1223 Michael Street North, Suite 100
City / Postal Code: Ottawa, Ontario, K1J 7T2
Telephone / Extension: 613-691-1569
E-Mail Address: Mark.Baker@parsons.com



1098 Ogilvie Road

Transportation Impact Assessment Report

prepared for:
6770967 Canada inc
201-2551 Chemin des Quatre-Bourgeois
Québec, QC G1V 0G2

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

September 23, 2019

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REVIEWER:	Mark Baker, P. Eng.
AUTHORIZATION:	
CIRCULATION LIST:	Mike Giampa, P.Eng.
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TIA Report

Parsons has been retained by 6770967 Canada inc. to prepare a Transportation Impact Assessment (TIA) in support of a Zoning By-Law Amendment and Site Plan application for a residential and hotel development located at 1098 Ogilvie Road. The following report represents Step 5 – TIA Submission, of the TIA process. City comments from the previous submission have been provided in Appendix A

1. SCREENING FORM

The screening form was submitted in conjunction with the Scoping Report for the subject development to the City of Ottawa staff for review and confirmation of the need for a TIA. Trip generation triggers were met based on the size of the development. The location triggers were met based on the site's location in a Design Priority Area (DPA) and proximity to the future Cyrville LRT Station. The safety triggers were met based on the proposed site driveway's proximity to the Ogilvie/Cummings intersection, which is located adjacent to the site. The Screening Form is provided as Appendix B.

2. SCOPING REPORT

2.1. EXISTING AND PLANNED CONDITIONS

2.1.1. PROPOSED DEVELOPMENT

Based on the proposed Site Plan provided by Douville, Moffet & Associés inc, it is our understanding that the proponent is proposing a two-phase residential development located at 1098 Ogilvie Road with an expected date of occupancy of 2020 for Phase 1 and 2022 for Phase 2. The proposed residential development will consist of three residential towers and a hotel, totalling approximately 870 residential units and 182 hotel rooms. The unit breakdown of each tower has been provided in **Table 1**. Phase 1 will consist of the construction of the southern block, which includes Tower 3 and the hotel on a shared 6-storey podium. Phase 2 will consist of the construction of the northern block, which includes Towers 1 and 2 on a shared 6-storey podium. A right-in/right-out access is proposed along Ogilvie Road and a full movement access is proposed on Cummings Avenue. The site is currently a vacant lot and zoned as R3V V – Residential Zone and will have to be rezoned prior to construction. The local context of the site is provided as **Figure 1** and the proposed Site Plan is provided as **Figure 2**.

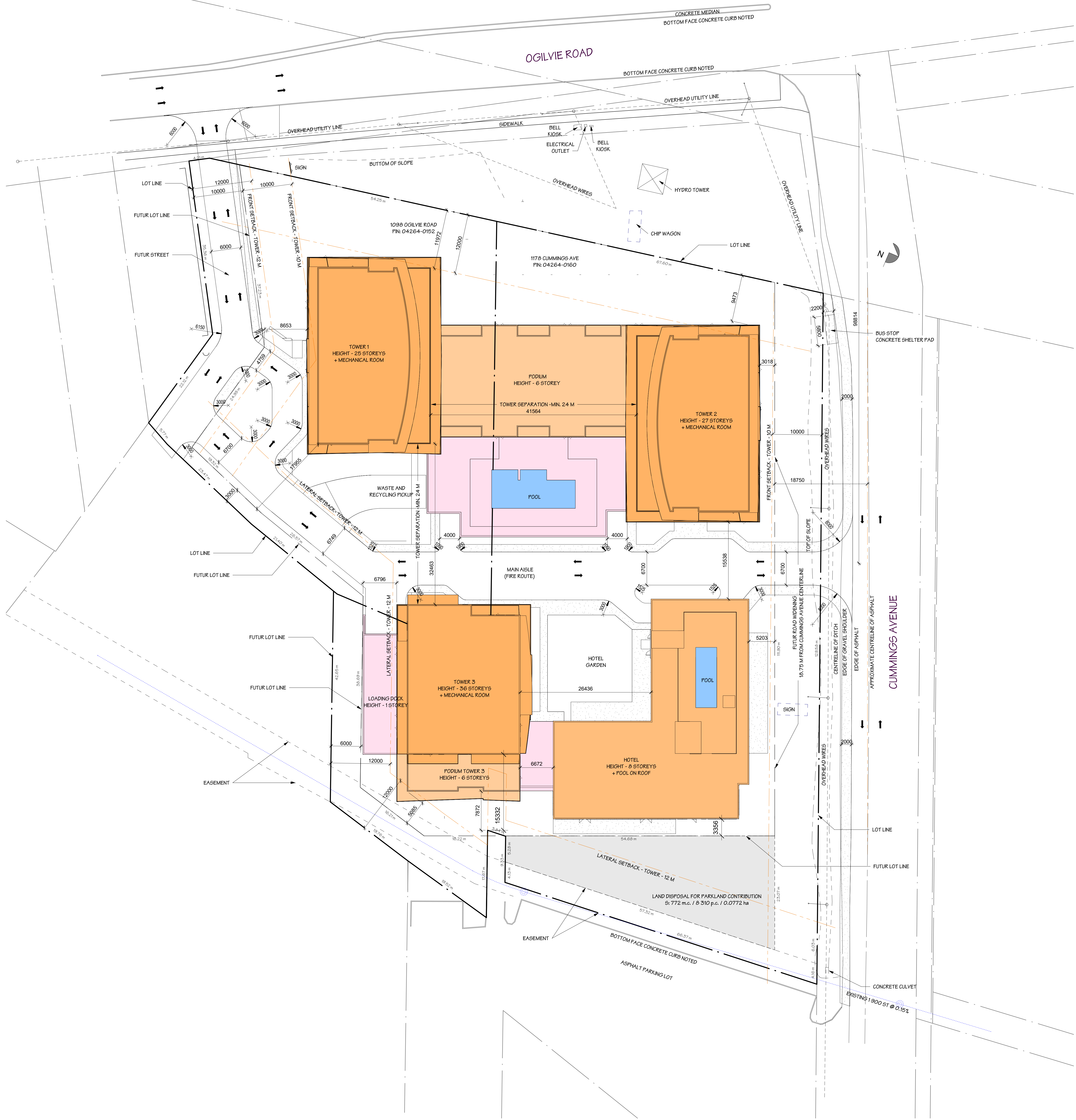
Table 1: Unit Breakdown

Phase	Building	# of Storeys	# of Units
Phase 1 (buildout 2020)	Tower 3	36	282
	Hotel	8	182 rooms
Phase 2 (buildout 2022)	Tower 2	24	306
	Tower 1	22	284

Figure 1: Local Context



Figure 2: Proposed Site Plan



Project

PLACE
LUX
PLACE

1088 OGILVIE ROAD & 1178 CUMMINGS AVE.

Propriétaire

6770967
Canada Inc

Architecte

PM

ARCHITECTES

3070, chemin des Quatre-Bourgeois
Québec (QC)
G1W 2M4
www.pmaarchitectes.com

LAPALME RHEAULT

ARCHITECTES ASSOCIÉS

53 Boul. St. Raymond, Suite 300
Gatineau (Québec) J8Y 3R8
Tél: 819-595-3626 / Fax: 819-595-5655

Structure

Mécanique-électricité

Architecte paysagiste

Consultant Lead

Scéau

ONTARIO ASSOCIATION
of
ARCHITECTS
style
JEROME MARTIN
LICENCE
6787

Révision	
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A: No du détail
B: No de la feuille où il est détaillé

Note

Avant de débiter les travaux l'entrepreneur devra vérifier toutes les cotes et dimensions et aviser par écrit l'architecte s'il y a une non-concordance. Ces dessins sont la propriété de ceux qui les ont préparés et ne doivent pas être utilisés contre leurs intérêts.

Date
2019-07-09

Dossier
1712

Echelle
1 : 300

Dessiné par
EBSA/JVAGEAU

Titre
SITE PLAN

Feuille
A100-A

2.1.2. EXISTING CONDITIONS

Area Road Network

Ogilvie Road is an arterial roadway with a four-lane cross-section. Auxiliary turn lanes are provided at major intersections and it has a posted speed limit of 60 km/h.

Aviation Parkway is a north-south federal arterial roadway, which extends from Highway 417 in the south to Sir George-Etienne Cartier Parkway in the north. Aviation Parkway has a four-lane divided cross-section with auxiliary turn-lane provided at major intersections. The posted speed limit within the study area is 60 km/h.

St. Laurent Boulevard is an arterial roadway with a six-lane divided cross-section south of Cyrville Road and a four-lane divided cross-section north of Cyrville Road. Auxiliary turn lanes are provided at major intersections and it has a posted speed limit of 60 km/h.

Cummings Avenue is designated as an arterial roadway between Ogilvie Road and Cyrville Road (adjacent to the site) and is designated a major collector roadway between Donald Street and Ogilvie Road. Within the study area, Cummings Avenue has a two-lane undivided cross-section. Auxiliary turn lanes are provided at major intersections and its unposted speed is understood to be 50 km/h.

Cyrville Road is designated as an arterial roadway southeast of Cumming Avenue and is designated a collector roadway northwest of Cumming Avenue. Cyrville Road has a two-lane undivided cross-section with auxiliary turn lanes provided at major intersections. Within the study area it has a posted speed limit of 60 km/h.

Donald Street is a major collector roadway within the study area and has a two-lane undivided cross-section. Auxiliary turn lanes are provided at major intersections and it has a posted speed limit of 50 km/h.

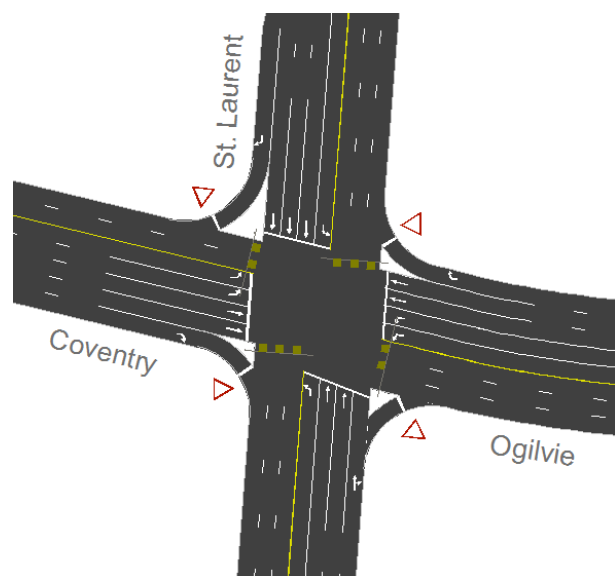
Lemieux Street is a major collector roadway which has a three-lane cross-section and auxiliary turn lanes at intersections. The posted speed is 50 km/h.

Labelle Street is a major collector roadway which has a two-lane undivided cross-section and auxiliary turn lanes at intersections. The unposted speed is understood to be 50 km/h.

Existing Study Area Intersections

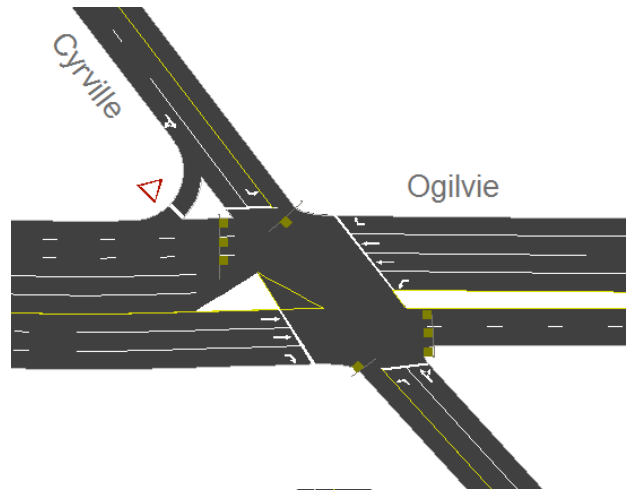
St. Laurent/Ogilvie

The St. Laurent/Ogilvie & Coventry intersection is a signalized four-legged intersection. The east and westbound approaches consist of double left-turn lanes, two through lanes and a channelized right-turn lane. East and westbound bike lanes are provided on both the east and west legs of the intersection. The southbound approach consists of a single left-turn lane, three through lanes and a channelized right-turn lane. The northbound approach consists of a single left-turn lane, two through lanes and a shared through/channelized right-turn lane. U-turns are prohibited along all four approaches.



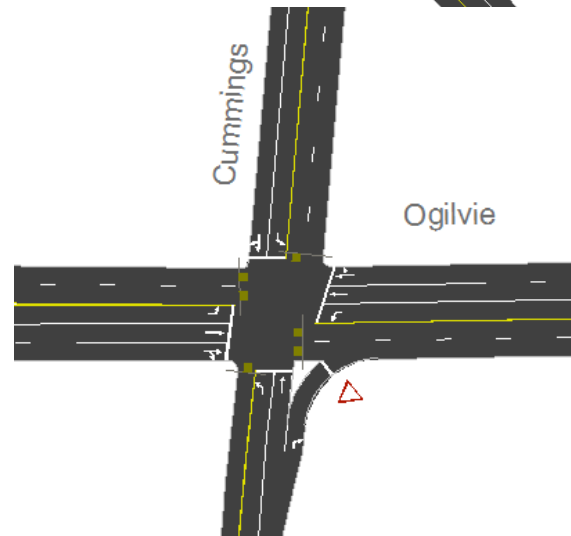
Ogilvie/Cyrville

The Ogilvie/Cyrville intersection is a signalized four-legged intersection. The eastbound approach consists of two through lanes and a right-turn lane. The westbound approach consists of a single left-turn lane, two through lanes and a right-turn lane. East and westbound bike lanes are provided on both the east and west legs of the intersection. The north and southbound approaches consist of an auxiliary left-turn lane and a shared through-right turn lane. The eastbound left-turn movement is prohibited at this location.



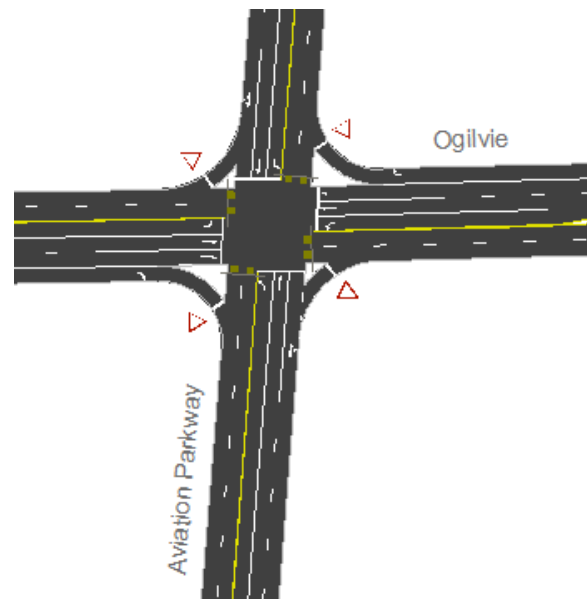
Ogilvie/Cummings

The Ogilvie/Cummings intersection is a signalized four-legged intersection. The east and westbound approaches consist of a single auxiliary left-turn lane, a through lane and a shared through-right turn lane. East and westbound bike lanes are provided on both the east and west legs of the intersection. The northbound approach consists of a single auxiliary left-turn lane, a through lane and channelized right-turn lane. The southbound approach consists of a single auxiliary left-turn lane and a shared through-right turn lane. All movements are permitted at this location.



Ogilvie/Aviation

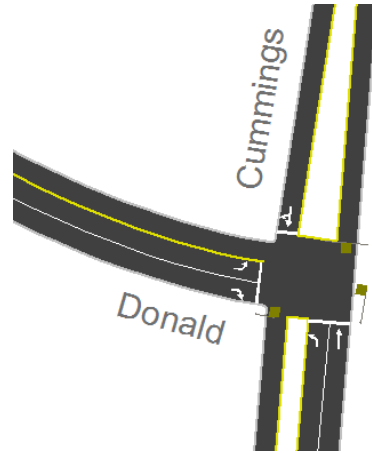
The Ogilvie/Aviation intersection is a signalized four-legged intersection. The east and westbound approaches consist of a single auxiliary left-turn lane, two through lanes, and a channelized right turn lane. East and westbound bike lanes are provided on both the east and west legs of the intersection. The north and southbound approaches consist of a single auxiliary left-turn lane, a through lane and a shared through/channelized right-turn lane. A north-south MUP is provided along the west side of Aviation Parkway (north of Ogilvie Road). All movements are permitted at this location.



PARSONS

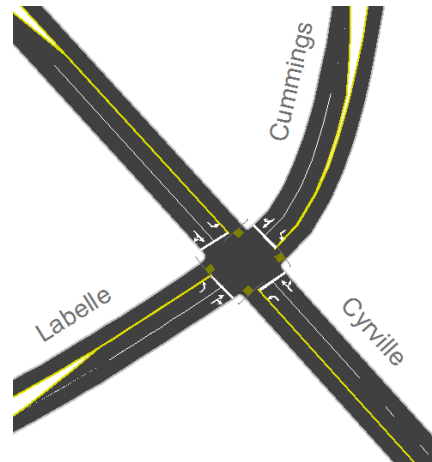
Cummings/Donald

The Cummings/Donald intersection is a signalized 'T' intersection. The eastbound approach consists of a single left-turn lane and single right-turn lane. The northbound approach consists of a single auxiliary left-turn lane and single through-lane. The southbound approach consists of a single shared through/right-turn lane. All movements are permitted at this location.



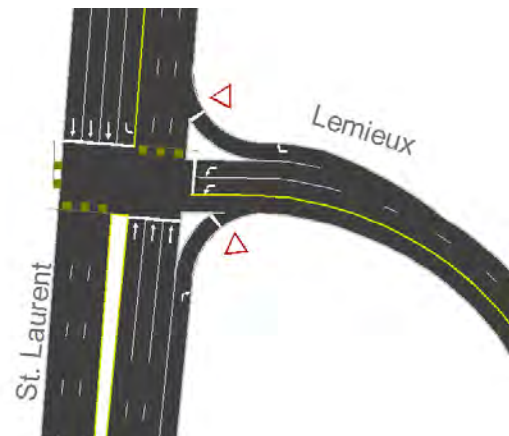
Cummings/Cyrville

The Cummings/Cyrville intersection is a signalized four-legged intersection. All four approaches consist of a single auxiliary left-turn lane and a shared through-right turn lane. Bike lanes are provided along both side of Cyrville Road and green thermoplastic is provided for cyclists through the intersection. All movements are permitted at this location.



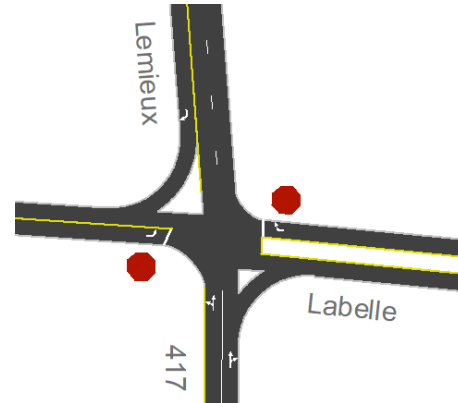
St. Laurent/Lemieux

The St. Laurent/Lemieux intersection is a signalized 'T' intersection. The westbound approach consists of dual left-turn lanes and a channelized right-turn lane. The northbound approach consists of three through lanes and a channelized right-turn lane. The southbound approach consists of a single auxiliary left-turn lane and three through lanes. All movements are permitted at this location.



Lemieux/Labelle

The Lemieux/Labelle intersection is an unsignalized four-legged intersection. The east and west approach are stop controlled. Both east and west approach traffic must continue northbound on Lemieux. The south approach has two free flow lanes which are allowed to turn left, right or continue through. The north approach is a single lane that is forced to continue westbound towards St. Laurent Shopping Center.



Existing Driveways to Adjacent Developments

There are five commercial driveways on the south side of Ogilvie Road between the west property line and the Ogilvie/Cyrville intersection. There are three commercial driveways on the east side and one commercial driveway on the west side of Cummings Avenue between Ogilvie Road and Cyrville Road.

Pedestrian/Cycling Network

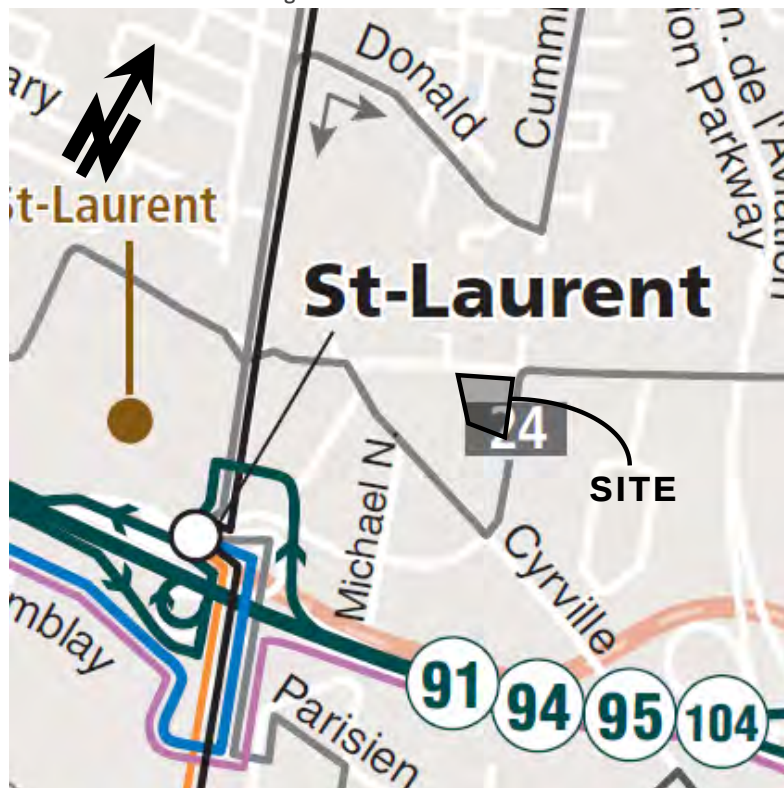
With respect to pedestrians, sidewalk facilities on boundary streets are provided along both sides of Ogilvie Road and on the east side of Cummings Avenue, south of Ogilvie Road. Within the study area, sidewalks are provided along St. Laurent Boulevard, Donald Street, Labelle Street, Cummings Avenue (north of Ogilvie), and Cyrville Road.

With respect to cyclists, according to the Ottawa Cycling Plan, Ogilvie Road, Cyrville Road and St. Laurent Boulevard are classified as “Spine” cycling routes and Cummings Avenue, Donald Street, Labelle Street and Lemieux Street are classified as “Local” cycling routes. Cyrville Road and Ogilvie Road west of Cyrville Road are also identified as a part of the Cross-Town Bikeway. Cycling facilities are currently provided on Ogilvie Road and Cyrville Road in the form of curb-side bike lanes. Cummings Avenue and Donald Street are identified as a suggested route in the Ottawa Cycling Plan.

Transit Network

Transit service within the vicinity of the site is currently provided by OC Transpo Route #24. Bus stops for Route #24 are located on Cummings Avenue, directly adjacent to the site and on Ogilvie Road approximately 90m walking distance east of the site. Local Route #24 provides frequent all-day service.

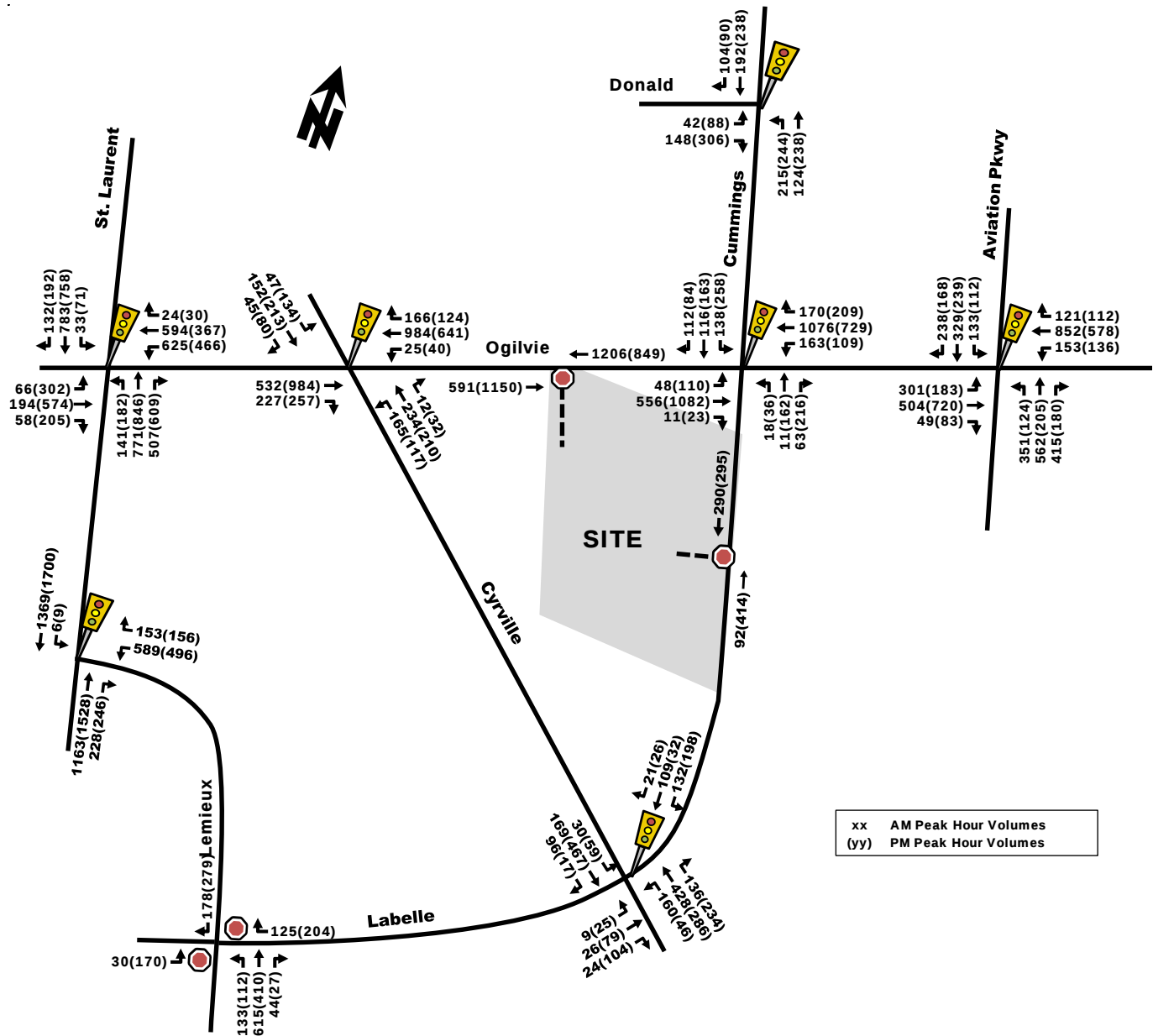
Figure 3: Area Transit Network



Peak hour travel demands

The existing peak hour traffic volumes within the study area were obtained from the City of Ottawa and are illustrated in **Figure 4**. The peak hour traffic volume count data is included as Appendix C.

Figure 4: Existing Peak Hour Traffic Volumes



Existing Road Safety Conditions

Collision history for study area intersections and roads (2012 to 2016, inclusive) was obtained from the City of Ottawa and most collisions (79%) involved only property damage, indicating low impact speeds, and 20% involved personal injuries. The primary causes of collisions cited by police include; rear end (47%), turning movement (17%) and sideswipe (15%) type collisions.

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

- 1.31/MEV at the St. Laurent/Ogilvie intersection;
- 0.64/MEV at the Ogilvie/Cyrville intersection;
- 0.91/MEV at the Ogilvie/Cummings intersection;

- 1.10/MEV at the Ogilvie/Aviation intersection;
- 0.49/MEV at the Cummings/Donald intersection;
- 0.52/MEV at the Cummings/Cyrville intersection; and
- 0.84/MEV at the St. Laurent/Lemieux intersection.

It is noteworthy that within the five-years of recorded collision data there were 15 collisions involving pedestrians and 10 collisions involving cyclists. The list below shows the number and location of collisions involving pedestrian and cyclists within the study area.

Collisions involving pedestrians

- St. Laurent/Ogilvie (1);
- Ogilvie/Cyrville (3);
- Ogilvie/Cummings (4);
- Ogilvie/Aviation (1);
- Cummings/Donald (1);
- Cummings/Cyrville (2); and
- St. Laurent/Lemieux (3).

Collisions involving cyclists

- St. Laurent/Ogilvie (3);
- Ogilvie/Cummings (4);
- Ogilvie/Aviation (1);
- St. Laurent/Lemieux (1); and,
- Ogilvie Road between Cyrville Road and Cummings Avenue (1, fatal).

A deeper investigation was done to determine if there were patterns involved in pedestrian and cyclist collisions. For pedestrians, it was determined that 6 of the 15 noted collisions involved through movements while the remaining 9 collisions involved left turns. Of the 6 through collisions, 3 occurred during clear, daylight, dry driving conditions and 3 occurred during dry but poor lighting conditions. Congestion mixed with human error were considered the likely causes for these collisions, as there are no discernable design constraints (blind spots, grade changes etc.). Of the 9 turning left collisions, 6 occurred during clear dry daylight conditions.

Of the 10 cyclist collisions, 6 involved through movements and all involved dry, clear, daylight conditions. All 6 through movement collisions occurred either on Ogilvie Road east-west through movement or St Laurent north-south through movement. The remaining 4 bicycle collisions occurred while vehicles made turning movements. The likely triggers were high vehicle traffic volumes combined with narrow or non segregated bike lanes and high operating speeds.

The collision data as provided by the City of Ottawa and related analysis has been provided in Appendix D.

2.1.3. PLANNED CONDITIONS

Planned Study Area Transportation Network Changes

Transit Projects

The following transit projects have been identified within the vicinity of the site:

- St. Laurent Boulevard – Within the study area, Transit Signal Priority (TSP) and queue jump lanes have been proposed as a part of the 2031 Affordable Network; and
- Ogilvie Road – Transit Signal Priority is planned between Blair Road and St. Laurent Boulevard as a part of the 2031 Network Concept, however, it is not identified as part of the Affordable Network.

Road Projects

The following road projects have been identified within the vicinity of the site:

- Cyrville Road – Identified on the Planned Construction Projects 2018-2021¹ is the construction of a MUP from Michael Street to St. Laurent Boulevard;
- Cyrville Road – Identified in the TMP is the widening of Cyrville Road from two to four lanes from Star Top to St. Laurent (Affordable Network) and from St. Laurent to Innes (Network Concept Plan). This is identified as a Phase 3 City project;
- Cummings Avenue – Identified on the Planned Construction Projects 2018-2021² is the construction of a sidewalk from Cyrville Road to the south boundary of subject site; and,
- Donald Street – Identified on the Planned Construction Projects 2018-2021³ is the road resurfacing of Donald Street from Cummings Avenue to St. Laurent Boulevard.

Other Area Development

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

1125-1145 Cyrville

At one time, Mark Motors was proposing the construction of a new car dealership at the above-noted address, which is located directly west of the subject development. The Transportation Impact Study (prepared by Delcan) projected an increase in vehicle traffic of approximately 50 veh/h and 65 veh/h during the morning and afternoon peak hours, respectively. The status of this development proposal is unknown given that Mark Motors has opened Audi Ottawa at 458 Montreal Road.

1220 Ogilvie, 1235 Cyrville

Richcraft is proposing a residential development at the above-noted address, which is located approximately 350 m east of the subject development. The Transportation Impact Study Addendum (prepared by Parsons) projected an increase in vehicle traffic of approximately 40 veh/h during both the morning and afternoon peak hours.

1298 Ogilvie

Construction of six 12-unit and one 6-unit apartment dwellings.

1098 Ogilvie, 1178 Cummings

Planned development of 85 townhomes. The status of this development is unknown as the application has not seen any progress since the last status update on May 29, 2012 (more than 7 years ago).

2.2. STUDY AREA AND TIME PERIODS

As the proposed site is a residential development, the time periods assessed will be the weekday morning and afternoon peak hours. The proposed study area is outlined below and highlighted in **Figure 5**.

- St. Laurent/Ogilvie;
- Ogilvie/Cyrville;
- Ogilvie/Cummings;
- Ogilvie/Aviation;
- Cummings/Donald;
- Cummings/Cyrville;
- St. Laurent/Lemieux;
- Lemieux/Labelle
- Ogilvie between Cyrville and Cummings; and,
- Cummings between Cyrville and Ogilvie.

¹ Source: https://documents.ottawa.ca/sites/documents.ottawa.ca/files/construction_ward11_en.pdf

² Source: https://documents.ottawa.ca/sites/documents.ottawa.ca/files/construction_ward11_en.pdf

³ Source: https://documents.ottawa.ca/sites/documents.ottawa.ca/files/construction_ward11_en.pdf

Figure 5: Study Area



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 2**, are recommended to be exempt in the subsequent steps of the TIA process:

Table 2: Exemptions Review Summary

Module	Element	Exemption Consideration
4.1 Development Design	4.1.2 New Streets Network	Not required for applications involving site plans.
4.2 Parking	4.2.2 Spillover Parking	The parking is expected to meet By-Law requirements.
4.4 Access Intersection Design	4.4.3 Intersection Design	As the proposed site access intersection is assumed to be unsignalized, MMLoS analysis is not possible for unsignalized intersection.
4.6 Neighbourhood Traffic Management	All elements	The site relies on two arterial roadways for access.
4.8 Review of Network Concept	All elements	The site is not expected to generate 200 trips more than the established zoning. This will be confirmed in Step 3.

3. FORECASTING REPORT

3.1. DEVELOPMENT-GENERATED TRAVEL DEMAND

3.1.1. TRIP GENERATION RATES

Trip generation rates for the proposed development, consisting of 872 high-rise residential units, were obtained from the City's 2009 TRANS Trip Generation Report and 182 hotel rooms obtained from the ITE Trip Generation Manual. **Table 3** provides the appropriate trip generation rates for both land uses.

Table 3: Vehicle Trip Generation Rates

Land Use	Data Source	Trip Rates	
		AM Peak	PM Peak
High-Rise Condominiums	TRANS	$T = 0.38(\text{du})$	$T = 0.34(\text{du})$
Hotel	ITE 310	$T = 0.5(x) - 5.34$	$T = 0.75(x) - 26.02$
Notes: T = Average Vehicle Trip Ends du = Residential units; x = Hotel Rooms			

Using the TRANS Trip Generation rates, the total amount of vehicle trips generated by the proposed Phase 1 development (consisting of 282 units) and Phase 2 development (consisting of an additional 590 units) was calculated. The results are summarized in **Table 4**. Note that the 182 hotel rooms to be built in phase 1 were calculated using the ITE Manual.

Table 4: Projected Vehicle Trip Generation

Land Use	Source	Units	AM Peak (veh/h)			PM Peak(veh/h)		
			In	Out	Total	In	Out	Total
Phase 1 Condominiums	TRANS	282 units	29	78	107	55	41	96
Phase 2 Condominiums	TRANS	590 units	62	162	224	116	85	201
Total Residential Vehicle Trips			91	240	331	171	126	297

As shown in **Table 4**, the total projected number of vehicle trips expected to be generated by residential development for Phase 1 is approximately 110 and 100 veh/h during the morning and afternoon peak hours, respectively. At full-build out, the total new vehicle traffic related to the proposed residential development is estimated to be 330 and 300 veh/h during the morning and afternoon peak hours, respectively. Using the TRANS guidelines and table 3.13, the person trips were calculated and shown in **Table 5** and **Table 9** for interim and ultimate buildout respectively. The person trips were then used to calculate the vehicle trips generated based on mode shares for Ottawa East extracted from the OD-Survey conducted in 2011 as seen in **Table 6**, **Table 7**, and **Table 10**. The total site generated 'new trips' in accordance to the OD-Survey 2011 are summarized in **Table 8** and **Table 11** for interim and full buildout respectively.

Table 5: Site 'Person Trips' Generated - Phase 1 (Tower 3)

Travel Mode	AM Mode Share	AM Peak (persons/h)			PM Mode Share	PM Peak (persons/h)		
		In	Out	Total		In	Out	Total
Auto Driver	37%	29	78	107	40%	55	41	96
Auto Passenger	8%	6	17	23	9%	13	8	21
Transit	41%	33	86	119	37%	52	37	89
Non-motorized	14%	11	30	41	14%	20	14	34
Total People Trips	100%	79	211	290	100%	140	100	240

Table 6: Site 'Vehicle Trips' Generated – Phase 1 (Tower 3)

Travel Mode	AM Mode Share	AM Peak (veh/h)			PM Mode Share	PM Peak (veh/h)		
		In	Out	Total		In	Out	Total
Auto Driver	55%	44	116	160	55%	77	55	132
Auto Passenger	15%	12	31	43	15%	21	15	36
Transit	25%	20	53	73	25%	35	25	60
Non-motorized	5%	3	11	14	5%	7	5	12
Total People Trips	100%	79	211	290	100%	140	100	240
Total 'New' Vehicle Trips		44	116	160	-	77	55	132

Table 7: Site 'Vehicle Trips' Generated – Phase 1 (Hotel)

Travel Mode	AM Mode Share	AM Peak (veh/h)			PM Mode Share	PM Peak (veh/h)		
		In	Out	Total		In	Out	Total
Auto Driver	55%	36	26	62	55%	40	39	79
Auto Passenger	15%	9	7	16	15%	11	11	22
Transit	25%	16	11	27	25%	17	17	34
Non-motorized	5%	3	2	5	5%	3	3	6
Total People Trips	100%	64	46	110	100%	71	70	141
Total Vehicle Trips		36	26	62	-	40	39	79

Table 8: Site 'Vehicle Trips' Generated – Interim Phase 1 Total (Tower 3 & Hotel)

Travel Mode	AM Peak (veh/h)			PM Peak (veh/h)		
	In	Out	Total	In	Out	Total
Total Vehicle Trips Tower 3	44	116	160	77	55	132
Total Vehicle Trips Hotel	36	26	62	40	39	79
Total Vehicle Trips Phase 1	80	142	222	117	94	211

Table 9: Site Trip Generation – Phase 2 Total (Tower 1 & 2)

Travel Mode	AM Mode Share	AM Peak (persons/h)			PM Mode Share	PM Peak (persons/h)		
		In	Out	Total		In	Out	Total
Auto Driver	37%	62	162	224	40%	116	85	201
Auto Passenger	8%	13	35	48	9%	27	18	45
Transit	41%	69	180	249	37%	108	79	187
Non-motorized	14%	23	62	85	14%	41	30	71
Total People Trips	100%	167	439	606	100%	292	212	504

Table 10: Site 'Vehicle Trips' Generated – Phase 2 (Tower 1 & 2)

Travel Mode	AM Mode Share	AM Peak (veh/h)			PM Mode Share	PM Peak (veh/h)		
		In	Out	Total		In	Out	Total
Auto Driver	55%	93	240	333	55%	160	117	277
Auto Passenger	15%	25	65	90	15%	44	31	75
Transit	25%	41	111	152	25%	73	53	126
Non-motorized	5%	8	23	31	5%	15	11	26
Total People Trips	100%	167	439	606	100%	292	212	504
Total Vehicle Trips		93	240	333	-	160	117	277

Table 11: Site Trip Generation – Full Buildout (Phase 1 and 2)

Travel Mode	AM Peak (veh/h)			PM Peak (veh/h)		
	In	Out	Total	In	Out	Total
Total Vehicle Trips Phase 1	80	142	222	117	94	211
Total Vehicle Trips Phase 2	93	240	333	292	212	504
Total Vehicle Trips Ultimate Buildout	173	382	604	409	306	715

Using the mode shares extracted from the OD-Survey 2011, TRANS guidelines for residential and ITE trip rates for the hotel, the Phases 1 and 2 developments are projected to generate a total of approximately 604 and 715 ‘new’ vehicle trips per hour during the morning and afternoon peak hours, respectively. As the site is within 600m of the future Cyrville LRT Station, which is projected to open mid 2019, vehicle reductions can be done to project future mode shares for the proposed development as described in the following section.

3.1.2. MODE SHARES

The modal shares outlined above were used to calculate the number of person trips projected to be generated by the proposed Phases 1 and 2 of the development which are based on existing travel patterns within the City. As the City invests in transit and active mode infrastructure, travel mode shares are expected to shift. The proposed development is located within 600 m of the new Cyrville LRT Station, which is projected to open later in 2019, and as such the following future mode shares are forecasted for the subject development for Phase 1 (2020), Phase 2 (2022) and five years beyond full build-out (2027).

Table 12: Future Mode Share Targets for the Proposed Development

Travel Mode	Mode Share Target	Rationale
Transit	65%	Development is located in close proximity to both the future Cyrville LRT Station and St. Laurent Rapid Transit Station. This is consistent with the City’s target modal shares for developments within 600 m of LRT stations.
Walking	10%	This is consistent with the City’s TMP and existing mode shares shown in Tables 5 through 11.
Biking	5%	
Auto Passenger	5%	Given the close proximity to transit, the driver and passenger mode splits are forecasted to be lower than other areas of the City.
Auto Driver	15%	

Using the future mode shares summarized in **Table 12** for the study area and the total person-trips for the residential towers and hotel outlined in **Table 5**, **Table 6** and **Table 9**, the trips by mode were calculated and are summarized for each phase of development in **Table 13** and **Table 14**.

Table 13: Future Site Trip Generation – Interim Phase 1 (Tower 3 & Hotel)

Travel Mode	AM Mode Share	AM Peak (veh/h)			PM Mode Share	PM Peak (veh/h)		
		In	Out	Total		In	Out	Total
Auto Driver	15%	22	38	60	15%	32	26	58
Auto Passenger	5%	7	14	21	5%	11	9	20
Transit	65%	93	167	260	65%	137	110	247
Non-motorized	15%	21	38	59	15%	31	25	56
Total People Trips	100%	143	257	400	100%	211	170	381
Total Vehicle Trips	-	22	38	60	-	32	26	58

Table 14: Future Total Site Trip Generation – Full Buildout (Phase 1 and 2)

Travel Mode	AM Mode Share	AM Peak (veh/h)			PM Mode Share	PM Peak (veh/h)		
		In	Out	Total		In	Out	Total
Auto Driver	15%	47	103	150	15%	75	58	133
Auto Passenger	5%	14	38	52	5%	27	19	46
Transit	65%	203	451	654	65%	326	248	574
Non-motorized	15%	46	104	150	15%	75	57	132
Total People Trips	100%	310	696	1006	100%	503	382	885
Total Vehicle Trips	-	47	103	150	-	75	58	133

As shown in **Table 14**, based on the TRANS trip generation rate for residential and ITE trip generation rate for hotel, the proposed site is projected to generate approximately 1010 and 885 new person-trips per hour during the weekday commuter peak hours. The two-way transit trips are estimated to be 650 and 575 persons per hour in the AM and PM peak respectively, and the bike/walk trips are approximately 150 and 130 persons per hour. The total amount of ‘new’ vehicle traffic to the study area is projected to be 150 and 130 vehicles per hour during the peak AM and PM hours, respectively.

3.1.3. TRIP DISTRIBUTION AND ASSIGNMENT

The site-generated vehicle traffic distribution was based on existing traffic volume splits and the existing road network of the surrounding area. The resultant distribution is outlined as follows:

- 20% to/from the north;
- 50% to/from the south;
- 10% to/from the east; and
- 20% to/from the west.

Based on the foregoing distribution, ‘new’ 2020 and 2022 projected site-generated trips were assigned to the study area, which are illustrated as **Figure 6** and **Figure 7**, respectively.

Figure 6: Phase 1 Site Generated Traffic

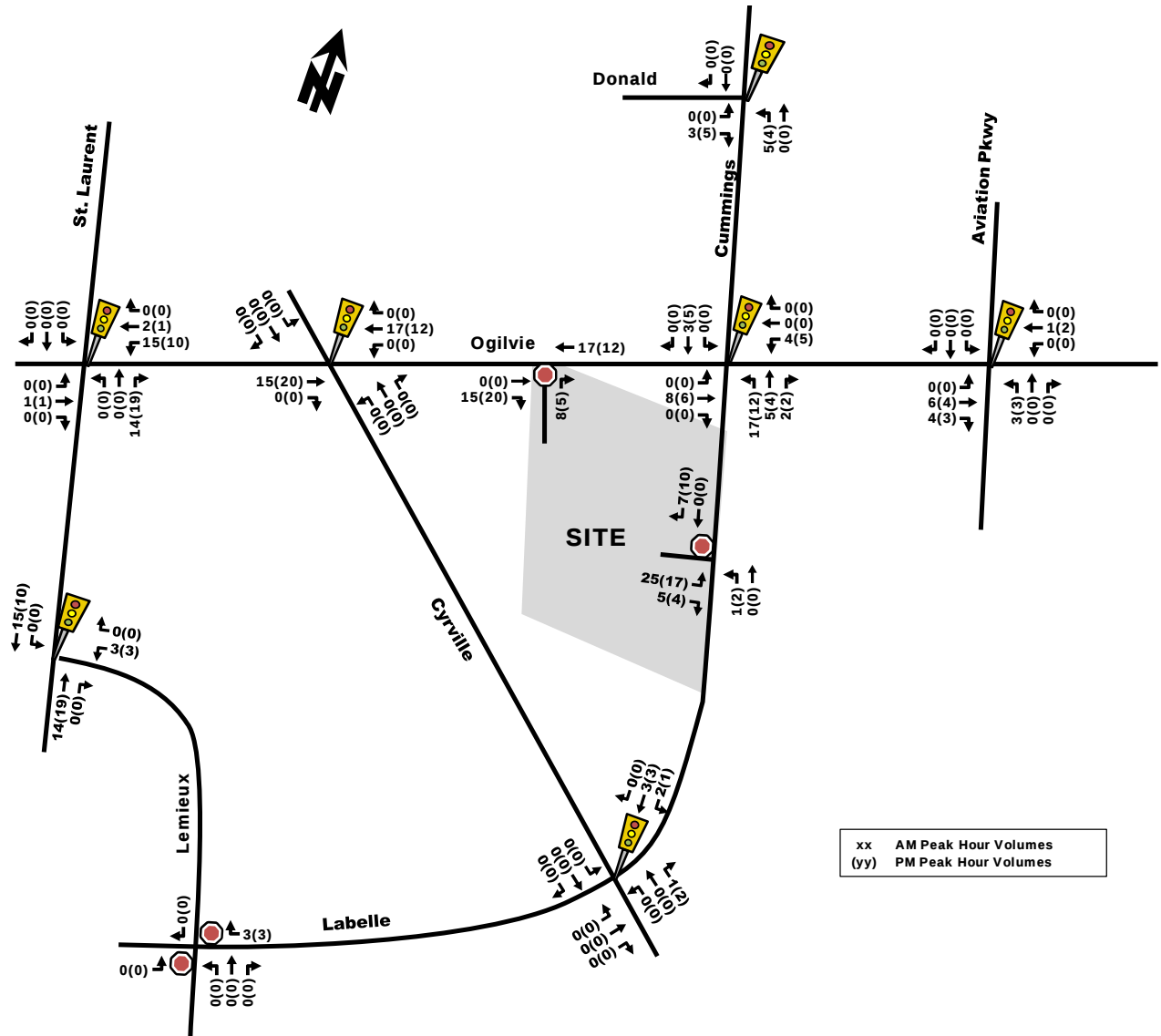
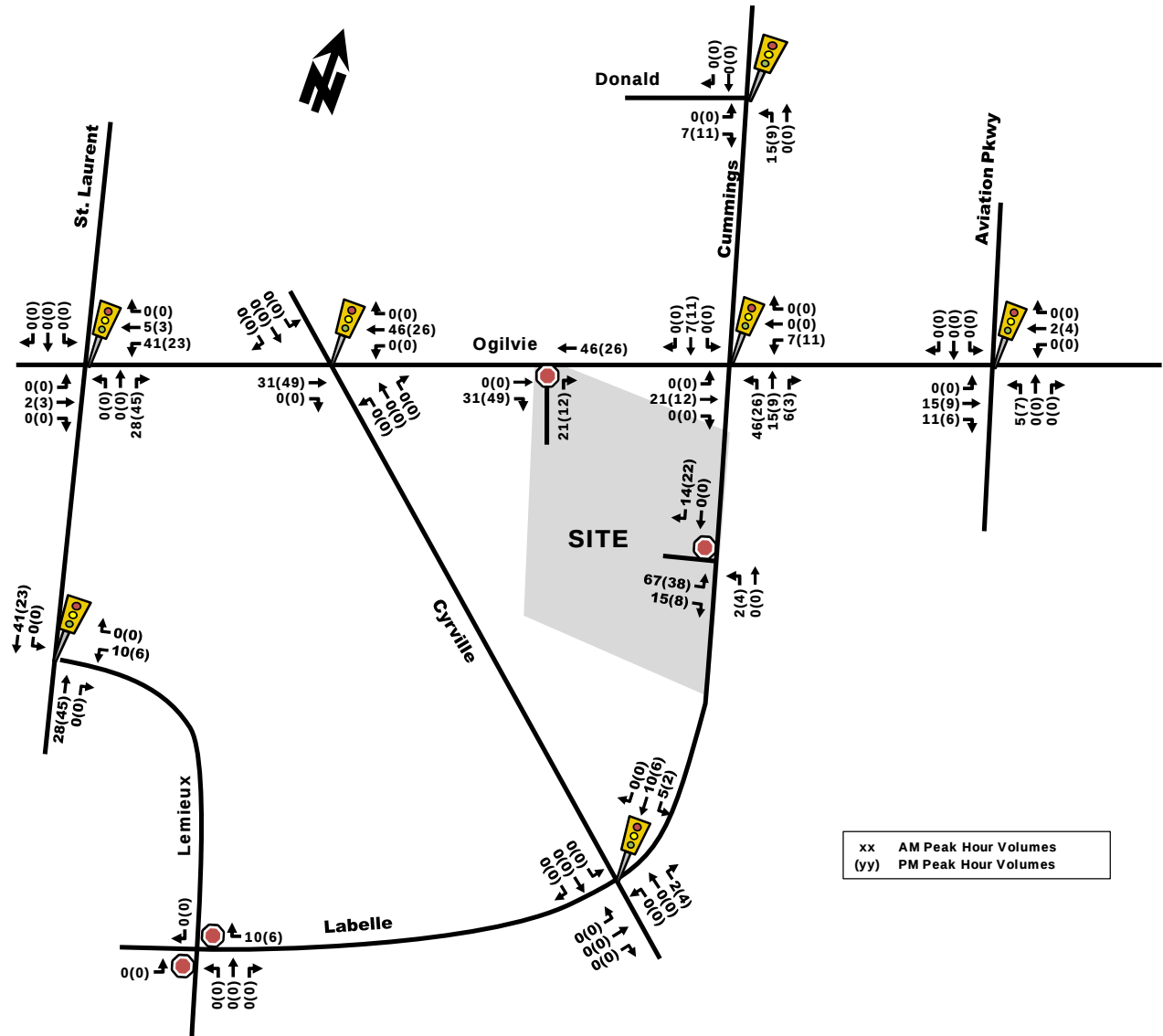


Figure 7: Total Phase 1 and 2 Site Generated Traffic



3.2. BACKGROUND NETWORK TRAVEL DEMANDS

3.2.1. TRANSPORTATION NETWORK PLANS

See Section 2.1.3.

3.2.2. BACKGROUND GROWTH

The following background traffic growth through the immediate study area (summarized in **Table 15**) was calculated based on historical traffic count data (years 2001, 2009, and 2018) provided by the City of Ottawa at the Ogilvie/Cyrville intersection. Detailed background traffic growth analysis is included as Appendix E.

Table 15: Ogilvie/Cyrville Historical Background Growth (2001 – 2018)

Time Period	Percent Annual Change				
	North Leg	South Leg	East Leg	West Leg	Overall
8 hrs	2.20%	0.80%	1.24%	1.02%	1.23%
AM Peak	2.75%	2.53%	1.72%	1.97%	2.07%
PM Peak	1.25%	0.37%	0.45%	0.54%	0.58%

As shown in **Table 15**, the Ogilvie/Cyrville intersection has experienced an approximate 0.5% to 2% annual increase overall in vehicle traffic within recent years. To account for area development within the surrounding area, a 1% per annum growth factor was applied to existing traffic volumes along the arterial roadways, namely St. Laurent Boulevard, Ogilvie Road, Cyrville Road, Cummings Avenue and Aviation Parkway. Background traffic volumes for the 2020 built-out horizon year, 2022 built-out horizon year and 2027 (5-years beyond site build-out) are depicted within **Figure 8**, **Figure 9**, and **Figure 10**, respectively.

Figure 8: 2020 Background Traffic Volumes

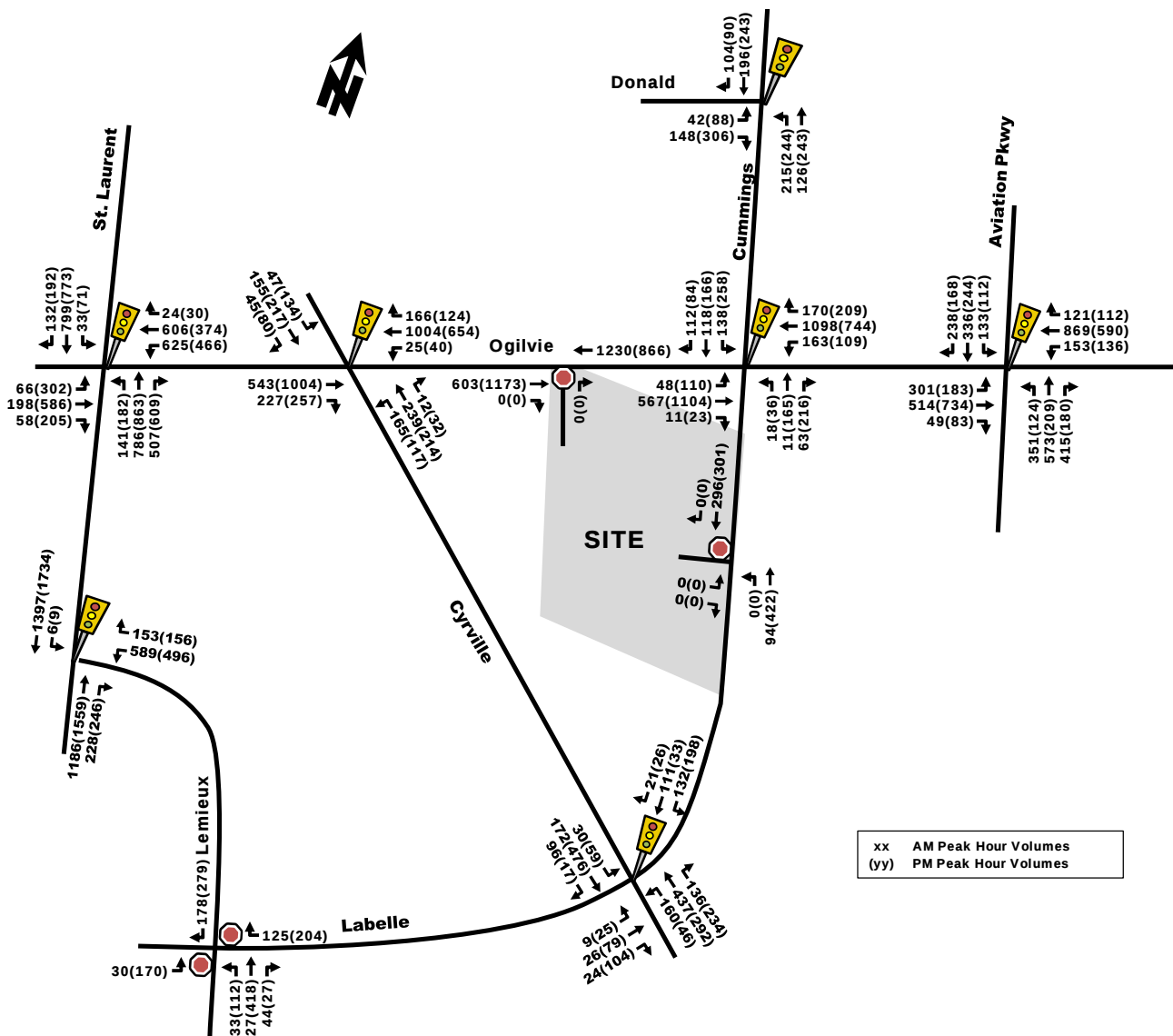


Figure 9: 2022 Background Traffic Volumes

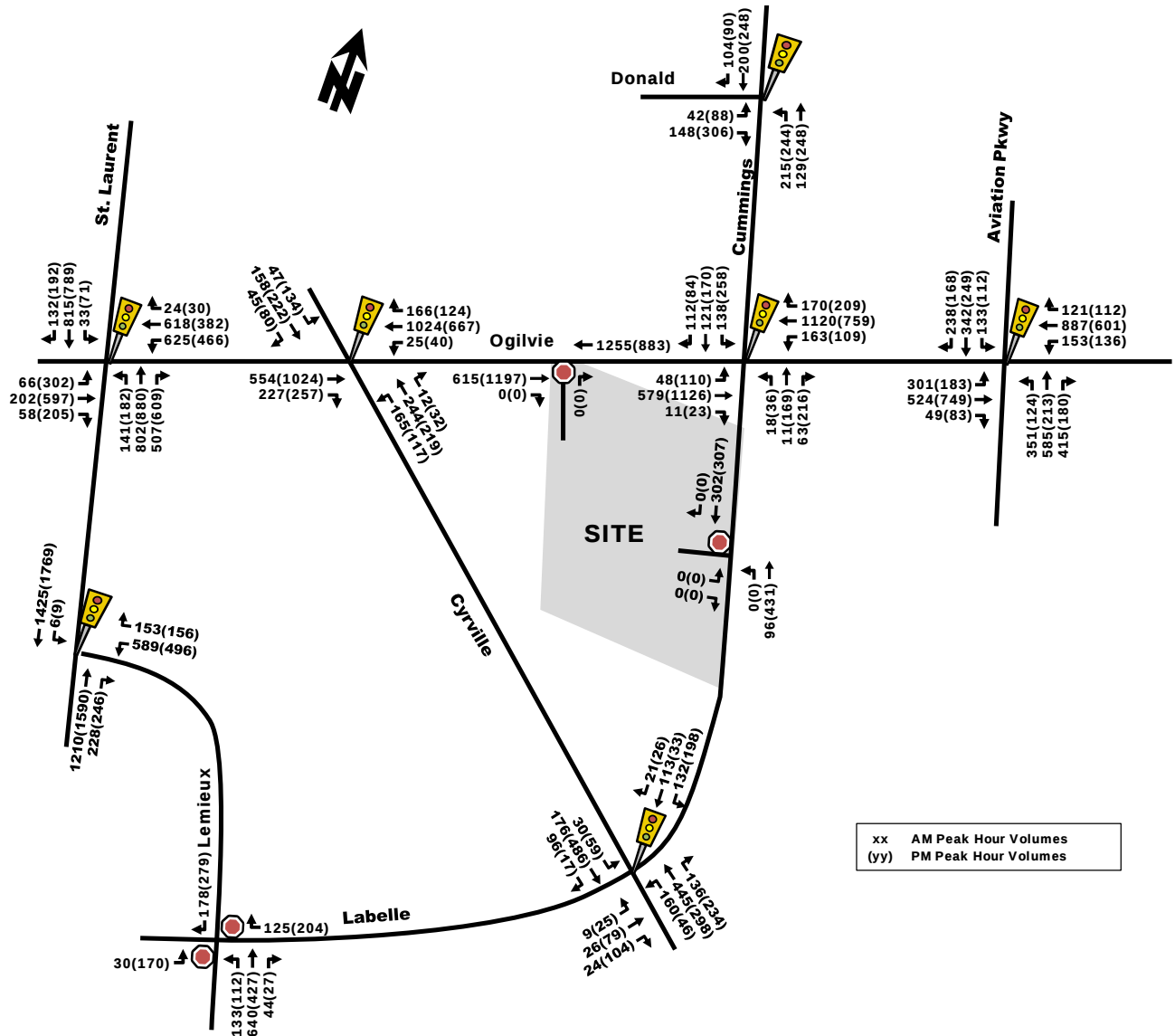
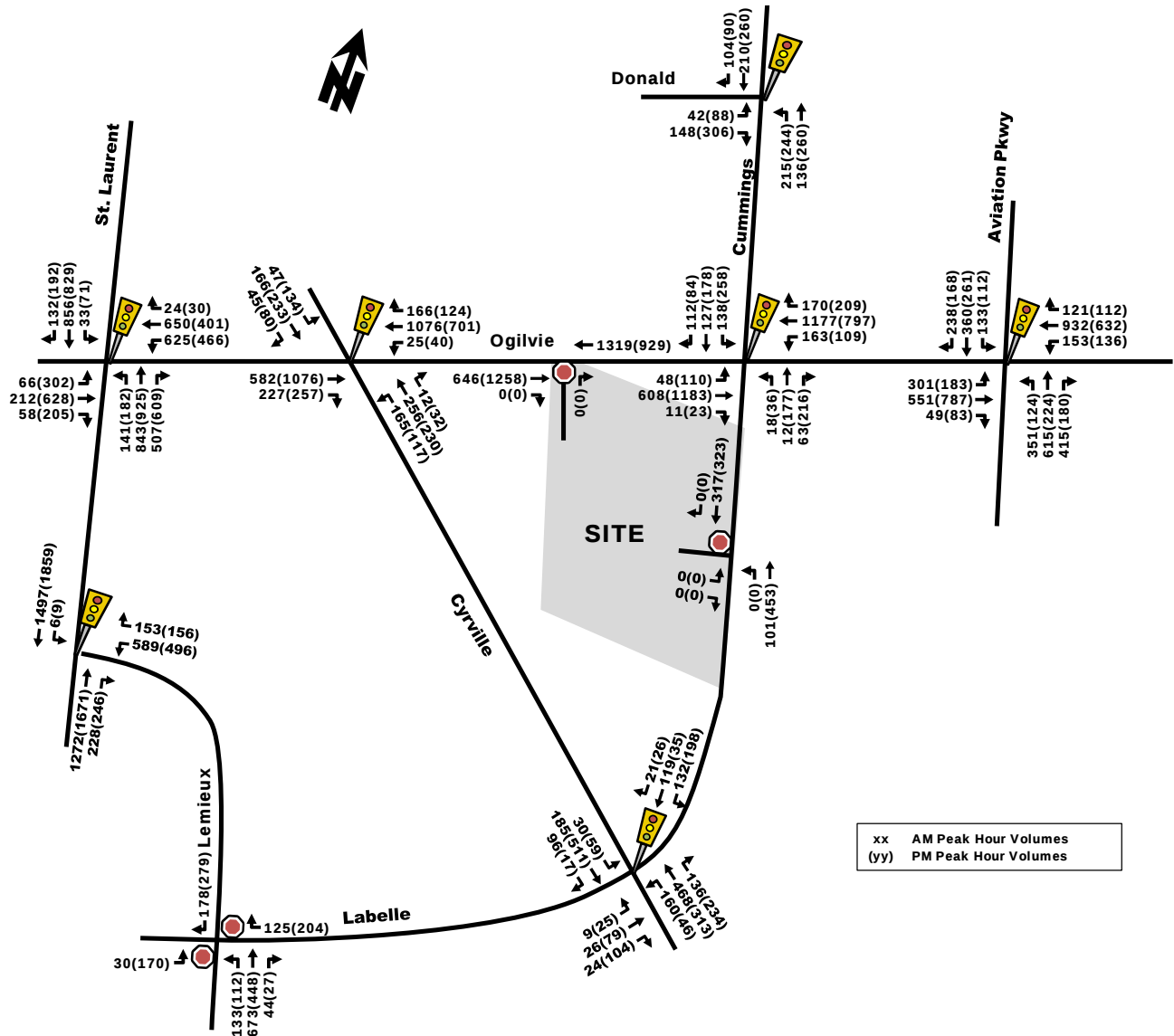


Figure 10: 2027 Background Traffic Volumes



3.2.3. OTHER DEVELOPMENTS

See Section 2.1.3.

3.3. DEMAND RATIONALIZATION

3.3.1. EXISTING CAPACITY ISSUES

The following **Table 16** provides a summary of the existing traffic operations at the study area intersection based on the SYNCHRO (V10) traffic analysis software. The subject intersections were assessed in terms of the volume-to-capacity (v/c) ratio and the corresponding Level of Service (LoS) for the critical movement(s). The SYNCHRO model outputs of existing conditions are provided within Appendix F.

Table 16: Existing Intersection Performance

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Signalized						
St. Laurent/Ogilvie	D(D)	0.87(0.84)	WBL(WBL)	38(39)	B(B)	0.67(0.69)
Ogilvie/Cyrville	A(A)	0.56(0.56)	NBL(EBT)	13(18)	A(A)	0.52(0.52)
Ogilvie/Cummings	C(E)	0.79(0.98)	WBT(EBT)	22(36)	C(D)	0.72(0.82)
Ogilvie/Aviation Parkway	F(B)	1.36(0.66)	EBL(NBL)	66(28)	E(A)	0.95(0.53)
Cummings/Donald	A(A)	0.36(0.56)	EBR(EBR)	6(8)	A(A)	0.32(0.43)
Cummings/Cyrville	A(C)	0.58(0.71)	NBT(WBL)	12(16)	A(A)	0.52(0.53)
St. Laurent/Lemieux	C(B)	0.76(0.70)	WBL(WBL)	18(13)	A(A)	0.55(0.56)
Unsignalized						
Lemieux/Labelle	C(C)	18.1(24.8)	EB(EB)	2(7)	A(A)	-
Note: Analysis of signalized intersections assumes a PHF of 0.90 and a saturation flow rate of 1800 veh/h/lane.						

As shown in **Table 16**, the majority of the intersections within the subject area are currently operating ‘as a whole’ at an acceptable LoS ‘D’ or better during both peak hours with the exception of the Ogilvie/Aviation intersection that is operating at a LoS ‘E’ during the morning peak hour.

Similarly, the majority of the ‘critical movements’ at study area intersections are currently operating at an acceptable LoS ‘D’ or better during both peak hours. However, the exceptions are the westbound left-turn movement at the St. Laurent/Ogilvie intersection, eastbound and northbound left-turn movements at the Ogilvie/Aviation intersection during the morning peak hour, and the eastbound through movement at the Ogilvie/Cummings intersection during the afternoon peak hour.

The foregoing SYNCHRO analysis indicates that there is currently some spare vehicle capacity at certain study area intersections; however, there are certain capacity constraints in the network.

4. STRATEGY REPORT

4.1. DEVELOPMENT DESIGN

Pedestrian Routes and Facilities

Sidewalks are located on both sides of Ogilvie Road (east-west arterial) and on the east side of Cummings Avenue (north-south arterial road). The developer is considering construction of a sidewalk on the west side of Cummings Avenue along the site’s frontage, which would connect to a future sidewalk that the City is proposing that extends from Cyrville Road to the southern boundary of the subject site. Note that north of subject site, there are no known plans for a sidewalk on Cummings Avenue that would provide a connection to Ogilvie Road. A functional sketch of the proposed sidewalk along the site’s frontage has been included in Appendix G.

Internal pedestrian walkways are proposed through landscaped courtyards which connect all the towers and provide access to the existing sidewalk on the south side of Ogilvie Road and the proposed sidewalk on the west side of Cummings Avenue. These facilities are shown in the Landscape Plan included as Appendix G.

Location of Transit Facilities

The proposed development will be located approximately 570-meter walk to the Cyrville LRT Station. In addition, the site is located less than 100 meters from OC Transpo bus stop #1769 with local bus route #24 from Beacon Hill to Blair. During the school year, bus routes #624 and #633 also use this bus stop and provide access from Rideau Station to Gloucester High School and Lester B. Pearson High School. The aforementioned functional sketch of the sidewalk on the west side of Cummings Avenue features a bus pad located on the north end of the site.

Bicycle Parking

The proponent is providing 445 bicycle parking spaces which meets the minimum bylaw requirement. The majority of bicycle parking spaces, 436, are located indoors on the first floor in a well-lit area. The remainder 9 bicycle spots are located outdoors near the building entrance.

Vehicle Access

The proposed development access will be provided through two vehicular driveways; one is a right-in right-out access to Ogilvie Road and the other is a full movement, minor stop-controlled access to Cummings Avenue.

Two-way internal roadways of 6-meters wide or more are proposed for the development. The access driveway ramps do not exceed a 2% transition grade within 6 meters from the property line. Underground parking lot ramps are separated by direction and have a width of 4 meters per direction, satisfying the minimum ramp width requirements. Drive aisle widths accommodating the one-way vehicle traffic meet the minimum width of 2.4 meters.

It is anticipated that garbage pick-up will take place on-site.

4.2. PARKING SUPPLY

Based on the City of Ottawa parking bylaws, vehicle and bicycle parking requirements were calculated based on the site's location and are summarized in **Table 17** and **Table 18** respectively.

Table 17: Vehicle Parking Spaces Requirements

Building / Units		Residential Rate (spaces/unit)	Required # of Parking Spaces				Proposed # of Parking Spaces
			Hotel	Res	Visitor	Total	
Tower 3	282	0.5	-	141	28	169	448
Hotel	182 rooms		32	-	-	32	
Tower 2	306		-	153	31	184	564
Tower 1	284		-	142	28	170	
Total			32	436	87	555	1,012

According to **Table 17**, the subject development is required to provide 436 parking spaces for residents, 87 parking spaces for visitors and 32 parking spaces for the hotel, for a total of 555 parking spaces. With a total of 1,012 proposed underground and surface parking spaces, the subject development meets City requirements.

Table 18 summarizes bicycle parking requirements as per City of Ottawa Zoning By-Law-Part 4, sections 100-114.

Table 18: Bicycle Parking Requirements

Land Use	Units	# of Bicycle Spaces	
		Required	Proposed
Towers 1 to 3	872	436	445
Hotel	182	9	
Total	872	445	445

A total of 9 bicycle spaces will be located outdoors, while the remainder 436 proposed bicycle parking spaces will be located indoors on the first floor. According to **Table 18**, the subject development meets City requirements for bicycle parking spaces.

4.3. BOUNDARY STREET DESIGN

The boundary streets for the development are Ogilvie Road and Cummings Avenue. Cummings Avenue has an existing sidewalk on the east side of the roadway only. The developer is considering construction of a sidewalk on the west side of Cummings Avenue along the site's frontage, which would connect to a future sidewalk that the City is proposing which would extend from Cyrville Road to the southern boundary of the subject site. Note that north of subject site on the west side of Cummings Avenue, there are no known plans for a sidewalk that would provide a connection to Ogilvie Road.

Regarding the proposed sidewalk along the site's frontage of Cummings Avenue, there is an existing ditch and utility poles that constrain the placement and width of the sidewalk. In order to accommodate a 2m wide sidewalk on the west side of Cummings Avenue, the pavement width for vehicle travel is limited to approximately 7.5m. Some additional asphalt width could be provided if a narrower sidewalk is considered acceptable. A functional sketch for a proposed 2m sidewalk, and Landscape Plan (including internal pathways) is included in Appendix G.

The existing/proposed roadway geometry consists of the following features:

- Existing Ogilvie Road
 - o 2 vehicle travel lane in each direction;
 - o 1.8m sidewalk with greater than 2m boulevard on both sides of the roadway; and,
 - o More than 3,000 vehicles per day.
- Existing Cummings Avenue East Side
 - o 1 vehicle travel lane in each direction;
 - o 1.8m sidewalk with no boulevard; and,
 - o More than 3,000 vehicles per day.
- Existing Cummings Avenue West Side
 - o 1 vehicle travel lane in each direction;
 - o No sidewalk; and,
 - o More than 3,000 vehicles per day.
- Proposed Cummings Avenue West Side
 - o 1 vehicle travel lane in each direction;
 - o 2m sidewalk with no boulevard; and,
 - o More than 3,000 vehicles per day.

The multi-modal level of service analysis for the subject road segments adjacent to the site is summarized in **Table 19** with detail analysis provided in Appendix H.

Table 19: MMLOS – Road Segments Adjacent to the Site

Road Segment	Level of Service							
	Pedestrian (PLOS)		Bicycle (BLOS)		Transit (TLOS)		Truck (TkLOS)	
	PLOS	Target	BLOS	Target	TLOS	Target	TkLOS	Target
Ogilvie Road between Cummings & Cyrville	D	A	C	C	D	D	C	D
Cummings Avenue between Ogilvie & Cyrville - East	D	A	B	B	D	D	D	D
Existing Cummings Avenue between Ogilvie & Cyrville - West	F	A	B	B	D	D	D	D
Proposed Cummings Avenue between Ogilvie & Cyrville - West	C	A	B	B	D	D	D	D

Pedestrian PLOS targets were not met on any road segment. The triggers were due to high vehicle volumes, high operating speeds and lack of sidewalks in certain locations. The proposed sidewalk on the west side of Cummings Avenue improves PLOS from 'F' to 'C'. Note that to achieve the PLOS 'A' targets, the daily traffic on the road would need to decrease and a boulevard greater than 2m would be required, which is not considered feasible at this location given the rural cross-section.

Cyclist BLOS, Transit TLOS and Truck TkLOS targets were all met on all road segments.

4.4. ACCESS INTERSECTION DESIGN

The proposed development will be accessed via two driveways:

- The first driveway consists of a right-in right-out access located approximately 130 meters west of Ogilvie/Cummings intersection on Ogilvie Road. A clear throat length of approximately 40 meters is proposed for the Ogilvie Road access which satisfies the minimum clear throat length recommendations of the TAC Guidelines
- The second driveway consists of a full movement, three-legged intersection on Cummings Avenue with STOP control on the minor leg, located approximately 120 meters south of Ogilvie/Cummings intersection. A clear throat length of approximately 40 meters to the first conflict point⁴, which is considered to be the inbound ramp serving the parking lot. This distance satisfies the minimum clear throat length recommendations of the TAC Guidelines.

On-site vehicle turning templates are included as Appendix I.

Auxiliary turn lanes are not warranted for either of the driveways based on queue lengths from Synchro and TAC Guidelines as seen in Appendix J. Furthermore, there are no adjacent driveways or existing auxiliary lanes within the influence zone of either of the two proposed driveway accesses:

- The nearest adjacent driveway to the Cummings access is located approximately 45 meters to the south which provide access to the parking lot for Cyrville Towers Apartments which consists of approximately 70 parking stalls (1177 Cummings Avenue)
 - o there is second driveway on the east side of Cummings serving Cyrville Towers Apartments that is 70 meters to the north
 - o further to the north, there is also an existing driveway on the east side of Cummings serving the Pioneer Gas Bar. At times, there is congestion at this location as delayed southbound left-turning vehicles into

⁴ Note that there is a drop off bay located 17 meters from the driveway curb radii; however, the proposed driveway is 6.7 meters wide with an additional 2.7 meters for the drop off bay on the north and 4 meters on the south, anticipated to cause negligible delays due to the available width.

the gas bar can block southbound through traffic (with potential spillback into the Ogilvie/Cummings intersection)

- The nearest adjacent driveway to the Ogilvie access is located approximately 40 meters to the west which provide access to a gated parking lot for the Mission Ottawa which consists of approximately 20 parking stalls

4.5. TRANSPORTATION DEMAND MANAGEMENT

The TDM checklist is attached as Appendix K. Some of the TDM measures that the proponent is providing/considering are as follows:

- Proposed sidewalk on the west side of Cummings Avenue along the site's frontage, including bus pad;
- Provide internal pathway network linking to adjacent street sidewalks;
- Development meets bicycle parking requirements;
- Program coordinator;
- Walking/cycling/transit information on their site;
- Carshare membership;
- Priced parking.

Given the type of development and its location, a high amount of non-auto trips is expected to be generated by the proposed development. As a result, non-auto mode shares are expected to increase, and auto shares expected to decrease over time for the subject site.

4.6. ROUTE CAPACITY

It is projected that 655 and 575 'new' two-way transit passenger trips will be generated for the AM and PM peak hours, respectively. Considering the envisioned Confederation LRT Line is projected to operate with a capacity of 600 passengers per train and 12 trains per hour per direction during peak hours, it is anticipated that the future transit network will have sufficient capacity to accommodate the projected transit demand.

4.7. INTERSECTION DESIGN

4.7.1. MULTI-MODAL LEVEL OF SERVICE

The Ogilvie/Cummings intersection is within 600 meters of high-frequency transit. Cummings/Cyrville intersection was also analysed as it will be required to be crossed for pedestrians and cyclists heading to the Cyrville LRT Station. The applicable target levels of service for pedestrians and cyclists is PLoS 'A' and BLoS 'B', respectively. The MMLOS analysis for the existing signalized intersections Ogilvie/Cummings and Cummings/Cyrville within the study area are summarized in **Table 20**, with detailed analyses provided in Appendix L. As stated in the MMLOS Guidelines, only signalized or roundabout intersections are considered for the intersection level of service measures.

Table 20: MMLOS – Intersections

Intersection	Level of Service							
	Pedestrian (PLoS)		Bicycle (BLoS)		Transit (TLoS)		Truck (TkLoS)	
	PLoS	Target	BLoS	Target	TLoS	Target	TkLoS	Target
Ogilvie/Cummings	F	A	F	B	F	D	E	D
Cummings/Cyrville	C	A	D	B	D	D	E	D

As shown in **Table 20**, the pedestrian and bicycle target level of service were not met on Ogilvie/Cummings and Cummings/Cyrville. Pedestrians have to cross 5 to 6 lanes of traffic when crossing Ogilvie Road resulting in the poor PLoS 'F' for Ogilvie/Cummings. The lack of bicycle facilities on Cummings Avenue and high operating speeds on Ogilvie Road

result in poor BLoS. If a pocket bike lane, curb bike lane, cycletrack or MUP was built on Cummings Avenue, and 2-stage left turning box on Ogilvie Road and Cyrville Road approaches, the BLoS targets could be met for both intersections. Transit TLoS targets were not met on Ogilvie/Cummings due to delays; however, nearby grade separated LRT Rapid Transit is located less than 600-meter walk. Truck TkLoS was not met at either intersection due to the low number of receiving lanes and short effective corner radius.

The Cummings/Cyrville intersection is expected to be modified once Cyrville Road is widened as per Phase 3 of the 2031 Affordable Road Network. Phase 3 widening are expected to occur between 2026 and 2031 according to the Transportation Master Plan. Due to the anticipated timing of this widening, it is assumed that MMLOS for intersections will remain the same for all horizon years.

4.7.2. PROJECTED BACKGROUND 2020 OPERATIONS

The interim Phase 1 background volumes from Section 3.2.2 and **Figure 8** were evaluated using Synchro. Results are summarized in **Table 21** with detailed analyses provided in Appendix M.

Table 21: Projected Background Phase 1 Interim 2020 Operations at Study Area Intersections

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Signalized						
St. Laurent/Ogilvie	D(D)	0.81(0.82)	WBL(WBL)	37(38)	B(B)	0.68(0.67)
Ogilvie/Cyrville	A(A)	0.51(0.54)	WBT(EBT)	13(18)	A(A)	0.48(0.50)
Ogilvie/Cummings	C(E)	0.72(0.95)	WBT(EBT)	21(32)	B(C)	0.65(0.80)
Ogilvie/Aviation Parkway	F(B)	1.17(0.64)	EBL(NBL)	53(27)	D(A)	0.86(0.50)
Cummings/Donald	A(A)	0.33(0.54)	EBR(EBR)	6(7)	A(A)	0.28(0.41)
Cummings/Cyrville	A(B)	0.53(0.69)	NBT(WBL)	12(15)	A(A)	0.48(0.51)
St. Laurent/Lemieux	C(B)	0.74(0.68)	WBL(WBL)	17(12)	A(A)	0.51(0.54)
Unsignalized						
Lemieux/Labelle	C(C)	17(22)	EB(EB)	2(7)	A(A)	-
Note: Analysis of signalized intersections assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane.						

As shown in **Table 21**, all the intersections within the subject area are projected to operate ‘as a whole’ at acceptable LoS ‘D’ or better during the AM and PM peak hours. The majority of the ‘critical movements’ at study area intersections are projected to operate at acceptable LoS ‘D’ or better during both peak hours with the exception of Ogilvie/Cummings and Ogilvie/Aviation. In general, intersections will operate similarly to existing conditions.

4.7.3. PROJECTED BACKGROUND 2022 OPERATIONS

The ultimate buildout background 2022 volumes from Section 3.2.2 and **Figure 9** were evaluated using Synchro. Results are summarized in **Table 22** with detailed analyses provided in Appendix M.

Table 22: Projected Background 2022 Operations at Study Area Intersections

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Signalized						
St. Laurent/Ogilvie	D(D)	0.81(0.82)	WBL(WBL)	37(38)	B(B)	0.68(0.67)
Ogilvie/Cyrville	A(A)	0.52(0.55)	WBT(EBT)	13(18)	A(A)	0.49(0.51)
Ogilvie/Cummings	C(E)	0.73(0.97)	WBT(EBT)	21(34)	B(D)	0.66(0.81)
Ogilvie/Aviation Parkway	F(B)	1.20(0.64)	EBL(NBL)	54(27)	D(A)	0.87(0.51)
Cummings/Donald	A(A)	0.33(0.54)	EBR(EBR)	6(7)	A(A)	0.28(0.41)
Cummings/Cyrville	A(B)	0.53(0.69)	NBT(WBL)	12(15)	A(A)	0.48(0.51)
St. Laurent/Lemieux	C(B)	0.74(0.68)	WBL(WBL)	17(12)	A(A)	0.51(0.55)
Unsignalized						
Lemieux/Labelle	C(C)	17(23)	EB(EB)	2(7)	A(A)	-
Note: Analysis of signalized intersections assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane.						

As shown in **Table 22**, all the intersections within the study area are projected to operate ‘as a whole’ at acceptable LoS ‘D’ or better during the AM and PM peak hours. The majority of the ‘critical movements’ at study area intersections are projected to operate at acceptable LoS ‘D’ or better during both peak hours with the exception of Ogilvie/Cummings and Ogilvie/Aviation. In general, intersections will operate similarly to existing conditions.

4.7.4. PROJECTED BACKGROUND 2027 OPERATIONS

The ultimate buildout background 2027 volumes from Section 3.2.4 and **Figure 10** were evaluated using Synchro. Results are summarized in **Table 23** with detailed analyses provided in Appendix M.

Table 23: Projected Background 2027 Operations at Study Area Intersections

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Signalized						
St. Laurent/Ogilvie	D(D)	0.81(0.82)	WBL(WBL)	36(39)	B(B)	0.69(0.69)
Ogilvie/Cyrville	A(A)	0.54(0.58)	WBT(EBT)	13(18)	A(A)	0.51(0.54)
Ogilvie/Cummings	C(F)	0.76(1.02)	WBT(EBT)	21(39)	B(D)	0.69(0.85)
Ogilvie/Aviation Parkway	F(B)	1.22(0.64)	EBL(NBL)	57(28)	D(A)	0.90(0.54)
Cummings/Donald	A(A)	0.33(0.54)	EBR(EBR)	6(7)	A(A)	0.29(0.42)
Cummings/Cyrville	A(B)	0.55(0.69)	NBT(WBL)	12(15)	A(A)	0.49(0.53)
St. Laurent/Lemieux	C(B)	0.74(0.68)	WBL(WBL)	16(12)	A(A)	0.52(0.57)
Unsignalized						
Lemieux/Labelle	C(C)	18(23)	EB(EB)	2(7)	A(A)	-
Note: Analysis of signalized intersections assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane.						

As shown in **Table 23**, all the intersections within the subject area are projected to operate ‘as a whole’ at acceptable LoS ‘D’ or better during the AM and PM peak hours. The majority of the ‘critical movements’ at study area intersections are projected to operate at acceptable LoS ‘D’ or better during both peak hours with the exception of Ogilvie/Cummings and

Ogilvie/Aviation which are projected to operate at LoS 'F' in the PM and AM respectively. In general, intersections will operate similarly to existing conditions.

4.7.5. FUTURE PROJECTED 2020 CONDITIONS

The total future projected interim 2020 conditions were derived by superimposing the interim 2020 background volumes onto the interim 2020 site-generated volumes and are illustrated in **Figure 11**. Synchro results for study area intersection performance are summarized in **Table 24** with detailed analyses provided in Appendix N.

Figure 11: Future Projected Interim 2020 Conditions

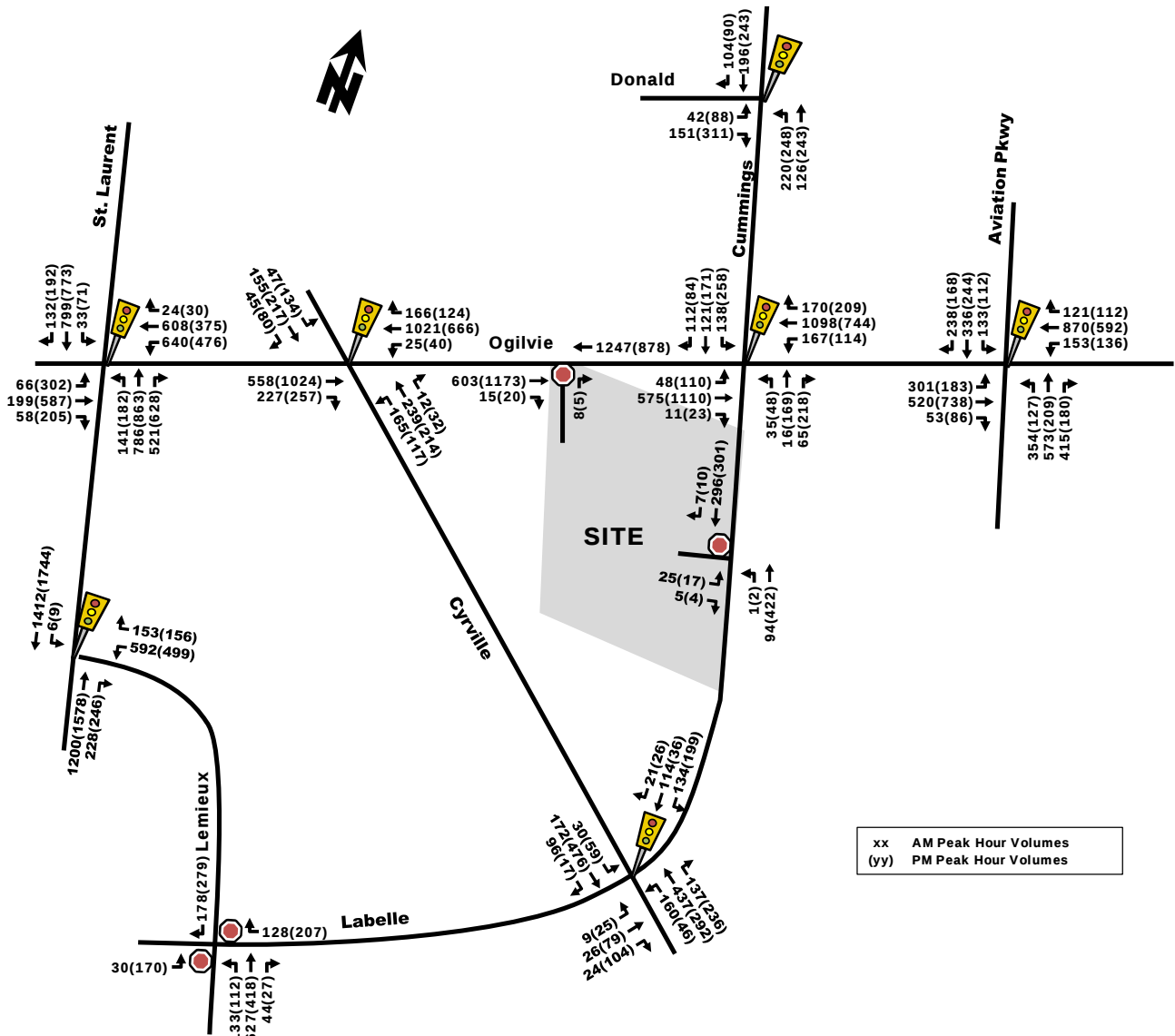


Table 24: Future Projected Interim 2020 Operations at Study Area Intersections

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Signalized						
St. Laurent/Ogilvie	D(D)	0.83(0.83)	WBL(WBL)	37(38)	B(B)	0.69(0.67)
Ogilvie/Cyrville	A(A)	0.52(0.55)	WBT(EBT)	13(18)	A(A)	0.49(0.51)
Ogilvie/Cummings	C(E)	0.72(0.96)	WBT(EBT)	22(33)	B(C)	0.65(0.80)
Ogilvie/Aviation Parkway	F(B)	1.18(0.65)	EBL(NBL)	53(27)	D(A)	0.86(0.52)
Cummings/Donald	A(A)	0.34(0.55)	EBR(EBR)	6(7)	A(A)	0.29(0.42)
Cummings/Cyrville	A(B)	0.52(0.70)	NBT(WBL)	12(15)	A(A)	0.48(0.52)
St. Laurent/Lemieux	C(B)	0.74(0.69)	WBL(WBL)	17(12)	A(A)	0.51(0.54)
Unsignalized						
Lemieux/Labelle	C(C)	17(22)	EB(EB)	2(7)	A(A)	-
Ogilvie Site Access	B(B)	10(13)	NB(NB)	0(0)	A(A)	-
Cummings Site Access	B(B)	11(14)	EB(EB)	1(0)	A(A)	-
Note: Analysis of signalized intersections assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane.						

As shown in **Table 24**, all the intersections within the subject area are projected to operate ‘as a whole’ at acceptable LoS ‘D’ or better during the AM and PM peak hours. The majority of the ‘critical movements’ at study area intersections are projected to operate at acceptable LoS ‘D’ or better during both peak hours with the exception of Ogilvie/Cummings and Ogilvie/Aviation. In general, intersections will operate similarly to existing conditions.

4.7.6. FUTURE PROJECTED 2022 CONDITIONS

The total future projected ultimate buildout 2022 conditions were derived by superimposing the ultimate 2022 background volumes onto the 2022 site-generated volumes and are illustrated in **Figure 12**. Synchro results for study area intersection performance are summarized in **Table 25** with detailed analyses provided in Appendix N.

Figure 12: Future Projected Interim 2022 Conditions

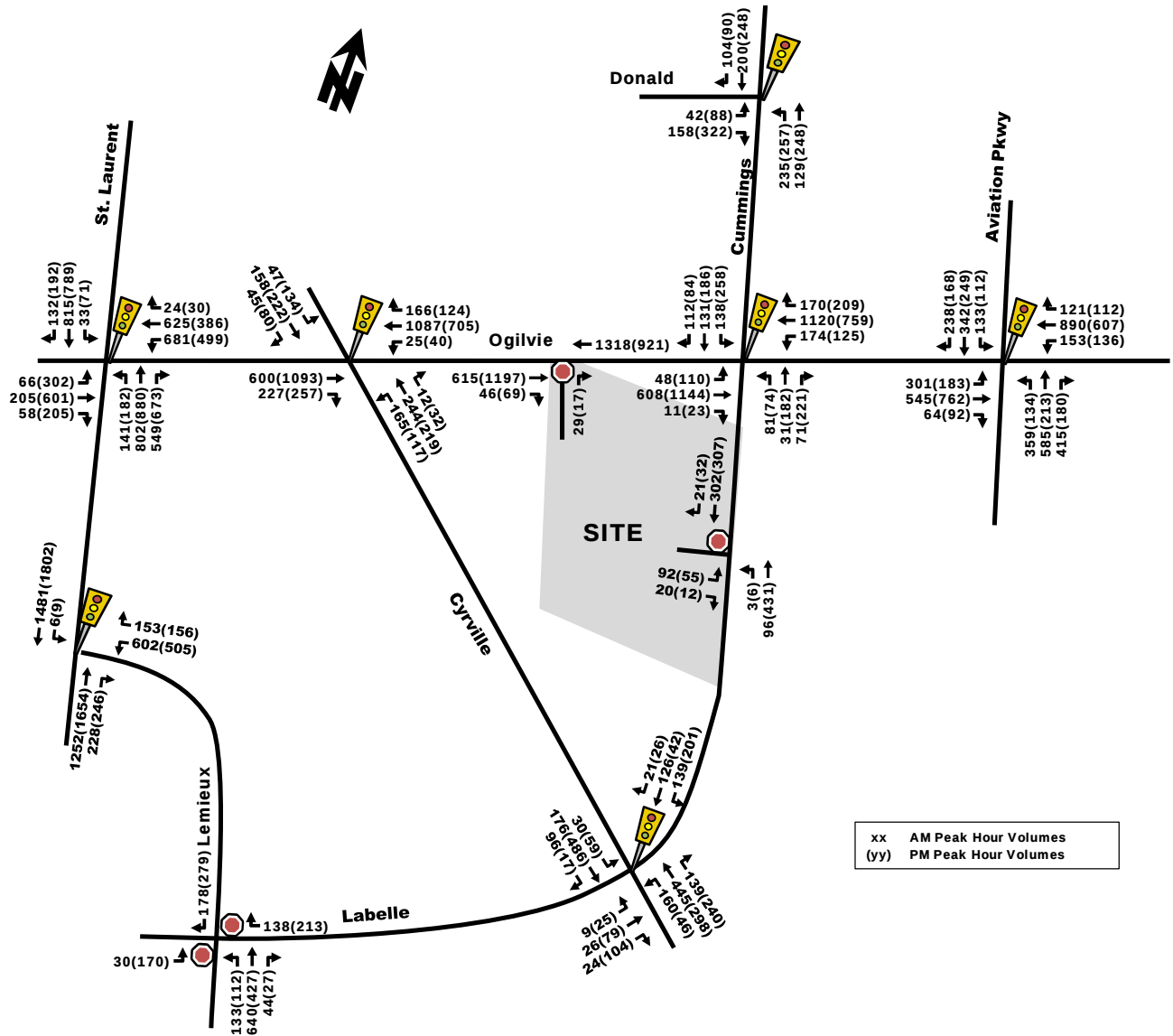


Table 25: Future Projected Interim 2022 Operations at Study Area Intersections

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Signalized						
St. Laurent/Ogilvie	D(D)	0.86(0.85)	WBL(WBL)	38(39)	C(B)	0.72(0.69)
Ogilvie/Cyrville	A(A)	0.55(0.59)	WBT(EBT)	13(18)	A(A)	0.51(0.54)
Ogilvie/Cummings	C(E)	0.73(0.99)	WBT(EBT)	23(36)	B(D)	0.65(0.83)
Ogilvie/Aviation Parkway	F(B)	1.20(0.68)	EBL(NBL)	55(28)	D(A)	0.88(0.54)
Cummings/Donald	A(A)	0.35(0.56)	EBR(EBR)	6(7)	A(A)	0.30(0.43)
Cummings/Cyrville	A(B)	0.53(0.70)	WBL(WBL)	12(15)	A(A)	0.49(0.52)
St. Laurent/Lemieux	C(B)	0.75(0.69)	WBL(WBL)	17(12)	A(A)	0.53(0.56)
Unsignalized						
Lemieux/Labelle	C(C)	18(23)	EB(EB)	2(7)	A(A)	-
Ogilvie Site Access	B(B)	10(14)	NB(NB)	0(0)	A(A)	-
Cummings Site Access	B(C)	12(16)	EB(EB)	3(1)	A(A)	-
Note: Analysis of signalized intersections assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane.						

As shown in **Table 25**, all the intersections within the subject area are projected to operate ‘as a whole’ at acceptable LoS ‘D’ or better during the AM and PM peak hours. The majority of the ‘critical movements’ at study area intersections are projected to operate at acceptable LoS ‘D’ or better during both peak hours with the exception of Ogilvie/Cummings and Ogilvie/Aviation. In general, intersections will operate similarly to existing conditions.

4.7.7. FUTURE PROJECTED 2027 CONDITIONS

The total future projected ultimate buildout 2027 conditions were derived by superimposing the ultimate buildout 2027 background volumes onto the ultimate buildout 2027 site-generated volumes and are illustrated in **Figure 13**. Synchro results for study area intersection performance are summarized in **Table 26** with detailed analyses provided in Appendix N.

Figure 13: Future Projected 2027 Ultimate Conditions

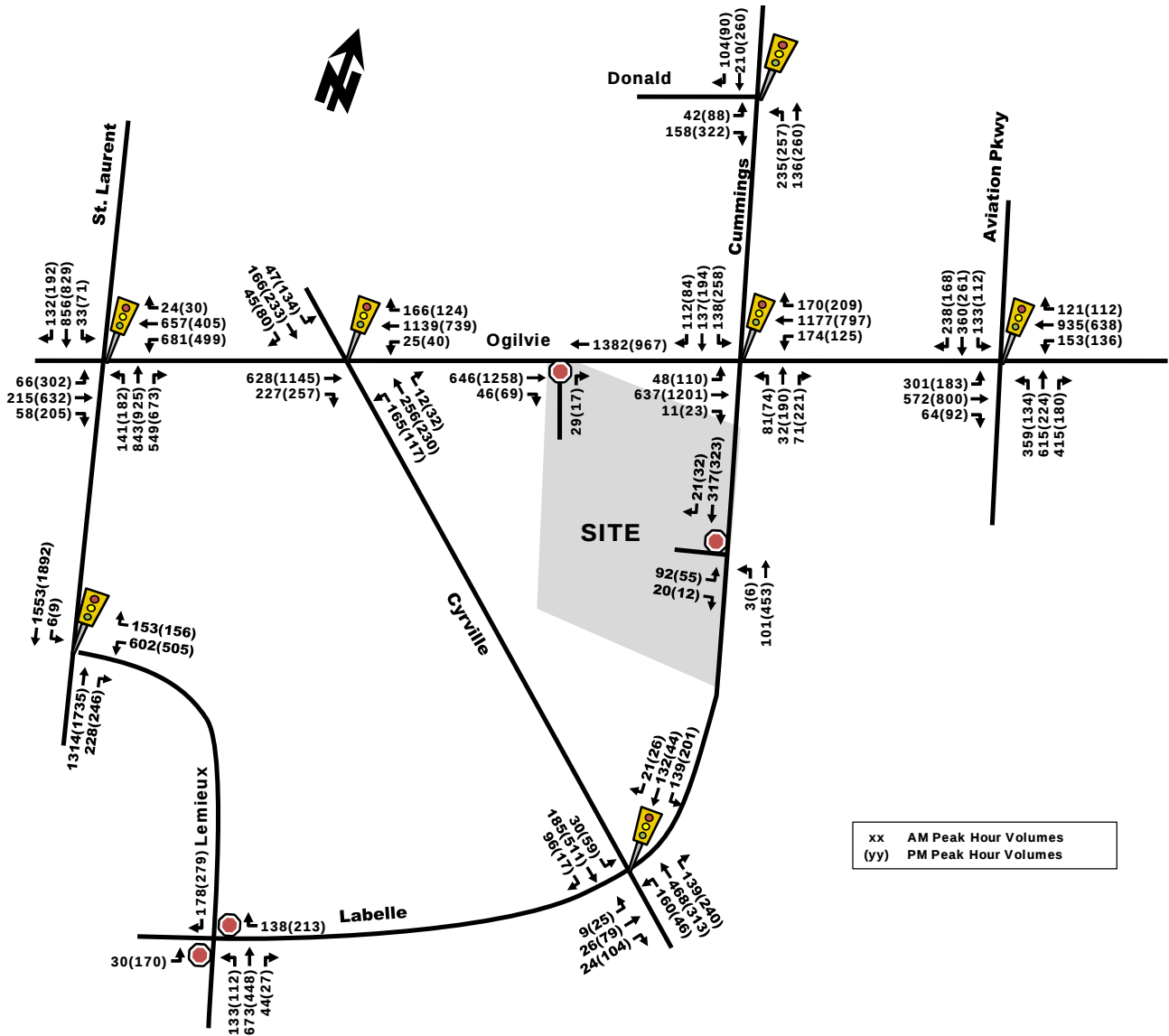


Table 26: Future Projected Ultimate 2027 Buildout Operations at Study Area Intersections

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Signalized						
St. Laurent/Ogilvie	D(D)	0.86(0.86)	WBL(WBL)	37(40)	C(C)	0.74(0.71)
Ogilvie/Cyrville	A(B)	0.58(0.61)	WBT(EBT)	14(18)	A(A)	0.54(0.56)
Ogilvie/Cummings	C(F)	0.76(1.04)	WBT(EBT)	23(42)	B(D)	0.68(0.87)
Ogilvie/Aviation Parkway	F(B)	1.22(0.68)	EBL(NBL)	57(29)	D(A)	0.90(0.56)
Cummings/Donald	A(A)	0.35(0.56)	EBR(EBR)	6(8)	A(A)	0.30(0.43)
Cummings/Cyrville	A(B)	0.55(0.70)	NBT(WBL)	13(15)	A(A)	0.50(0.53)
St. Laurent/Lemieux	C(B)	0.75(0.69)	WBL(WBL)	17(12)	A(A)	0.54(0.58)
Unsignalized						
Lemieux/Labelle	C(C)	18(24)	EB(EB)	2(7)	A(A)	-
Ogilvie Site Access	B(B)	11(14)	NB(NB)	0(0)	A(A)	-
Cummings Site Access	B(C)	12(16)	EB(EB)	3(1)	A(A)	-
Optimized Critical Intersections						
Ogilvie/Cummings	C(D)	0.76(0.89)	WBT(EBT)	21(27)	B(C)	0.68(0.79)
Ogilvie/Aviation Parkway	E(B)	0.95(0.68)	EBL(NBL)	55(29)	E(A)	0.92(0.56)
Note: Analysis of signalized intersections assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane.						

As shown in **Table 26**, all the intersections within the subject area are projected to operate ‘as a whole’ at acceptable LoS ‘D’ or better during the AM and PM peak hours. The majority of the ‘critical movements’ at study area intersections are projected to operate at acceptable LoS ‘D’ or better during both peak hours with the exception of Ogilvie/Cummings and Ogilvie/Aviation which are projected to operate at LoS ‘F’ in the PM and AM respectively. In general, intersections will operate similarly to existing conditions. No significant change between 2027 background conditions and 2027 projected future conditions were noted, indicating that the majority of vehicles impacting the operations at the study area intersections come from background growth.

Both intersections with critical movements of LoS ‘F’ were optimized while keeping the same cycle length. By doing so, critical movements were improved to LoS ‘D’ for the eastbound through movement at Ogilvie/Cummings and to LoS ‘E’ at Ogilvie/Aviation for eastbound left movement.

It is important to note that the future background traffic volumes were not adjusted to reflect future mode shares, which are expected to change when the Stage 1 and 2 LRT system is operating. It is expected that arterial-to-arterial intersections will continue to be congested, but as LRT is adopted traffic behaviour around new stations and local trips near LRT stations will adjust.

4.7.8. FUTURE 2027 CONDITIONS IF TOD TARGETS NOT MET

Impacts to the existing network were analysed and summarised in **Table 27** in the event that TOD targets are not met and existing mode shares were used, based on the OD-Mode Share Survey. The vehicle trip generation was extracted from **Table 11**. A detailed analysis is provided in Appendix N.

Table 27: Future Projected Ultimate 2027 Buildout Operations if TOD Targets Not Met

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Signalized						
St. Laurent/Ogilvie	E(E)	0.91(0.97)	WBL(WBL)	39(49)	B(C)	0.69(0.76)
Ogilvie/Cyrville	B(C)	0.63(0.72)	WBT(EBT)	15(19)	A(B)	0.58(0.65)
Ogilvie/Cummings	C(F)	0.77(1.10)	NBL(EBT)	25(50)	C(E)	0.71(0.93)
Ogilvie/Aviation Parkway	F(C)	1.22(0.80)	EBL(NBL)	58(30)	E(A)	0.91(0.59)
Cummings/Donald	A(A)	0.39(0.60)	NBL(EBR)	6(8)	A(A)	0.33(0.47)
Cummings/Cyrville	A(C)	0.56(0.71)	WBL(WBL)	13(16)	A(A)	0.52(0.55)
St. Laurent/Lemieux	C(B)	0.75(0.70)	WBL(WBL)	18(13)	A(B)	0.57(0.61)
Unsignalized						
Lemieux/Labelle	C(D)	19(25)	EB(EB)	3(7)	A(A)	-
Ogilvie Site Access	C(C)	12(18)	NB(NB)	0(0)	A(A)	-
Cummings Site Access	C(E)	18(38)	EB(EB)	7(8)	A(A)	-
Note: Analysis of signalized intersections assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane.						

As seen in **Table 27**, even if TOD projections are not met, most intersections continue to operate at an acceptable LoS of 'D' or better with the exception of Ogilvie/Cummings and Ogilvie/Aviation which begin to approach capacity. In terms of critical movements, only St. Laurent/Ogilvie and Cummings Site Access worsen to a level of service below LoS 'D' from the previous 2027 projected conditions with TOD targets met.

5. SUMMARY OF FINDINGS

Proposed Development

- The proposed development is located at 1098 Ogilvie Road
- The site is currently a vacant lot
- The proposed development will consist of two phases. Phase 1 consists of a residential and hotel towers expected to have occupancy by 2020. Phase 2 consists of two additional residential towers expected to have occupancy by 2024
- The proposed development will consist of the following:
 - Tower 3 (Phase 1): 36-storey building with 284 units
 - Hotel Tower (Phase 1): 8-storeys building with 182 rooms
 - Tower 2 (Phase 2): 24-storeys building with 306 units
 - Tower 1 (Phase 2): 22-storeys building with 284 units
- Full buildout will consist of 872 units and 182 hotel rooms

Existing Conditions

- Overall, all intersections operate at LoS 'D' or better with the exception of Ogilvie/Aviation which operates at LoS 'E' in the AM
- The critical movements all operate at LoS 'D' or better with the exception of Ogilvie/Cummings which operates at LoS 'E' for the eastbound through movement in the PM peak hour and Ogilvie/Aviation which operates at LoS 'F' for the eastbound left and northbound left movements in the AM peak hour

Background Conditions

- A 1% annual growth rate was applied to study area intersections on the through movements

Trip Generation and Parking

- At interim buildout (2020) which includes Towers 3 and the Hotel Tower, the proposed development was expected to generate approximately 60 vehicle trips in the weekday morning and afternoon peak hours respectively based on TRANS mode shares for residential and ITE for the hotel
- At ultimate buildout (2022), the proposed development was expected to generate approximately 150 and 135 vehicle trips during the weekday morning and afternoon periods respectively
- The subject development will provide a total of 1,012 underground and surface vehicle parking spaces meeting City requirements
- The subject development will provide a total of 445 bicycle parking spaces predominantly located indoors, which meets City requirements

Projected Conditions

- Most intersections in the future operate better than existing conditions despite growing volumes from background and site generated traffic due to a peak factor of 0.9 used in existing and 1.0 used in future analysis as required by TIA Guidelines
- Future Projected 2027 conditions operate similarly to 2027 background operations, indicating that most of the traffic and congestion added to the network comes from background volume growth
- Overall, all intersections are projected to operate at acceptable LoS 'D' or better with only Ogilvie/Cummings having a critical movement of LoS 'F' for the eastbound through movement in the PM and Ogilvie/Aviation having a critical movement of LoS 'F' for the eastbound left movement in the AM. By optimizing the splits while keeping the same cycle lengths, the critical movement at Ogilvie/Cummings can be improved to LoS 'D' and the critical movement at Ogilvie/Aviation can be improved to LoS 'E'. These results may be considered conservative as they were based on pre-LRT background traffic volumes and assumes a larger share of auto drivers
- It is anticipated that even if TOD targets are not met, all intersections "as a whole" will operate at a LOS 'E' or better.
- The MMLOS road segment analysis shows that none of the road segments would meet minimum targets for pedestrians due to high operating speeds, high vehicle volumes and a lack of on road parking. Considering that both boundary roads are arterials, it is unlikely that any of the triggers could be mitigated without causing major vehicle delays. Cyclist BLoS, Transit TLoS and Truck TLoS targets were met on all road segments
- The proposed sidewalk on the west side of Cummings Road improves PLoS from 'F' to 'C'. The proposed sidewalk would connect to a City proposed sidewalk expansion from Cyrville Road to the south edge of the proponent's property. A discontinuity in sidewalk of approximately 50m will occur between the north edge of the proponent's property and Ogilvie Road

Transit

- Site-generated transit trips at interim (2020) buildout was approximately 265 and 250 during the weekday morning and afternoon peak hour, respectively
- Site-generated transit trips at full buildout (2022) was approximately 645 and 565 during the weekday morning and afternoon peak hour, respectively
- The estimated transit trips could be accommodated by the Confederation LRT Line which is projected to operate with a capacity of 600 passengers per train and 12 trains per hour per direction during peak hours
- The developer is proposing to include a bus pad for OC Transpo stop #1769 as part of the proposed sidewalk on the west side of Cummings Avenue

Site Access, Circulation and Connectivity

- The proposed development will be accessed via two driveways to the arterial road network. The first driveway consists of a right-in right-out access located approximately 130 meters west of Ogilvie/Cummings intersection on Ogilvie

Road. The second driveway consists of a full movement, three-legged intersection with STOP control on the minor leg, located approximately 120 meters south of Ogilvie/Cummings intersection on Cummings Avenue.

- No off-site roadway or intersection modifications are required to support the development, other than a sidewalk on the west side of Cummings Avenue along the site's frontage.
- The proposed Site Plan is considered supportive of pedestrian connectivity by providing a network of internal pathways that connect all towers to Ogilvie Road and Cummings Avenue as well as future connectivity to a proposed public park at the south end of the development.

Based on the foregoing, the proposed Site Plan for Lux Place Towers 1 to 3 and the Hotel, all located at 1098 Ogilvie, is recommended from a transportation perspective.

Prepared By:

Reviewed By:



Juan Lavin, E.I.T.



Mark Baker, P.Eng.
Senior Transportation Engineer

Appendix A

City Comments

Strategy comments are below:

Transportation Engineering Services

Will the future park south of the development have access to Cyrville Road? If not, given the unknown timing of the widening and urbanization of Cummings Avenue, the applicant should consider constructing a sidewalk/MUP as an interim measure along the frontage of the site on Cummings Avenue to provide a more desirable walking/cycling link to Cyrville Road / Cyrville Station. **Appendix G includes both a functional sketch of the proposed 2-meter wide sidewalk connecting the site to Cyrville Road and a surface concept plan that shows the proposed internal pathways and park south of the development.**

Please fill out the TDM-supportive Development Design and Infrastructure Checklist for residential and non-residential developments, as well as the TDM Measures checklist for non-residential developments. Please describe the implementation plans for all measures, as required. **Appropriate TDM checklists have been included in Appendix J.**

Please provide turning templates for municipal services within the development. **Turning templates included in Appendix I**

There are no minimum parking requirements for developments within 600 m of rapid transit, except for visitor parking. If visitor parking will be inaccessible to hotel guests, consider spillover parking potential for the hotel tower. Please provide the location of surface parking and the access points/grade of the underground garage. **There is no surface parking proposed. Hotel guests will have access to underground visitor parking spots. The development is expected to meet all parking demands for residential, visitors and hotel.**

If the minimum bicycle parking requirements will not be met, a variance will need to be submitted for the City's approval. Given the large amount of required bicycle parking, please provide the locations and ensure that they are conveniently located to support its usage. **Site plan has been updated and now meets bylaw requirements. Bicycle parking is proposed on the first floor located indoors (436 spots) and outdoors near the building entrance (9).**

Segment BLOS is E on Cummings Avenue due to bicycle travel in mixed traffic. Consider measures to improve BLOS. PLOS is E along Ogilvie Road, operating speed is 70 km/h. Please include Transit Level of Service and Truck Level of Service for all MMLOS analyses. **Noted, MMLOS updated and measures discussed in section 4.3.**

Given the number of pedestrian and cyclist collisions at Ogilvie Road / Cummings Avenue and the high number of proposed transit users needing to cross this intersection to reach Cyrville Station, please consider some measures to improve safety. **It is not anticipated that pedestrians or cyclists will cross Ogilvie/Cummings to get to Cyrville Station. The majority of non-motorized person trips are anticipated to head south on the proposed sidewalk on Cummings Avenue to Cyrville, where they will continue east on Cyrville Road to the Cyrville LRT Station.**

Please include access design parameters such as access width, clear throat, access grade, location of any parking gates, etc. for both accesses. **Report updated to include.**

MMLOS should be completed for all signalized intersections in the study area, but particularly for those that vulnerable road users could use to reach Cyrville Station. **MMLOS updated to include intersections with vulnerable roads users headed to Cyrville Station.**

Traffic Signal Operations

In the event that the proposed full movement access on Cummings Avenue develops a collision pattern or interferes with traffic signal operations (at the intersection of Ogilvie Road and Cummings Avenue), conversion to RIRO may be required.

NBL turn storage at Ogilvie Road and Cummings Avenue may be inadequate if TOD modal share is not achieved. This again may have impacts on proposed site access on Cummings Avenue.

If TOD modal share is not achieved, delays entering and exiting the site at Cummings Avenue may become excessive during peak hours.

Traffic signal timing will not be an effective mitigation tool in alleviating congestion or delay if TOD mode share is not achieved.

Noted

Traffic Signal Design

No comments to this TIA for this circulation. Traffic Signal Design and Specification Unit reserves the right to make future comments based on subsequent submissions.

Future considerations:

If there are any future proposed changes in the existing roadway geometry for the purpose of construction of a new TCS(s) or modifications to existing TCS(s) i.e. Cummings Avenue / Ogilvie Road, Ogilvie Road / Cyrville Road, the City of Ottawa Traffic Signal Design and Specification Unit is required to complete a review for traffic signal plant re-design and provide the actual re-design.

Further advice will come with subsequent submission(s). **Noted, will advise if new roadway geometry changes are proposed.**

Street Lighting

No comments with TIA for this circulation. Street Lighting reserves the right to make future comments based on subsequent submissions.

Future considerations may include as follows:

If there are any proposed changes to the existing roadway geometry, or changes to City of Ottawa traffic plant, the City of Ottawa Street Light Asset Management Group is required to provide a full review and possibly a street light design. **Noted, will advise if new roadway geometry changes are proposed.**

Transit Services

OC Transpo has been working with PIED to include the purchase of pre-loaded Presto cards with ePurse for future residents of condo developments in proximity of LRT service. A similar arrangement is currently being implemented via draft conditions for the project situated on 1960 Scott Street. A similar comment has been produced for the site of 90 Champlain Street and 208-212 Slater Street. Discussions are still being held to clarify official policy, but it is expected that developers shall purchase a Presto card for each future owner/tenant of 1098 Ogilvie Road. The Presto cards will be preloaded with a certain amount of money in ePurse format and will require a 6\$ activation fee.

Because of the proximity to rapid transit at Cyrville and St-Laurent Stations, the developer should reduce the number of vehicle parking spaces. OC Transpo recommends a rate of 0.5 spaces per unit for this development.

Bicycle parking should be increased to meet minimum requirements as there are cycling lanes on Ogilvie Road and Cyrville Road, and as stated in this TIA, anticipated improvements on Cummings Avenue may also include cycling facilities. These adjustments would support the future mode share goals outlined in the TIA.

Noted, additional bicycle parking has been included to meet bylaw.

Appendix B

Screening Form

City of Ottawa 2017 TIA Guidelines

Date

5/6/2018

TIA Screening Form

Project

1098 Ogilvie TIA

Project Number

476751-01000

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

Module 1.1 - Description of Proposed Development	
Municipal Address	1098 Ogilvie Road
Description of location	Southwest corner of the Cummings/Ogilvie intersection
Land Use	Residential
Development Size	Four residential towers (20 storeys and 250 units per tower)
Number of Accesses and Locations	Three proposed accesses: one right-in/right-out driveway on Ogilvie Road, one right-in/right-out driveway on Cummings Avenue and one full movement access on Cummings Avenue.
Development Phasing	Phase 1 - Towers 1 & 2, Amenity Area Phase 2 - Towers 3 & 4
Buildout Year	Phase 1 - Assumed 2020 Phase 2 - Assumed 2022
Sketch Plan / Site Plan	See attached

Module 1.2 - Trip Generation Trigger		
Land Use Type	Townhomes or Apartments	
Development Size	1000	Units
Trip Generation Trigger Met?	Yes	

Module 1.3 - Location Triggers	
Development Proposes a new driveway to a boundary street that is designated as part of the City's Transit Priority, Rapid Transit, or Spine Bicycle Networks (See Sheet 3)	Yes
Development is in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone. (See Sheet 3)	Yes
Location Trigger Met?	Yes

Module 1.4 - Safety Triggers		
Posted Speed Limit on any boundary road	<80	km/h
Horizontal / Vertical Curvature on a boundary street limits sight lines at a proposed driveway	No	
A proposed driveway is within the area of influence of an adjacent traffic signal or roundabout (i.e. within 300 m of intersection in rural conditions, or within 150 m of intersection in urban/ suburban conditions) or within auxiliary lanes of an intersection;	Yes	
A proposed driveway makes use of an existing median break that serves an existing site	No	
There is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development	Yes	
The development includes a drive-thru facility	No	
Safety Trigger Met?	Yes	



Appendix C

Traffic Counts



Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

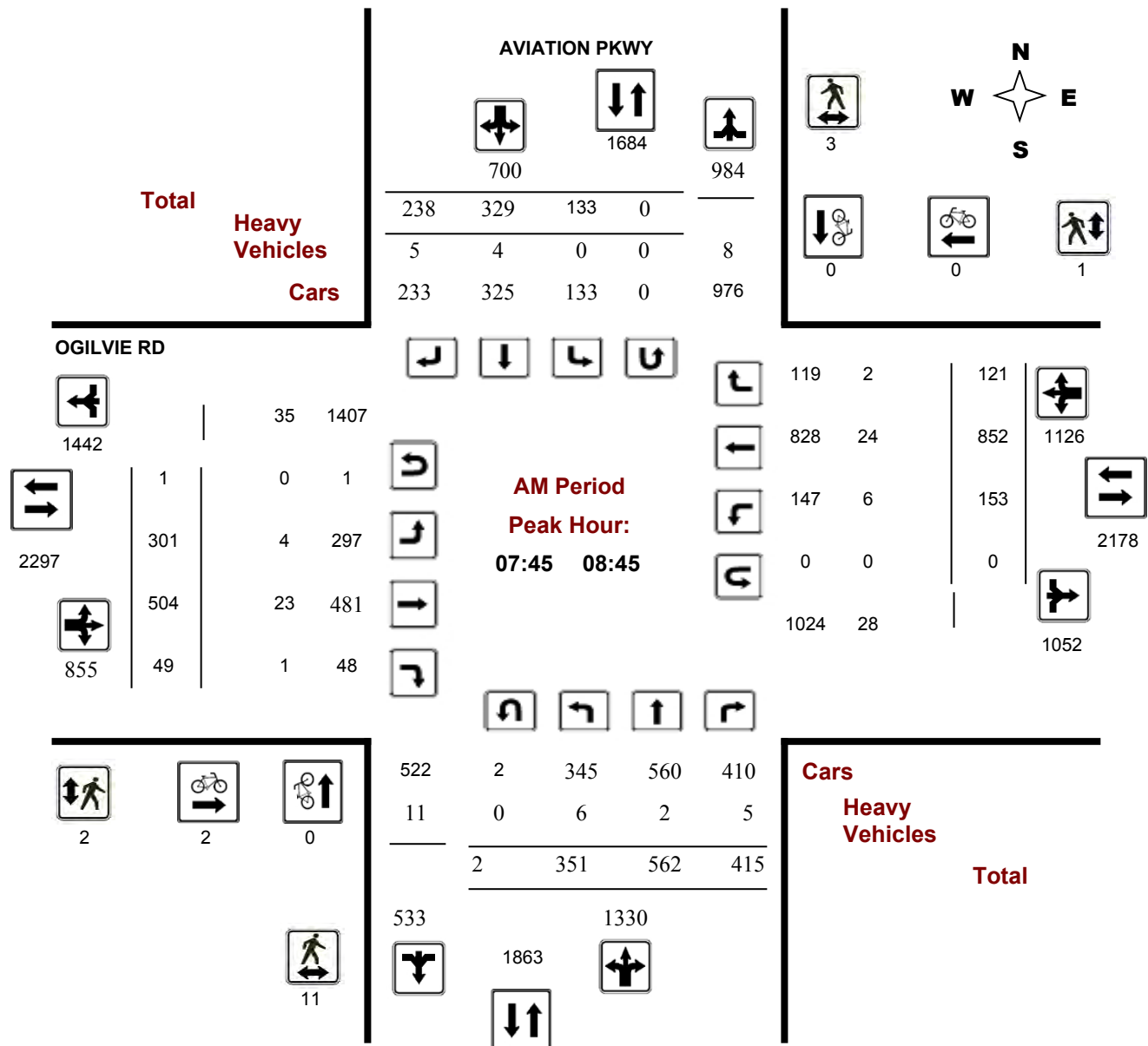
AVIATION PKWY @ OGILVIE RD

Survey Date: Thursday, January 25, 2018

Start Time: 07:00

WO No: 37443

Device: Miovision





Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

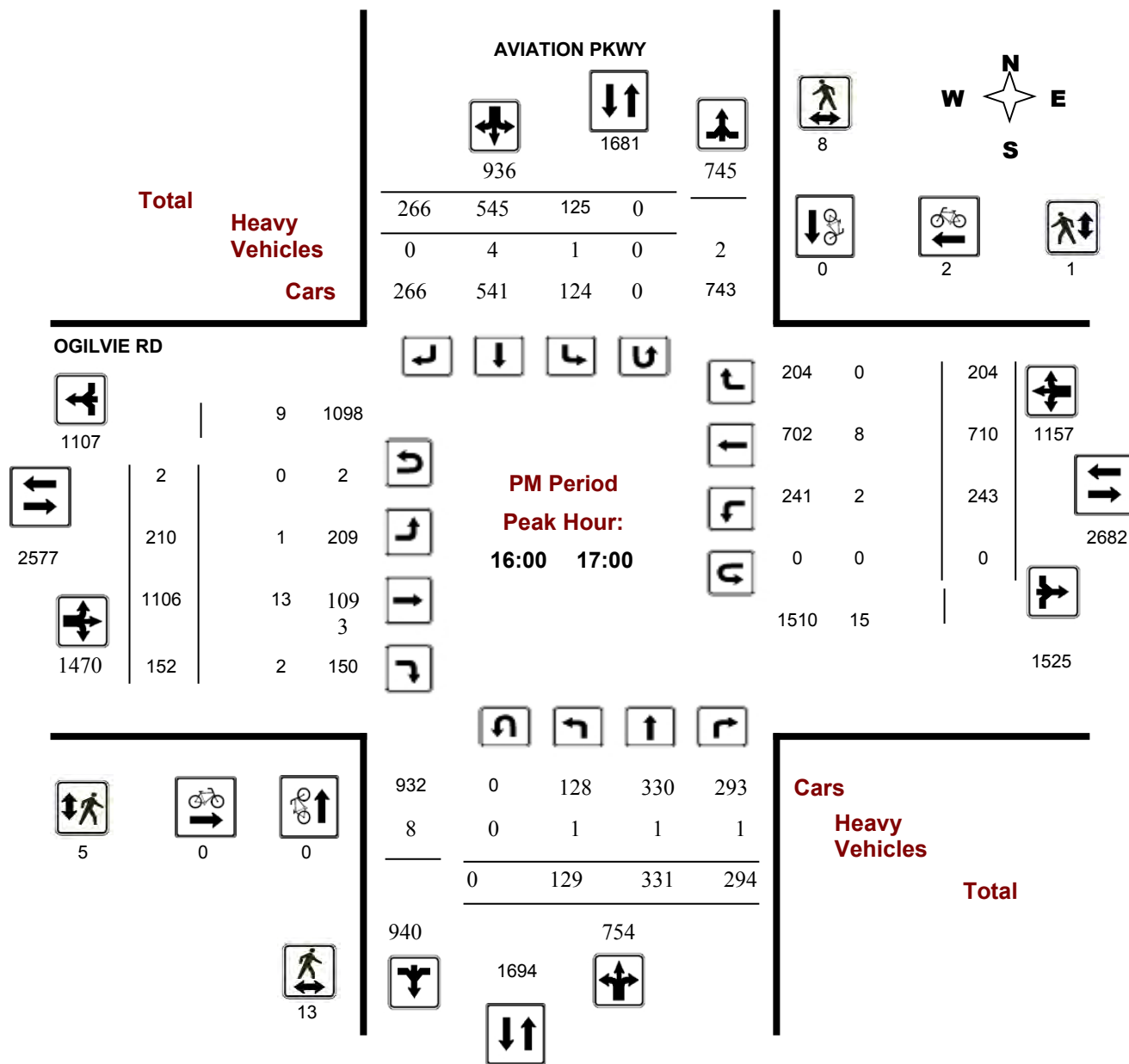
AVIATION PKWY @ OGILVIE RD

Survey Date: Thursday, January 25, 2018

Start Time: 07:00

WO No: 37443

Device: Miovision



Turning Movement Count - Full Study Peak Hour Diagram

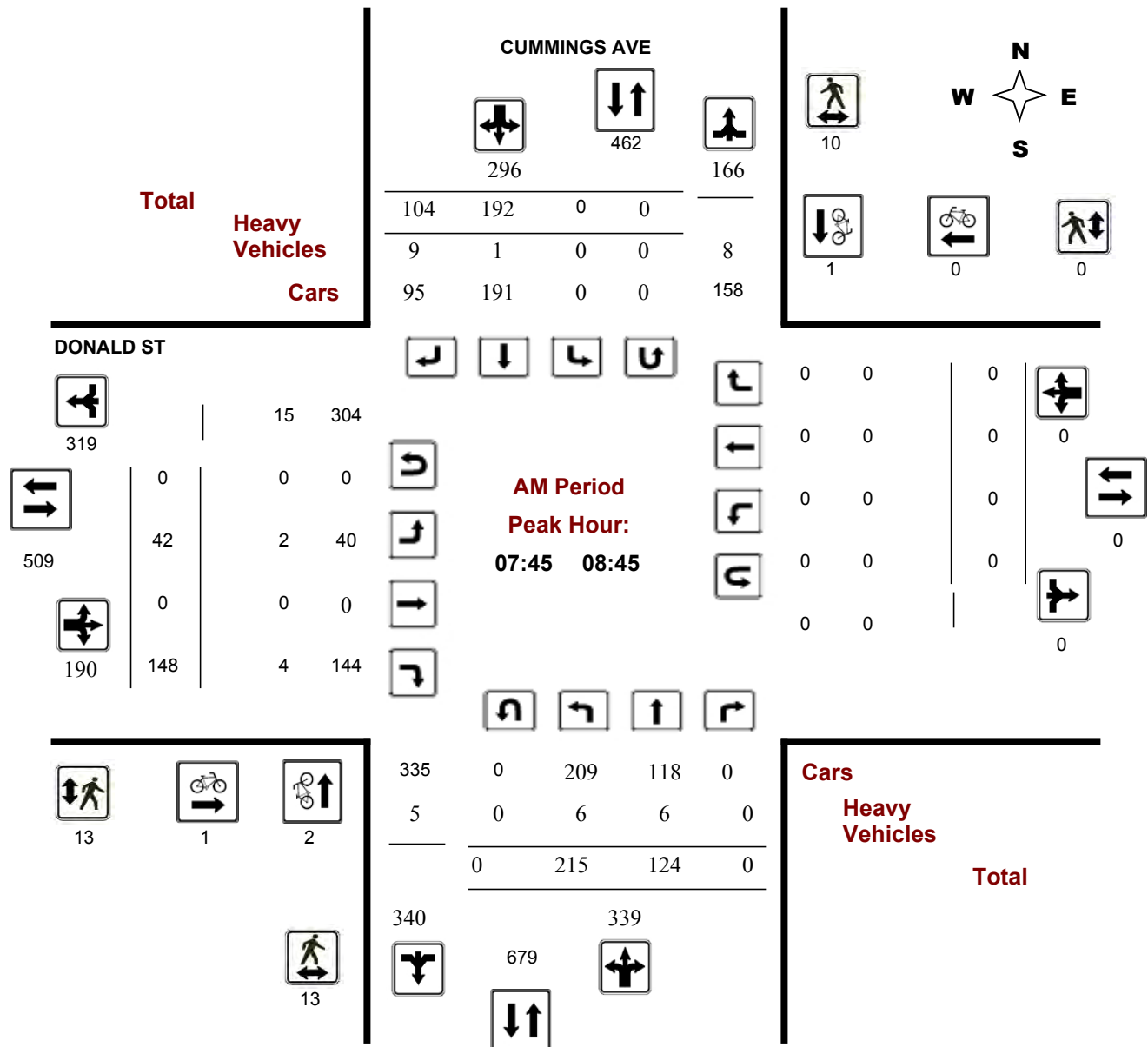
CUMMINGS AVE @ DONALD ST

Survey Date: Wednesday, April 11, 2018

Start Time: 07:00

WO No: 37720

Device: Miovision



Turning Movement Count - Full Study Peak Hour Diagram

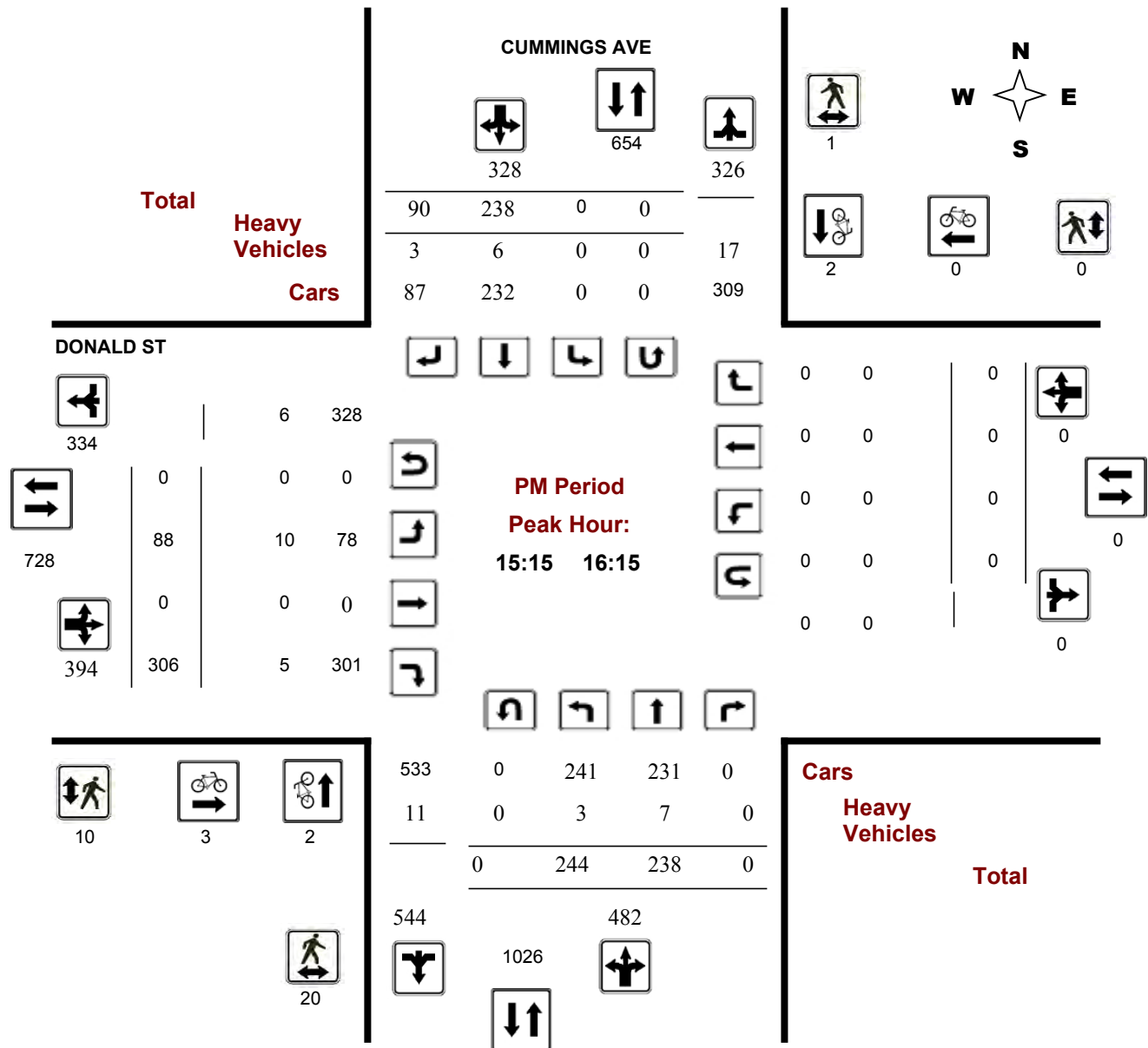
CUMMINGS AVE @ DONALD ST

Survey Date: Wednesday, April 11, 2018

Start Time: 07:00

WO No: 37720

Device: Miovision



Turning Movement Count - Full Study Peak Hour Diagram

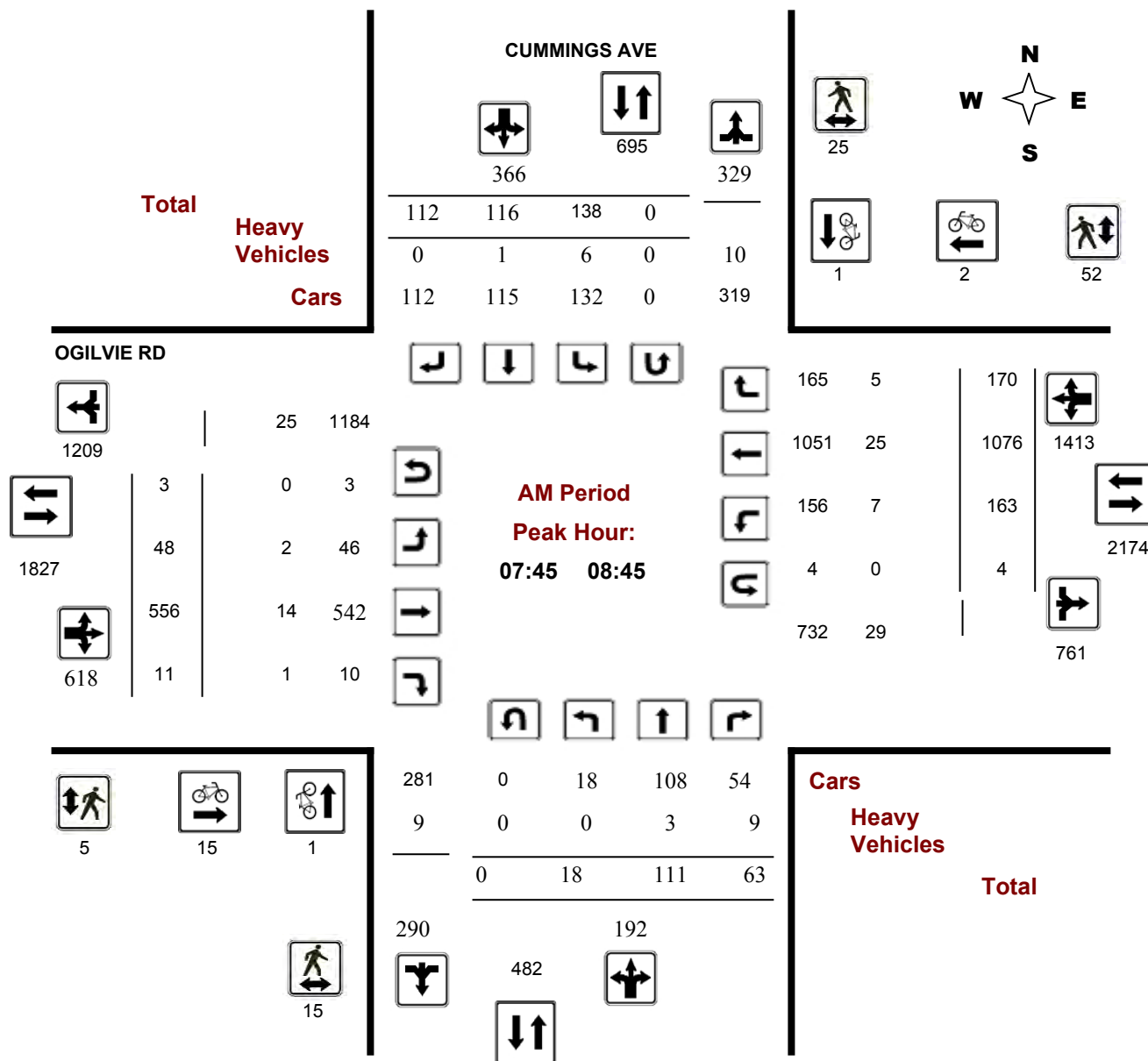
CUMMINGS AVE @ OGILVIE RD

Survey Date: Wednesday, April 11, 2018

Start Time: 07:00

WO No: 37738

Device: Miovision



Comments



Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

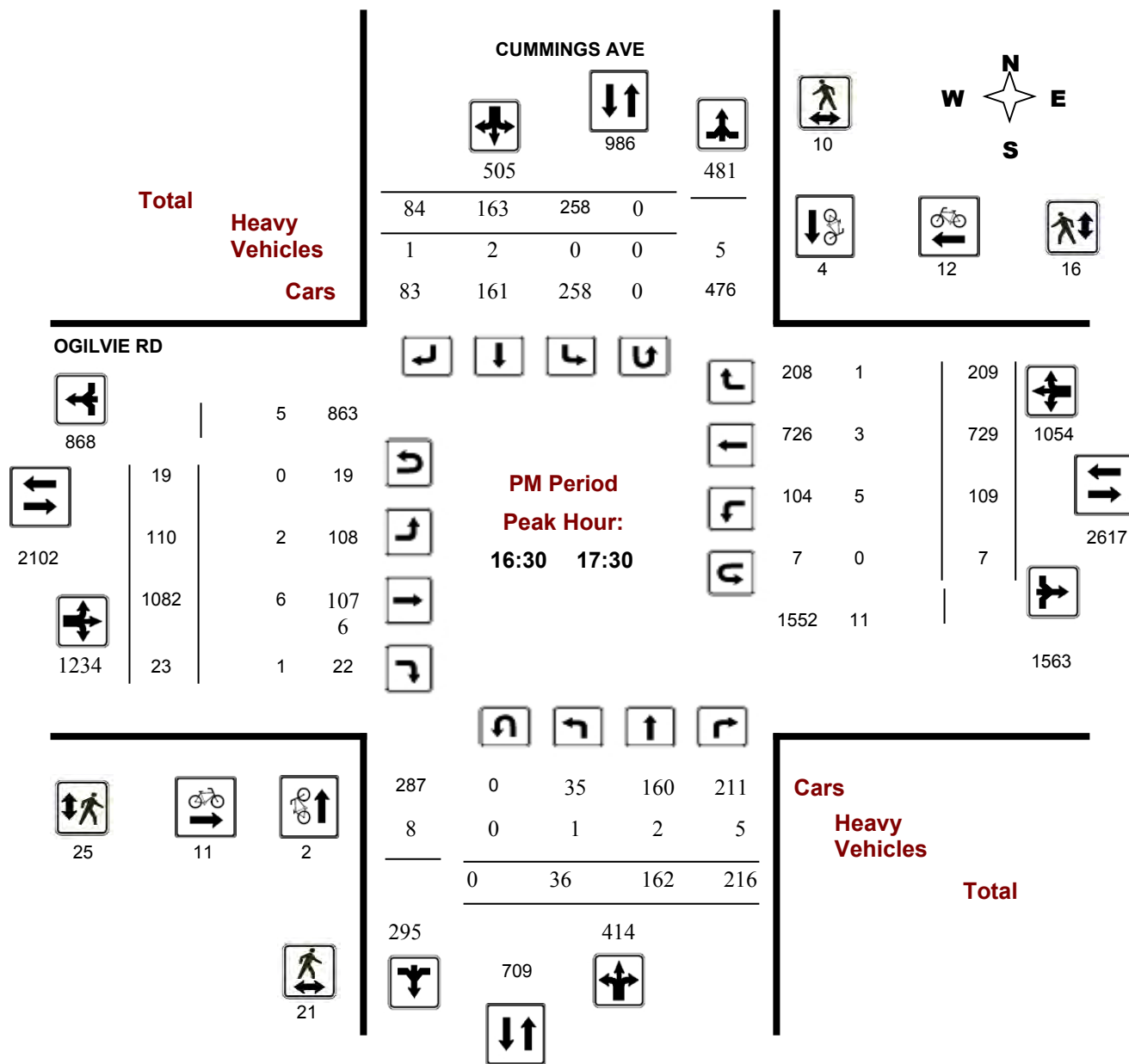
CUMMINGS AVE @ OGILVIE RD

Survey Date: Wednesday, April 11, 2018

Start Time: 07:00

WO No: 37738

Device: Miovision



Turning Movement Count - Full Study Peak Hour Diagram

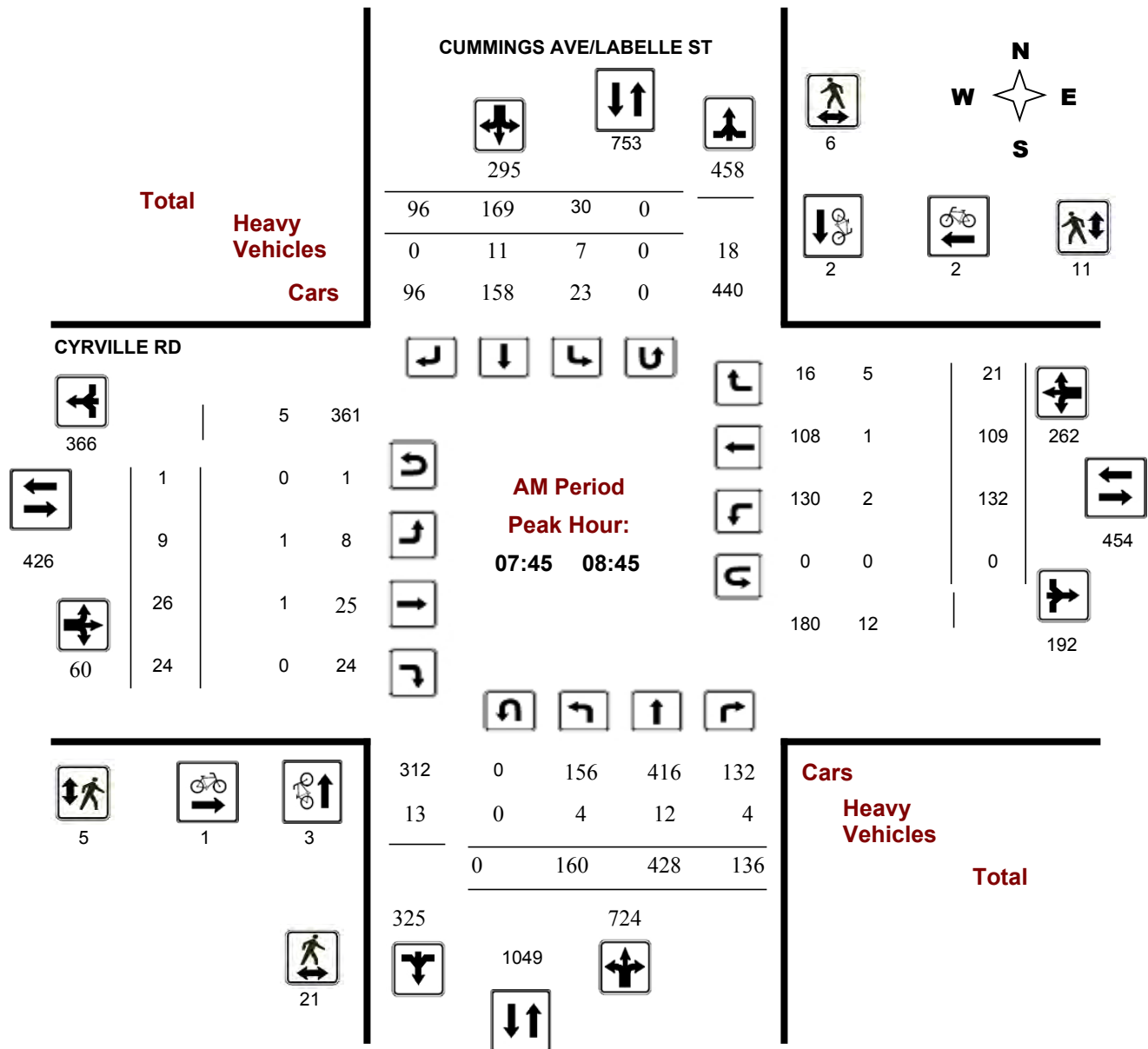
CUMMINGS AVE/LABELLE ST @ CYRVILLE RD

Survey Date: Wednesday, April 11, 2018

Start Time: 07:00

WO No: 37718

Device: Miovision



Turning Movement Count - Full Study Peak Hour Diagram

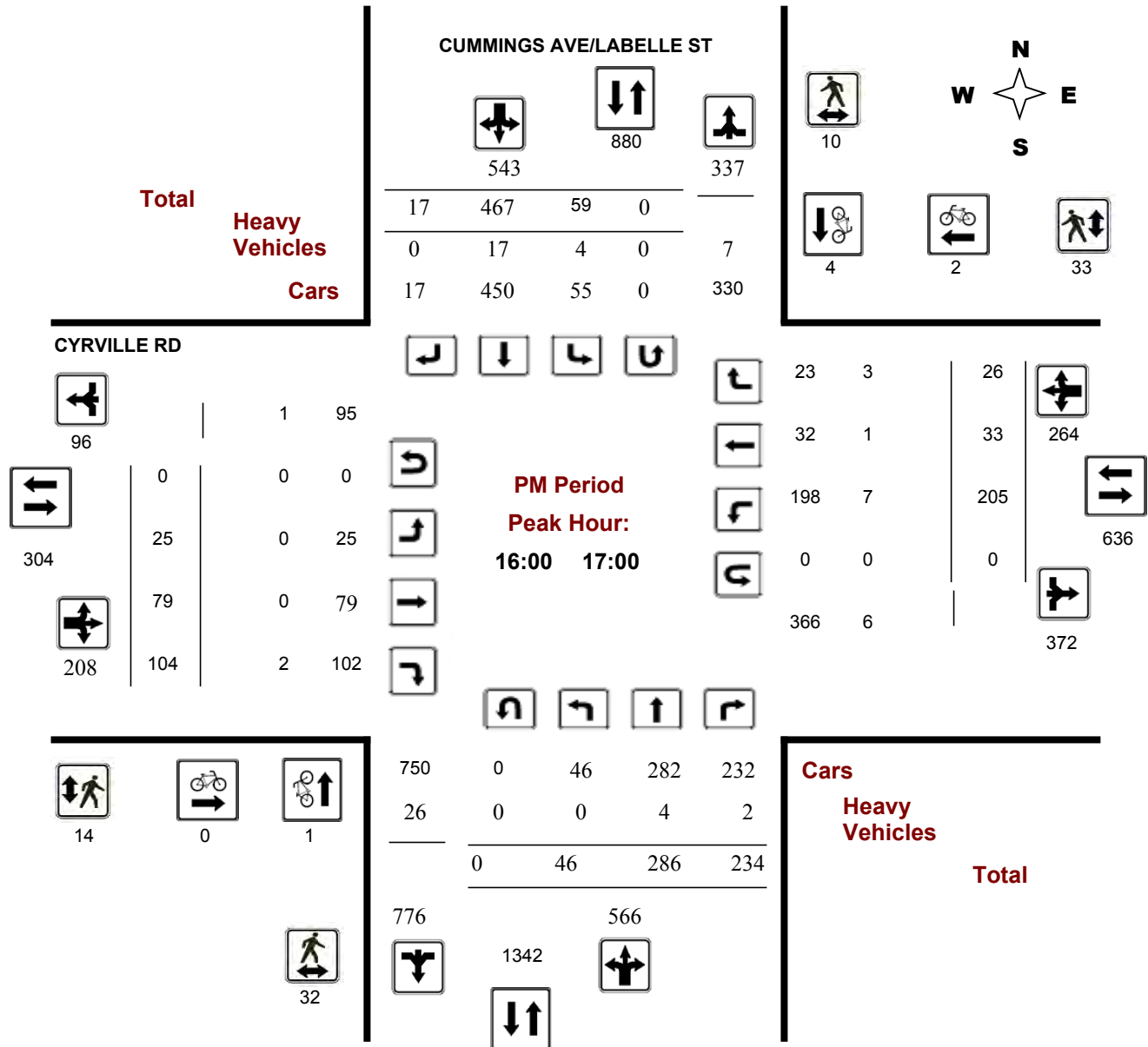
CUMMINGS AVE/LABELLE ST @ CYRVILLE RD

Survey Date: Wednesday, April 11, 2018

Start Time: 07:00

WO No: 37718

Device: Miovision





Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

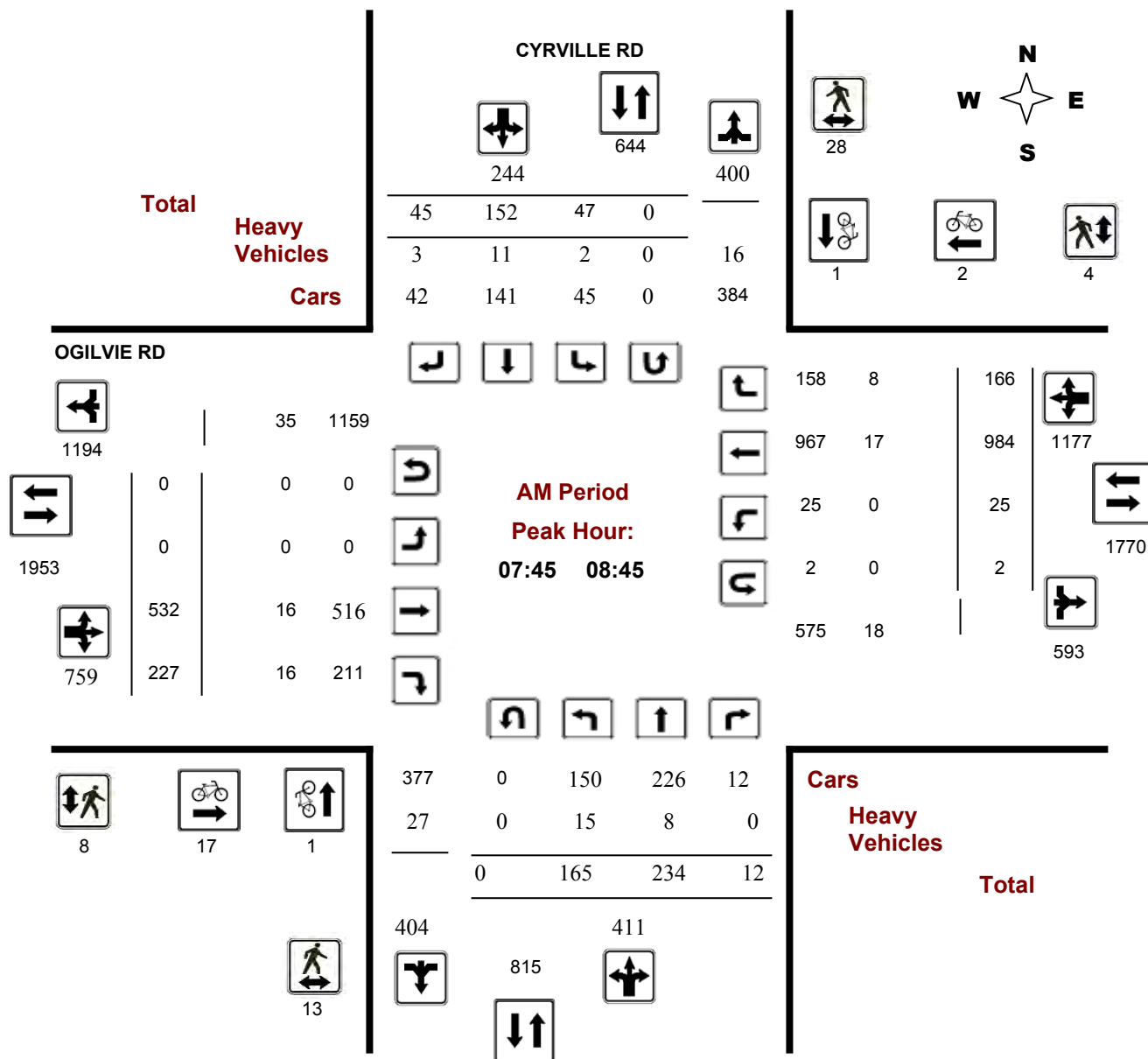
CYRVILLE RD @ OGILVIE RD

Survey Date: Wednesday, April 11, 2018

Start Time: 07:00

WO No: 37723

Device: Miovision





Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

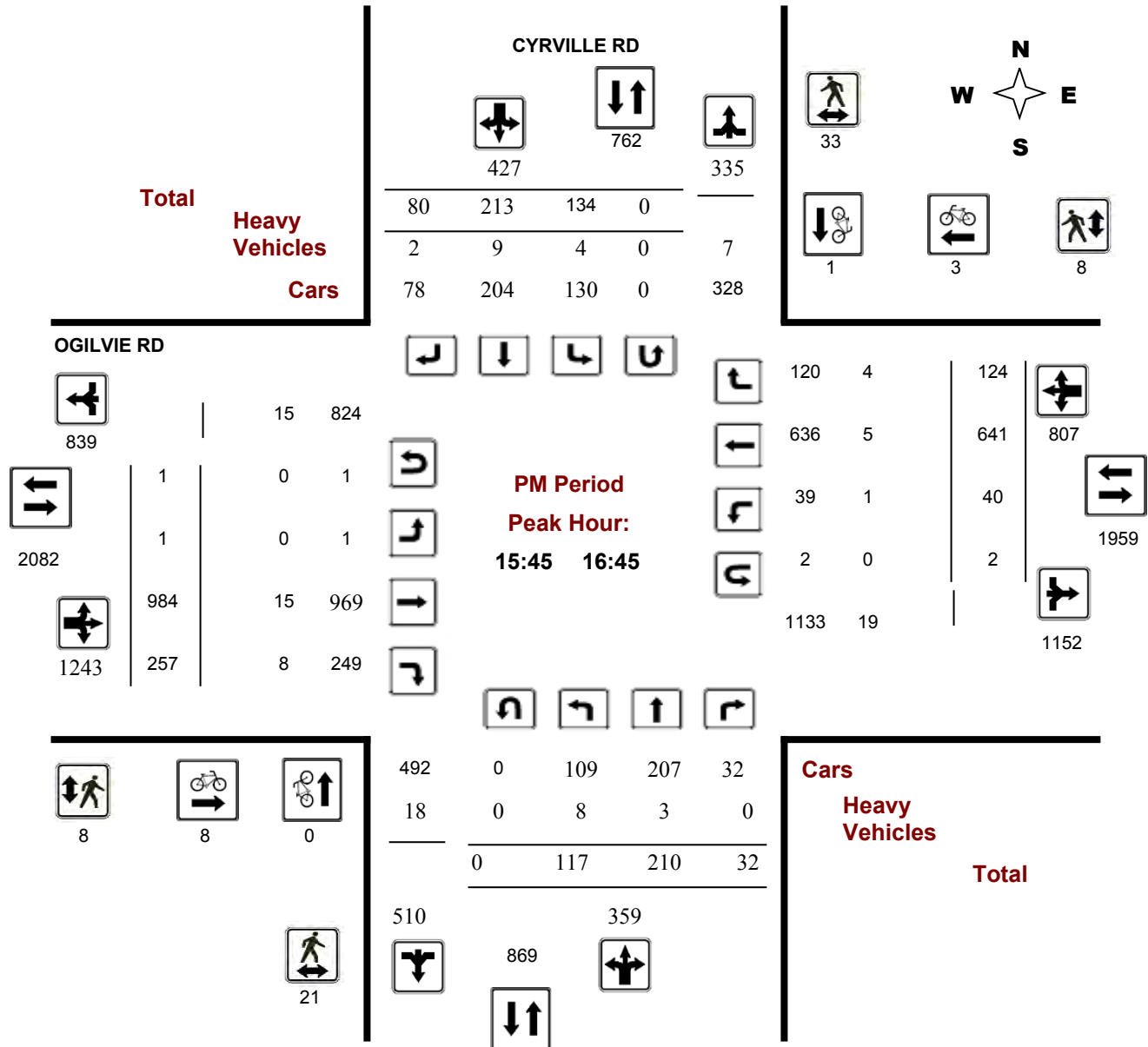
CYRVILLE RD @ OGILVIE RD

Survey Date: Wednesday, April 11, 2018

Start Time: 07:00

WO No: 37723

Device: Miovision



Turning Movement Count - Full Study Peak Hour Diagram

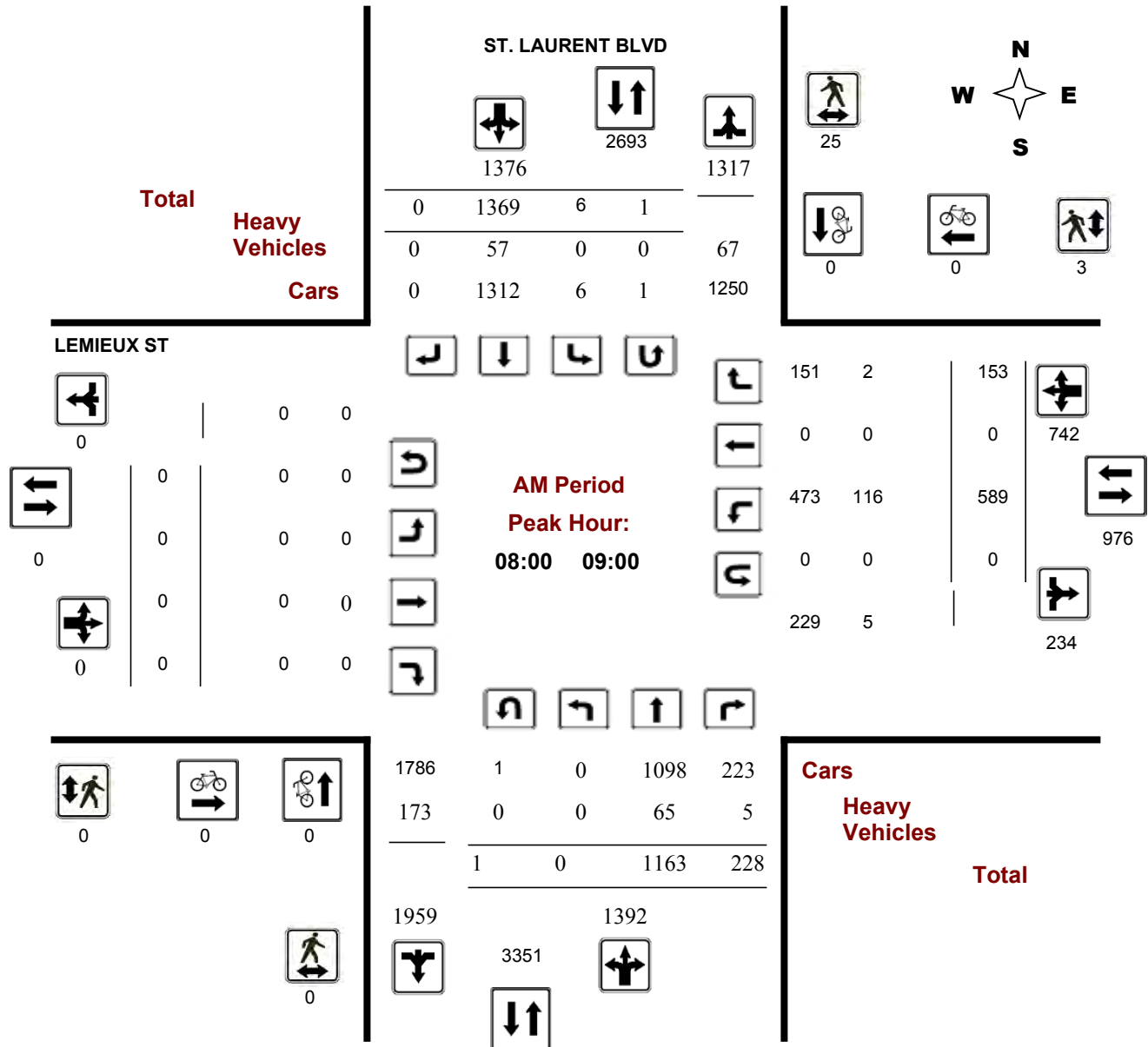
LEMIEUX ST @ ST. LAURENT BLVD

Survey Date: Wednesday, March 21, 2018

Start Time: 07:00

WO No: 37620

Device: Miovision



Turning Movement Count - Full Study Peak Hour Diagram

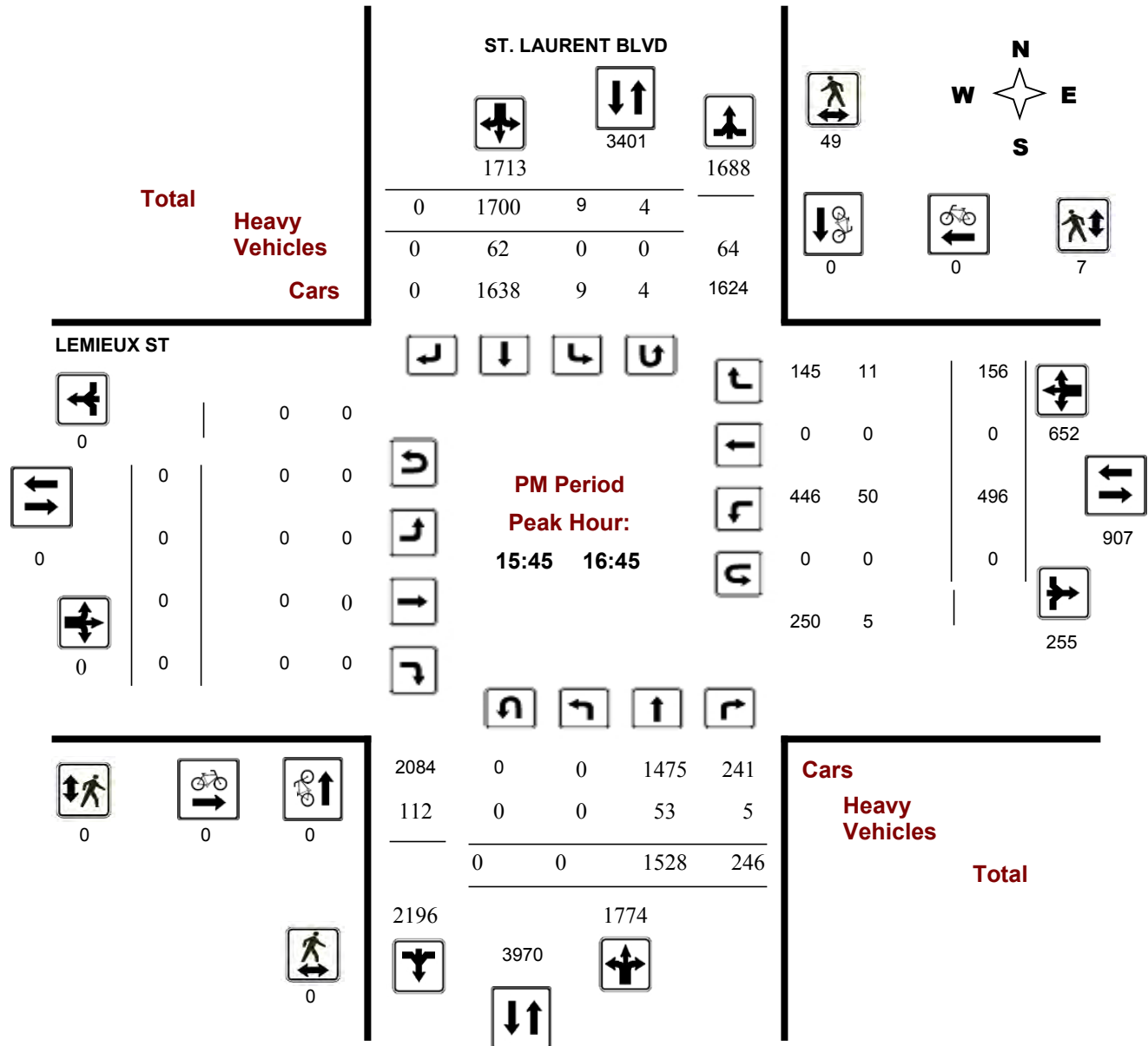
LEMIEUX ST @ ST. LAURENT BLVD

Survey Date: Wednesday, March 21, 2018

Start Time: 07:00

WO No: 37620

Device: Miovision





Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

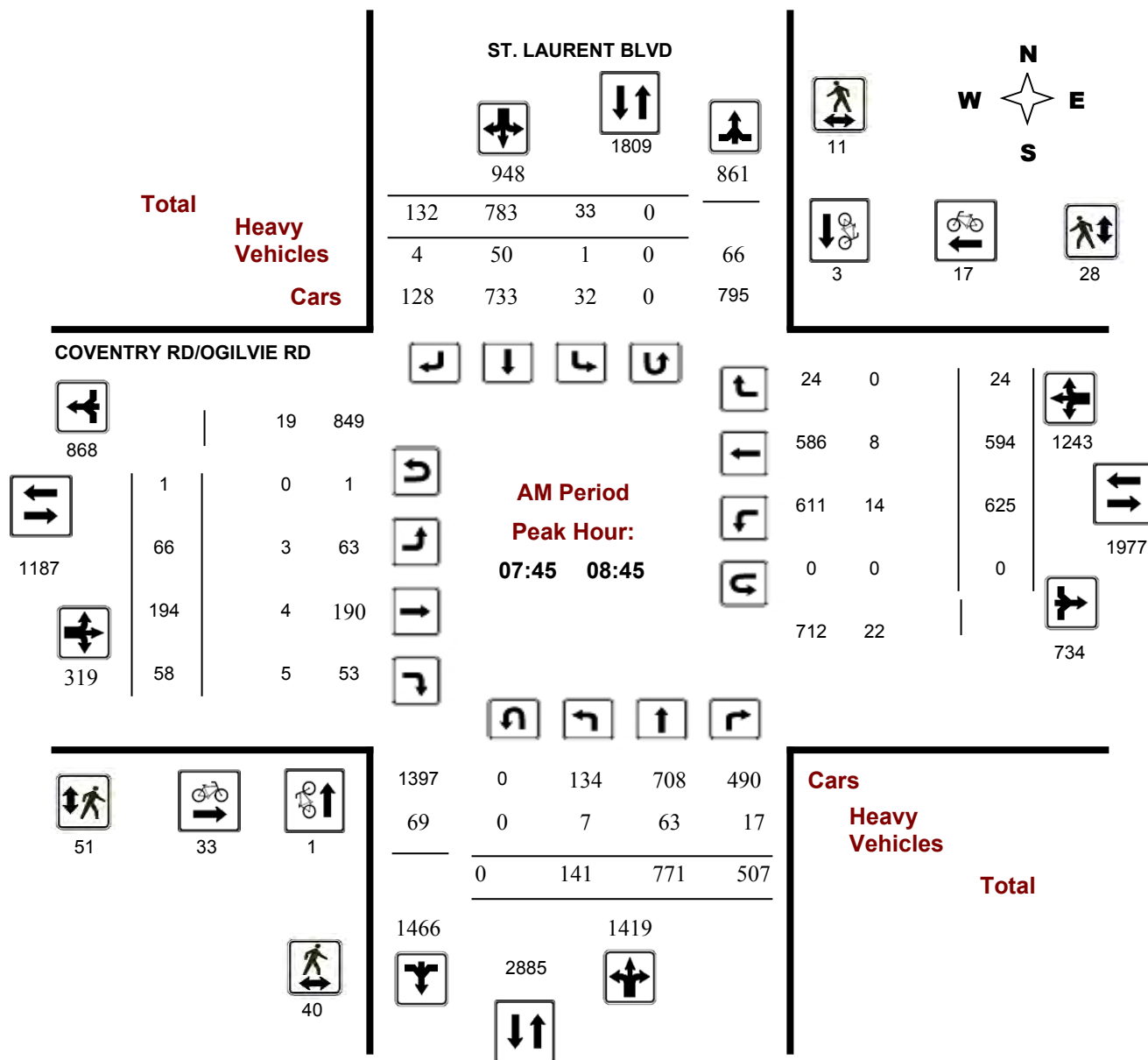
ST. LAURENT BLVD @ COVENTRY RD/OGILVIE RD

Survey Date: Thursday, June 01, 2017

Start Time: 07:00

WO No: 37069

Device: Miovision





Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

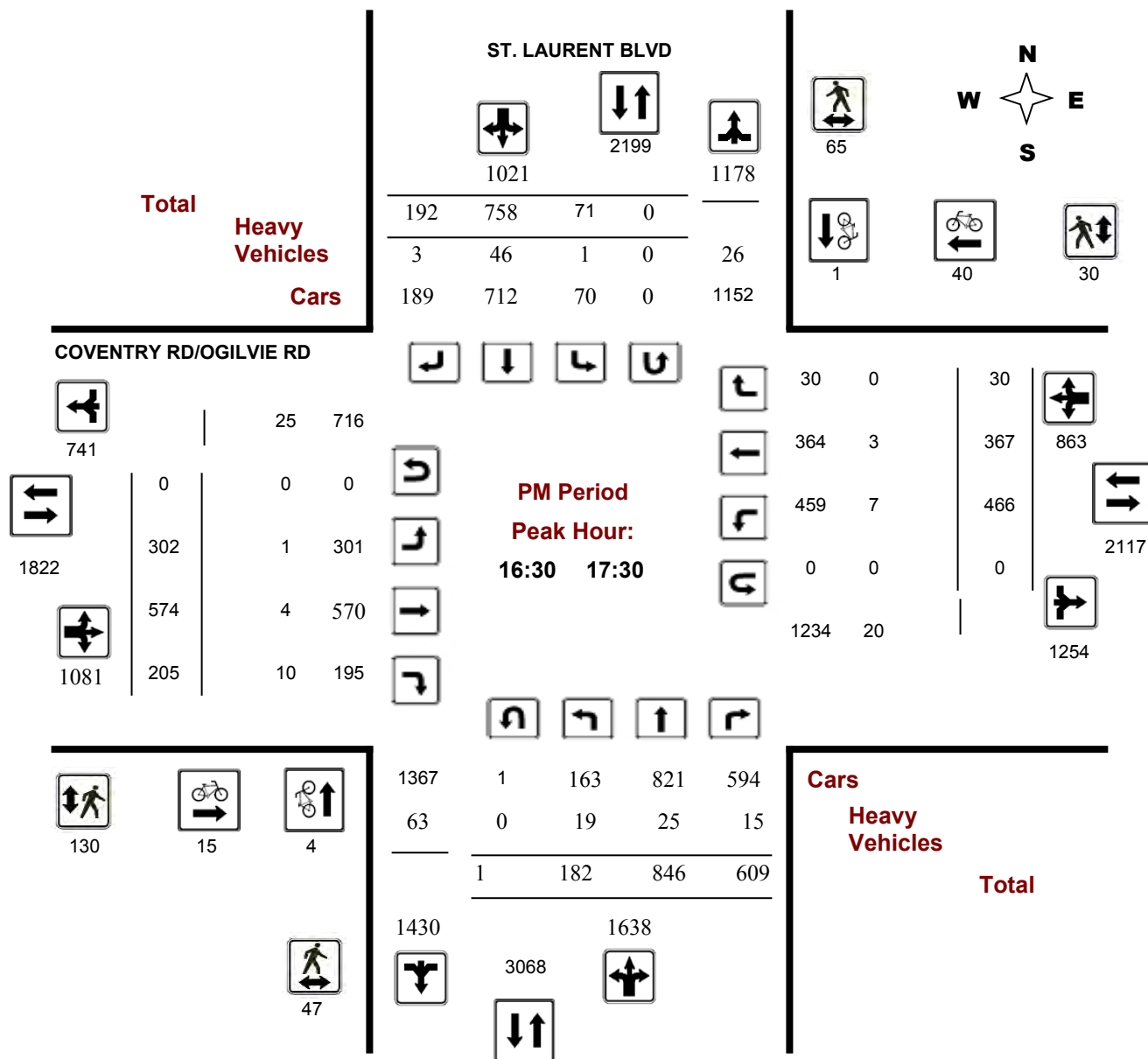
ST. LAURENT BLVD @ COVENTRY RD/OGILVIE RD

Survey Date: Thursday, June 01, 2017

Start Time: 07:00

WO No: 37069

Device: Miovision



Appendix D

Collision Data

Total Area

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	168	59	64	39	3	11	1	8	353	79%
Non-fatal injury	40	16	3	16	0	15	0	1	91	20%
Fatal Injury	0	1	1	0	0	0	0	0	2	0%
Total	208	76	68	55	3	26	1	9	446	100%
	#1 or 47%	#2 or 17%	#3 or 15%	#4 or 12%	#7 or 1%	#5 or 6%	#8 or 0%	#6 or 2%		

OGILVIE RD/AVIATION PKWY

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	101	50,437	1825	1.10

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	50	18	4	6	0	4	0	1	83	82%
Non-fatal injury	6	6	1	3	0	1	0	0	17	17%
Fatal Injury	0	1	0	0	0	0	0	0	1	1%
Total	56	25	5	9	0	5	0	1	101	100%
	55%	25%	5%	9%	0%	5%	0%	1%		

OGILVIE RD/CUMMINGS AVE

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	56	33,543	1825	0.91

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	15	14	2	3	1	2	0	1	38	68%
Non-fatal injury	5	3	1	4	0	4	0	1	18	32%
Fatal Injury	0	0	0	0	0	0	0	0	0	0%
Total	20	17	3	7	1	6	0	2	56	100%
	36%	30%	5%	13%	2%	11%	0%	4%		

CYRVILLE RD/CUMMINGS AVE/LABELLE ST

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	16	16,883	1825	0.52

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	8	2	0	2	1	0	0	1	14	88%
Non-fatal injury	0	0	0	0	0	2	0	0	2	13%
Fatal Injury	0	0	0	0	0	0	0	0	0	0%
Total	8	2	0	2	1	2	0	1	16	100%
	50%	13%	0%	13%	6%	13%	0%	6%		

OGILVIE RD/CYRVILLE RD

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	36	30,688	1825	0.64

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	8	1	7	6	0	0	0	2	24	67%
Non-fatal injury	6	1	0	2	0	3	0	0	12	33%
Fatal Injury	0	0	0	0	0	0	0	0	0	0%
Total	14	2	7	8	0	3	0	2	36	100%
	39%	6%	19%	22%	0%	8%	0%	6%		

ST. LAURENT BLVD/LEMIEUX ST

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	78	50,892	1825	0.84

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	26	15	11	6	0	1	0	1	60	77%
Non-fatal injury	9	3	0	3	0	3	0	0	18	23%
Fatal Injury	0	0	0	0	0	0	0	0	0	0%
Total	35	18	11	9	0	4	0	1	78	100%
	45%	23%	14%	12%	0%	5%	0%	1%		

COVENTRY RD/OGILVIE RD /ST. LAURENT BLVD

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	125	52,270	1825	1.31

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	55	5	36	7	0	3	0	1	107	86%
Non-fatal injury	12	2	0	3	0	1	0	0	18	14%
Fatal Injury	0	0	0	0	0	0	0	0	0	0%
Total	67	7	36	10	0	4	0	1	125	100%
	54%	6%	29%	8%	0%	3%	0%	1%		

DONALD ST/CUMMINGS AVE

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	11	12,186	1825	0.49

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	5	2	1	0	0	0	0	0	8	73%
Non-fatal injury	2	0	0	0	0	1	0	0	3	27%
Fatal Injury	0	0	0	0	0	0	0	0	0	0%
Total	7	2	1	0	0	1	0	0	11	100%
	64%	18%	9%	0%	0%	9%	0%	0%		

CUMMINGS AVE , OGILVIE RD to LABELLE ST

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	12	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	1	2	0	5	1	0	1	1	11	92%
Non-fatal injury	0	0	0	1	0	0	0	0	1	8%
Fatal Injury	0	0	0	0	0	0	0	0	0	0%
Total	1	2	0	6	1	0	1	1	12	100%
	8%	17%	0%	50%	8%	0%	8%	8%		

OGILVIE RD, CYRVILLE RD to CUMMINGS AVE

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	11	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	0	0	3	4	0	1	0	0	8	73%
Non-fatal injury	0	1	1	0	0	0	0	0	2	18%
Fatal Injury	0	0	1	0	0	0	0	0	1	9%
Total	0	1	5	4	0	1	0	0	11	100%
	0%	9%	45%	36%	0%	9%	0%	0%		

Appendix E

Background Traffic Growth

Ogilvie/Cyrville
8 hrs

Year	Date	North Leg		South Leg		East Leg		West Leg		Total
		SB	NB	NB	SB	WB	EB	EB	WB	
2001	Monday 16 July	1588	1934	2525	2453	5227	5222	5840	5571	30360
2009	Friday 31 July	2438	2605	2756	2524	6408	5849	5938	6562	35080
2018	Wednesday April 11	2684	2556	2550	3144	6740	6217	6751	6808	37450

North Leg	Year	Counts				% Change			
		NB	SB	NB+SB	INT	NB	SB	NB+SB	INT
	2001	1934	1588	3522	30360				
	2009	2605	2438	5043	35080	34.7%	53.5%	43.2%	15.5%
	2018	2556	2684	5240	37450	-1.9%	10.1%	3.9%	6.8%

Regression Estimate 2001 2067 1706 3773
Regression Estimate 2018 2675 2789 5463
Average Annual Change 1.53% 2.93% 2.20%

West Leg	Year	Counts				% Change			
		EB	WB	EB+WB	INT	EB	WB	EB+WB	INT
	2001	5840	5571	11411	30360				
	2009	5938	6562	12500	35080	1.7%	17.8%	9.5%	15.5%
	2018	6751	6808	13559	37450	13.7%	3.7%	8.5%	6.8%

Regression Estimate 2001 5723 5715 11439
Regression Estimate 2018 6647 6936 13583
Average Annual Change 0.88% 1.15% 1.02%

East Leg	Year	Counts				% Change			
		EB	WB	EB+WB	INT	EB	WB	EB+WB	INT
	2001	5222	5227	10449	30360				
	2009	5849	6408	12257	35080	12.0%	22.6%	17.3%	15.5%
	2018	6217	6740	12957	37450	6.3%	5.2%	5.7%	6.8%

Regression Estimate 2001 5278 5392 10670
Regression Estimate 2018 6267 6887 13154
Average Annual Change 1.02% 1.45% 1.24%

South Leg	Year	Counts				% Change			
		NB	SB	NB+SB	INT	NB	SB	NB+SB	INT
	2001	2525	2453	4978	30360				
	2009	2756	2524	5280	35080	9.1%	2.9%	6.1%	15.5%
	2018	2550	3144	5694	37450	-7.5%	24.6%	7.8%	6.8%

Regression Estimate 2001 2602 2363 4966
Regression Estimate 2018 2619 3064 5683
Average Annual Change 0.04% 1.54% 0.80%

Ogilvie/Cyrville
AM Peak

Year	Date	North Leg		South Leg		East Leg		West Leg		Total
		SB	NB	NB	SB	WB	EB	EB	WB	
2001	Monday 16 July	174	240	269	278	950	404	485	956	3756
2009	Friday 31 July	214	255	306	273	858	434	480	896	3716
2018	Wednesday April 11	244	400	411	404	1177	593	759	1194	5182

North Leg	Year	Counts				% Change			
		NB	SB	NB+SB	INT	NB	SB	NB+SB	INT
	2001	240	174	414	3756				
	2009	255	214	469	3716	6.3%	23.0%	13.3%	-1.1%
	2018	400	244	644	5182	56.9%	14.0%	37.3%	39.5%

Regression Estimate 2001 219 176 395
Regression Estimate 2018 381 246 627
Average Annual Change 3.32% 1.98% 2.75%

West Leg	Year	Counts				% Change			
		EB	WB	EB+WB	INT	EB	WB	EB+WB	INT
	2001	485	956	1441	3756				
	2009	480	896	1376	3716	-1.0%	-6.3%	-4.5%	-1.1%
	2018	759	1194	1953	5182	58.1%	33.3%	41.9%	39.5%

Regression Estimate 2001 438 895 1333
Regression Estimate 2018 717 1140 1857
Average Annual Change 2.94% 1.43% 1.97%

East Leg	Year	Counts				% Change			
		EB	WB	EB+WB	INT	EB	WB	EB+WB	INT
	2001	404	950	1354	3756				
	2009	434	858	1292	3716	7.4%	-9.7%	-4.6%	-1.1%
	2018	593	1177	1770	5182	36.6%	37.2%	37.0%	39.5%

Regression Estimate 2001 383 880 1263
Regression Estimate 2018 575 1115 1689
Average Annual Change 2.41% 1.40% 1.72%

South Leg	Year	Counts				% Change			
		NB	SB	NB+SB	INT	NB	SB	NB+SB	INT
	2001	269	278	547	3756				
	2009	306	273	579	3716	13.8%	-1.8%	5.9%	-1.1%
	2018	411	404	815	5182	34.3%	48.0%	40.8%	39.5%

Regression Estimate 2001 258 255 514
Regression Estimate 2018 402 384 786
Average Annual Change 2.63% 2.43% 2.53%

Ogilvie/Cyrville
PM Peak

Year	Date	North Leg		South Leg		East Leg		West Leg		Total
		SB	NB	NB	SB	WB	EB	EB	WB	
2001	Monday 16 July	284	320	394	422	702	1101	1184	721	5128
2009	Friday 31 July	440	370	385	449	922	1134	1141	935	5776
2018	Wednesday April 11	427	335	359	510	807	1152	1253	839	5682

North Leg	Year	Counts				% Change			
		NB	SB	NB+SB	INT	NB	SB	NB+SB	INT
	2001	320	284	604	5128				
	2009	370	440	810	5776	15.6%	54.9%	34.1%	12.6%
	2018	335	427	762	5682	-9.5%	-3.0%	-5.9%	-1.6%

Regression Estimate 2001 335 315 650
Regression Estimate 2018 348 455 803
Average Annual Change 0.23% 2.18% 1.25%

West Leg	Year	Counts				% Change			
		EB	WB	EB+WB	INT	EB	WB	EB+WB	INT
	2001	1184	721	1905	5128				
	2009	1141	935	2076	5776	-3.6%	29.7%	9.0%	12.6%
	2018	1253	839	2092	5682	9.8%	-10.3%	0.8%	-1.6%

Regression Estimate 2001 1157 777 1934
Regression Estimate 2018 1229 889 2118
Average Annual Change 0.36% 0.79% 0.54%

East Leg	Year	Counts				% Change			
		EB	WB	EB+WB	INT	EB	WB	EB+WB	INT
	2001	1101	702	1803	5128				
	2009	1134	922	2056	5776	3.0%	31.3%	14.0%	12.6%
	2018	1152	807	1959	5682	1.6%	-12.5%	-4.7%	-1.6%

Regression Estimate 2001 1104 762 1866
Regression Estimate 2018 1155 860 2015
Average Annual Change 0.26% 0.72% 0.45%

South Leg	Year	Counts				% Change			
		NB	SB	NB+SB	INT	NB	SB	NB+SB	INT
	2001	394	422	816	5128				
	2009	385	449	834	5776	-2.3%	6.4%	2.2%	12.6%
	2018	359	510	869	5682	-6.8%	13.6%	4.2%	-1.6%

Regression Estimate 2001 397 417 814
Regression Estimate 2018 361 505 867
Average Annual Change -0.55% 1.14% 0.37%

Ogilvie/St Laurent
8 hrs

Year	Date	North Leg		South Leg		East Leg		West Leg		Total
		SB	NB	NB	SB	WB	EB	EB	WB	
2009	Friday 15 May	8550	9494	12118	11486	7630	6164	5419	6573	67434
2010	Thursday 19 August	7334	8785	10830	11859	8675	5120	5266	6341	64210
2017	Thursday June 1	7517	8177	11578	10755	7246	7097	5554	5866	63790

North Leg	Year	Counts				% Change			
		NB	SB	NB+SB	INT	NB	SB	NB+SB	INT
	2009	9494	8550	18044	67434				
	2010	8785	7334	16119	64210	-7.5%	-14.2%	-10.7%	-4.8%
	2017	8177	7517	15694	63790	-6.9%	2.5%	-2.6%	-0.7%

Regression Estimate 2009 9227 8016 17243
Regression Estimate 2017 8139 7441 15580
Average Annual Change -1.56% -0.93% -1.26%

West Leg	Year	Counts				% Change			
		EB	WB	EB+WB	INT	EB	WB	EB+WB	INT
	2009	5419	6573	11992	67434				
	2010	5266	6341	11607	64210	-2.8%	-3.5%	-3.2%	-4.8%
	2017	5554	5866	11420	63790	5.5%	-7.5%	-1.6%	-0.7%

Regression Estimate 2009 5336 6502 11838
Regression Estimate 2017 5542 5856 11398
Average Annual Change 0.48% -1.30% -0.47%

East Leg	Year	Counts				% Change			
		EB	WB	EB+WB	INT	EB	WB	EB+WB	INT
	2009	6164	7630	13794	67434				
	2010	5120	8675	13795	64210	-16.9%	13.7%	0.0%	-4.8%
	2017	7097	7246	14343	63790	38.6%	-16.5%	4.0%	-0.7%

Regression Estimate 2009 5594 8167 13761
Regression Estimate 2017 7016 7323 14338
Average Annual Change 2.87% -1.35% 0.52%

South Leg	Year	Counts				% Change			
		NB	SB	NB+SB	INT	NB	SB	NB+SB	INT
	2009	12118	11486	23604	67434				
	2010	10830	11859	22689	64210	-10.6%	3.2%	-3.9%	-4.8%
	2017	11578	10755	22333	63790	6.9%	-9.3%	-1.6%	-0.7%

Regression Estimate 2009 11518 11714 23233
Regression Estimate 2017 11492 10788 22280
Average Annual Change -0.03% -1.02% -0.52%

Ogilvie/St Laurent
AM Peak

Year	Date	North Leg		South Leg		East Leg		West Leg		Total
		SB	NB	NB	SB	WB	EB	EB	WB	
2009	Friday 15 May	1020	971	1354	1508	1320	539	259	935	7906
2010	Thursday 19 August	1039	893	1170	1512	1126	456	283	757	7236
2017	Thursday June 1	948	861	1419	1466	1243	734	319	868	7858

North Leg	Year	Counts				% Change			
		NB	SB	NB+SB	INT	NB	SB	NB+SB	INT
	2009	971	1020	1991	7906				
	2010	893	1039	1932	7236	-8.0%	1.9%	-3.0%	-8.5%
	2017	861	948	1809	7858	-3.6%	-8.8%	-6.4%	8.6%

Regression Estimate 2009 939 1034 1973
Regression Estimate 2017 856 950 1806
Average Annual Change -1.15% -1.05% -1.10%

West Leg	Year	Counts				% Change			
		EB	WB	EB+WB	INT	EB	WB	EB+WB	INT
	2009	259	935	1194	7906				
	2010	283	757	1040	7236	9.3%	-19.0%	-12.9%	-8.5%
	2017	319	868	1187	7858	12.7%	14.7%	14.1%	8.6%

Regression Estimate 2009 267 852 1119
Regression Estimate 2017 320 856 1176
Average Annual Change 2.29% 0.06% 0.63%

East Leg	Year	Counts				% Change			
		EB	WB	EB+WB	INT	EB	WB	EB+WB	INT
	2009	539	1320	1859	7906				
	2010	456	1126	1582	7236	-15.4%	-14.7%	-14.9%	-8.5%
	2017	734	1243	1977	7858	61.0%	10.4%	25.0%	8.6%

Regression Estimate 2009 486 1229 1716
Regression Estimate 2017 726 1230 1957
Average Annual Change 5.15% 0.01% 1.66%

South Leg	Year	Counts				% Change			
		NB	SB	NB+SB	INT	NB	SB	NB+SB	INT
	2009	1354	1508	2862	7906				
	2010	1170	1512	2682	7236	-13.6%	0.3%	-6.3%	-8.5%
	2017	1419	1466	2885	7858	21.3%	-3.0%	7.6%	8.6%

Regression Estimate 2009 1260 1513 2772
Regression Estimate 2017 1406 1467 2872
Average Annual Change 1.38% -0.38% 0.44%

Ogilvie/St Laurent
PM Peak

Year	Date	North Leg		South Leg		East Leg		West Leg		Total
		SB	NB	NB	SB	WB	EB	EB	WB	
2009	Friday 15 May	1133	1610	1935	1586	1032	1128	1097	873	10394
2010	Thursday 19 August	810	1556	1768	1401	1233	939	1057	972	9736
2017	Thursday June 1	1021	1178	1638	1430	863	1254	1081	741	9206

North Leg	Year	Counts				% Change			
		NB	SB	NB+SB	INT	NB	SB	NB+SB	INT
	2009	1610	1133	2743	10394				
	2010	1556	810	2366	9736	-3.4%	-28.5%	-13.7%	-6.3%
	2017	1178	1021	2199	9206	-24.3%	26.0%	-7.1%	-5.4%

Regression Estimate 2009 1610 981 2591
Regression Estimate 2017 1178 999 2177
Average Annual Change -3.83% 0.23% -2.15%

West Leg	Year	Counts				% Change			
		EB	WB	EB+WB	INT	EB	WB	EB+WB	INT
	2009	1097	873	1970	10394				
	2010	1057	972	2029	9736	-3.6%	11.3%	3.0%	-6.3%
	2017	1081	741	1822	9206	2.3%	-23.8%	-10.2%	-5.4%

Regression Estimate 2009 1078 930 2008
Regression Estimate 2017 1078 749 1827
Average Annual Change 0.00% -2.66% -1.17%

East Leg	Year	Counts				% Change			
		EB	WB	EB+WB	INT	EB	WB	EB+WB	INT
	2009	1128	1032	2160	10394				
	2010	939	1233	2172	9736	-16.8%	19.5%	0.6%	-6.3%
	2017	1254	863	2117	9206	33.5%	-30.0%	-2.5%	-5.4%

Regression Estimate 2009 1027 1141 2169
Regression Estimate 2017 1240 879 2118
Average Annual Change 2.37% -3.22% -0.29%

South Leg	Year	Counts				% Change			
		NB	SB	NB+SB	INT	NB	SB	NB+SB	INT
	2009	1935	1586	3521	10394				
	2010	1768	1401	3169	9736	-8.6%	-11.7%	-10.0%	-6.3%
	2017	1638	1430	3068	9206	-7.4%	2.1%	-3.2%	-5.4%

Regression Estimate 2009 1871 1505 3376
Regression Estimate 2017 1629 1418 3047
Average Annual Change -1.72% -0.74% -1.27%

Appendix F

Existing Traffic SYNCHRO Analysis

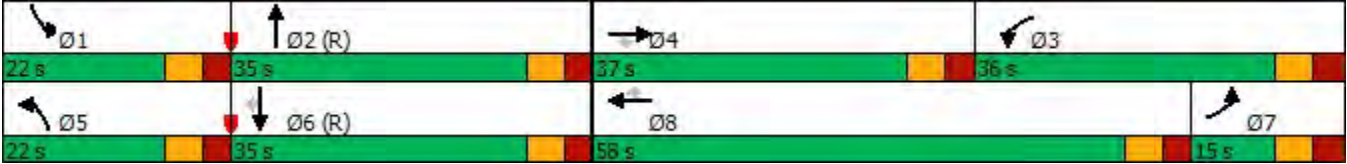
Existing AM

1: St. Laurent & Coventry/Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	194	58	625	594	24	141	771	507	33	783	132
Future Volume (vph)	66	194	58	625	594	24	141	771	507	33	783	132
Satd. Flow (prot)	3288	3390	1517	3288	3390	1517	1695	4490	0	1695	4871	1517
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3270	3390	1384	3166	3390	1464	1660	4490	0	1686	4871	1395
Satd. Flow (RTOR)			195			140		120				196
Lane Group Flow (vph)	73	216	64	694	660	27	157	1420	0	37	870	147
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	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		5.0	10.0	10.0
Minimum Split (s)	11.9	37.5	37.5	11.9	37.5	37.5	11.4	35.4		11.4	35.4	35.4
Total Split (s)	15.0	37.0	37.0	36.0	58.0	58.0	22.0	35.0		22.0	35.0	35.0
Total Split (%)	11.5%	28.5%	28.5%	27.7%	44.6%	44.6%	16.9%	26.9%		16.9%	26.9%	26.9%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	3.2	2.8	2.8	3.2	2.8	2.8	2.7	2.7		2.7	2.7	2.7
Lost Time Adjust (s)	-2.9	-2.5	-2.5	-2.9	-2.5	-2.5	-2.4	-2.4		-2.4	-2.4	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	21.1	25.2	25.2	31.6	38.3	38.3	16.9	51.6		10.7	40.3	40.3
Actuated g/C Ratio	0.16	0.19	0.19	0.24	0.29	0.29	0.13	0.40		0.08	0.31	0.31
v/c Ratio	0.14	0.33	0.15	0.87	0.66	0.05	0.71	0.85dr		0.27	0.58	0.26
Control Delay	45.2	44.7	0.7	56.2	26.7	0.2	90.4	31.1		59.9	41.8	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	45.2	44.7	0.7	56.2	26.7	0.2	90.4	31.1		59.9	41.8	2.8
LOS	D	D	A	E	C	A	F	C		E	D	A
Approach Delay		36.8			41.0			37.0			37.0	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	7.5	23.3	0.0	93.1	78.0	0.0	42.5	~127.9		9.1	76.1	0.0
Queue Length 95th (m)	15.2	34.3	0.0	#117.9	85.9	m0.0	#66.4	#171.6		19.8	91.9	6.2
Internal Link Dist (m)		132.3			135.6			202.6			118.5	
Turn Bay Length (m)				160.0			60.0			60.0		45.0
Base Capacity (vph)	543	860	496	814	1408	689	234	1853		234	1509	567
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.13	0.25	0.13	0.85	0.47	0.04	0.67	0.77		0.16	0.58	0.26
Intersection Summary												
Cycle Length: 130												
Actuated Cycle Length: 130												
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green												
Natural Cycle: 110												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.87												
Intersection Signal Delay: 38.3						Intersection LOS: D						
Intersection Capacity Utilization 86.3%						ICU Level of Service E						
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.												
dr Defacto Right Lane. Recode with 1 though lane as a right lane.												

Existing AM
1: St. Laurent & Coventry/Ogilvie

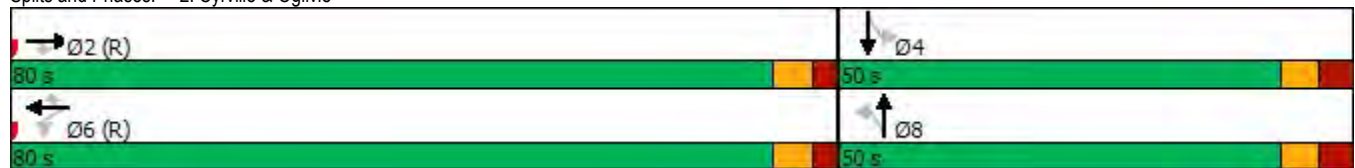
Splits and Phases: 1: St. Laurent & Coventry/Ogilvie



Existing AM
2: Cyrville & Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	532	227	25	984	166	165	234	12	47	152	45
Future Volume (vph)	0	532	227	25	984	166	165	234	12	47	152	45
Satd. Flow (prot)	0	3390	1517	1695	3390	1517	1695	1770	0	1695	1716	0
Flt Permitted				0.388			0.518			0.450		
Satd. Flow (perm)	0	3390	1422	684	3390	1381	919	1770	0	801	1716	0
Satd. Flow (RTOR)			252			162		2			13	
Lane Group Flow (vph)	0	591	252	28	1093	184	183	273	0	52	219	0
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases			2	6		6	8			4		
Detector Phase		2	2	6	6	6	8	8		4	4	
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)		32.2	32.2	32.2	32.2	32.2	47.1	47.1		47.1	47.1	
Total Split (s)		80.0	80.0	80.0	80.0	80.0	50.0	50.0		50.0	50.0	
Total Split (%)		61.5%	61.5%	61.5%	61.5%	61.5%	38.5%	38.5%		38.5%	38.5%	
Yellow Time (s)		3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)		2.5	2.5	2.5	2.5	2.5	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)		-2.2	-2.2	-2.2	-2.2	-2.2	-3.1	-3.1		-3.1	-3.1	
Total Lost Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max	C-Max	C-Max	C-Max	C-Max	Max	Max		Max	Max	
Act Effct Green (s)		76.0	76.0	76.0	76.0	76.0	46.0	46.0		46.0	46.0	
Actuated g/C Ratio		0.58	0.58	0.58	0.58	0.58	0.35	0.35		0.35	0.35	
v/c Ratio		0.30	0.27	0.07	0.55	0.21	0.56	0.44		0.18	0.36	
Control Delay		7.4	1.8	2.8	6.1	1.0	42.0	34.5		31.3	31.1	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		7.4	1.8	2.8	6.1	1.0	42.0	34.5		31.3	31.1	
LOS		A	A	A	A	A	D	C		C	C	
Approach Delay		5.7			5.3			37.5			31.2	
Approach LOS		A			A			D			C	
Queue Length 50th (m)		14.6	1.5	0.7	48.2	2.3	37.6	52.8		9.2	38.7	
Queue Length 95th (m)		11.9	m0.0	m1.2	54.2	m2.7	63.0	77.6		19.5	60.0	
Internal Link Dist (m)		135.6			311.6			406.7			100.8	
Turn Bay Length (m)				50.0		50.0	50.0					
Base Capacity (vph)		1981	936	399	1981	874	325	627		283	615	
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		0.30	0.27	0.07	0.55	0.21	0.56	0.44		0.18	0.36	
Intersection Summary												
Cycle Length: 130												
Actuated Cycle Length: 130												
Offset: 10 (8%), Referenced to phase 2:EBT and 6:WBTL, Start of Green												
Natural Cycle: 80												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.56												
Intersection Signal Delay: 13.0						Intersection LOS: B						
Intersection Capacity Utilization 81.7%						ICU Level of Service D						
Analysis Period (min) 15												
m Volume for 95th percentile queue is metered by upstream signal.												

Splits and Phases: 2: Cyrville & Ogilvie



Existing AM
3: Cummings & Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	556	11	163	1076	170	18	11	63	138	116	112
Future Volume (vph)	48	556	11	163	1076	170	18	11	63	138	116	112
Satd. Flow (prot)	1695	3375	0	1695	3291	0	1695	1784	1517	1695	1637	0
Flt Permitted	0.084			0.341			0.602			0.650		
Satd. Flow (perm)	150	3375	0	599	3291	0	1069	1784	1397	1089	1637	0
Satd. Flow (RTOR)		2			20				98		40	
Lane Group Flow (vph)	53	630	0	181	1385	0	20	12	70	153	253	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	8	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	9.7	24.7		9.7	24.7		36.6	36.6	36.6	9.3	36.6	
Total Split (s)	11.0	71.0		11.0	71.0		37.0	37.0	37.0	11.0	48.0	
Total Split (%)	8.5%	54.6%		8.5%	54.6%		28.5%	28.5%	28.5%	8.5%	36.9%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.0	2.0		1.0	2.0		3.3	3.3	3.3	1.0	3.3	
Lost Time Adjust (s)	0.7	-1.7		0.7	-1.7		-2.6	-2.6	-2.6	0.3	-2.6	
Total Lost Time (s)	5.4	4.0		5.4	4.0		4.0	4.0	4.0	4.6	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	None	Max	
Act Effct Green (s)	71.1	67.0		72.3	69.2		33.0	33.0	33.0	43.4	44.0	
Actuated g/C Ratio	0.55	0.52		0.56	0.53		0.25	0.25	0.25	0.33	0.34	
v/c Ratio	0.36	0.36		0.48	0.79		0.07	0.03	0.16	0.39	0.44	
Control Delay	33.4	22.5		14.2	20.5		38.0	36.8	3.8	35.5	30.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	33.4	22.5		14.2	20.5		38.0	36.8	3.8	35.5	30.6	
LOS	C	C		B	C		D	D	A	D	C	
Approach Delay		23.3			19.7			14.4			32.4	
Approach LOS		C			B			B			C	
Queue Length 50th (m)	7.8	47.9		18.4	77.0		3.9	2.3	0.0	28.6	42.0	
Queue Length 95th (m)	20.3	58.6		m20.0	m83.4		10.7	7.5	5.9	46.2	66.5	
Internal Link Dist (m)		311.6			386.5			299.5			235.7	
Turn Bay Length (m)	75.0			90.0			40.0		15.0	150.0		
Base Capacity (vph)	148	1740		380	1760		271	452	427	393	580	
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	0.36	0.36		0.48	0.79		0.07	0.03	0.16	0.39	0.44	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 110 (85%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 22.3

Intersection LOS: C

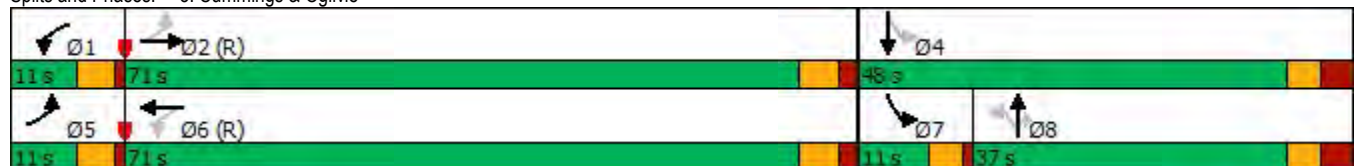
Intersection Capacity Utilization 77.8%

ICU Level of Service D

Analysis Period (min) 15

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

Splits and Phases: 3: Cummings & Ogilvie



Existing AM

4: Aviation Parkway & Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	301	504	49	153	852	121	351	562	415	133	329	238
Future Volume (vph)	301	504	49	153	852	121	351	562	415	133	329	238
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	3155	0	1695	3156	0
Flt Permitted	0.093			0.333			0.950			0.950		
Satd. Flow (perm)	166	3390	1474	591	3390	1492	1693	3155	0	1694	3156	0
Satd. Flow (RTOR)			164			164		150			125	
Lane Group Flow (vph)	334	560	54	170	947	134	390	1085	0	148	630	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		10.9	30.1	
Total Split (s)	20.0	47.0	47.0	20.0	47.0	47.0	33.0	45.0		18.0	30.0	
Total Split (%)	15.4%	36.2%	36.2%	15.4%	36.2%	36.2%	25.4%	34.6%		13.8%	23.1%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		2.2	2.4	
Lost Time Adjust (s)	0.7	-2.1	-2.1	0.7	-2.1	-2.1	-1.9	-2.1		-1.9	-2.1	
Total Lost Time (s)	5.4	4.0	4.0	5.4	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max		None	Max	
Act Effct Green (s)	58.6	45.6	45.6	53.6	43.0	43.0	29.0	41.1		13.9	26.0	
Actuated g/C Ratio	0.45	0.35	0.35	0.41	0.33	0.33	0.22	0.32		0.11	0.20	
v/c Ratio	1.36	0.47	0.09	0.49	0.84	0.22	1.03	0.99		0.82	0.86	
Control Delay	218.5	30.0	1.1	25.5	48.7	3.1	103.9	62.3		89.3	53.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	218.5	30.0	1.1	25.5	48.7	3.1	103.9	62.3		89.3	53.1	
LOS	F	C	A	C	D	A	F	E		F	D	
Approach Delay		94.8			40.7			73.3			60.0	
Approach LOS		F			D			E			E	
Queue Length 50th (m)	~100.1	47.1	0.1	24.9	118.3	0.0	~107.0	130.0		37.7	67.6	
Queue Length 95th (m)	#161.4	67.0	1.1	39.6	145.0	8.3	#168.2	#177.3		#72.8	#96.7	
Internal Link Dist (m)		386.5			205.1			147.2			200.4	
Turn Bay Length (m)	75.0		60.0	55.0		70.0	110.0			110.0		
Base Capacity (vph)	246	1189	623	379	1121	603	378	1099		182	731	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	1.36	0.47	0.09	0.45	0.84	0.22	1.03	0.99		0.81	0.86	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 105 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.36

Intersection Signal Delay: 66.4

Intersection LOS: E

Intersection Capacity Utilization 97.5%

ICU Level of Service F

Analysis Period (min) 15

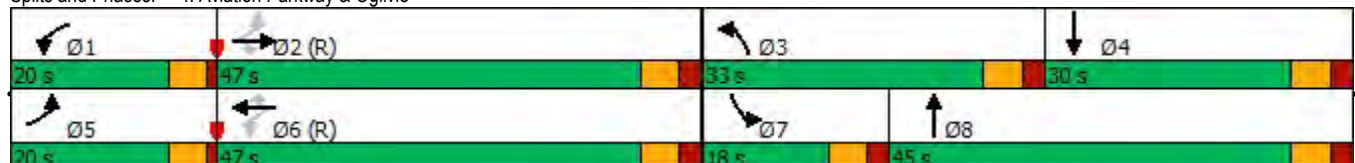
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

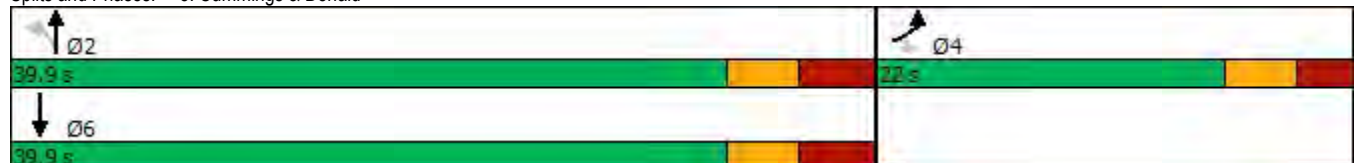
Splits and Phases: 4: Aviation Parkway & Ogilvie



Existing AM
5: Cummings & Donald

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	42	148	215	124	192	104
Future Volume (vph)	42	148	215	124	192	104
Satd. Flow (prot)	1695	1517	1695	1784	1677	0
Flt Permitted	0.950		0.558			
Satd. Flow (perm)	1662	1447	986	1784	1677	0
Satd. Flow (RTOR)		164			75	
Lane Group Flow (vph)	47	164	239	138	329	0
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	22.0	22.0	24.9	24.9	32.9	
Total Split (s)	22.0	22.0	39.9	39.9	39.9	
Total Split (%)	35.5%	35.5%	64.5%	64.5%	64.5%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7	3.6	3.6	3.6	
Lost Time Adjust (s)	-2.0	-2.0	-2.9	-2.9	-2.9	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	
Act Effct Green (s)	13.1	13.1	39.9	39.9	39.9	
Actuated g/C Ratio	0.23	0.23	0.70	0.70	0.70	
v/c Ratio	0.12	0.36	0.35	0.11	0.27	
Control Delay	18.0	6.0	7.2	4.9	4.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	18.0	6.0	7.2	4.9	4.5	
LOS	B	A	A	A	A	
Approach Delay	8.7			6.4	4.5	
Approach LOS	A			A	A	
Queue Length 50th (m)	3.9	0.0	9.3	4.4	8.9	
Queue Length 95th (m)	10.4	11.4	27.3	12.7	24.4	
Internal Link Dist (m)	138.1			235.7	73.1	
Turn Bay Length (m)		50.0	60.0			
Base Capacity (vph)	536	570	691	1251	1198	
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	0.09	0.29	0.35	0.11	0.27	
Intersection Summary						
Cycle Length: 61.9						
Actuated Cycle Length: 56.9						
Natural Cycle: 55						
Control Type: Actuated-Uncoordinated						
Maximum v/c Ratio: 0.36						
Intersection Signal Delay: 6.2				Intersection LOS: A		
Intersection Capacity Utilization 54.3%				ICU Level of Service A		
Analysis Period (min) 15						

Splits and Phases: 5: Cummings & Donald



Existing AM

6: Cyrville & Labelle/Cummings

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	26	24	132	109	21	160	428	136	30	169	96
Future Volume (vph)	9	26	24	132	109	21	160	428	136	30	169	96
Satd. Flow (prot)	1695	1611	0	1695	1733	0	1695	1705	0	1695	1670	0
Flt Permitted	0.644			0.720			0.565			0.326		
Satd. Flow (perm)	1140	1611	0	1242	1733	0	1004	1705	0	579	1670	0
Satd. Flow (RTOR)		27			13			31			55	
Lane Group Flow (vph)	10	56	0	147	144	0	178	627	0	33	295	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		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	
Minimum Split (s)	27.5	27.5		27.5	27.5		34.3	34.3		34.3	34.3	
Total Split (s)	28.0	28.0		28.0	28.0		42.0	42.0		42.0	42.0	
Total Split (%)	37.3%	37.3%		37.3%	37.3%		56.0%	56.0%		56.0%	56.0%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	2.2	2.2		2.2	2.2		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.5	-1.5		-1.5	-1.5		-2.3	-2.3		-2.3	-2.3	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lag	Lag		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)	15.1	15.1		15.1	15.1		41.1	41.1		41.1	41.1	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.63	0.63		0.63	0.63	
v/c Ratio	0.04	0.14		0.51	0.35		0.28	0.58		0.09	0.28	
Control Delay	18.1	12.3		27.4	20.3		8.6	10.9		7.8	6.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	18.1	12.3		27.4	20.3		8.6	10.9		7.8	6.3	
LOS	B	B		C	C		A	B		A	A	
Approach Delay		13.2			23.9			10.4			6.5	
Approach LOS		B			C			B			A	
Queue Length 50th (m)	0.9	2.5		14.1	12.0		7.2	30.7		1.2	9.3	
Queue Length 95th (m)	4.0	10.2		30.9	26.5		27.4	97.7		6.8	33.0	
Internal Link Dist (m)		133.5			299.5			94.0			406.7	
Turn Bay Length (m)	30.0			40.0						55.0		
Base Capacity (vph)	424	616		462	652		632	1086		364	1072	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.02	0.09		0.32	0.22		0.28	0.58		0.09	0.28	
Intersection Summary												
Cycle Length: 75												
Actuated Cycle Length: 65.2												
Natural Cycle: 70												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.58												
Intersection Signal Delay: 12.3						Intersection LOS: B						
Intersection Capacity Utilization 66.2%						ICU Level of Service C						
Analysis Period (min) 15												

Splits and Phases: 6: Cyrville & Labelle/Cummings



Existing AM
6: Cyrville & Labelle/Cummings

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	7%	7%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Existing AM

7: St. Laurent & Lemieux

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	589	153	1163	228	6	1369
Future Volume (vph)	589	153	1163	228	6	1369
Satd. Flow (prot)	3288	1517	4871	1517	1695	4871
Flt Permitted	0.950				0.177	
Satd. Flow (perm)	3288	1450	4871	1477	316	4871
Satd. Flow (RTOR)		56		253		
Lane Group Flow (vph)	654	170	1292	253	7	1521
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	37.5	37.5	24.0	24.0
Total Split (s)	50.0	50.0	80.0	80.0	80.0	80.0
Total Split (%)	38.5%	38.5%	61.5%	61.5%	61.5%	61.5%
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	-2.1	-2.1	-1.5	-1.5	-1.5	-1.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	34.1	34.1	87.9	87.9	87.9	87.9
Actuated g/C Ratio	0.26	0.26	0.68	0.68	0.68	0.68
v/c Ratio	0.76	0.40	0.39	0.23	0.03	0.46
Control Delay	49.8	27.9	10.2	1.7	8.5	11.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.8	27.9	10.2	1.7	8.5	11.9
LOS	D	C	B	A	A	B
Approach Delay	45.3		8.8			11.9
Approach LOS	D		A			B
Queue Length 50th (m)	79.5	23.7	49.5	0.0	0.7	67.8
Queue Length 95th (m)	92.9	41.2	69.1	9.8	m1.1	74.9
Internal Link Dist (m)	109.2		139.3			202.6
Turn Bay Length (m)		25.0		60.0	125.0	
Base Capacity (vph)	1163	549	3292	1080	213	3292
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.31	0.39	0.23	0.03	0.46

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 124 (95%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 17.7

Intersection LOS: B

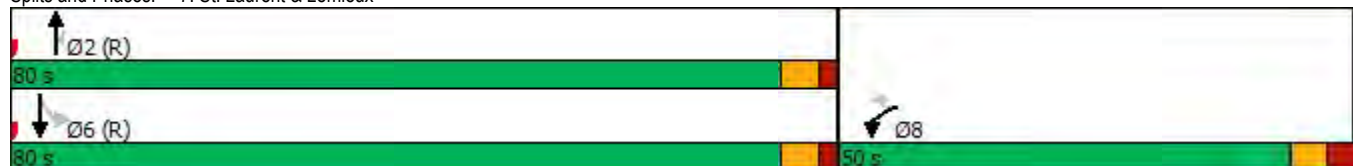
Intersection Capacity Utilization 56.4%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 7: St. Laurent & Lemieux



Existing AM
11: 417/Lemieux & Labelle

Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	0	0	0	0	125	133	615	44	0	0	178
Future Vol, veh/h	30	0	0	0	0	125	133	615	44	0	0	178
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	-	-	Free	-	-	Free
Storage Length	0	-	-	-	-	0	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	0	0	0	0	132	140	647	46	0	0	187

Major/Minor	Minor2	Minor1				Major1		
Conflicting Flow All	604	-	-	-	-	324	0	0
Stage 1	0	-	-	-	-	-	-	-
Stage 2	604	-	-	-	-	-	-	-
Critical Hdwy	7.54	-	-	-	-	6.94	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	-	-	-	-	3.32	2.22	-
Pot Cap-1 Maneuver	382	0	0	0	0	672	-	0
Stage 1	-	0	0	0	0	-	-	0
Stage 2	452	0	0	0	0	-	-	0
Platoon blocked, %								-
Mov Cap-1 Maneuver	307	-	-	-	-	672	-	-
Mov Cap-2 Maneuver	307	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	363	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	18.1	11.7	
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1
Capacity (veh/h)	-	-	307	672
HCM Lane V/C Ratio	-	-	0.103	0.196
HCM Control Delay (s)	-	-	18.1	11.7
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	0.3	0.7

Existing PM

1: St. Laurent & Coventry/Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	302	574	205	466	367	30	182	846	609	71	758	192
Future Volume (vph)	302	574	205	466	367	30	182	846	609	71	758	192
Satd. Flow (prot)	3288	3390	1517	3288	3390	1517	1695	4473	0	1695	4871	1517
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3264	3390	1392	3222	3390	1459	1660	4473	0	1688	4871	1403
Satd. Flow (RTOR)			216			210		162				211
Lane Group Flow (vph)	318	604	216	491	386	32	192	1532	0	75	798	202
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	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		5.0	10.0	10.0
Minimum Split (s)	11.9	37.5	37.5	11.9	37.5	37.5	11.4	35.4		11.4	35.4	35.4
Total Split (s)	24.0	37.0	37.0	24.0	37.0	37.0	24.0	44.0		15.0	35.0	35.0
Total Split (%)	20.0%	30.8%	30.8%	20.0%	30.8%	30.8%	20.0%	36.7%		12.5%	29.2%	29.2%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	3.2	2.8	2.8	3.2	2.8	2.8	2.7	2.7		2.7	2.7	2.7
Lost Time Adjust (s)	-2.9	-2.5	-2.5	-2.9	-2.5	-2.5	-2.4	-2.4		-2.4	-2.4	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	24.4	30.2	30.2	21.2	27.0	27.0	18.6	44.5		10.6	33.9	33.9
Actuated g/C Ratio	0.20	0.25	0.25	0.18	0.22	0.22	0.16	0.37		0.09	0.28	0.28
v/c Ratio	0.47	0.71	0.42	0.84	0.51	0.07	0.73	0.98dr		0.50	0.58	0.37
Control Delay	46.1	45.6	7.1	56.6	42.9	0.2	74.2	31.9		64.3	39.7	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	46.1	45.6	7.1	56.6	42.9	0.2	74.2	31.9		64.3	39.7	6.2
LOS	D	D	A	E	D	A	E	C		E	D	A
Approach Delay		38.4			48.8			36.6			35.1	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	36.0	66.1	0.0	50.8	50.2	0.0	36.2	119.7		17.1	61.2	0.0
Queue Length 95th (m)	50.7	85.6	17.9	#85.6	65.4	m0.1	#66.3	#62.2		32.7	75.6	16.1
Internal Link Dist (m)		132.3			135.6			202.6			118.5	
Turn Bay Length (m)				160.0			60.0			60.0		45.0
Base Capacity (vph)	670	932	539	582	932	553	282	1761		155	1377	547
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.47	0.65	0.40	0.84	0.41	0.06	0.68	0.87		0.48	0.58	0.37

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 39.0

Intersection LOS: D

Intersection Capacity Utilization 87.7%

ICU Level of Service E

Analysis Period (min) 15

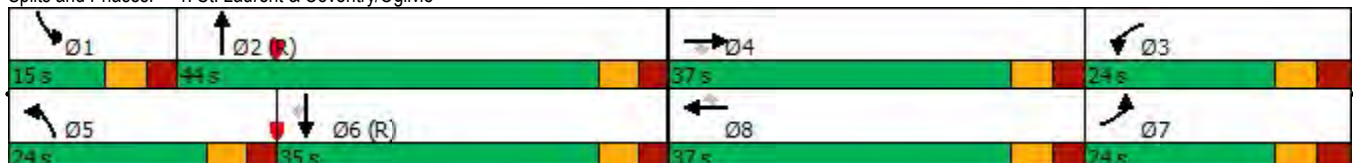
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

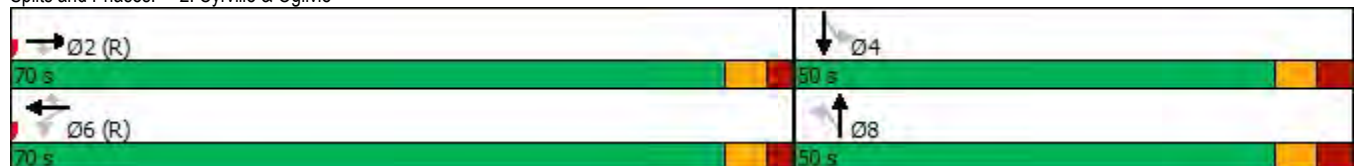
Splits and Phases: 1: St. Laurent & Coventry/Ogilvie



Existing PM
2: Cyrville & Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	984	257	40	641	124	117	210	32	134	213	80
Future Volume (vph)	0	984	257	40	641	124	117	210	32	134	213	80
Satd. Flow (prot)	0	3390	1517	1695	3390	1517	1695	1745	0	1695	1702	0
Flt Permitted				0.195			0.432			0.494		
Satd. Flow (perm)	0	3390	1425	346	3390	1388	768	1745	0	879	1702	0
Satd. Flow (RTOR)			271			131		7			18	
Lane Group Flow (vph)	0	1036	271	42	675	131	123	255	0	141	308	0
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases			2	6		6	8			4		
Detector Phase		2	2	6	6	6	8	8		4	4	
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)		32.2	32.2	32.2	32.2	32.2	47.1	47.1		47.1	47.1	
Total Split (s)		70.0	70.0	70.0	70.0	70.0	50.0	50.0		50.0	50.0	
Total Split (%)		58.3%	58.3%	58.3%	58.3%	58.3%	41.7%	41.7%		41.7%	41.7%	
Yellow Time (s)		3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)		2.5	2.5	2.5	2.5	2.5	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)		-2.2	-2.2	-2.2	-2.2	-2.2	-3.1	-3.1		-3.1	-3.1	
Total Lost Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max	C-Max	C-Max	C-Max	C-Max	Max	Max		Max	Max	
Act Effct Green (s)		66.0	66.0	66.0	66.0	66.0	46.0	46.0		46.0	46.0	
Actuated g/C Ratio		0.55	0.55	0.55	0.55	0.55	0.38	0.38		0.38	0.38	
v/c Ratio		0.56	0.30	0.22	0.36	0.16	0.42	0.38		0.42	0.46	
Control Delay		9.8	1.5	24.4	22.7	9.2	32.7	28.0		32.0	28.8	
Queue Delay		0.4	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		10.2	1.5	24.4	22.7	9.2	32.7	28.0		32.0	28.8	
LOS		B	A	C	C	A	C	C		C	C	
Approach Delay		8.4			20.7			29.5			29.8	
Approach LOS		A			C			C			C	
Queue Length 50th (m)		56.2	3.5	5.1	44.6	5.7	21.1	41.6		24.1	50.5	
Queue Length 95th (m)		m67.9	m6.6	m7.7	m59.3	m10.5	39.1	63.5		42.9	76.2	
Internal Link Dist (m)		135.6			311.6			406.7			100.8	
Turn Bay Length (m)				50.0		50.0	50.0					
Base Capacity (vph)		1864	905	190	1864	822	294	673		336	663	
Starvation Cap Reductn		363	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		0.69	0.30	0.22	0.36	0.16	0.42	0.38		0.42	0.46	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 20 (17%), Referenced to phase 2:EBT and 6:WBTL, Start of Green												
Natural Cycle: 80												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.56												
Intersection Signal Delay: 17.8						Intersection LOS: B						
Intersection Capacity Utilization 86.8%						ICU Level of Service E						
Analysis Period (min) 15												
m Volume for 95th percentile queue is metered by upstream signal.												

Splits and Phases: 2: Cyrville & Ogilvie



Existing PM
3: Cummings & Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	1082	23	109	729	209	36	162	216	258	163	84
Future Volume (vph)	110	1082	23	109	729	209	36	162	216	258	163	84
Satd. Flow (prot)	1695	3374	0	1695	3231	0	1695	1784	1517	1695	1683	0
Flt Permitted	0.101			0.101			0.599			0.492		
Satd. Flow (perm)	180	3374	0	180	3231	0	1064	1784	1405	841	1683	0
Satd. Flow (RTOR)		2			34				169		29	
Lane Group Flow (vph)	116	1163	0	115	987	0	38	171	227	272	260	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	8	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	9.7	24.7		9.7	24.7		36.6	36.6	36.6	9.3	36.6	
Total Split (s)	15.0	45.0		15.0	45.0		40.0	40.0	40.0	20.0	60.0	
Total Split (%)	12.5%	37.5%		12.5%	37.5%		33.3%	33.3%	33.3%	16.7%	50.0%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.0	2.0		1.0	2.0		3.3	3.3	3.3	1.0	3.3	
Lost Time Adjust (s)	0.7	-1.7		0.7	-1.7		-2.6	-2.6	-2.6	0.3	-2.6	
Total Lost Time (s)	5.4	4.0		5.4	4.0		4.0	4.0	4.0	4.6	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	None	Max	
Act Effct Green (s)	49.2	42.0		49.2	41.9		36.8	36.8	36.8	55.4	56.0	
Actuated g/C Ratio	0.41	0.35		0.41	0.35		0.31	0.31	0.31	0.46	0.47	
v/c Ratio	0.63	0.98		0.63	0.86		0.12	0.31	0.41	0.55	0.33	
Control Delay	52.0	41.0		49.1	38.9		31.8	34.2	12.0	25.7	19.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	52.0	41.0		49.1	38.9		31.8	34.2	12.0	25.7	19.1	
LOS	D	D		D	D		C	C	B	C	B	
Approach Delay		42.0			39.9			22.5			22.4	
Approach LOS		D			D			C			C	
Queue Length 50th (m)	13.5	~125.2		20.2	70.9		6.5	31.2	10.0	40.1	33.0	
Queue Length 95th (m)	32.8	#189.1		m38.7	#110.2		15.2	50.2	31.2	60.5	52.2	
Internal Link Dist (m)		311.6			386.5			299.5			235.7	
Turn Bay Length (m)	75.0			90.0			40.0		15.0	150.0		
Base Capacity (vph)	196	1181		196	1151		326	547	547	497	800	
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	0.59	0.98		0.59	0.86		0.12	0.31	0.41	0.55	0.33	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 46 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 35.7

Intersection LOS: D

Intersection Capacity Utilization 93.8%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

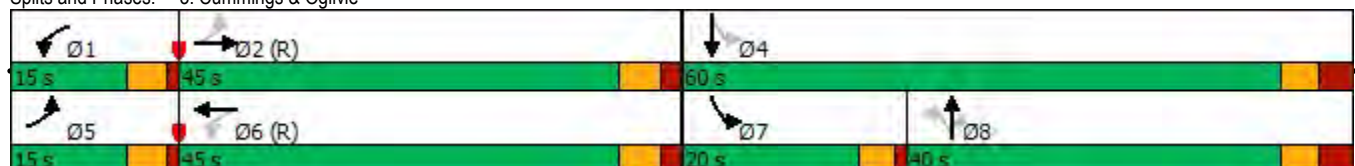
Queue shown is maximum after two cycles.

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: 3: Cummings & Ogilvie



Existing PM

4: Aviation Parkway & Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	183	720	83	136	578	112	124	205	180	112	239	168
Future Volume (vph)	183	720	83	136	578	112	124	205	180	112	239	168
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	3133	0	1695	3160	0
Flt Permitted	0.311			0.258			0.950			0.950		
Satd. Flow (perm)	554	3390	1476	459	3390	1493	1692	3133	0	1694	3160	0
Satd. Flow (RTOR)			125			125		168			136	
Lane Group Flow (vph)	193	758	87	143	608	118	131	405	0	118	429	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		10.9	30.1	
Total Split (s)	20.0	51.0	51.0	20.0	51.0	51.0	19.0	30.0		19.0	30.0	
Total Split (%)	16.7%	42.5%	42.5%	16.7%	42.5%	42.5%	15.8%	25.0%		15.8%	25.0%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		2.2	2.4	
Lost Time Adjust (s)	0.7	-2.1	-2.1	0.7	-2.1	-2.1	-1.9	-2.1		-1.9	-2.1	
Total Lost Time (s)	5.4	4.0	4.0	5.4	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max		None	Max	
Act Effct Green (s)	61.9	51.7	51.7	58.5	50.0	50.0	14.0	27.3		13.7	27.0	
Actuated g/C Ratio	0.52	0.43	0.43	0.49	0.42	0.42	0.12	0.23		0.11	0.22	
v/c Ratio	0.49	0.52	0.12	0.44	0.43	0.17	0.66	0.48		0.61	0.53	
Control Delay	21.6	26.1	3.8	18.3	26.5	4.2	67.3	25.4		64.2	30.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	21.6	26.1	3.8	18.3	26.5	4.2	67.3	25.4		64.2	30.3	
LOS	C	C	A	B	C	A	E	C		E	C	
Approach Delay		23.4			22.1			35.7			37.6	
Approach LOS		C			C			D			D	
Queue Length 50th (m)	23.7	52.0	1.2	16.0	52.7	0.0	29.7	25.3		26.5	32.1	
Queue Length 95th (m)	m28.4	m57.2	m2.0	26.7	71.3	10.2	50.4	40.8		45.8	48.4	
Internal Link Dist (m)		386.5			205.1			147.2			200.4	
Turn Bay Length (m)	75.0		60.0	55.0		70.0	110.0			110.0		
Base Capacity (vph)	435	1461	707	391	1413	695	211	841		211	816	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.44	0.52	0.12	0.37	0.43	0.17	0.62	0.48		0.56	0.53	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 50 (42%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 27.8

Intersection LOS: C

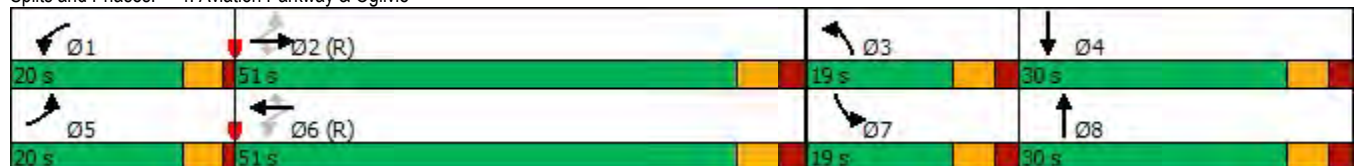
Intersection Capacity Utilization 75.8%

ICU Level of Service D

Analysis Period (min) 15

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

Splits and Phases: 4: Aviation Parkway & Ogilvie



Existing PM
5: Cummings & Donald

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	88	306	244	238	238	90
Future Volume (vph)	88	306	244	238	238	90
Satd. Flow (prot)	1695	1517	1695	1784	1700	0
Flt Permitted	0.950		0.538			
Satd. Flow (perm)	1658	1442	950	1784	1700	0
Satd. Flow (RTOR)		322			39	
Lane Group Flow (vph)	93	322	257	251	346	0
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	22.0	22.0	24.9	24.9	32.9	
Total Split (s)	31.0	31.0	39.9	39.9	39.9	
Total Split (%)	43.7%	43.7%	56.3%	56.3%	56.3%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7	3.6	3.6	3.6	
Lost Time Adjust (s)	-2.0	-2.0	-2.9	-2.9	-2.9	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	
Act Effct Green (s)	13.1	13.1	36.0	36.0	36.0	
Actuated g/C Ratio	0.23	0.23	0.63	0.63	0.63	
v/c Ratio	0.24	0.56	0.43	0.22	0.32	
Control Delay	19.5	6.7	8.7	5.6	5.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	19.5	6.7	8.7	5.6	5.6	
LOS	B	A	A	A	A	
Approach Delay	9.6			7.1	5.6	
Approach LOS	A			A	A	
Queue Length 50th (m)	7.9	0.0	10.5	8.7	11.1	
Queue Length 95th (m)	17.4	15.4	30.8	22.2	28.7	
Internal Link Dist (m)	138.1			235.7	73.1	
Turn Bay Length (m)		50.0	60.0			
Base Capacity (vph)	802	852	598	1123	1084	
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	0.12	0.38	0.43	0.22	0.32	

Intersection Summary

Cycle Length: 70.9

Actuated Cycle Length: 57.1

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 7.5

Intersection LOS: A

Intersection Capacity Utilization 56.0%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 5: Cummings & Donald



Existing PM

6: Cyrville & Labelle/Cummings

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	79	104	198	32	26	46	286	234	59	467	17
Future Volume (vph)	25	79	104	198	32	26	46	286	234	59	467	17
Satd. Flow (prot)	1695	1574	0	1695	1642	0	1695	1636	0	1695	1773	0
Flt Permitted	0.717			0.574			0.378			0.350		
Satd. Flow (perm)	1265	1574	0	992	1642	0	673	1636	0	621	1773	0
Satd. Flow (RTOR)		91			27			58			3	
Lane Group Flow (vph)	26	192	0	208	61	0	48	547	0	62	510	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		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	
Minimum Split (s)	27.5	27.5		27.5	27.5		34.3	34.3		34.3	34.3	
Total Split (s)	42.0	42.0		42.0	42.0		43.0	43.0		43.0	43.0	
Total Split (%)	46.7%	46.7%		46.7%	46.7%		47.8%	47.8%		47.8%	47.8%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	2.2	2.2		2.2	2.2		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.5	-1.5		-1.5	-1.5		-2.3	-2.3		-2.3	-2.3	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lag	Lag		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)	20.3	20.3		20.3	20.3		39.7	39.7		39.7	39.7	
Actuated g/C Ratio	0.29	0.29		0.29	0.29		0.58	0.58		0.58	0.58	
v/c Ratio	0.07	0.36		0.71	0.12		0.12	0.57		0.17	0.50	
Control Delay	17.1	11.9		35.8	11.4		10.8	13.1		11.6	12.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	17.1	11.9		35.8	11.4		10.8	13.1		11.6	12.9	
LOS	B	B		D	B		B	B		B	B	
Approach Delay		12.6			30.2			12.9			12.8	
Approach LOS		B			C			B			B	
Queue Length 50th (m)	2.3	9.4		22.8	3.0		2.4	32.6		3.2	32.6	
Queue Length 95th (m)	7.5	24.7		47.4	10.8		11.0	97.0		14.0	90.8	
Internal Link Dist (m)		133.5			299.5			94.0			406.7	
Turn Bay Length (m)	30.0			40.0						55.0		
Base Capacity (vph)	706	919		554	929		387	967		357	1022	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.04	0.21		0.38	0.07		0.12	0.57		0.17	0.50	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 69

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 15.6

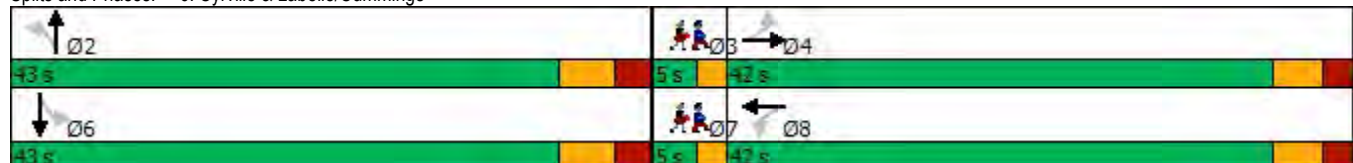
Intersection LOS: B

Intersection Capacity Utilization 80.1%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 6: Cyrville & Labelle/Cummings



Existing PM
6: Cyrville & Labelle/Cummings

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Existing PM

7: St. Laurent & Lemieux

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	496	156	1528	246	9	1700
Future Volume (vph)	496	156	1528	246	9	1700
Satd. Flow (prot)	3288	1517	4871	1517	1695	4871
Flt Permitted	0.950				0.122	
Satd. Flow (perm)	3288	1454	4871	1477	218	4871
Satd. Flow (RTOR)		38		259		
Lane Group Flow (vph)	522	164	1608	259	9	1789
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	37.5	37.5	24.0	24.0
Total Split (s)	38.0	38.0	82.0	82.0	82.0	82.0
Total Split (%)	31.7%	31.7%	68.3%	68.3%	68.3%	68.3%
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	-2.1	-2.1	-1.5	-1.5	-1.5	-1.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	27.2	27.2	84.8	84.8	84.8	84.8
Actuated g/C Ratio	0.23	0.23	0.71	0.71	0.71	0.71
v/c Ratio	0.70	0.46	0.47	0.23	0.06	0.52
Control Delay	47.6	33.7	8.7	1.4	3.9	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.6	33.7	8.7	1.4	3.9	5.6
LOS	D	C	A	A	A	A
Approach Delay	44.3		7.7			5.6
Approach LOS	D		A			A
Queue Length 50th (m)	59.1	25.7	52.7	0.0	0.1	47.5
Queue Length 95th (m)	72.3	43.6	74.7	8.3	m0.9	70.6
Internal Link Dist (m)	109.2		139.3			202.6
Turn Bay Length (m)		25.0		60.0	125.0	
Base Capacity (vph)	931	439	3443	1119	154	3443
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.37	0.47	0.23	0.06	0.52

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 99 (83%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 12.6

Intersection LOS: B

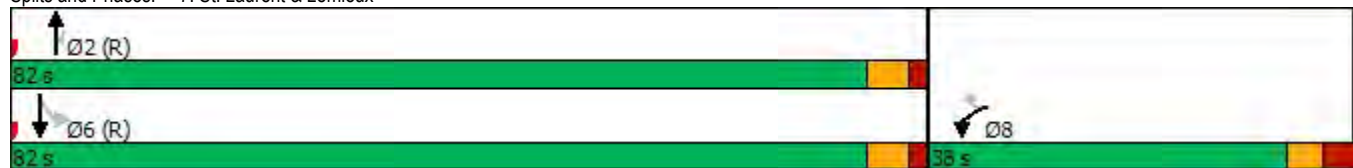
Intersection Capacity Utilization 62.0%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 7: St. Laurent & Lemieux



Existing PM
11: 417 & Labelle

Intersection												
Int Delay, s/veh	7.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	170	0	0	0	0	204	112	410	27	0	0	279
Future Vol, veh/h	170	0	0	0	0	204	112	410	27	0	0	279
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	-	-	Free	-	-	Free
Storage Length	0	-	-	-	-	0	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	179	0	0	0	0	215	118	432	28	0	0	294

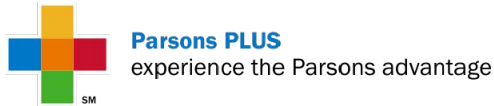
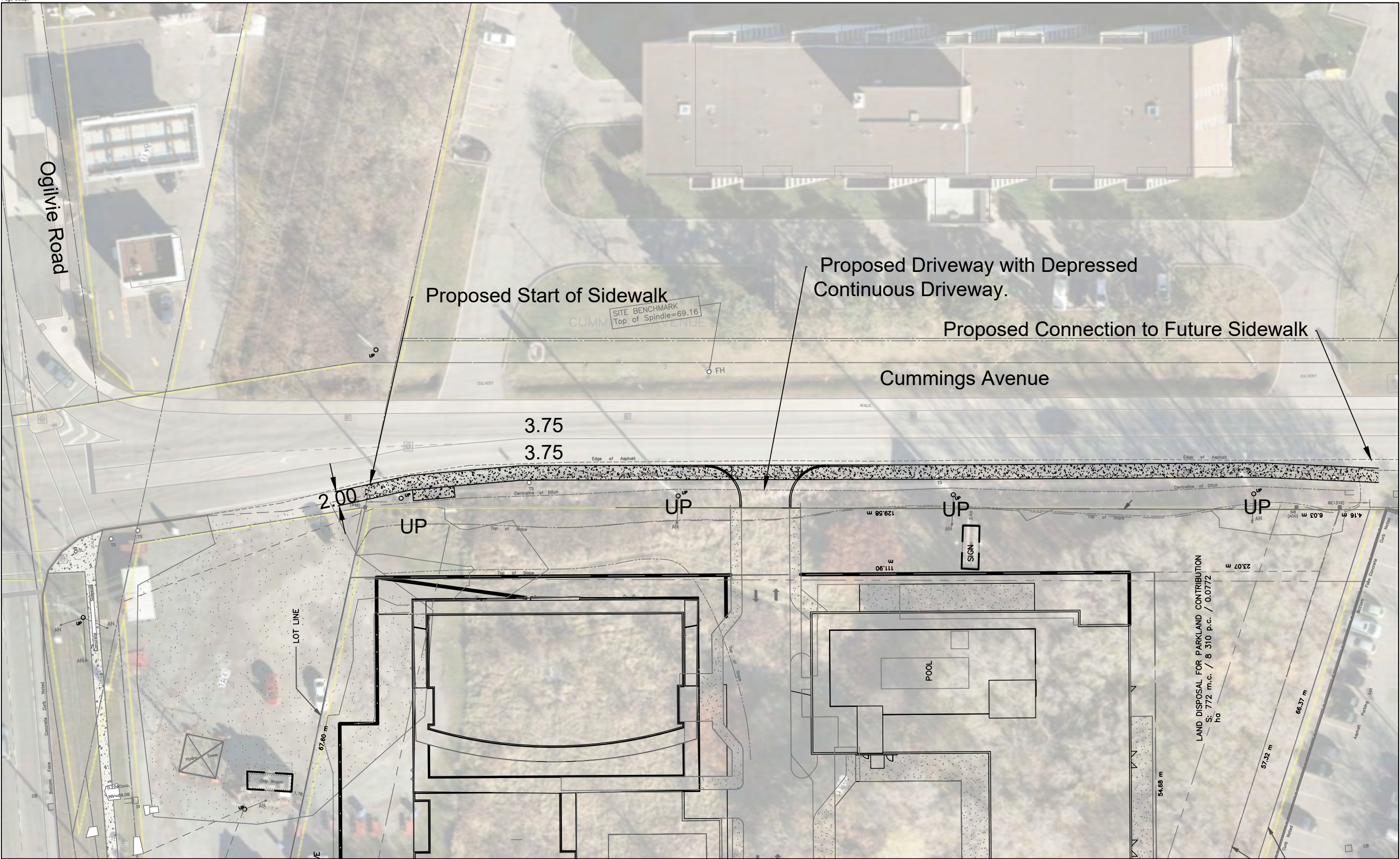
Major/Minor	Minor2	Minor1				Major1		
Conflicting Flow All	452	-	-	-	-	216	0	0
Stage 1	0	-	-	-	-	-	-	-
Stage 2	452	-	-	-	-	-	-	-
Critical Hdwy	7.54	-	-	-	-	6.94	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	-	-	-	-	3.32	2.22	-
Pot Cap-1 Maneuver	491	0	0	0	0	789	-	0
Stage 1	-	0	0	0	0	-	-	0
Stage 2	557	0	0	0	0	-	-	0
Platoon blocked, %								-
Mov Cap-1 Maneuver	357	-	-	-	-	789	-	-
Mov Cap-2 Maneuver	357	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	405	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	24.8	11.3	
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1
Capacity (veh/h)	-	-	357	789
HCM Lane V/C Ratio	-	-	0.501	0.272
HCM Control Delay (s)	-	-	24.8	11.3
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	2.7	1.1

Appendix G

Functional Sidewalk Sketch & Surface Concept Plan



Legend

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

Not to Scale

Drawing Description			1098 Ogilvie, Cummings Road Sidwalk Option		
Client		6770967 Canada inc		Date	August 30, 2019
Project Number		476751		Figure Number	001
				Project Description	1098 Ogilvie Road Development

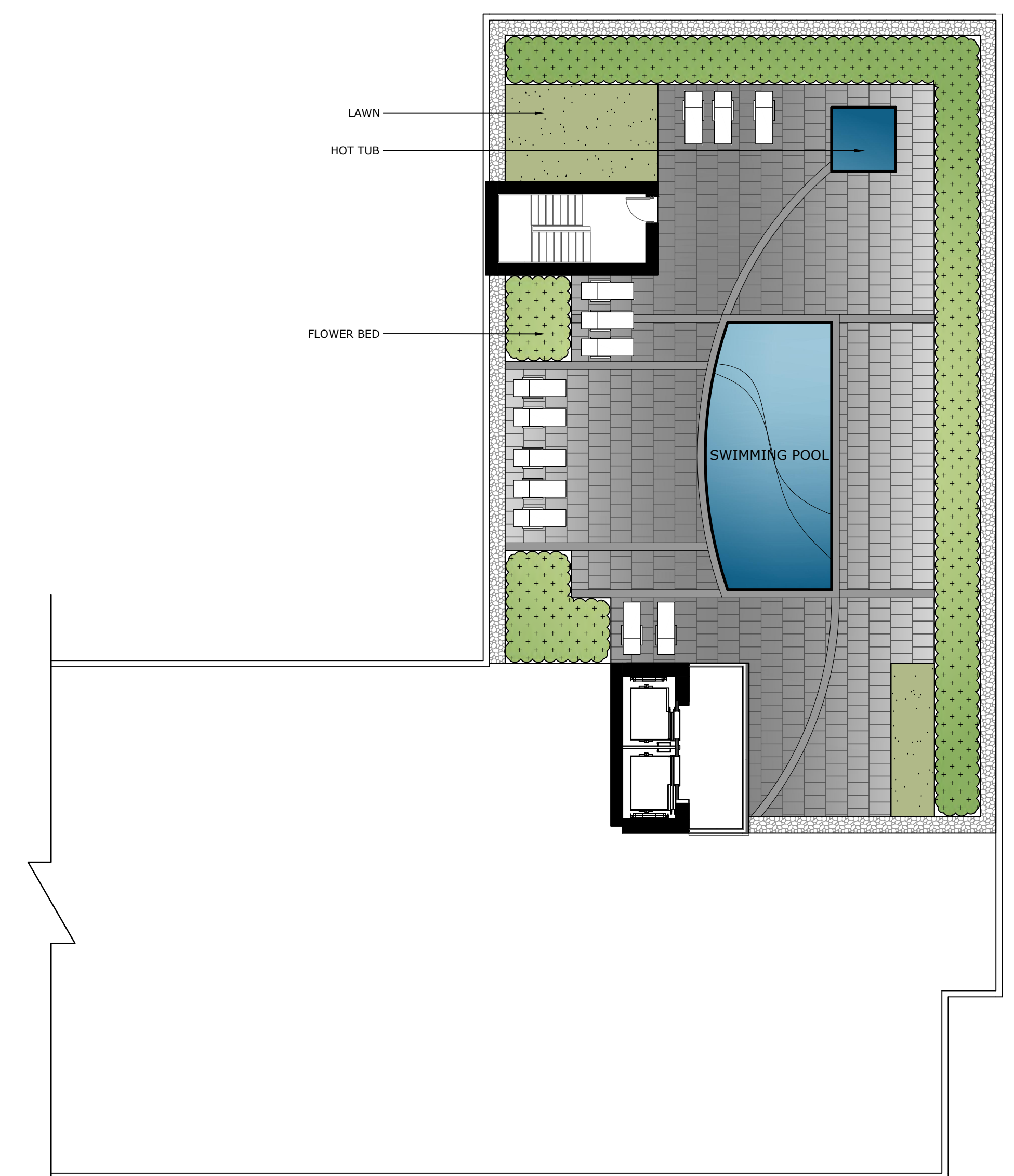
LEGEND:

- CONCRETE
- PAVERS
- DECORATIVE GRAVEL
- RETAINING WALL
- LAWN
- DECIDUOUS TREE
- EVERGREEN
- PERENNIALS & SHRUBS
- BENCHES



LANDSCAPE SITE PLAN
scale:1:250

NOTE: Proposed sidewalk on west side of Cummings Avenue not shown in this Landscape Plan.



HOTEL ROOF- 9th floor
scale:1:150

Appendix H

MMLOS Road Segment Analysis

Multi-Modal Level of Service - Segments Form

Consultant
Scenario
Comments

Parsons

1098 Ogilvie, Lux Place

Project
Date

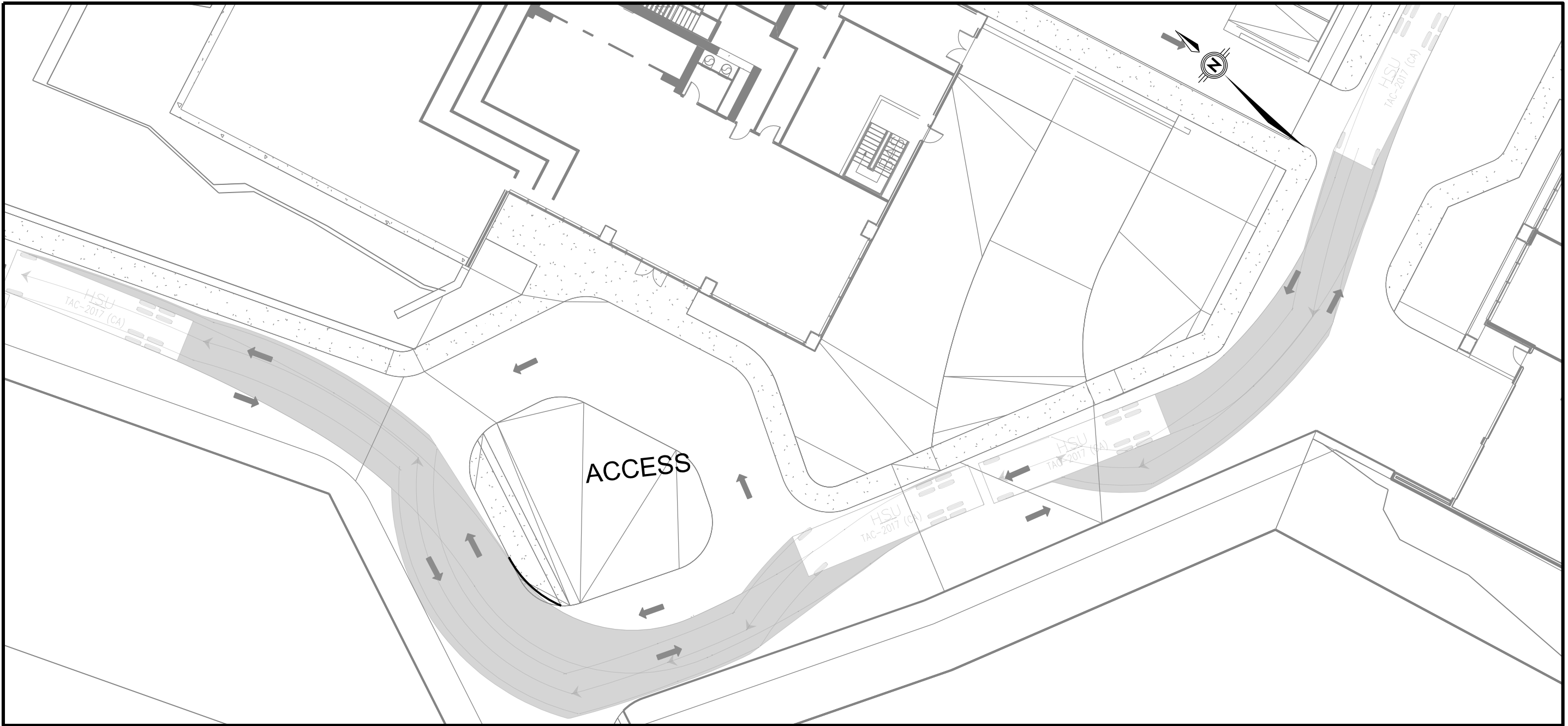
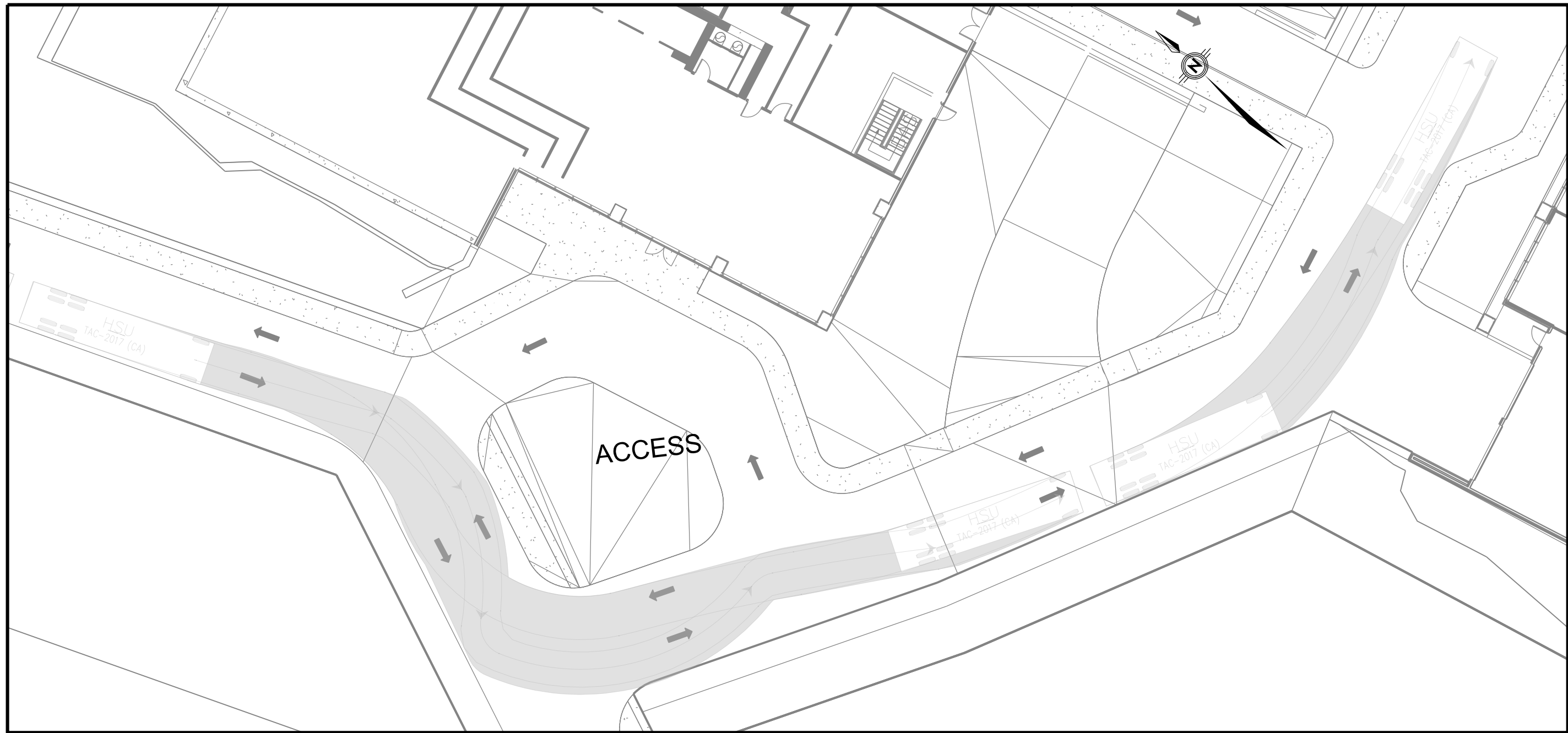
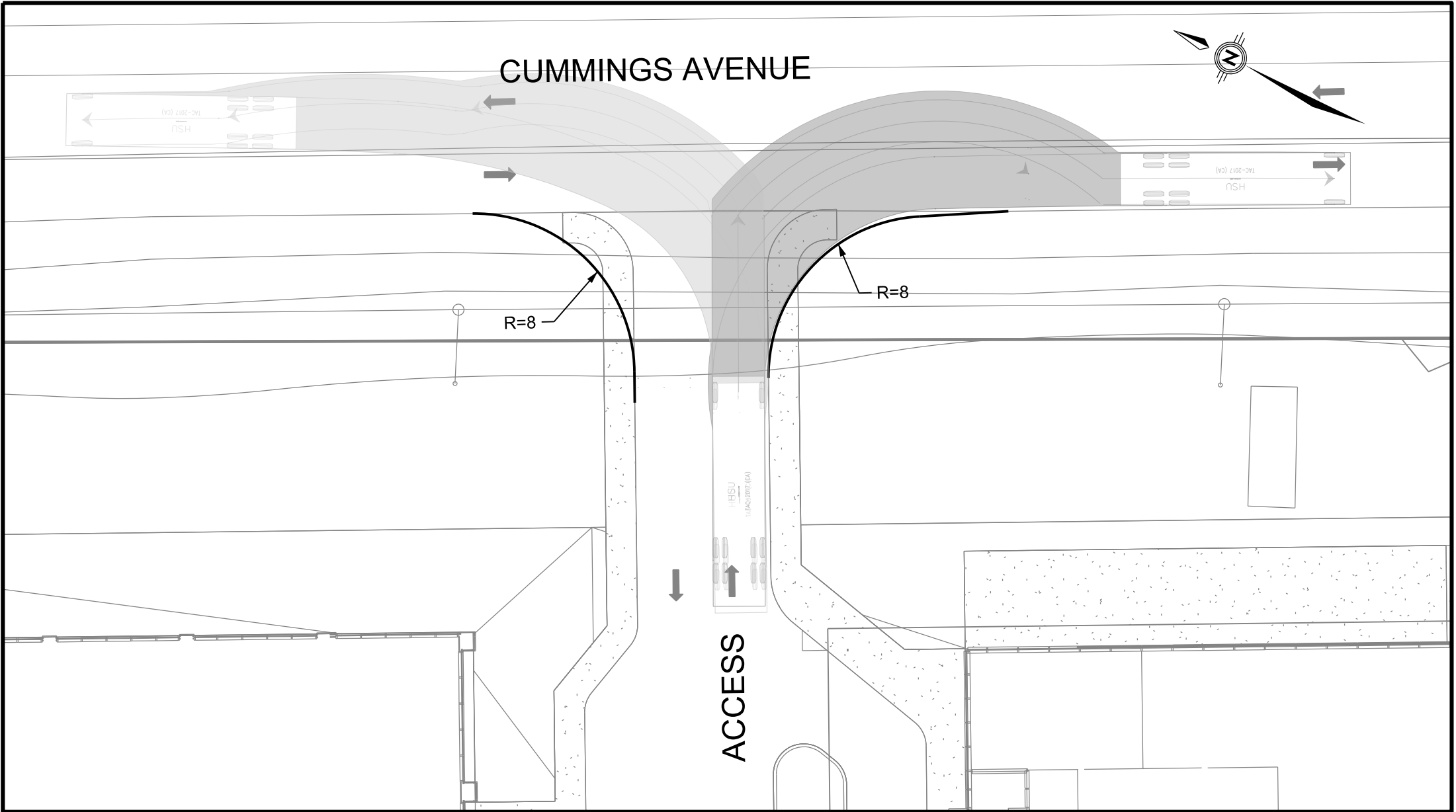
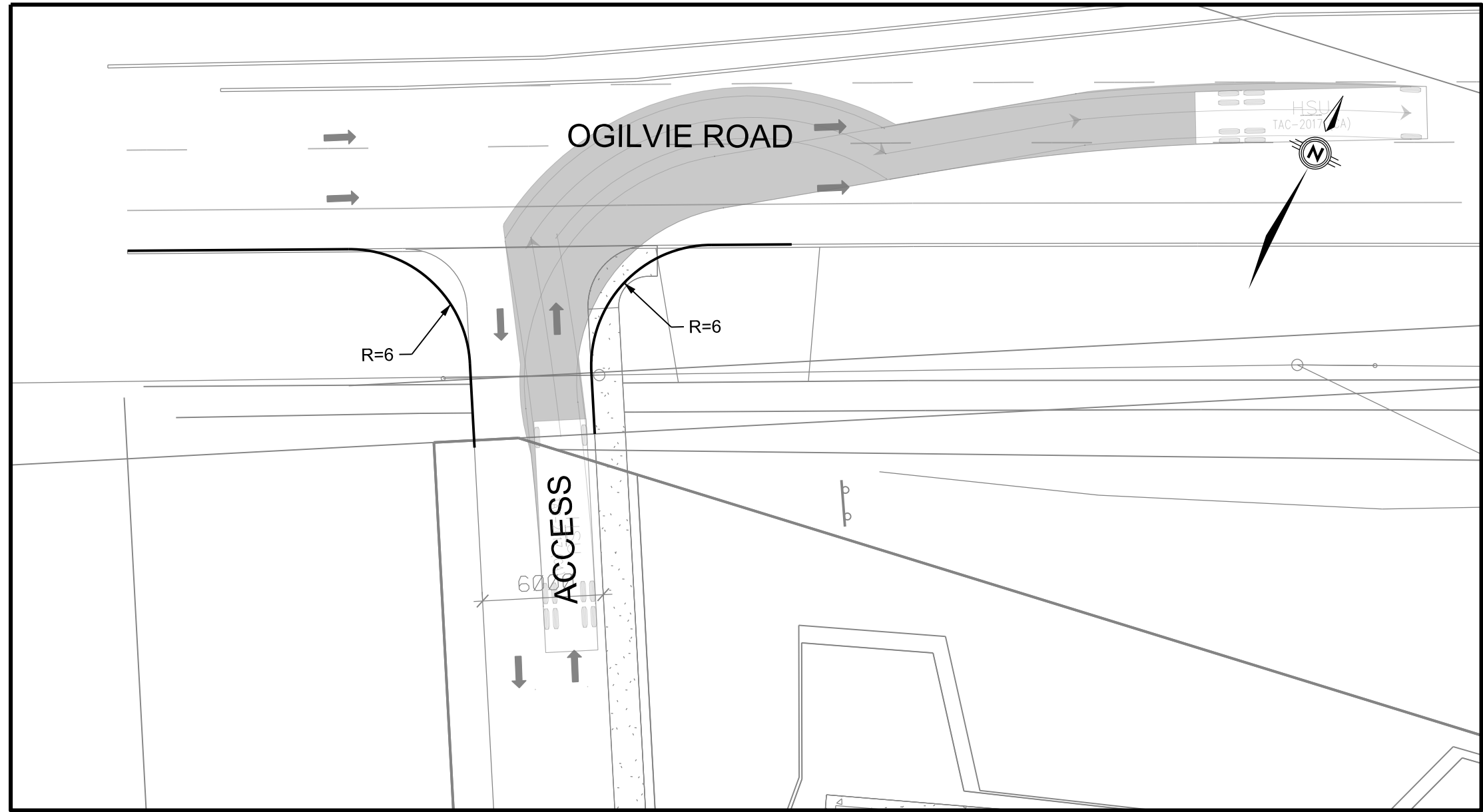
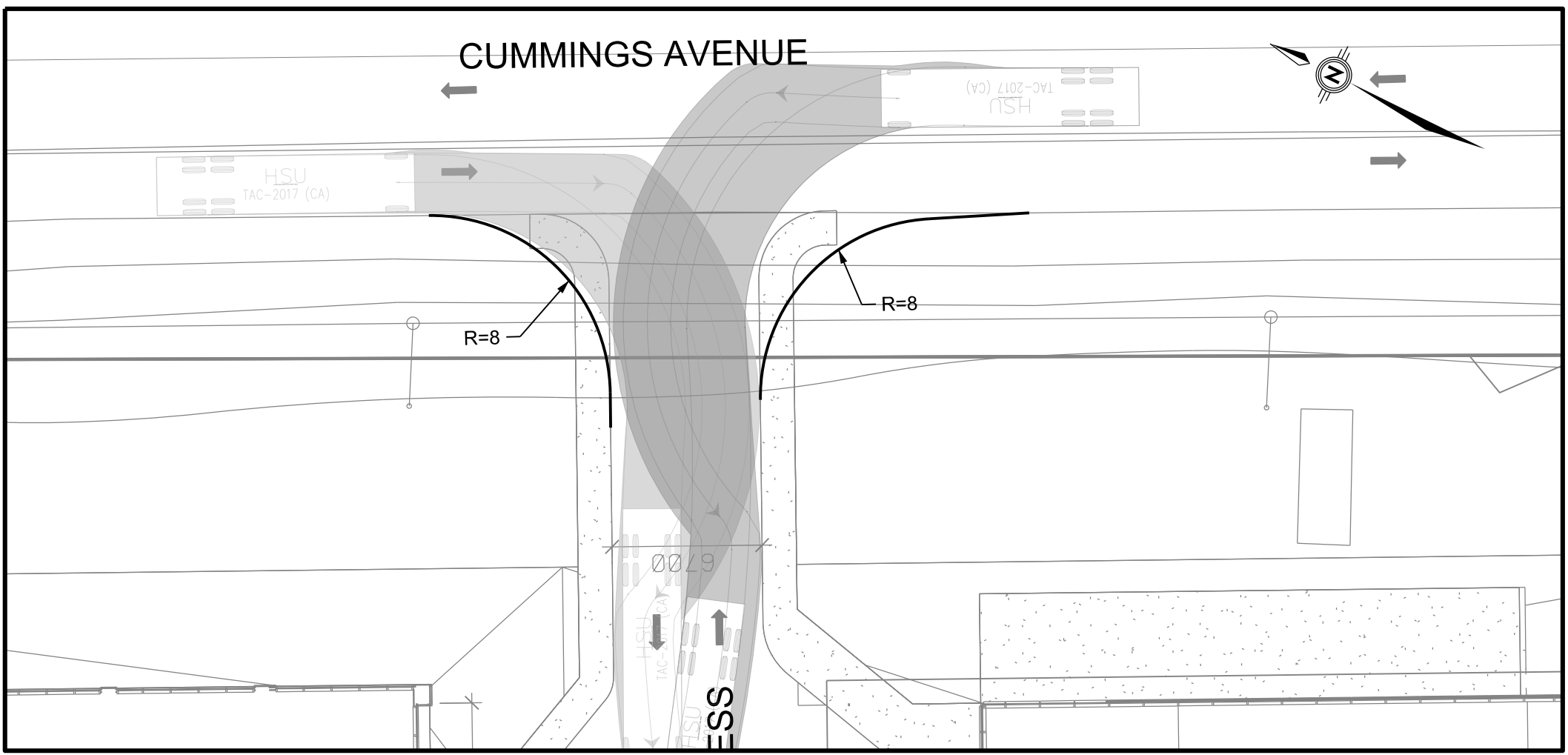
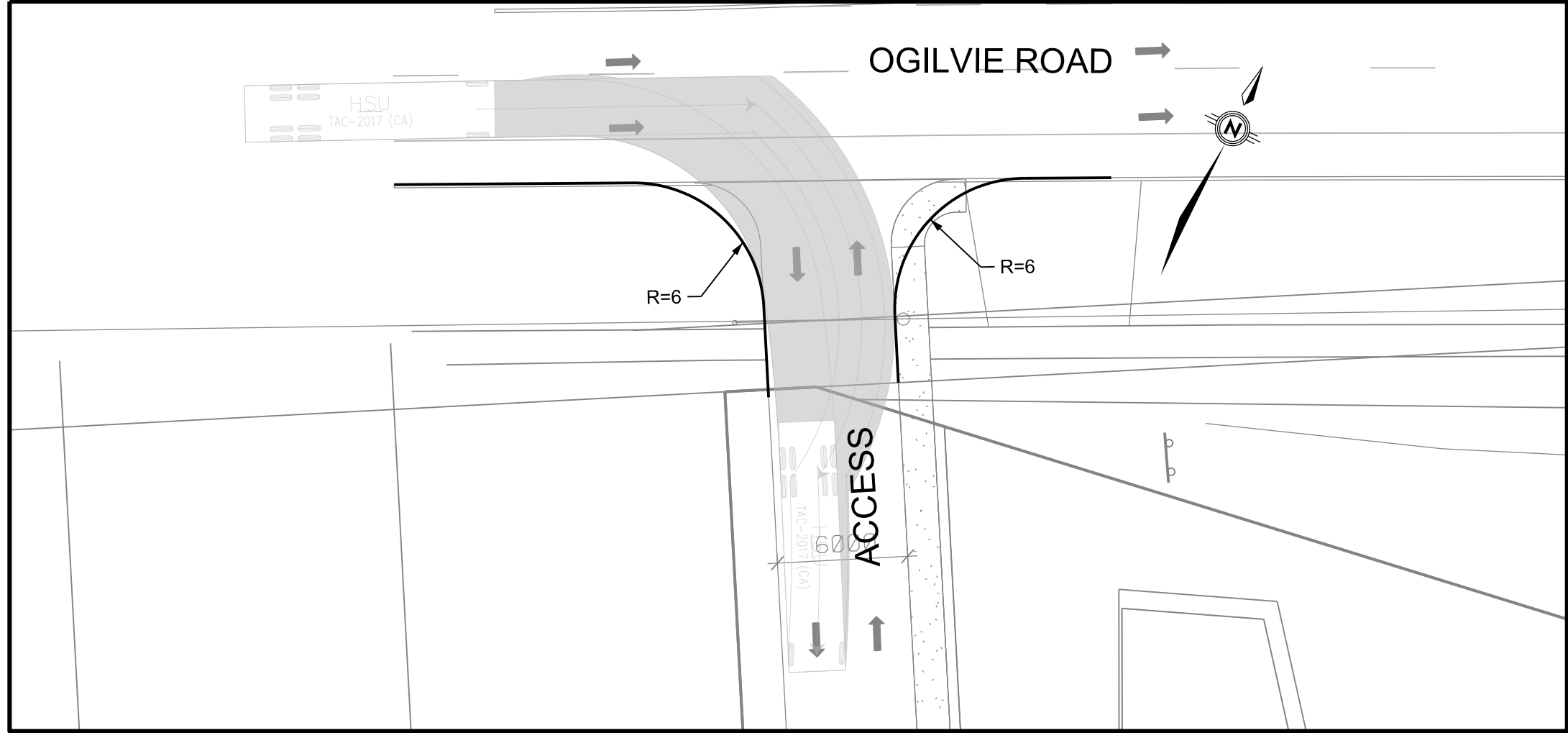
476751

5-Jun-19

SEGMENTS		Street A	Section Ogilvie	EXISTING Cummings W	Section Cummings E	PROPOSED Cummings W	Section 5	Section 6	Section 7	Section 8	Section 9
Pedestrian	Sidewalk Width	D	1.8 m	no sidewalk	1.8 m	≥ 2 m					
	Boulevard Width		> 2 m	n/a	< 0.5 m	< 0.5					
	Avg Daily Curb Lane Traffic Volume		> 3000	> 3000	> 3000	> 3000					
	Operating Speed		> 50 to 60 km/h	> 30 to 50 km/h	> 30 to 50 km/h	> 30 to 50 km/h					
	On-Street Parking		no	no	no	no					
	Exposure to Traffic PLoS		D	F	D	C	-	-	-	-	-
	Effective Sidewalk Width		1.5 m		1.5 m	2.0 m					
	Pedestrian Volume		250 ped/hr		250 ped/hr	250 ped/hr					
	Crowding PLoS		B	-	B	B	-	-	-	-	-
	Level of Service		D	-	D	C	-	-	-	-	-
Bicycle	Type of Cycling Facility	C	Curbside Bike Lane	Mixed Traffic	Mixed Traffic	Mixed Traffic					
	Number of Travel Lanes		2 ea. dir. (w median)	≤ 2 (no centreline)	≤ 2 (no centreline)	≤ 2 (no centreline)					
	Operating Speed		>50 to 70 km/h	>40 to <50 km/h	>40 to <50 km/h	>40 to <50 km/h					
	# of Lanes & Operating Speed LoS		C	B	B	B	-	-	-	-	-
	Bike Lane (+ Parking Lane) Width		≥1.5 to <1.8 m								
	Bike Lane Width LoS		B	-	-	-	-	-	-	-	-
	Bike Lane Blockages		Rare								
	Blockage LoS		A	-	-	-	-	-	-	-	-
	Median Refuge Width (no median = < 1.8 m)		< 1.8 m refuge	< 1.8 m refuge	< 1.8 m refuge	< 1.8 m refuge					
	No. of Lanes at Unsignalized Crossing		≤ 3 lanes	≤ 3 lanes	≤ 3 lanes	≤ 3 lanes					
	Sidestreet Operating Speed		>40 to 50 km/h	>40 to 50 km/h	>40 to 50 km/h	>40 to 50 km/h					
	Unsignalized Crossing - Lowest LoS		B	B	B	B	-	-	-	-	-
	Level of Service		C	B	B	B	-	-	-	-	-
Transit	Facility Type	D	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic					
	Friction or Ratio Transit:Posted Speed		Vt/Vp ≥ 0.8	Vt/Vp ≥ 0.8	Vt/Vp ≥ 0.8	Vt/Vp ≥ 0.8					
	Level of Service		D	D	D	D	-	-	-	-	-
Truck	Truck Lane Width	D	≤ 3.3 m	≤ 3.3 m	≤ 3.3 m	≤ 3.3 m					
	Travel Lanes per Direction		> 1	1	1	1					
	Level of Service		C	D	D	D	-	-	-	-	-

Appendix I

Turning Templates



1098 OGILVIE ROAD

EMERGENCY VEHICLES
TURNING MOVEMENTS

PARSONS



Contract No. 476751 Dwg. No. 001

Sheet 1 of

Asset No.

Asset Group

Des. MPM Chk'd. MJM

Dwn. MPM Chk'd. MJM

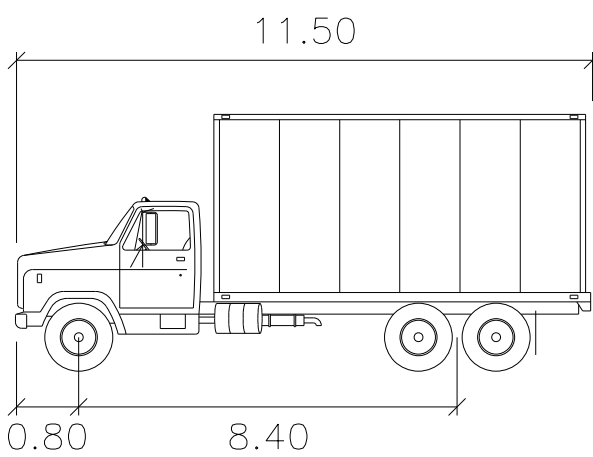
Utility Circ. No. Index No.

Const. Inspector

Scale: HORIZONTAL
0m 2.5 5 10

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

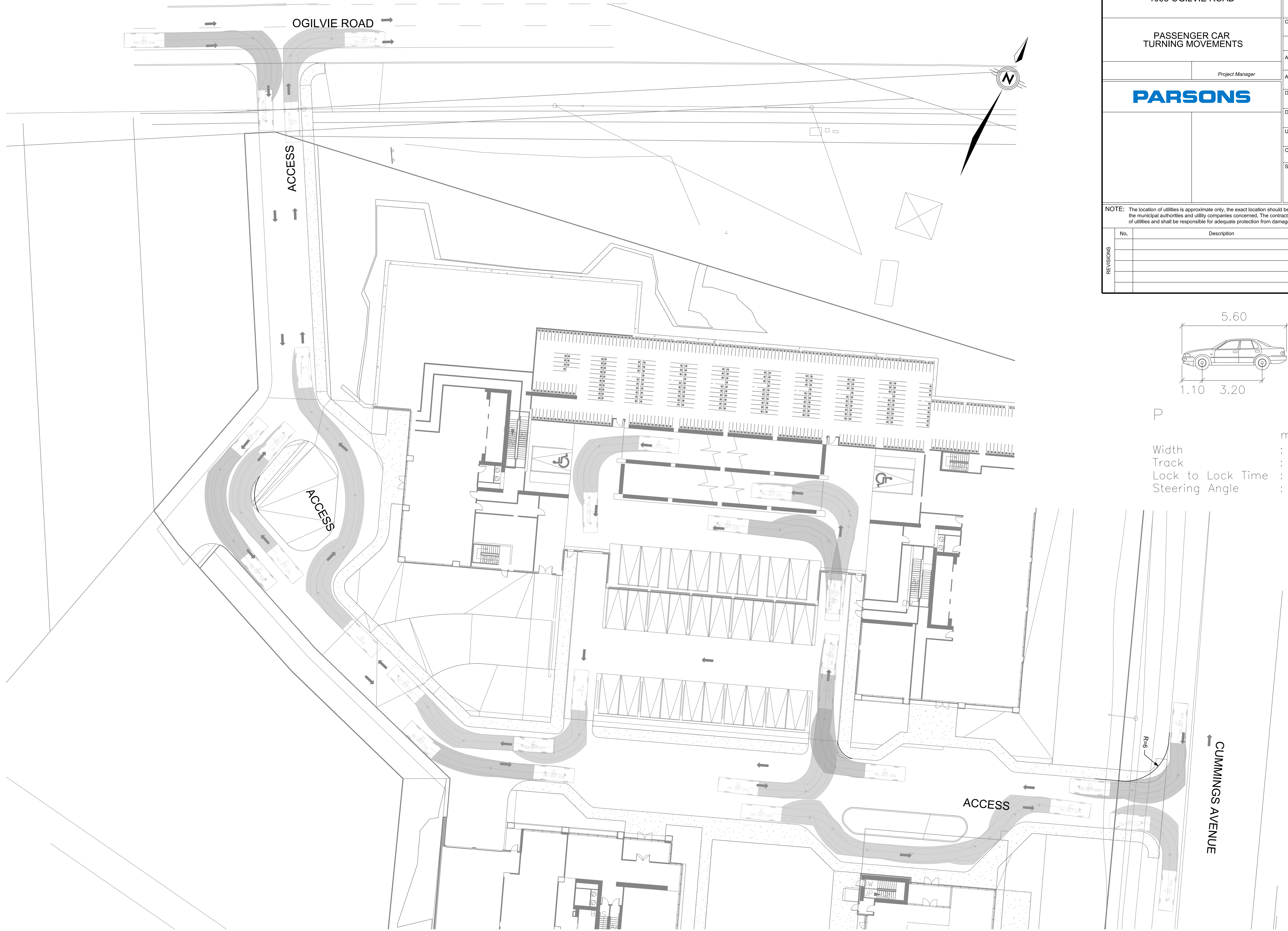
No.	Description	By	Date (dd/mm/yy)



HSU

Width : 2.60
Track : 2.60
Lock to Lock Time : 6.0
Steering Angle : 40.0

meters



1098 OGILVIE ROAD

PASSENGER CAR
TURNING MOVEMENTS

Contract No.
476751

Dwg. No.
002

Sheet 2 of

Asset No.

Asset Group

Des. MPM

Chk'd. MJM

Dwn. MPM

Chk'd. MJM

Utility Circ. No.

Index No.

Const. Inspector

Scale: HORIZONTAL
0m 2.5 5 10

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

No.	Description	By	Date (dd/mm/yy)

Ottawa

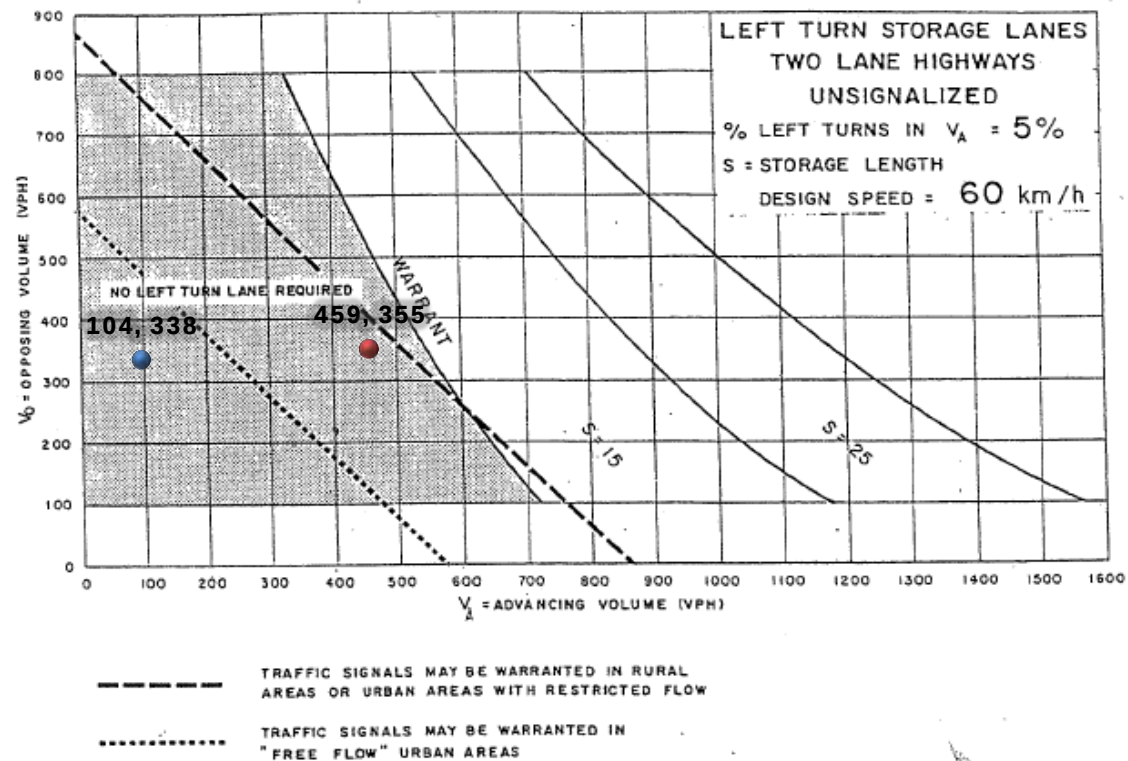
PARSONS

Appendix J

Auxiliary Turn Lane Warrants

	Design Speed	Advancing Traffic Volume (V_A)		Opposing Traffic Volume (V_O)		Left Turn Traffic Volume (V_L)		% of Left Turning Traffic		Warrant Left Turn Lane
		AM	PM	AM	PM	AM	PM	AM	PM	
Existing										
Cummings/Site	50	104	459	338	355	3	6	3%	1%	No

Peak	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
	Warrant?											
AM	3	101			317	21	92		20			
PM	6	453			323	32	55		12			



Appendix K

TDM Checklist

TDM Measures Checklist:

Residential Developments (multi-family, condominium or subdivision)

Legend

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

TDM measures: <i>Residential developments</i>		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	☐ NO
2. WALKING AND CYCLING		
2.1 Information on walking/cycling routes & destinations		
BASIC	2.1.1 Display local area maps with walking/cycling access routes and key destinations at major entrances (<i>multi-family, condominium</i>)	☒ we will put some information on our web site / portal
2.2 Bicycle skills training		
BETTER	2.2.1 Offer on-site cycling courses for residents, or subsidize off-site courses	☐ NO

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 (<i>multi-family, condominium</i>)	☒ on our website / portal
BETTER	3.1.2 Provide real-time arrival information display at entrances (<i>multi-family, condominium</i>)	☐ No
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	☐ if necessary
BETTER	3.2.2 Offer at least one year of free monthly transit passes on residence purchase/move-in	☐ No
3.3 Enhanced public transit service		
BETTER ★	3.3.1 Contract with OC Transpo to provide early transit services until regular services are warranted by occupancy levels (<i>subdivision</i>)	☐ if necessary
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)	☐ No
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>)	☐ No
BETTER	4.1.2 Provide residents with bikeshare memberships, either free or subsidized (<i>multi-family</i>)	☐ No
4.2 Carshare vehicles & memberships		
BETTER	4.2.1 Contract with provider to install on-site carshare vehicles and promote their use by residents	☒ we will try to have a contract with a carshare company
BETTER	4.2.2 Provide residents with carshare memberships, either free or subsidized	☐ No
5. PARKING		
5.1 Priced parking		
BASIC ★	5.1.1 Unbundle parking cost from purchase price (<i>condominium</i>)	☐ No
BASIC ★	5.1.2 Unbundle parking cost from monthly rent (<i>multi-family</i>)	☒ we will separate parking from apartment price

TDM measures: <i>Residential developments</i>			Check if proposed & add descriptions
6. TDM MARKETING & COMMUNICATIONS			
6.1 Multimodal travel information			
BASIC	★	6.1.1 Provide a multimodal travel option information package to new residents	☒ on our website / portal
6.2 Personalized trip planning			
BETTER	★	6.2.1 Offer personalized trip planning to new residents	☐ if necessary

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

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

TDM-supportive design & infrastructure measures: <i>Residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
1. WALKING & CYCLING: ROUTES		
1.1 Building location & access points		
BASIC	1.1.1 Locate building close to the street, and do not locate parking areas between the street and building entrances	☒
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 (<i>see Official Plan policy 4.3.3</i>)	☒
REQUIRED	1.2.2 Provide safe, direct and attractive pedestrian access from public sidewalks to building entrances through such measures as: reducing distances between public sidewalks and major building entrances; providing walkways from public streets to major building entrances; within a site, providing walkways along the front of adjoining buildings, between adjacent buildings, and connecting areas where people may congregate, such as courtyards and transit stops; and providing weather protection through canopies, colonnades, and other design elements wherever possible (<i>see Official Plan policy 4.3.12</i>)	☒

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

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

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

Appendix L

MMLOS Intersection Analysis

Multi-Modal Level of Service - Intersections Form

Consultant

Scenario

Comments

Parsons

1098 Ogilvie, Lux Place

Project

Date

476751

5-Jun-19

Unlocked Rows for Replicating

INTERSECTIONS		Ogilvie/Cummings				Cummings/Cyrville				Intersection C			
Crossing Side		NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
Pedestrian	Lanes	3	4	6	5	3	3	3	3				
	Median	No Median - 2.4 m	Median > 2.4 m	Median > 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m				
	Conflicting Left Turns	Permissive	Protected/ Permissive	Protected/ Permissive	Permissive	Permissive	Permissive	Permissive	Permissive				
	Conflicting Right Turns	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control				
	Right Turns on Red (RTor) ?	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed				
	Ped Signal Leading Interval?	No	No	No	No	Yes	Yes	No	No				
	Right Turn Channel	No Channel	Conv'tl without Receiving Lane	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel				
	Corner Radius	10-15m	15-25m	10-15m	10-15m	10-15m	15-25m	10-15m	10-15m				
	Crosswalk Type	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings				
	PETSI Score	70	57	25	37	72	70	70	70				
	Ped. Exposure to Traffic LoS	C	D	F	E	C	C	C	C	-	-	-	-
	Cycle Length	61	61	36	48	28	28	42	42				
Effective Walk Time	19	19	30	30	22	22	28	28					
Average Pedestrian Delay	14	14	1	3	1	1	2	2					
Pedestrian Delay LoS	B	B	A	A	A	A	A	A	-	-	-	-	
Level of Service	C	D	F	E	C	C	C	C	-	-	-	-	
	F				C				-				
Approach From		NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
Bicycle	Bicycle Lane Arrangement on Approach	Mixed Traffic	Mixed Traffic	Pocket Bike Lane	Pocket Bike Lane	Mixed Traffic	Mixed Traffic	Pocket Bike Lane	Pocket Bike Lane				
	Right Turn Lane Configuration	≤ 50 m	≤ 50 m	≤ 50 m Introduced right turn lane	≤ 50 m Introduced right turn lane	≤ 50 m	≤ 50 m	≤ 50 m Introduced right turn lane	≤ 50 m Introduced right turn lane				
	Right Turning Speed	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h				
	Cyclist relative to RT motorists	D	D	B	B	D	D	B	B	-	-	-	-
	Separated or Mixed Traffic	Mixed Traffic	Mixed Traffic	Separated	Separated	Mixed Traffic	Mixed Traffic	Separated	Separated	-	-	-	-
	Left Turn Approach	No lane crossed	No lane crossed	≥ 2 lanes crossed	≥ 2 lanes crossed	No lane crossed	No lane crossed	1 lane crossed	1 lane crossed				
	Operating Speed	> 40 to ≤ 50 km/h	> 40 to ≤ 50 km/h	> 50 to < 60 km/h	> 50 to < 60 km/h	> 40 to ≤ 50 km/h	> 40 to ≤ 50 km/h	> 40 to ≤ 50 km/h	> 40 to ≤ 50 km/h				
	Left Turning Cyclist	B	B	F	F	B	B	C	C				
Level of Service	D	D	F	F	D	D	C	C	-	-	-	-	
	F				D				-				
Transit	Average Signal Delay	≤ 30 sec	≤ 30 sec	> 40 sec	≤ 40 sec	≤ 20 sec	≤ 10 sec	≤ 30 sec	≤ 20 sec				
	Level of Service	D	D	F	E	C	B	D	C	-	-	-	-
		F				D				-			
Truck	Effective Corner Radius	10 - 15 m	> 15 m	10 - 15 m	10 - 15 m	10 - 15 m	> 15 m	10 - 15 m	10 - 15 m				
	Number of Receiving Lanes on Departure from Intersection	1	1	≥ 2	≥ 2	1	1	1	1				
	Level of Service	E	C	B	B	E	C	E	E	-	-	-	-
		E				E				-			
Auto	Volume to Capacity Ratio												
	Level of Service	-				-				-			

Appendix M

Future Background Traffic SYNCHRO Analysis

Background 2020 AM

1: St. Laurent & Coventry/Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	198	58	625	606	24	141	786	507	33	799	132
Future Volume (vph)	66	198	58	625	606	24	141	786	507	33	799	132
Satd. Flow (prot)	3288	3390	1517	3288	3390	1517	1695	4491	0	1695	4871	1517
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3269	3390	1384	3163	3390	1464	1656	4491	0	1685	4871	1395
Satd. Flow (RTOR)			195			140		117				196
Lane Group Flow (vph)	66	198	58	625	606	24	141	1293	0	33	799	132
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	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		5.0	10.0	10.0
Minimum Split (s)	11.9	37.5	37.5	11.9	37.5	37.5	11.4	35.4		11.4	35.4	35.4
Total Split (s)	15.0	37.0	37.0	36.0	58.0	58.0	22.0	35.0		22.0	35.0	35.0
Total Split (%)	11.5%	28.5%	28.5%	27.7%	44.6%	44.6%	16.9%	26.9%		16.9%	26.9%	26.9%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	3.2	2.8	2.8	3.2	2.8	2.8	2.7	2.7		2.7	2.7	2.7
Lost Time Adjust (s)	-2.9	-2.5	-2.5	-2.9	-2.5	-2.5	-2.4	-2.4		-2.4	-2.4	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	21.9	25.1	25.1	30.4	36.2	36.2	16.5	53.1		10.4	42.0	42.0
Actuated g/C Ratio	0.17	0.19	0.19	0.23	0.28	0.28	0.13	0.41		0.08	0.32	0.32
v/c Ratio	0.12	0.30	0.14	0.81	0.64	0.05	0.66	0.68		0.24	0.51	0.23
Control Delay	43.6	44.3	0.7	53.3	27.3	0.2	87.1	29.1		59.7	39.7	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	43.6	44.3	0.7	53.3	27.3	0.2	87.1	29.1		59.7	39.7	1.7
LOS	D	D	A	D	C	A	F	C		E	D	A
Approach Delay		36.3			39.7			34.8			35.2	
Approach LOS		D			D			C			D	
Queue Length 50th (m)	6.8	21.2	0.0	82.7	71.3	0.0	35.4	109.4		8.1	68.7	0.0
Queue Length 95th (m)	13.6	31.8	0.0	104.2	83.1	m0.0	59.9	#145.3		18.4	83.7	2.4
Internal Link Dist (m)		132.3			135.6			202.6			118.5	
Turn Bay Length (m)				160.0			60.0			60.0		45.0
Base Capacity (vph)	564	860	496	809	1408	689	234	1903		234	1574	583
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.12	0.23	0.12	0.77	0.43	0.03	0.60	0.68		0.14	0.51	0.23

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

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

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 36.6

Intersection LOS: D

Intersection Capacity Utilization 86.6%

ICU Level of Service E

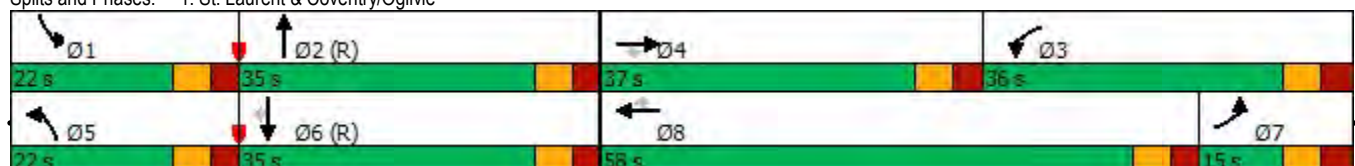
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

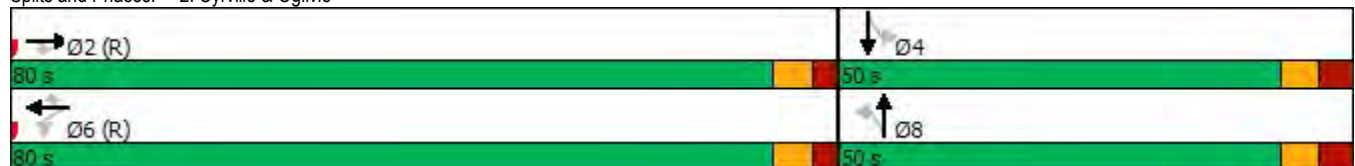
Splits and Phases: 1: St. Laurent & Coventry/Ogilvie



Background 2020 AM
2: Cyrville & Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗	↖	↑↑↑	↗	↖	↖		↖	↖	
Traffic Volume (vph)	0	543	227	25	1004	166	165	239	12	47	155	45
Future Volume (vph)	0	543	227	25	1004	166	165	239	12	47	155	45
Satd. Flow (prot)	0	3390	1517	1695	3390	1517	1695	1770	0	1695	1716	0
Flt Permitted				0.413			0.543			0.477		
Satd. Flow (perm)	0	3390	1422	727	3390	1381	964	1770	0	849	1716	0
Satd. Flow (RTOR)			227			159		2			12	
Lane Group Flow (vph)	0	543	227	25	1004	166	165	251	0	47	200	0
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases			2	6		6	8			4		
Detector Phase		2	2	6	6	6	8	8		4	4	
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)		32.2	32.2	32.2	32.2	32.2	47.1	47.1		47.1	47.1	
Total Split (s)		80.0	80.0	80.0	80.0	80.0	50.0	50.0		50.0	50.0	
Total Split (%)		61.5%	61.5%	61.5%	61.5%	61.5%	38.5%	38.5%		38.5%	38.5%	
Yellow Time (s)		3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)		2.5	2.5	2.5	2.5	2.5	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)		-2.2	-2.2	-2.2	-2.2	-2.2	-3.1	-3.1		-3.1	-3.1	
Total Lost Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max	C-Max	C-Max	C-Max	C-Max	Max	Max		Max	Max	
Act Effct Green (s)		76.0	76.0	76.0	76.0	76.0	46.0	46.0		46.0	46.0	
Actuated g/C Ratio		0.58	0.58	0.58	0.58	0.58	0.35	0.35		0.35	0.35	
v/c Ratio		0.27	0.25	0.06	0.51	0.19	0.48	0.40		0.16	0.33	
Control Delay		7.7	1.7	2.6	5.9	1.0	38.6	33.7		30.6	30.6	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		7.7	1.7	2.6	5.9	1.0	38.6	33.7		30.6	30.6	
LOS		A	A	A	A	A	D	C		C	C	
Approach Delay		5.9			5.1			35.7			30.6	
Approach LOS		A			A			D			C	
Queue Length 50th (m)		14.6	1.8	0.7	47.8	2.3	32.8	47.7		8.2	34.9	
Queue Length 95th (m)		11.6	0.0	m1.1	50.5	m3.2	55.0	71.2		17.6	54.9	
Internal Link Dist (m)		135.6			311.6			406.7			100.8	
Turn Bay Length (m)				50.0		50.0	50.0					
Base Capacity (vph)		1981	925	425	1981	873	341	627		300	614	
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	0.25	0.06	0.51	0.19	0.48	0.40		0.16	0.33	
Intersection Summary												
Cycle Length: 130												
Actuated Cycle Length: 130												
Offset: 10 (8%), Referenced to phase 2:EBT and 6:WBTL, Start of Green												
Natural Cycle: 80												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.51												
Intersection Signal Delay: 12.6						Intersection LOS: B						
Intersection Capacity Utilization 82.3%						ICU Level of Service E						
Analysis Period (min) 15												
m Volume for 95th percentile queue is metered by upstream signal.												

Splits and Phases: 2: Cyrville & Ogilvie



Background 2020 AM
3: Cummings & Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	567	11	163	1098	170	18	11	63	138	118	112
Future Volume (vph)	48	567	11	163	1098	170	18	11	63	138	118	112
Satd. Flow (prot)	1695	3375	0	1695	3292	0	1695	1784	1517	1695	1639	0
Flt Permitted	0.114			0.368			0.615			0.651		
Satd. Flow (perm)	203	3375	0	645	3292	0	1092	1784	1397	1090	1639	0
Satd. Flow (RTOR)		2			20				98		40	
Lane Group Flow (vph)	48	578	0	163	1268	0	18	11	63	138	230	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	8	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	9.7	24.7		9.7	24.7		36.6	36.6	36.6	9.3	36.6	
Total Split (s)	11.0	71.0		11.0	71.0		37.0	37.0	37.0	11.0	48.0	
Total Split (%)	8.5%	54.6%		8.5%	54.6%		28.5%	28.5%	28.5%	8.5%	36.9%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.0	2.0		1.0	2.0		3.3	3.3	3.3	1.0	3.3	
Lost Time Adjust (s)	0.7	-1.7		0.7	-1.7		-2.6	-2.6	-2.6	0.3	-2.6	
Total Lost Time (s)	5.4	4.0		5.4	4.0		4.0	4.0	4.0	4.6	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	None	Max	
Act Effct Green (s)	71.0	67.0		72.3	69.2		33.0	33.0	33.0	43.4	44.0	
Actuated g/C Ratio	0.55	0.52		0.56	0.53		0.25	0.25	0.25	0.33	0.34	
v/c Ratio	0.28	0.33		0.40	0.72		0.06	0.02	0.15	0.35	0.40	
Control Delay	25.4	22.1		13.9	19.4		37.8	36.7	2.9	34.6	29.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	25.4	22.1		13.9	19.4		37.8	36.7	2.9	34.6	29.2	
LOS	C	C		B	B		D	D	A	C	C	
Approach Delay		22.4			18.8			13.8			31.2	
Approach LOS		C			B			B			C	
Queue Length 50th (m)	5.8	40.5		16.8	69.2		3.5	2.1	0.0	25.6	36.7	
Queue Length 95th (m)	16.9	54.4		m19.4	m77.6		10.1	7.1	4.1	42.1	59.4	
Internal Link Dist (m)		311.6			386.5			299.5			235.7	
Turn Bay Length (m)	75.0			90.0			40.0		15.0	150.0		
Base Capacity (vph)	175	1740		403	1761		277	452	427	393	581	
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	0.33		0.40	0.72		0.06	0.02	0.15	0.35	0.40	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 110 (85%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 21.3

Intersection LOS: C

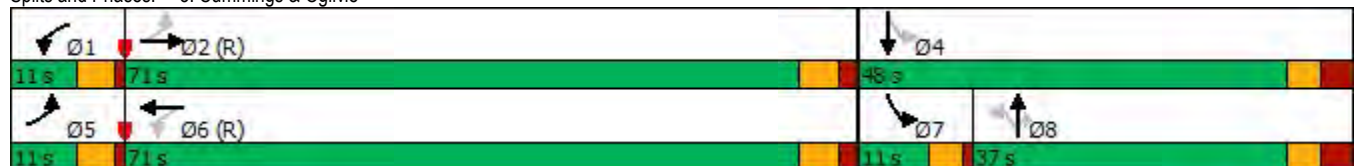
Intersection Capacity Utilization 78.4%

ICU Level of Service D

Analysis Period (min) 15

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

Splits and Phases: 3: Cummings & Ogilvie



Background 2020 AM
4: Aviation Parkway & Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	301	514	49	153	869	121	351	573	415	133	336	238
Future Volume (vph)	301	514	49	153	869	121	351	573	415	133	336	238
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	3158	0	1695	3160	0
Flt Permitted	0.110			0.375			0.950			0.950		
Satd. Flow (perm)	196	3390	1474	665	3390	1492	1693	3158	0	1694	3160	0
Satd. Flow (RTOR)			164			164		147			123	
Lane Group Flow (vph)	301	514	49	153	869	121	351	988	0	133	574	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		10.9	30.1	
Total Split (s)	20.0	47.0	47.0	20.0	47.0	47.0	33.0	45.0		18.0	30.0	
Total Split (%)	15.4%	36.2%	36.2%	15.4%	36.2%	36.2%	25.4%	34.6%		13.8%	23.1%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		2.2	2.4	
Lost Time Adjust (s)	0.7	-2.1	-2.1	0.7	-2.1	-2.1	-1.9	-2.1		-1.9	-2.1	
Total Lost Time (s)	5.4	4.0	4.0	5.4	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max		None	Max	
Act Effct Green (s)	59.1	46.2	46.2	53.0	43.0	43.0	28.8	41.4		13.6	26.2	
Actuated g/C Ratio	0.45	0.36	0.36	0.41	0.33	0.33	0.22	0.32		0.10	0.20	
v/c Ratio	1.17	0.43	0.08	0.42	0.78	0.20	0.94	0.89		0.75	0.78	
Control Delay	147.4	28.2	0.9	24.0	44.8	2.3	82.5	47.3		82.1	46.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	147.4	28.2	0.9	24.0	44.8	2.3	82.5	47.3		82.1	46.8	
LOS	F	C	A	C	D	A	F	D		F	D	
Approach Delay		68.1			37.5			56.5			53.5	
Approach LOS		E			D			E			D	
Queue Length 50th (m)	~75.0	44.4	0.1	22.1	105.2	0.0	88.7	111.4		33.5	59.0	
Queue Length 95th (m)	#135.2	59.2	0.8	35.8	129.9	5.3	#145.3	#149.6		#63.2	80.2	
Internal Link Dist (m)		386.5			205.1			147.2			200.4	
Turn Bay Length (m)	75.0		60.0	55.0		70.0	110.0			110.0		
Base Capacity (vph)	257	1205	629	403	1121	603	378	1105		182	735	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	1.17	0.43	0.08	0.38	0.78	0.20	0.93	0.89		0.73	0.78	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 105 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.17

Intersection Signal Delay: 53.1

Intersection LOS: D

Intersection Capacity Utilization 98.0%

ICU Level of Service F

Analysis Period (min) 15

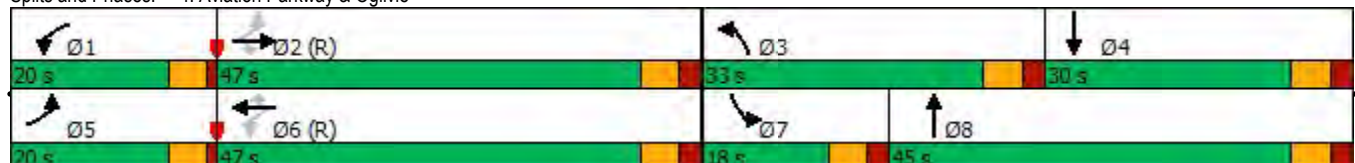
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

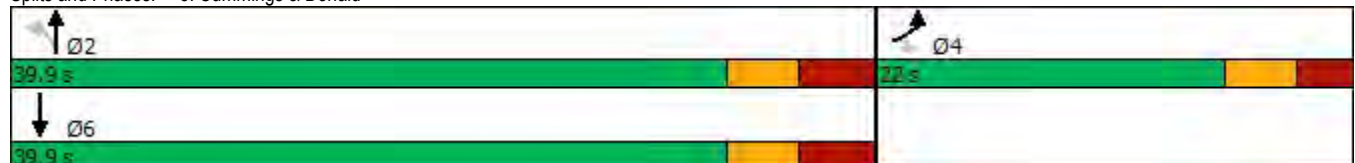
Splits and Phases: 4: Aviation Parkway & Ogilvie



Background 2020 AM
5: Cummings & Donald

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	42	148	215	126	196	104
Future Volume (vph)	42	148	215	126	196	104
Satd. Flow (prot)	1695	1517	1695	1784	1679	0
Flt Permitted	0.950		0.577			
Satd. Flow (perm)	1662	1447	1019	1784	1679	0
Satd. Flow (RTOR)		148			73	
Lane Group Flow (vph)	42	148	215	126	300	0
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	22.0	22.0	24.9	24.9	32.9	
Total Split (s)	22.0	22.0	39.9	39.9	39.9	
Total Split (%)	35.5%	35.5%	64.5%	64.5%	64.5%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7	3.6	3.6	3.6	
Lost Time Adjust (s)	-2.0	-2.0	-2.9	-2.9	-2.9	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	
Act Effct Green (s)	13.1	13.1	39.9	39.9	39.9	
Actuated g/C Ratio	0.23	0.23	0.70	0.70	0.70	
v/c Ratio	0.11	0.33	0.30	0.10	0.25	
Control Delay	17.8	6.0	6.7	4.9	4.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	17.8	6.0	6.7	4.9	4.4	
LOS	B	A	A	A	A	
Approach Delay	8.6			6.0	4.4	
Approach LOS	A			A	A	
Queue Length 50th (m)	3.5	0.0	8.1	4.0	7.7	
Queue Length 95th (m)	9.5	10.8	23.5	11.7	21.7	
Internal Link Dist (m)	138.1			235.7	73.1	
Turn Bay Length (m)		50.0	60.0			
Base Capacity (vph)	536	559	714	1251	1199	
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	0.26	0.30	0.10	0.25	
Intersection Summary						
Cycle Length: 61.9						
Actuated Cycle Length: 56.9						
Natural Cycle: 55						
Control Type: Actuated-Uncoordinated						
Maximum v/c Ratio: 0.33						
Intersection Signal Delay: 6.0				Intersection LOS: A		
Intersection Capacity Utilization 54.3%				ICU Level of Service A		
Analysis Period (min) 15						

Splits and Phases: 5: Cummings & Donald



Background 2020 AM
6: Cyrville & Labelle/Cummings

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	26	24	132	111	21	160	437	136	30	172	96
Future Volume (vph)	9	26	24	132	111	21	160	437	136	30	172	96
Satd. Flow (prot)	1695	1611	0	1695	1733	0	1695	1705	0	1695	1671	0
Flt Permitted	0.669			0.724			0.588			0.363		
Satd. Flow (perm)	1184	1611	0	1249	1733	0	1045	1705	0	644	1671	0
Satd. Flow (RTOR)		24			13			30			54	
Lane Group Flow (vph)	9	50	0	132	132	0	160	573	0	30	268	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		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	
Minimum Split (s)	27.5	27.5		27.5	27.5		34.3	34.3		34.3	34.3	
Total Split (s)	28.0	28.0		28.0	28.0		42.0	42.0		42.0	42.0	
Total Split (%)	37.3%	37.3%		37.3%	37.3%		56.0%	56.0%		56.0%	56.0%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	2.2	2.2		2.2	2.2		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.5	-1.5		-1.5	-1.5		-2.3	-2.3		-2.3	-2.3	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lag	Lag		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)	14.8	14.8		14.8	14.8		41.1	41.1		41.1	41.1	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.63	0.63		0.63	0.63	
v/c Ratio	0.03	0.13		0.46	0.33		0.24	0.53		0.07	0.25	
Control Delay	18.1	12.5		26.2	19.9		8.0	9.8		7.4	6.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	18.1	12.5		26.2	19.9		8.0	9.8		7.4	6.0	
LOS	B	B		C	B		A	A		A	A	
Approach Delay		13.4			23.0			9.4			6.1	
Approach LOS		B			C			A			A	
Queue Length 50th (m)	0.8	2.2		12.5	10.8		5.9	25.2		1.0	7.7	
Queue Length 95th (m)	3.9	9.5		27.8	24.5		24.1	84.6		6.2	29.6	
Internal Link Dist (m)		133.5			299.5			94.0			406.7	
Turn Bay Length (m)	30.0			40.0						55.0		
Base Capacity (vph)	443	618		467	656		662	1091		408	1079	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.02	0.08		0.28	0.20		0.24	0.53		0.07	0.25	
Intersection Summary												
Cycle Length: 75												
Actuated Cycle Length: 64.9												
Natural Cycle: 70												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.53												
Intersection Signal Delay: 11.5						Intersection LOS: B						
Intersection Capacity Utilization 66.7%						ICU Level of Service C						
Analysis Period (min) 15												

Splits and Phases: 6: Cyrville & Labelle/Cummings



Background 2020 AM
6: Cyrville & Labelle/Cummings

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	7%	7%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Background 2020 AM
7: St. Laurent & Lemieux

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	589	153	1186	228	6	1397
Future Volume (vph)	589	153	1186	228	6	1397
Satd. Flow (prot)	3288	1517	4871	1517	1695	4871
Flt Permitted	0.950				0.205	
Satd. Flow (perm)	3288	1450	4871	1477	365	4871
Satd. Flow (RTOR)		72		228		
Lane Group Flow (vph)	589	153	1186	228	6	1397
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	37.5	37.5	24.0	24.0
Total Split (s)	50.0	50.0	80.0	80.0	80.0	80.0
Total Split (%)	38.5%	38.5%	61.5%	61.5%	61.5%	61.5%
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	-2.1	-2.1	-1.5	-1.5	-1.5	-1.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	31.4	31.4	90.6	90.6	90.6	90.6
Actuated g/C Ratio	0.24	0.24	0.70	0.70	0.70	0.70
v/c Ratio	0.74	0.38	0.35	0.21	0.02	0.41
Control Delay	51.3	23.1	8.7	1.5	7.0	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.3	23.1	8.7	1.5	7.0	10.5
LOS	D	C	A	A	A	B
Approach Delay	45.4		7.5			10.5
Approach LOS	D		A			B
Queue Length 50th (m)	72.0	16.7	41.0	0.0	0.5	61.3
Queue Length 95th (m)	85.8	34.0	57.1	8.6	m0.9	68.4
Internal Link Dist (m)	109.2		139.3			202.6
Turn Bay Length (m)		25.0		60.0	125.0	
Base Capacity (vph)	1163	559	3394	1098	254	3394
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.27	0.35	0.21	0.02	0.41

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 124 (95%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 16.6

Intersection LOS: B

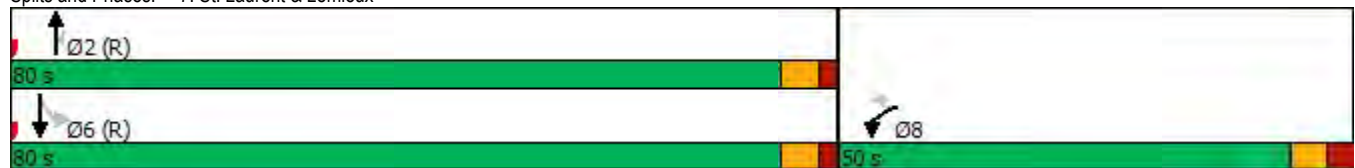
Intersection Capacity Utilization 57.0%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 7: St. Laurent & Lemieux



Background 2020 AM
11: 417/Lemieux & Labelle

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	0	0	0	0	125	133	627	44	0	0	178
Future Vol, veh/h	30	0	0	0	0	125	133	627	44	0	0	178
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	-	-	Free	-	-	Free
Storage Length	0	-	-	-	-	0	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
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	30	0	0	0	0	125	133	627	44	0	0	178

Major/Minor	Minor2	Minor1				Major1		
Conflicting Flow All	580	-	-	-	-	314	0	0
Stage 1	0	-	-	-	-	-	-	-
Stage 2	580	-	-	-	-	-	-	-
Critical Hdwy	7.54	-	-	-	-	6.94	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	-	-	-	-	3.32	2.22	-
Pot Cap-1 Maneuver	398	0	0	0	0	682	-	0
Stage 1	-	0	0	0	0	-	-	0
Stage 2	467	0	0	0	0	-	-	0
Platoon blocked, %								-
Mov Cap-1 Maneuver	325	-	-	-	-	682	-	-
Mov Cap-2 Maneuver	325	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	381	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	17.2	11.5	
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1
Capacity (veh/h)	-	-	325	682
HCM Lane V/C Ratio	-	-	0.092	0.183
HCM Control Delay (s)	-	-	17.2	11.5
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	0.3	0.7

Background 2020 PM

1: St. Laurent & Coventry/Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	302	586	205	466	374	30	182	863	609	71	773	192
Future Volume (vph)	302	586	205	466	374	30	182	863	609	71	773	192
Satd. Flow (prot)	3288	3390	1517	3288	3390	1517	1695	4479	0	1695	4871	1517
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3263	3390	1392	3221	3390	1459	1658	4479	0	1687	4871	1403
Satd. Flow (RTOR)			210			210		159				211
Lane Group Flow (vph)	302	586	205	466	374	30	182	1472	0	71	773	192
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	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		5.0	10.0	10.0
Minimum Split (s)	11.9	37.5	37.5	11.9	37.5	37.5	11.4	35.4		11.4	35.4	35.4
Total Split (s)	24.0	37.0	37.0	24.0	37.0	37.0	24.0	44.0		15.0	35.0	35.0
Total Split (%)	20.0%	30.8%	30.8%	20.0%	30.8%	30.8%	20.0%	36.7%		12.5%	29.2%	29.2%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	3.2	2.8	2.8	3.2	2.8	2.8	2.7	2.7		2.7	2.7	2.7
Lost Time Adjust (s)	-2.9	-2.5	-2.5	-2.9	-2.5	-2.5	-2.4	-2.4		-2.4	-2.4	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	23.7	29.8	29.8	20.7	26.9	26.9	18.3	45.4		10.6	35.1	35.1
Actuated g/C Ratio	0.20	0.25	0.25	0.17	0.22	0.22	0.15	0.38		0.09	0.29	0.29
v/c Ratio	0.47	0.70	0.41	0.82	0.49	0.06	0.71	0.92dr		0.48	0.54	0.34
Control Delay	46.3	45.4	6.8	55.5	43.0	0.2	73.2	29.2		63.1	38.4	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	46.3	45.4	6.8	55.5	43.0	0.2	73.2	29.2		63.1	38.4	5.3
LOS	D	D	A	E	D	A	E	C		E	D	A
Approach Delay		38.4			48.2			34.0			33.9	
Approach LOS		D			D			C			C	
Queue Length 50th (m)	34.0	63.7	0.0	46.1	48.6	0.0	33.1	112.5		16.1	58.9	0.0
Queue Length 95th (m)	48.3	82.8	16.7	#79.1	64.1	m0.1	61.9	#140.9		31.1	72.9	13.7
Internal Link Dist (m)		132.3			135.6			202.6			118.5	
Turn Bay Length (m)				160.0			60.0			60.0		45.0
Base Capacity (vph)	648	932	535	567	932	553	282	1795		155	1426	559
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.47	0.63	0.38	0.82	0.40	0.05	0.65	0.82		0.46	0.54	0.34

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 37.7

Intersection LOS: D

Intersection Capacity Utilization 88.1%

ICU Level of Service E

Analysis Period (min) 15

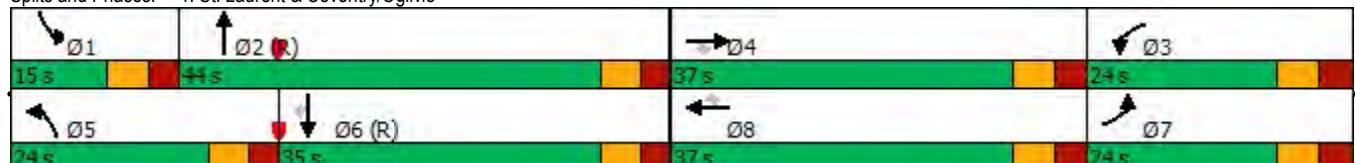
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

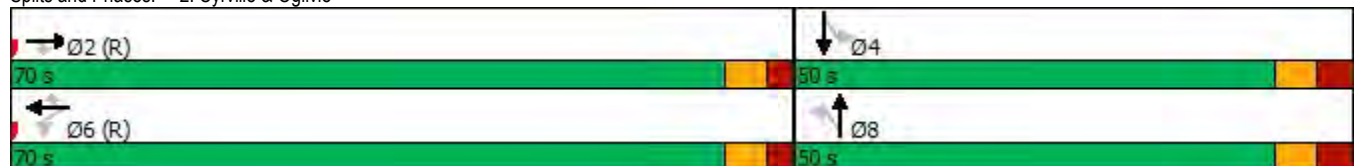
Splits and Phases: 1: St. Laurent & Coventry/Ogilvie



Background 2020 PM
2: Cyrville & Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗	↖	↑↑	↗	↖	↗		↖	↗	
Traffic Volume (vph)	0	1004	257	40	654	124	117	214	32	134	217	80
Future Volume (vph)	0	1004	257	40	654	124	117	214	32	134	217	80
Satd. Flow (prot)	0	3390	1517	1695	3390	1517	1695	1745	0	1695	1704	0
Flt Permitted				0.206			0.445			0.505		
Satd. Flow (perm)	0	3390	1425	366	3390	1388	791	1745	0	899	1704	0
Satd. Flow (RTOR)			257			124		7			18	
Lane Group Flow (vph)	0	1004	257	40	654	124	117	246	0	134	297	0
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases			2	6		6	8			4		
Detector Phase		2	2	6	6	6	8	8		4	4	
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)		32.2	32.2	32.2	32.2	32.2	47.1	47.1		47.1	47.1	
Total Split (s)		70.0	70.0	70.0	70.0	70.0	50.0	50.0		50.0	50.0	
Total Split (%)		58.3%	58.3%	58.3%	58.3%	58.3%	41.7%	41.7%		41.7%	41.7%	
Yellow Time (s)		3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)		2.5	2.5	2.5	2.5	2.5	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)		-2.2	-2.2	-2.2	-2.2	-2.2	-3.1	-3.1		-3.1	-3.1	
Total Lost Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max	C-Max	C-Max	C-Max	C-Max	Max	Max		Max	Max	
Act Effct Green (s)		66.0	66.0	66.0	66.0	66.0	46.0	46.0		46.0	46.0	
Actuated g/C Ratio		0.55	0.55	0.55	0.55	0.55	0.38	0.38		0.38	0.38	
v/c Ratio		0.54	0.29	0.20	0.35	0.15	0.39	0.37		0.39	0.45	
Control Delay		9.9	1.6	23.7	22.6	9.2	31.5	27.7		31.0	28.4	
Queue Delay		0.4	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		10.3	1.6	23.7	22.6	9.2	31.5	27.7		31.0	28.4	
LOS		B	A	C	C	A	C	C		C	C	
Approach Delay		8.5			20.6			28.9			29.2	
Approach LOS		A			C			C			C	
Queue Length 50th (m)		55.4	3.7	4.9	43.1	5.4	19.7	39.8		22.6	48.2	
Queue Length 95th (m)		63.3	m6.5	m7.5	m59.1	m10.5	36.7	61.0		40.4	73.1	
Internal Link Dist (m)		135.6			311.6			406.7			100.8	
Turn Bay Length (m)				50.0		50.0	50.0					
Base Capacity (vph)		1864	899	201	1864	819	303	673		344	664	
Starvation Cap Reductn		358	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		0.67	0.29	0.20	0.35	0.15	0.39	0.37		0.39	0.45	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 20 (17%), Referenced to phase 2:EBT and 6:WBTL, Start of Green												
Natural Cycle: 80												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.54												
Intersection Signal Delay: 17.7						Intersection LOS: B						
Intersection Capacity Utilization 86.8%						ICU Level of Service E						
Analysis Period (min) 15												
m Volume for 95th percentile queue is metered by upstream signal.												

Splits and Phases: 2: Cyrville & Ogilvie



Background 2020 PM
3: Cummings & Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	1104	23	109	744	209	36	165	216	258	166	84
Future Volume (vph)	110	1104	23	109	744	209	36	165	216	258	166	84
Satd. Flow (prot)	1695	3374	0	1695	3231	0	1695	1784	1517	1695	1685	0
Flt Permitted	0.103			0.101			0.604			0.501		
Satd. Flow (perm)	184	3374	0	180	3231	0	1073	1784	1405	856	1685	0
Satd. Flow (RTOR)		2			33				167		28	
Lane Group Flow (vph)	110	1127	0	109	953	0	36	165	216	258	250	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	8	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	9.7	24.7		9.7	24.7		36.6	36.6	36.6	9.3	36.6	
Total Split (s)	15.0	45.0		15.0	45.0		40.0	40.0	40.0	20.0	60.0	
Total Split (%)	12.5%	37.5%		12.5%	37.5%		33.3%	33.3%	33.3%	16.7%	50.0%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.0	2.0		1.0	2.0		3.3	3.3	3.3	1.0	3.3	
Lost Time Adjust (s)	0.7	-1.7		0.7	-1.7		-2.6	-2.6	-2.6	0.3	-2.6	
Total Lost Time (s)	5.4	4.0		5.4	4.0		4.0	4.0	4.0	4.6	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	None	Max	
Act Effct Green (s)	49.2	42.1		49.2	42.1		37.0	37.0	37.0	55.4	56.0	
Actuated g/C Ratio	0.41	0.35		0.41	0.35		0.31	0.31	0.31	0.46	0.47	
v/c Ratio	0.60	0.95		0.60	0.83		0.11	0.30	0.39	0.52	0.31	
Control Delay	48.1	34.2		47.2	36.5		31.6	33.9	11.1	24.8	18.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	48.1	34.2		47.2	36.5		31.6	33.9	11.1	24.8	18.9	
LOS	D	C		D	D		C	C	B	C	B	
Approach Delay		35.4			37.6			21.9			21.9	
Approach LOS		D			D			C			C	
Queue Length 50th (m)	11.9	102.7		18.7	67.5		6.1	29.9	8.4	37.6	31.6	
Queue Length 95th (m)	30.6	#179.2		37.1	102.3		14.4	48.5	28.2	57.2	49.9	
Internal Link Dist (m)		311.6			386.5			299.5			235.7	
Turn Bay Length (m)	75.0			90.0			40.0		15.0	150.0		
Base Capacity (vph)	197	1185		196	1153		330	550	549	502	801	
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	0.56	0.95		0.56	0.83		0.11	0.30	0.39	0.51	0.31	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 46 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 32.3

Intersection LOS: C

Intersection Capacity Utilization 94.5%

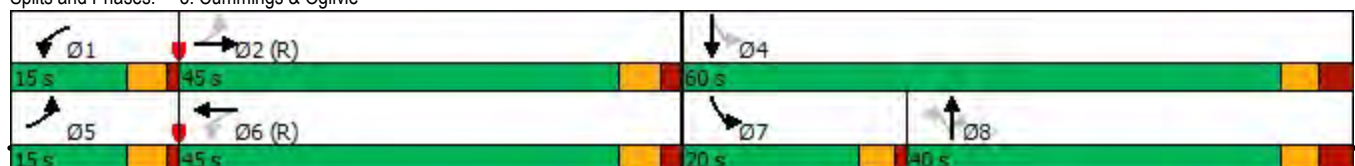
ICU Level of Service F

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: Cummings & Ogilvie



Background 2020 PM
4: Aviation Parkway & Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	183	734	83	136	590	112	124	209	180	112	244	168
Future Volume (vph)	183	734	83	136	590	112	124	209	180	112	244	168
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	3137	0	1695	3164	0
Flt Permitted	0.323			0.272			0.950			0.950		
Satd. Flow (perm)	576	3390	1476	484	3390	1493	1692	3137	0	1694	3164	0
Satd. Flow (RTOR)			125			125		168			131	
Lane Group Flow (vph)	183	734	83	136	590	112	124	389	0	112	412	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		10.9	30.1	
Total Split (s)	20.0	51.0	51.0	20.0	51.0	51.0	19.0	30.0		19.0	30.0	
Total Split (%)	16.7%	42.5%	42.5%	16.7%	42.5%	42.5%	15.8%	25.0%		15.8%	25.0%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		2.2	2.4	
Lost Time Adjust (s)	0.7	-2.1	-2.1	0.7	-2.1	-2.1	-1.9	-2.1		-1.9	-2.1	
Total Lost Time (s)	5.4	4.0	4.0	5.4	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max		None	Max	
Act Effct Green (s)	61.9	52.0	52.0	58.5	50.3	50.3	13.8	27.4		13.6	27.2	
Actuated g/C Ratio	0.52	0.43	0.43	0.49	0.42	0.42	0.12	0.23		0.11	0.23	
v/c Ratio	0.46	0.50	0.12	0.41	0.42	0.16	0.64	0.46		0.59	0.50	
Control Delay	20.4	25.3	3.5	17.7	26.0	3.7	65.7	24.4		63.0	29.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	20.4	25.3	3.5	17.7	26.0	3.7	65.7	24.4		63.0	29.9	
LOS	C	C	A	B	C	A	E	C		E	C	
Approach Delay		22.6			21.7			34.4			37.0	
Approach LOS		C			C			C			D	
Queue Length 50th (m)	21.5	48.2	0.9	15.1	50.5	0.0	28.0	23.4		25.1	30.5	
Queue Length 95th (m)	m27.5	m56.4	m1.9	25.4	69.0	9.0	48.0	38.6		43.7	46.6	
Internal Link Dist (m)		386.5			205.1			147.2			200.4	
Turn Bay Length (m)	75.0		60.0	55.0		70.0	110.0			110.0		
Base Capacity (vph)	445	1470	710	402	1421	698	211	845		211	817	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.41	0.50	0.12	0.34	0.42	0.16	0.59	0.46		0.53	0.50	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 50 (42%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 27.1

Intersection LOS: C

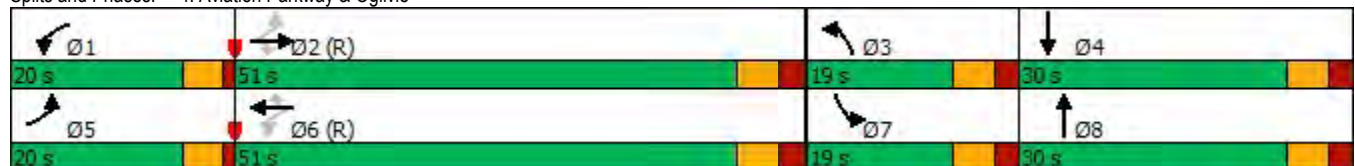
Intersection Capacity Utilization 75.8%

ICU Level of Service D

Analysis Period (min) 15

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

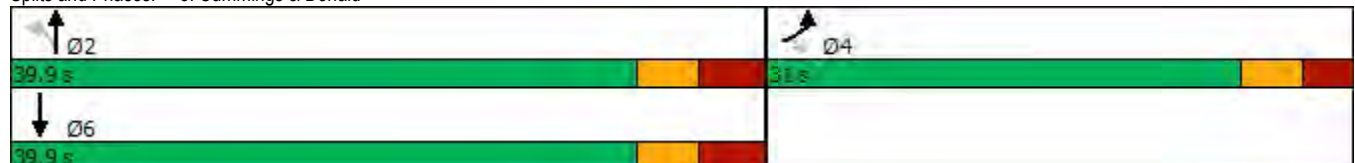
Splits and Phases: 4: Aviation Parkway & Ogilvie



Background 2020 PM
5: Cummings & Donald

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	88	306	244	243	243	90
Future Volume (vph)	88	306	244	243	243	90
Satd. Flow (prot)	1695	1517	1695	1784	1702	0
Flt Permitted	0.950		0.548			
Satd. Flow (perm)	1658	1442	968	1784	1702	0
Satd. Flow (RTOR)		306			38	
Lane Group Flow (vph)	88	306	244	243	333	0
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	22.0	22.0	24.9	24.9	32.9	
Total Split (s)	31.0	31.0	39.9	39.9	39.9	
Total Split (%)	43.7%	43.7%	56.3%	56.3%	56.3%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7	3.6	3.6	3.6	
Lost Time Adjust (s)	-2.0	-2.0	-2.9	-2.9	-2.9	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	
Act Effct Green (s)	13.1	13.1	36.0	36.0	36.0	
Actuated g/C Ratio	0.23	0.23	0.63	0.63	0.63	
v/c Ratio	0.23	0.54	0.40	0.22	0.31	
Control Delay	19.3	6.6	8.2	5.5	5.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	19.3	6.6	8.2	5.5	5.5	
LOS	B	A	A	A	A	
Approach Delay	9.5			6.9	5.5	
Approach LOS	A			A	A	
Queue Length 50th (m)	7.5	0.0	9.7	8.3	10.6	
Queue Length 95th (m)	16.6	15.1	28.4	21.4	27.5	
Internal Link Dist (m)	138.1			235.7	73.1	
Turn Bay Length (m)		50.0	60.0			
Base Capacity (vph)	802	843	609	1123	1085	
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	0.11	0.36	0.40	0.22	0.31	
Intersection Summary						
Cycle Length: 70.9						
Actuated Cycle Length: 57.1						
Natural Cycle: 55						
Control Type: Actuated-Uncoordinated						
Maximum v/c Ratio: 0.54						
Intersection Signal Delay: 7.3				Intersection LOS: A		
Intersection Capacity Utilization 56.0%				ICU Level of Service B		
Analysis Period (min) 15						

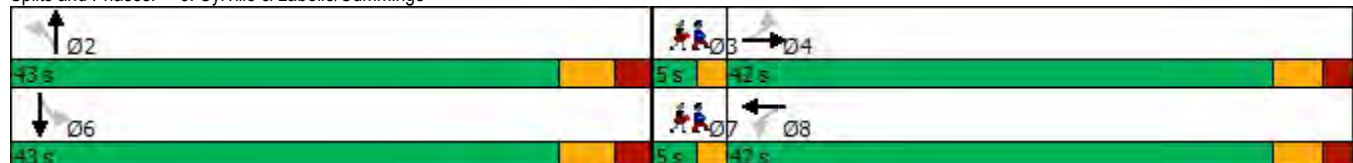
Splits and Phases: 5: Cummings & Donald



Background 2020 PM
6: Cyrville & Labelle/Cummings

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	79	104	198	33	26	46	292	234	59	476	17
Future Volume (vph)	25	79	104	198	33	26	46	292	234	59	476	17
Satd. Flow (prot)	1695	1574	0	1695	1642	0	1695	1636	0	1695	1774	0
Flt Permitted	0.719			0.585			0.396			0.371		
Satd. Flow (perm)	1268	1574	0	1011	1642	0	704	1636	0	658	1774	0
Satd. Flow (RTOR)		91			26			57			3	
Lane Group Flow (vph)	25	183	0	198	59	0	46	526	0	59	493	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		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	
Minimum Split (s)	27.5	27.5		27.5	27.5		34.3	34.3		34.3	34.3	
Total Split (s)	42.0	42.0		42.0	42.0		43.0	43.0		43.0	43.0	
Total Split (%)	46.7%	46.7%		46.7%	46.7%		47.8%	47.8%		47.8%	47.8%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	2.2	2.2		2.2	2.2		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.5	-1.5		-1.5	-1.5		-2.3	-2.3		-2.3	-2.3	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lag	Lag		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)	19.3	19.3		19.3	19.3		39.9	39.9		39.9	39.9	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.59	0.59		0.59	0.59	
v/c Ratio	0.07	0.36		0.69	0.12		0.11	0.54		0.15	0.47	
Control Delay	17.4	11.8		34.9	11.7		10.0	11.9		10.6	11.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	17.4	11.8		34.9	11.7		10.0	11.9		10.6	11.9	
LOS	B	B		C	B		A	B		B	B	
Approach Delay		12.5			29.6			11.8			11.8	
Approach LOS		B			C			B			B	
Queue Length 50th (m)	2.2	8.5		21.3	2.9		2.2	29.2		2.8	29.7	
Queue Length 95th (m)	7.3	23.2		44.7	10.6		10.1	87.4		12.6	83.1	
Internal Link Dist (m)		133.5			299.5			94.0			406.7	
Turn Bay Length (m)	30.0			40.0						55.0		
Base Capacity (vph)	715	928		570	938		412	982		385	1041	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.03	0.20		0.35	0.06		0.11	0.54		0.15	0.47	
Intersection Summary												
Cycle Length: 90												
Actuated Cycle Length: 68.1												
Natural Cycle: 70												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.69												
Intersection Signal Delay: 14.7						Intersection LOS: B						
Intersection Capacity Utilization 80.4%						ICU Level of Service D						
Analysis Period (min) 15												

Splits and Phases: 6: Cyrville & Labelle/Cummings



Background 2020 PM
6: Cyrville & Labelle/Cummings

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Background 2020 PM
7: St. Laurent & Lemieux

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	496	156	1559	246	9	1734
Future Volume (vph)	496	156	1559	246	9	1734
Satd. Flow (prot)	3288	1517	4871	1517	1695	4871
Flt Permitted	0.950				0.131	
Satd. Flow (perm)	3288	1454	4871	1477	234	4871
Satd. Flow (RTOR)		43		246		
Lane Group Flow (vph)	496	156	1559	246	9	1734
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	37.5	37.5	24.0	24.0
Total Split (s)	38.0	38.0	82.0	82.0	82.0	82.0
Total Split (%)	31.7%	31.7%	68.3%	68.3%	68.3%	68.3%
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	-2.1	-2.1	-1.5	-1.5	-1.5	-1.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	26.5	26.5	85.5	85.5	85.5	85.5
Actuated g/C Ratio	0.22	0.22	0.71	0.71	0.71	0.71
v/c Ratio	0.68	0.44	0.45	0.22	0.05	0.50
Control Delay	47.4	31.8	8.3	1.4	3.7	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.4	31.8	8.3	1.4	3.7	5.3
LOS	D	C	A	A	A	A
Approach Delay	43.7		7.4			5.3
Approach LOS	D		A			A
Queue Length 50th (m)	56.2	23.1	48.7	0.0	0.2	35.2
Queue Length 95th (m)	69.0	40.7	70.4	7.9	m0.8	67.8
Internal Link Dist (m)	109.2		139.3			202.6
Turn Bay Length (m)		25.0		60.0	125.0	
Base Capacity (vph)	931	442	3469	1122	166	3469
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.35	0.45	0.22	0.05	0.50

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 99 (83%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 12.2

Intersection LOS: B

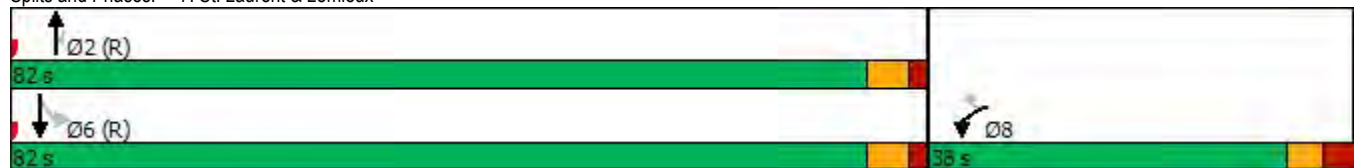
Intersection Capacity Utilization 62.7%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 7: St. Laurent & Lemieux



Background 2020 PM
11: 417 & Labelle

Intersection												
Int Delay, s/veh	6.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	170	0	0	0	0	204	112	418	27	0	0	279
Future Vol, veh/h	170	0	0	0	0	204	112	418	27	0	0	279
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	-	-	Free	-	-	Free
Storage Length	0	-	-	-	-	0	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
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	170	0	0	0	0	204	112	418	27	0	0	279

Major/Minor	Minor2	Minor1				Major1			
Conflicting Flow All	433	-	-	-	-	209	0	0	-
Stage 1	0	-	-	-	-	-	-	-	-
Stage 2	433	-	-	-	-	-	-	-	-
Critical Hdwy	7.54	-	-	-	-	6.94	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	-	-	-	-	3.32	2.22	-	-
Pot Cap-1 Maneuver	507	0	0	0	0	797	-	-	0
Stage 1	-	0	0	0	0	-	-	-	0
Stage 2	571	0	0	0	0	-	-	-	0
Platoon blocked, %									
Mov Cap-1 Maneuver	377	-	-	-	-	797	-	-	-
Mov Cap-2 Maneuver	377	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	425	-	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	22.2	11.1	
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1
Capacity (veh/h)	-	-	377	797
HCM Lane V/C Ratio	-	-	0.451	0.256
HCM Control Delay (s)	-	-	22.2	11.1
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	2.3	1

Background 2022 AM

1: St. Laurent & Coventry/Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	202	58	625	618	24	141	802	507	33	815	132
Future Volume (vph)	66	202	58	625	618	24	141	802	507	33	815	132
Satd. Flow (prot)	3288	3390	1517	3288	3390	1517	1695	4497	0	1695	4871	1517
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3269	3390	1384	3163	3390	1464	1657	4497	0	1685	4871	1395
Satd. Flow (RTOR)			195			140		115				196
Lane Group Flow (vph)	66	202	58	625	618	24	141	1309	0	33	815	132
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	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		5.0	10.0	10.0
Minimum Split (s)	11.9	37.5	37.5	11.9	37.5	37.5	11.4	35.4		11.4	35.4	35.4
Total Split (s)	15.0	37.0	37.0	36.0	58.0	58.0	22.0	35.0		22.0	35.0	35.0
Total Split (%)	11.5%	28.5%	28.5%	27.7%	44.6%	44.6%	16.9%	26.9%		16.9%	26.9%	26.9%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	3.2	2.8	2.8	3.2	2.8	2.8	2.7	2.7		2.7	2.7	2.7
Lost Time Adjust (s)	-2.9	-2.5	-2.5	-2.9	-2.5	-2.5	-2.4	-2.4		-2.4	-2.4	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	21.6	25.1	25.1	30.4	36.5	36.5	16.5	53.1		10.4	42.0	42.0
Actuated g/C Ratio	0.17	0.19	0.19	0.23	0.28	0.28	0.13	0.41		0.08	0.32	0.32
v/c Ratio	0.12	0.31	0.14	0.81	0.65	0.05	0.66	0.69		0.24	0.52	0.23
Control Delay	43.9	44.4	0.7	52.9	26.8	0.2	87.1	29.3		59.7	39.9	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	43.9	44.4	0.7	52.9	26.8	0.2	87.1	29.3		59.7	39.9	1.7
LOS	D	D	A	D	C	A	F	C		E	D	A
Approach Delay		36.5			39.2			34.9			35.4	
Approach LOS		D			D			C			D	
Queue Length 50th (m)	6.8	21.7	0.0	82.7	72.3	0.0	35.5	111.6		8.1	70.3	0.0
Queue Length 95th (m)	13.7	32.4	0.0	104.3	84.3	m0.0	59.9	#148.9		18.4	85.5	2.4
Internal Link Dist (m)		132.3			135.6			202.6			118.5	
Turn Bay Length (m)				160.0			60.0			60.0		45.0
Base Capacity (vph)	557	860	496	809	1408	689	234	1903		234	1573	583
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.12	0.23	0.12	0.77	0.44	0.03	0.60	0.69		0.14	0.52	0.23

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

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

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 36.5

Intersection LOS: D

Intersection Capacity Utilization 86.9%

ICU Level of Service E

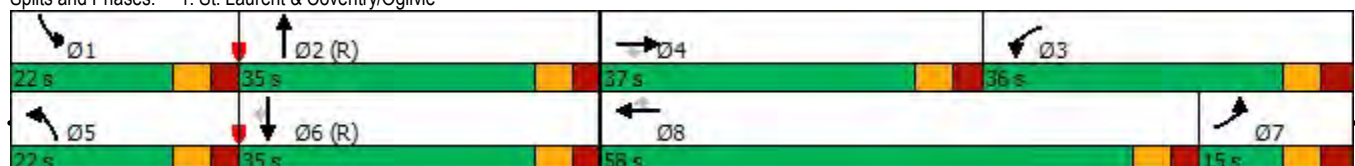
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

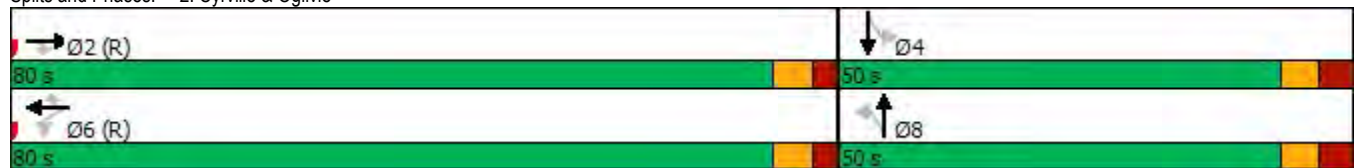
Splits and Phases: 1: St. Laurent & Coventry/Ogilvie



Background 2022 AM
2: Cyrville & Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗	↖	↑↑	↗	↖	↗		↖	↗	
Traffic Volume (vph)	0	554	227	25	1024	166	165	244	12	47	158	45
Future Volume (vph)	0	554	227	25	1024	166	165	244	12	47	158	45
Satd. Flow (prot)	0	3390	1517	1695	3390	1517	1695	1770	0	1695	1718	0
Flt Permitted				0.407			0.539			0.471		
Satd. Flow (perm)	0	3390	1422	717	3390	1381	957	1770	0	838	1718	0
Satd. Flow (RTOR)			227			156		2			12	
Lane Group Flow (vph)	0	554	227	25	1024	166	165	256	0	47	203	0
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases			2	6		6	8			4		
Detector Phase		2	2	6	6	6	8	8		4	4	
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)		32.2	32.2	32.2	32.2	32.2	47.1	47.1		47.1	47.1	
Total Split (s)		80.0	80.0	80.0	80.0	80.0	50.0	50.0		50.0	50.0	
Total Split (%)		61.5%	61.5%	61.5%	61.5%	61.5%	38.5%	38.5%		38.5%	38.5%	
Yellow Time (s)		3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)		2.5	2.5	2.5	2.5	2.5	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)		-2.2	-2.2	-2.2	-2.2	-2.2	-3.1	-3.1		-3.1	-3.1	
Total Lost Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max	C-Max	C-Max	C-Max	C-Max	Max	Max		Max	Max	
Act Effct Green (s)		76.0	76.0	76.0	76.0	76.0	46.0	46.0		46.0	46.0	
Actuated g/C Ratio		0.58	0.58	0.58	0.58	0.58	0.35	0.35		0.35	0.35	
v/c Ratio		0.28	0.25	0.06	0.52	0.19	0.49	0.41		0.16	0.33	
Control Delay		7.7	1.7	2.5	5.8	1.0	38.8	33.9		30.7	30.7	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		7.7	1.7	2.5	5.8	1.0	38.8	33.9		30.7	30.7	
LOS		A	A	A	A	A	D	C		C	C	
Approach Delay		6.0			5.1			35.8			30.7	
Approach LOS		A			A			D			C	
Queue Length 50th (m)		15.1	1.6	0.7	48.8	2.3	32.9	48.9		8.2	35.5	
Queue Length 95th (m)		12.3	0.0	m1.1	51.2	m3.0	55.1	73.0		17.6	55.6	
Internal Link Dist (m)		135.6			311.6			406.7			100.8	
Turn Bay Length (m)				50.0		50.0	50.0					
Base Capacity (vph)		1981	925	419	1981	872	338	627		296	615	
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		0.28	0.25	0.06	0.52	0.19	0.49	0.41		0.16	0.33	
Intersection Summary												
Cycle Length: 130												
Actuated Cycle Length: 130												
Offset: 10 (8%), Referenced to phase 2:EBT and 6:WBTL, Start of Green												
Natural Cycle: 80												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.52												
Intersection Signal Delay: 12.6						Intersection LOS: B						
Intersection Capacity Utilization 82.9%						ICU Level of Service E						
Analysis Period (min) 15												
m Volume for 95th percentile queue is metered by upstream signal.												

Splits and Phases: 2: Cyrville & Ogilvie



Background 2022 AM
3: Cummings & Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	579	11	163	1120	170	18	11	63	138	121	112
Future Volume (vph)	48	579	11	163	1120	170	18	11	63	138	121	112
Satd. Flow (prot)	1695	3375	0	1695	3292	0	1695	1784	1517	1695	1641	0
Flt Permitted	0.108			0.361			0.613			0.651		
Satd. Flow (perm)	193	3375	0	633	3292	0	1089	1784	1397	1090	1641	0
Satd. Flow (RTOR)		2			19				98		39	
Lane Group Flow (vph)	48	590	0	163	1290	0	18	11	63	138	233	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	8	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	9.7	24.7		9.7	24.7		36.6	36.6	36.6	9.3	36.6	
Total Split (s)	11.0	71.0		11.0	71.0		37.0	37.0	37.0	11.0	48.0	
Total Split (%)	8.5%	54.6%		8.5%	54.6%		28.5%	28.5%	28.5%	8.5%	36.9%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.0	2.0		1.0	2.0		3.3	3.3	3.3	1.0	3.3	
Lost Time Adjust (s)	0.7	-1.7		0.7	-1.7		-2.6	-2.6	-2.6	0.3	-2.6	
Total Lost Time (s)	5.4	4.0		5.4	4.0		4.0	4.0	4.0	4.6	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	None	Max	
Act Effct Green (s)	71.0	67.0		72.3	69.2		33.0	33.0	33.0	43.4	44.0	
Actuated g/C Ratio	0.55	0.52		0.56	0.53		0.25	0.25	0.25	0.33	0.34	
v/c Ratio	0.29	0.34		0.41	0.73		0.07	0.02	0.15	0.35	0.40	
Control Delay	26.3	22.3		13.7	19.3		37.8	36.7	2.9	34.6	29.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	26.3	22.3		13.7	19.3		37.8	36.7	2.9	34.6	29.5	
LOS	C	C		B	B		D	D	A	C	C	
Approach Delay		22.6			18.7			13.8			31.4	
Approach LOS		C			B			B			C	
Queue Length 50th (m)	5.8	42.1		16.5	69.7		3.5	2.1	0.0	25.6	37.6	
Queue Length 95th (m)	17.2	55.7		m18.9	m78.1		10.1	7.1	4.1	42.1	60.7	
Internal Link Dist (m)		311.6			386.5			299.5			235.7	
Turn Bay Length (m)	75.0			90.0			40.0		15.0	150.0		
Base Capacity (vph)	170	1740		397	1760		276	452	427	393	581	
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	0.28	0.34		0.41	0.73		0.07	0.02	0.15	0.35	0.40	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 110 (85%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 21.3

Intersection LOS: C

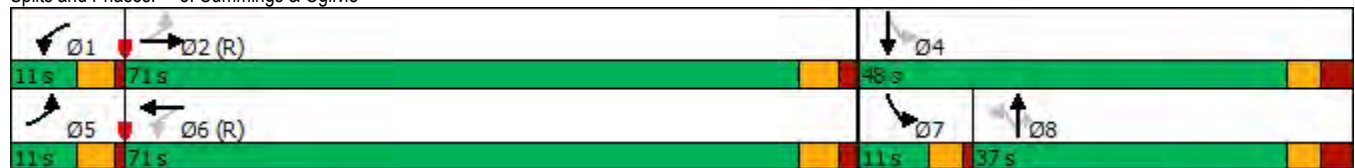
Intersection Capacity Utilization 79.1%

ICU Level of Service D

Analysis Period (min) 15

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

Splits and Phases: 3: Cummings & Ogilvie



Background 2022 AM
4: Aviation Parkway & Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	301	524	49	153	887	121	351	585	415	133	342	238
Future Volume (vph)	301	524	49	153	887	121	351	585	415	133	342	238
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	3162	0	1695	3160	0
Flt Permitted	0.101			0.367			0.950			0.950		
Satd. Flow (perm)	180	3390	1474	651	3390	1492	1693	3162	0	1694	3160	0
Satd. Flow (RTOR)			164			164		143			121	
Lane Group Flow (vph)	301	524	49	153	887	121	351	1000	0	133	580	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		10.9	30.1	
Total Split (s)	20.0	47.0	47.0	20.0	47.0	47.0	33.0	45.0		18.0	30.0	
Total Split (%)	15.4%	36.2%	36.2%	15.4%	36.2%	36.2%	25.4%	34.6%		13.8%	23.1%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		2.2	2.4	
Lost Time Adjust (s)	0.7	-2.1	-2.1	0.7	-2.1	-2.1	-1.9	-2.1		-1.9	-2.1	
Total Lost Time (s)	5.4	4.0	4.0	5.4	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max		None	Max	
Act Effct Green (s)	59.1	46.2	46.2	53.0	43.0	43.0	28.8	41.4		13.6	26.2	
Actuated g/C Ratio	0.45	0.36	0.36	0.41	0.33	0.33	0.22	0.32		0.10	0.20	
v/c Ratio	1.20	0.43	0.08	0.43	0.79	0.20	0.94	0.91		0.75	0.79	
Control Delay	157.6	28.5	0.9	24.1	45.6	2.3	82.5	48.8		82.1	47.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	157.6	28.5	0.9	24.1	45.6	2.3	82.5	48.8		82.1	47.7	
LOS	F	C	A	C	D	A	F	D		F	D	
Approach Delay		71.4			38.3			57.5			54.1	
Approach LOS		E			D			E			D	
Queue Length 50th (m)	~78.4	44.9	0.1	22.1	108.1	0.0	88.7	114.2		33.5	60.3	
Queue Length 95th (m)	#138.5	60.8	0.9	35.8	133.4	5.3	#145.3	#154.0		#63.2	81.5	
Internal Link Dist (m)		386.5			205.1			147.2			200.4	
Turn Bay Length (m)	75.0		60.0	55.0		70.0	110.0			110.0		
Base Capacity (vph)	251	1205	629	398	1121	603	378	1104		182	733	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	1.20	0.43	0.08	0.38	0.79	0.20	0.93	0.91		0.73	0.79	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 105 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.20

Intersection Signal Delay: 54.4

Intersection LOS: D

Intersection Capacity Utilization 98.5%

ICU Level of Service F

Analysis Period (min) 15

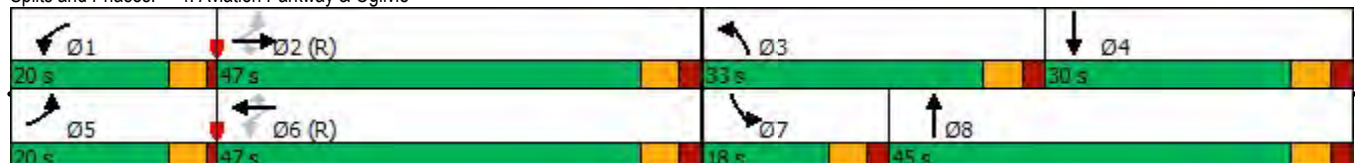
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

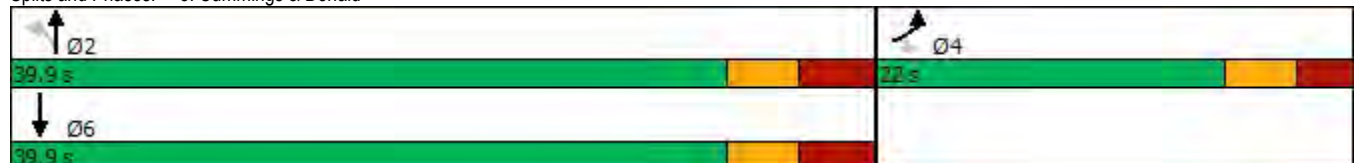
Splits and Phases: 4: Aviation Parkway & Ogilvie



Background 2022 AM
5: Cummings & Donald

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	42	148	215	129	200	104
Future Volume (vph)	42	148	215	129	200	104
Satd. Flow (prot)	1695	1517	1695	1784	1681	0
Flt Permitted	0.950		0.575			
Satd. Flow (perm)	1662	1447	1016	1784	1681	0
Satd. Flow (RTOR)		148			72	
Lane Group Flow (vph)	42	148	215	129	304	0
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	22.0	22.0	24.9	24.9	32.9	
Total Split (s)	22.0	22.0	39.9	39.9	39.9	
Total Split (%)	35.5%	35.5%	64.5%	64.5%	64.5%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7	3.6	3.6	3.6	
Lost Time Adjust (s)	-2.0	-2.0	-2.9	-2.9	-2.9	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	
Act Effct Green (s)	13.1	13.1	39.9	39.9	39.9	
Actuated g/C Ratio	0.23	0.23	0.70	0.70	0.70	
v/c Ratio	0.11	0.33	0.30	0.10	0.25	
Control Delay	17.8	6.0	6.7	4.9	4.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	17.8	6.0	6.7	4.9	4.4	
LOS	B	A	A	A	A	
Approach Delay	8.6			6.0	4.4	
Approach LOS	A			A	A	
Queue Length 50th (m)	3.5	0.0	8.1	4.1	8.0	
Queue Length 95th (m)	9.5	10.8	23.5	12.0	22.2	
Internal Link Dist (m)	138.1			235.7	73.1	
Turn Bay Length (m)		50.0	60.0			
Base Capacity (vph)	536	559	712	1251	1200	
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	0.26	0.30	0.10	0.25	
Intersection Summary						
Cycle Length: 61.9						
Actuated Cycle Length: 56.9						
Natural Cycle: 55						
Control Type: Actuated-Uncoordinated						
Maximum v/c Ratio: 0.33						
Intersection Signal Delay: 6.0				Intersection LOS: A		
Intersection Capacity Utilization 54.3%				ICU Level of Service A		
Analysis Period (min) 15						

Splits and Phases: 5: Cummings & Donald



Background 2022 AM
6: Cyrville & Labelle/Cummings

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	26	24	132	113	21	160	445	136	30	176	96
Future Volume (vph)	9	26	24	132	113	21	160	445	136	30	176	96
Satd. Flow (prot)	1695	1611	0	1695	1733	0	1695	1707	0	1695	1673	0
Flt Permitted	0.664			0.724			0.585			0.358		
Satd. Flow (perm)	1175	1611	0	1249	1733	0	1039	1707	0	636	1673	0
Satd. Flow (RTOR)		24			13			30			53	
Lane Group Flow (vph)	9	50	0	132	134	0	160	581	0	30	272	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		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	
Minimum Split (s)	27.5	27.5		27.5	27.5		34.3	34.3		34.3	34.3	
Total Split (s)	28.0	28.0		28.0	28.0		42.0	42.0		42.0	42.0	
Total Split (%)	37.3%	37.3%		37.3%	37.3%		56.0%	56.0%		56.0%	56.0%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	2.2	2.2		2.2	2.2		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.5	-1.5		-1.5	-1.5		-2.3	-2.3		-2.3	-2.3	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lag	Lag		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)	14.8	14.8		14.8	14.8		41.1	41.1		41.1	41.1	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.63	0.63		0.63	0.63	
v/c Ratio	0.03	0.13		0.46	0.33		0.24	0.53		0.07	0.25	
Control Delay	18.1	12.5		26.2	20.0		8.0	9.9		7.4	6.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	18.1	12.5		26.2	20.0		8.0	9.9		7.4	6.0	
LOS	B	B		C	B		A	A		A	A	
Approach Delay		13.4			23.1			9.5			6.2	
Approach LOS		B			C			A			A	
Queue Length 50th (m)	0.8	2.2		12.5	11.0		6.0	25.9		1.0	7.9	
Queue Length 95th (m)	3.9	9.5		27.8	24.7		24.1	86.3		6.2	30.2	
Internal Link Dist (m)		133.5			299.5			94.0			406.7	
Turn Bay Length (m)	30.0			40.0						55.0		
Base Capacity (vph)	439	618		467	656		658	1093		403	1080	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.02	0.08		0.28	0.20		0.24	0.53		0.07	0.25	
Intersection Summary												
Cycle Length: 75												
Actuated Cycle Length: 64.9												
Natural Cycle: 70												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.53												
Intersection Signal Delay: 11.6						Intersection LOS: B						
Intersection Capacity Utilization 67.2%						ICU Level of Service C						
Analysis Period (min) 15												

Splits and Phases: 6: Cyrville & Labelle/Cummings



Background 2022 AM
6: Cyrville & Labelle/Cummings

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	7%	7%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Background 2022 AM
7: St. Laurent & Lemieux

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	589	153	1210	228	6	1425
Future Volume (vph)	589	153	1210	228	6	1425
Satd. Flow (prot)	3288	1517	4871	1517	1695	4871
Flt Permitted	0.950				0.199	
Satd. Flow (perm)	3288	1450	4871	1477	355	4871
Satd. Flow (RTOR)		68		228		
Lane Group Flow (vph)	589	153	1210	228	6	1425
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	37.5	37.5	24.0	24.0
Total Split (s)	50.0	50.0	80.0	80.0	80.0	80.0
Total Split (%)	38.5%	38.5%	61.5%	61.5%	61.5%	61.5%
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	-2.1	-2.1	-1.5	-1.5	-1.5	-1.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	31.4	31.4	90.6	90.6	90.6	90.6
Actuated g/C Ratio	0.24	0.24	0.70	0.70	0.70	0.70
v/c Ratio	0.74	0.38	0.36	0.21	0.02	0.42
Control Delay	51.3	24.1	8.7	1.5	7.0	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.3	24.1	8.7	1.5	7.0	10.5
LOS	D	C	A	A	A	B
Approach Delay	45.7		7.6			10.4
Approach LOS	D		A			B
Queue Length 50th (m)	72.0	17.6	42.0	0.0	0.5	61.9
Queue Length 95th (m)	85.8	34.9	58.6	8.6	m0.9	68.9
Internal Link Dist (m)	109.2		139.3			202.6
Turn Bay Length (m)		25.0		60.0	125.0	
Base Capacity (vph)	1163	557	3394	1098	247	3394
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.27	0.36	0.21	0.02	0.42

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 124 (95%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 16.5

Intersection LOS: B

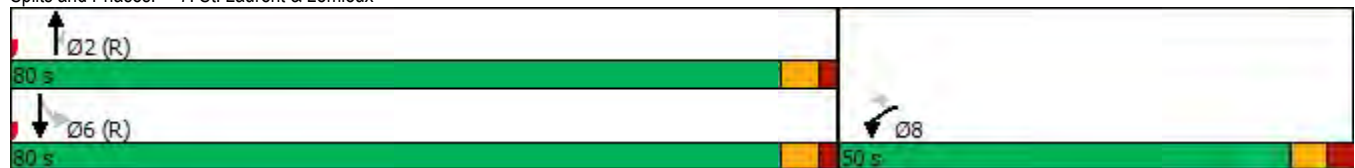
Intersection Capacity Utilization 57.6%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 7: St. Laurent & Lemieux



Background 2022 AM
11: 417/Lemieux & Labelle

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	0	0	0	0	125	133	640	44	0	0	178
Future Vol, veh/h	30	0	0	0	0	125	133	640	44	0	0	178
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	-	-	Free	-	-	Free
Storage Length	0	-	-	-	-	0	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
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	30	0	0	0	0	125	133	640	44	0	0	178

Major/Minor	Minor2	Minor1				Major1		
Conflicting Flow All	586	-	-	-	-	320	0	0
Stage 1	0	-	-	-	-	-	-	-
Stage 2	586	-	-	-	-	-	-	-
Critical Hdwy	7.54	-	-	-	-	6.94	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	-	-	-	-	3.32	2.22	-
Pot Cap-1 Maneuver	394	0	0	0	0	676	-	0
Stage 1	-	0	0	0	0	-	-	0
Stage 2	463	0	0	0	0	-	-	0
Platoon blocked, %								-
Mov Cap-1 Maneuver	321	-	-	-	-	676	-	-
Mov Cap-2 Maneuver	321	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	377	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	17.4	11.5	
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1
Capacity (veh/h)	-	-	321	676
HCM Lane V/C Ratio	-	-	0.093	0.185
HCM Control Delay (s)	-	-	17.4	11.5
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	0.3	0.7

Background 2022 PM

1: St. Laurent & Coventry/Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	302	597	205	466	382	30	182	880	609	71	789	192
Future Volume (vph)	302	597	205	466	382	30	182	880	609	71	789	192
Satd. Flow (prot)	3288	3390	1517	3288	3390	1517	1695	4484	0	1695	4871	1517
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3264	3390	1392	3222	3390	1459	1658	4484	0	1688	4871	1403
Satd. Flow (RTOR)			210			210		156				211
Lane Group Flow (vph)	302	597	205	466	382	30	182	1489	0	71	789	192
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	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		5.0	10.0	10.0
Minimum Split (s)	11.9	37.5	37.5	11.9	37.5	37.5	11.4	35.4		11.4	35.4	35.4
Total Split (s)	24.0	37.0	37.0	24.0	37.0	37.0	24.0	44.0		15.0	35.0	35.0
Total Split (%)	20.0%	30.8%	30.8%	20.0%	30.8%	30.8%	20.0%	36.7%		12.5%	29.2%	29.2%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	3.2	2.8	2.8	3.2	2.8	2.8	2.7	2.7		2.7	2.7	2.7
Lost Time Adjust (s)	-2.9	-2.5	-2.5	-2.9	-2.5	-2.5	-2.4	-2.4		-2.4	-2.4	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	23.7	30.0	30.0	20.7	27.0	27.0	18.3	45.3		10.6	35.0	35.0
Actuated g/C Ratio	0.20	0.25	0.25	0.17	0.22	0.22	0.15	0.38		0.09	0.29	0.29
v/c Ratio	0.47	0.70	0.41	0.82	0.50	0.06	0.71	0.93dr		0.48	0.56	0.34
Control Delay	46.3	45.6	6.8	55.3	43.1	0.2	73.1	29.8		63.1	38.7	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	46.3	45.6	6.8	55.3	43.1	0.2	73.1	29.8		63.1	38.7	5.3
LOS	D	D	A	E	D	A	E	C		E	D	A
Approach Delay		38.6			48.1			34.5			34.3	
Approach LOS		D			D			C			C	
Queue Length 50th (m)	34.0	65.1	0.0	46.1	49.8	0.0	33.2	114.6		16.1	60.5	0.0
Queue Length 95th (m)	48.3	84.4	16.7	#78.4	65.3	m0.0	62.1	#144.2		31.1	74.6	13.7
Internal Link Dist (m)		132.3			135.6			202.6			118.5	
Turn Bay Length (m)				160.0			60.0			60.0		45.0
Base Capacity (vph)	649	932	535	567	932	553	282	1789		155	1420	558
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.47	0.64	0.38	0.82	0.41	0.05	0.65	0.83		0.46	0.56	0.34

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 38.0

Intersection LOS: D

Intersection Capacity Utilization 88.5%

ICU Level of Service E

Analysis Period (min) 15

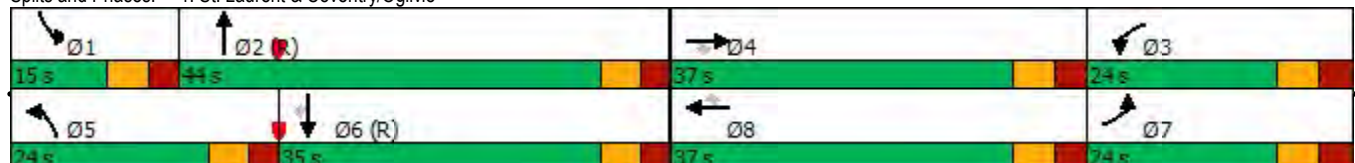
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

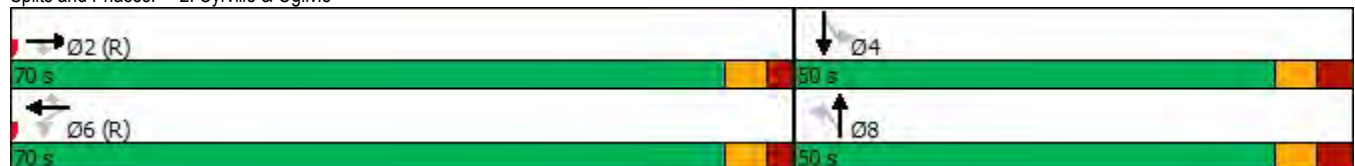
Splits and Phases: 1: St. Laurent & Coventry/Ogilvie



Background 2022 PM
2: Cyrville & Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗	↖	↑↑	↗	↖	↗		↖	↗	
Traffic Volume (vph)	0	1024	257	40	667	124	117	219	32	134	222	80
Future Volume (vph)	0	1024	257	40	667	124	117	219	32	134	222	80
Satd. Flow (prot)	0	3390	1517	1695	3390	1517	1695	1747	0	1695	1704	0
Flt Permitted				0.199			0.439			0.499		
Satd. Flow (perm)	0	3390	1425	353	3390	1388	780	1747	0	888	1704	0
Satd. Flow (RTOR)			257			124		7			18	
Lane Group Flow (vph)	0	1024	257	40	667	124	117	251	0	134	302	0
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases			2	6		6	8			4		
Detector Phase		2	2	6	6	6	8	8		4	4	
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)		32.2	32.2	32.2	32.2	32.2	47.1	47.1		47.1	47.1	
Total Split (s)		70.0	70.0	70.0	70.0	70.0	50.0	50.0		50.0	50.0	
Total Split (%)		58.3%	58.3%	58.3%	58.3%	58.3%	41.7%	41.7%		41.7%	41.7%	
Yellow Time (s)		3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)		2.5	2.5	2.5	2.5	2.5	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)		-2.2	-2.2	-2.2	-2.2	-2.2	-3.1	-3.1		-3.1	-3.1	
Total Lost Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max	C-Max	C-Max	C-Max	C-Max	Max	Max		Max	Max	
Act Effct Green (s)		66.0	66.0	66.0	66.0	66.0	46.0	46.0		46.0	46.0	
Actuated g/C Ratio		0.55	0.55	0.55	0.55	0.55	0.38	0.38		0.38	0.38	
v/c Ratio		0.55	0.29	0.21	0.36	0.15	0.39	0.37		0.39	0.45	
Control Delay		9.9	1.5	24.1	22.7	9.3	31.8	27.8		31.2	28.6	
Queue Delay		0.4	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		10.3	1.5	24.1	22.7	9.3	31.8	27.8		31.2	28.6	
LOS		B	A	C	C	A	C	C		C	C	
Approach Delay		8.5			20.8			29.1			29.4	
Approach LOS		A			C			C			C	
Queue Length 50th (m)		55.8	3.4	4.9	44.0	5.5	19.8	40.8		22.7	49.3	
Queue Length 95th (m)		64.5	m6.3	m7.4	m59.5	m10.3	36.9	62.7		40.5	74.6	
Internal Link Dist (m)		135.6			311.6			406.7			100.8	
Turn Bay Length (m)				50.0		50.0	50.0					
Base Capacity (vph)		1864	899	194	1864	819	299	674		340	664	
Starvation Cap Reductn		354	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		0.68	0.29	0.21	0.36	0.15	0.39	0.37		0.39	0.45	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 20 (17%), Referenced to phase 2:EBT and 6:WBTL, Start of Green												
Natural Cycle: 80												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.55												
Intersection Signal Delay: 17.7						Intersection LOS: B						
Intersection Capacity Utilization 86.8%						ICU Level of Service E						
Analysis Period (min) 15												
m Volume for 95th percentile queue is metered by upstream signal.												

Splits and Phases: 2: Cyrville & Ogilvie



Background 2022 PM
3: Cummings & Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	1126	23	109	759	209	36	169	216	258	170	84
Future Volume (vph)	110	1126	23	109	759	209	36	169	216	258	170	84
Satd. Flow (prot)	1695	3374	0	1695	3236	0	1695	1784	1517	1695	1685	0
Flt Permitted	0.101			0.101			0.602			0.496		
Satd. Flow (perm)	180	3374	0	180	3236	0	1070	1784	1405	848	1685	0
Satd. Flow (RTOR)		2			32				163		28	
Lane Group Flow (vph)	110	1149	0	109	968	0	36	169	216	258	254	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	8	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	9.7	24.7		9.7	24.7		36.6	36.6	36.6	9.3	36.6	
Total Split (s)	15.0	45.0		15.0	45.0		40.0	40.0	40.0	20.0	60.0	
Total Split (%)	12.5%	37.5%		12.5%	37.5%		33.3%	33.3%	33.3%	16.7%	50.0%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.0	2.0		1.0	2.0		3.3	3.3	3.3	1.0	3.3	
Lost Time Adjust (s)	0.7	-1.7		0.7	-1.7		-2.6	-2.6	-2.6	0.3	-2.6	
Total Lost Time (s)	5.4	4.0		5.4	4.0		4.0	4.0	4.0	4.6	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	None	Max	
Act Effct Green (s)	49.2	42.1		49.2	42.1		37.0	37.0	37.0	55.4	56.0	
Actuated g/C Ratio	0.41	0.35		0.41	0.35		0.31	0.31	0.31	0.46	0.47	
v/c Ratio	0.61	0.97		0.60	0.84		0.11	0.31	0.40	0.52	0.32	
Control Delay	49.1	37.5		47.3	37.3		31.6	34.0	11.6	24.9	19.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	49.1	37.5		47.3	37.3		31.6	34.0	11.6	24.9	19.0	
LOS	D	D		D	D		C	C	B	C	B	
Approach Delay		38.5			38.3			22.3			22.0	
Approach LOS		D			D			C			C	
Queue Length 50th (m)	12.2	108.7		18.7	68.4		6.1	30.8	9.1	37.6	32.2	
Queue Length 95th (m)	31.1	#185.2		36.9	104.5		14.4	49.5	29.2	57.2	50.9	
Internal Link Dist (m)		311.6			386.5			299.5			235.7	
Turn Bay Length (m)	75.0			90.0			40.0		15.0	150.0		
Base Capacity (vph)	196	1185		196	1154		330	550	546	500	801	
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	0.56	0.97		0.56	0.84		0.11	0.31	0.40	0.52	0.32	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 46 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 33.7

Intersection LOS: C

Intersection Capacity Utilization 95.1%

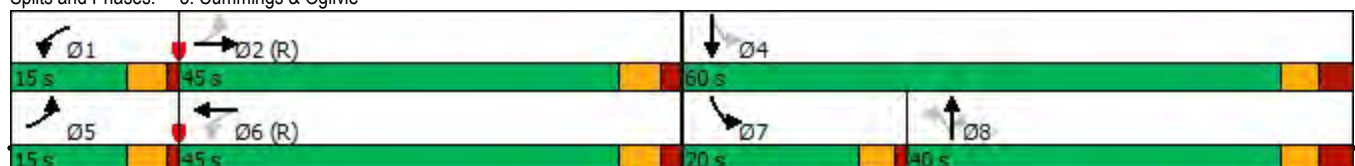
ICU Level of Service F

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: Cummings & Ogilvie



Background 2022 PM
4: Aviation Parkway & Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	183	749	83	136	601	112	124	213	180	112	249	168
Future Volume (vph)	183	749	83	136	601	112	124	213	180	112	249	168
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	3137	0	1695	3168	0
Flt Permitted	0.316			0.264			0.950			0.950		
Satd. Flow (perm)	563	3390	1476	469	3390	1493	1692	3137	0	1694	3168	0
Satd. Flow (RTOR)			125			125		164			126	
Lane Group Flow (vph)	183	749	83	136	601	112	124	393	0	112	417	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		10.9	30.1	
Total Split (s)	20.0	51.0	51.0	20.0	51.0	51.0	19.0	30.0		19.0	30.0	
Total Split (%)	16.7%	42.5%	42.5%	16.7%	42.5%	42.5%	15.8%	25.0%		15.8%	25.0%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		2.2	2.4	
Lost Time Adjust (s)	0.7	-2.1	-2.1	0.7	-2.1	-2.1	-1.9	-2.1		-1.9	-2.1	
Total Lost Time (s)	5.4	4.0	4.0	5.4	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max		None	Max	
Act Effct Green (s)	61.9	52.0	52.0	58.5	50.3	50.3	13.8	27.4		13.6	27.2	
Actuated g/C Ratio	0.52	0.43	0.43	0.49	0.42	0.42	0.12	0.23		0.11	0.23	
v/c Ratio	0.46	0.51	0.12	0.42	0.42	0.16	0.64	0.47		0.59	0.51	
Control Delay	20.8	25.6	3.4	17.8	26.2	3.7	65.7	25.1		63.0	30.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	20.8	25.6	3.4	17.8	26.2	3.7	65.7	25.1		63.0	30.7	
LOS	C	C	A	B	C	A	E	C		E	C	
Approach Delay		23.0			21.9			34.8			37.5	
Approach LOS		C			C			C			D	
Queue Length 50th (m)	22.0	50.1	1.0	15.1	51.7	0.0	28.0	24.3		25.1	31.7	
Queue Length 95th (m)	m27.0	m56.6	m1.9	25.4	70.5	9.0	48.0	39.7		43.7	47.9	
Internal Link Dist (m)		386.5			205.1			147.2			200.4	
Turn Bay Length (m)	75.0		60.0	55.0		70.0	110.0			110.0		
Base Capacity (vph)	440	1470	710	396	1421	698	211	843		211	814	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.42	0.51	0.12	0.34	0.42	0.16	0.59	0.47		0.53	0.51	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 50 (42%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 27.4

Intersection LOS: C

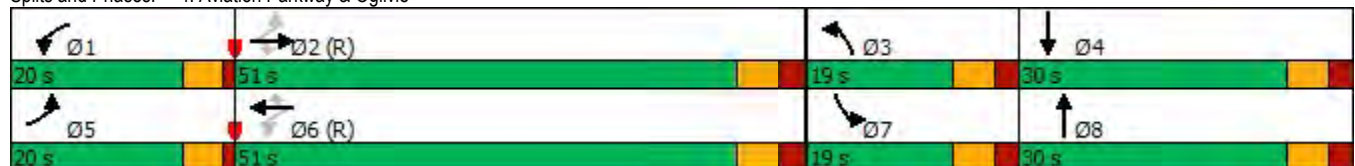
Intersection Capacity Utilization 75.8%

ICU Level of Service D

Analysis Period (min) 15

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

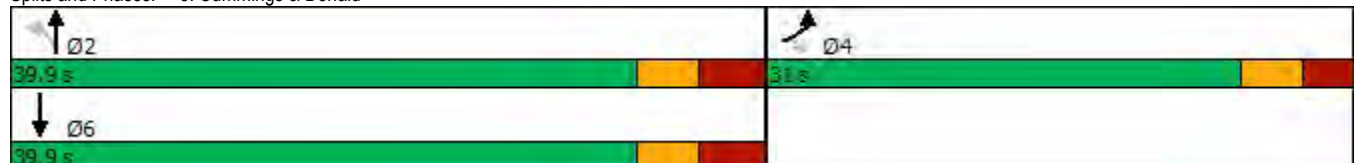
Splits and Phases: 4: Aviation Parkway & Ogilvie



Background 2022 PM
5: Cummings & Donald

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	88	306	244	248	248	90
Future Volume (vph)	88	306	244	248	248	90
Satd. Flow (prot)	1695	1517	1695	1784	1702	0
Flt Permitted	0.950		0.544			
Satd. Flow (perm)	1658	1442	961	1784	1702	0
Satd. Flow (RTOR)		306			37	
Lane Group Flow (vph)	88	306	244	248	338	0
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	22.0	22.0	24.9	24.9	32.9	
Total Split (s)	31.0	31.0	39.9	39.9	39.9	
Total Split (%)	43.7%	43.7%	56.3%	56.3%	56.3%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7	3.6	3.6	3.6	
Lost Time Adjust (s)	-2.0	-2.0	-2.9	-2.9	-2.9	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	
Act Effct Green (s)	13.1	13.1	36.0	36.0	36.0	
Actuated g/C Ratio	0.23	0.23	0.63	0.63	0.63	
v/c Ratio	0.23	0.54	0.40	0.22	0.31	
Control Delay	19.3	6.6	8.3	5.5	5.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	19.3	6.6	8.3	5.5	5.6	
LOS	B	A	A	A	A	
Approach Delay	9.5			6.9	5.6	
Approach LOS	A			A	A	
Queue Length 50th (m)	7.5	0.0	9.7	8.6	10.8	
Queue Length 95th (m)	16.6	15.1	28.5	21.9	28.1	
Internal Link Dist (m)	138.1			235.7	73.1	
Turn Bay Length (m)		50.0	60.0			
Base Capacity (vph)	802	843	605	1123	1085	
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	0.11	0.36	0.40	0.22	0.31	
Intersection Summary						
Cycle Length: 70.9						
Actuated Cycle Length: 57.1						
Natural Cycle: 55						
Control Type: Actuated-Uncoordinated						
Maximum v/c Ratio: 0.54						
Intersection Signal Delay: 7.4				Intersection LOS: A		
Intersection Capacity Utilization 56.0%				ICU Level of Service B		
Analysis Period (min) 15						

Splits and Phases: 5: Cummings & Donald



Background 2022 PM
6: Cyrville & Labelle/Cummings

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	79	104	198	33	26	46	298	234	59	486	17
Future Volume (vph)	25	79	104	198	33	26	46	298	234	59	486	17
Satd. Flow (prot)	1695	1574	0	1695	1642	0	1695	1638	0	1695	1774	0
Flt Permitted	0.719			0.585			0.388			0.367		
Satd. Flow (perm)	1268	1574	0	1011	1642	0	690	1638	0	651	1774	0
Satd. Flow (RTOR)		91			26			55			2	
Lane Group Flow (vph)	25	183	0	198	59	0	46	532	0	59	503	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		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	
Minimum Split (s)	27.5	27.5		27.5	27.5		34.3	34.3		34.3	34.3	
Total Split (s)	42.0	42.0		42.0	42.0		43.0	43.0		43.0	43.0	
Total Split (%)	46.7%	46.7%		46.7%	46.7%		47.8%	47.8%		47.8%	47.8%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	2.2	2.2		2.2	2.2		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.5	-1.5		-1.5	-1.5		-2.3	-2.3		-2.3	-2.3	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lag	Lag		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)	19.3	19.3		19.3	19.3		39.9	39.9		39.9	39.9	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.59	0.59		0.59	0.59	
v/c Ratio	0.07	0.36		0.69	0.12		0.11	0.54		0.15	0.48	
Control Delay	17.4	11.8		34.9	11.7		10.1	12.1		10.6	12.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	17.4	11.8		34.9	11.7		10.1	12.1		10.6	12.1	
LOS	B	B		C	B		B	B		B	B	
Approach Delay		12.5			29.6			11.9			11.9	
Approach LOS		B			C			B			B	
Queue Length 50th (m)	2.2	8.5		21.3	2.9		2.2	29.9		2.8	30.6	
Queue Length 95th (m)	7.3	23.2		44.7	10.6		10.1	89.2		12.6	85.4	
Internal Link Dist (m)		133.5			299.5			94.0			406.7	
Turn Bay Length (m)	30.0			40.0						55.0		
Base Capacity (vph)	715	928		570	938		404	982		381	1040	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.03	0.20		0.35	0.06		0.11	0.54		0.15	0.48	
Intersection Summary												
Cycle Length: 90												
Actuated Cycle Length: 68.1												
Natural Cycle: 70												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.69												
Intersection Signal Delay: 14.8						Intersection LOS: B						
Intersection Capacity Utilization 80.7%						ICU Level of Service D						
Analysis Period (min) 15												

Splits and Phases: 6: Cyrville & Labelle/Cummings



Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Background 2022 PM
7: St. Laurent & Lemieux

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	496	156	1590	246	9	1769
Future Volume (vph)	496	156	1590	246	9	1769
Satd. Flow (prot)	3288	1517	4871	1517	1695	4871
Flt Permitted	0.950				0.126	
Satd. Flow (perm)	3288	1454	4871	1477	225	4871
Satd. Flow (RTOR)		40		246		
Lane Group Flow (vph)	496	156	1590	246	9	1769
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	37.5	37.5	24.0	24.0
Total Split (s)	38.0	38.0	82.0	82.0	82.0	82.0
Total Split (%)	31.7%	31.7%	68.3%	68.3%	68.3%	68.3%
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	-2.1	-2.1	-1.5	-1.5	-1.5	-1.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	26.5	26.5	85.5	85.5	85.5	85.5
Actuated g/C Ratio	0.22	0.22	0.71	0.71	0.71	0.71
v/c Ratio	0.68	0.44	0.46	0.22	0.06	0.51
Control Delay	47.4	32.7	8.4	1.4	3.7	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.4	32.7	8.4	1.4	3.7	5.4
LOS	D	C	A	A	A	A
Approach Delay	43.9		7.4			5.4
Approach LOS	D		A			A
Queue Length 50th (m)	56.2	23.7	50.2	0.0	0.2	38.3
Queue Length 95th (m)	69.0	41.3	72.3	7.9	m0.9	68.5
Internal Link Dist (m)	109.2		139.3			202.6
Turn Bay Length (m)		25.0		60.0	125.0	
Base Capacity (vph)	931	440	3469	1122	160	3469
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.35	0.46	0.22	0.06	0.51

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 99 (83%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 12.2

Intersection LOS: B

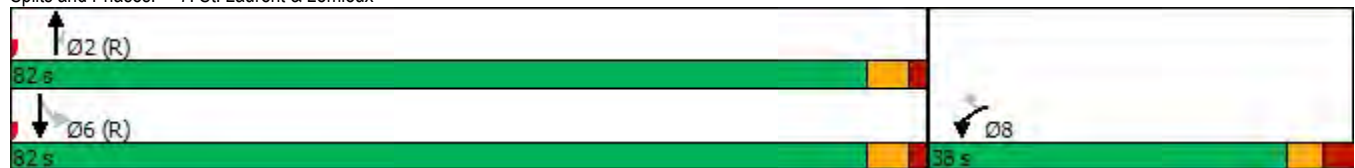
Intersection Capacity Utilization 63.4%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 7: St. Laurent & Lemieux



Background 2022 PM
11: 417 & Labelle

Intersection												
Int Delay, s/veh	6.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	170	0	0	0	0	204	112	427	27	0	0	279
Future Vol, veh/h	170	0	0	0	0	204	112	427	27	0	0	279
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	-	-	Free	-	-	Free
Storage Length	0	-	-	-	-	0	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
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	170	0	0	0	0	204	112	427	27	0	0	279

Major/Minor	Minor2	Minor1				Major1		
Conflicting Flow All	438	-	-	-	-	214	0	0
Stage 1	0	-	-	-	-	-	-	-
Stage 2	438	-	-	-	-	-	-	-
Critical Hdwy	7.54	-	-	-	-	6.94	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	-	-	-	-	3.32	2.22	-
Pot Cap-1 Maneuver	502	0	0	0	0	791	-	0
Stage 1	-	0	0	0	0	-	-	0
Stage 2	567	0	0	0	0	-	-	0
Platoon blocked, %								-
Mov Cap-1 Maneuver	372	-	-	-	-	791	-	-
Mov Cap-2 Maneuver	372	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	421	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	22.6	11.1	
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1
Capacity (veh/h)	-	-	372	791
HCM Lane V/C Ratio	-	-	0.457	0.258
HCM Control Delay (s)	-	-	22.6	11.1
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	2.3	1

Background 2027 AM

1: St. Laurent & Coventry/Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	212	58	625	650	24	141	843	507	33	856	132
Future Volume (vph)	66	212	58	625	650	24	141	843	507	33	856	132
Satd. Flow (prot)	3288	3390	1517	3288	3390	1517	1695	4509	0	1695	4871	1517
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3269	3390	1384	3165	3390	1464	1658	4509	0	1685	4871	1395
Satd. Flow (RTOR)			195			140		110				196
Lane Group Flow (vph)	66	212	58	625	650	24	141	1350	0	33	856	132
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	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		5.0	10.0	10.0
Minimum Split (s)	11.9	37.5	37.5	11.9	37.5	37.5	11.4	35.4		11.4	35.4	35.4
Total Split (s)	15.0	37.0	37.0	36.0	58.0	58.0	22.0	35.0		22.0	35.0	35.0
Total Split (%)	11.5%	28.5%	28.5%	27.7%	44.6%	44.6%	16.9%	26.9%		16.9%	26.9%	26.9%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	3.2	2.8	2.8	3.2	2.8	2.8	2.7	2.7		2.7	2.7	2.7
Lost Time Adjust (s)	-2.9	-2.5	-2.5	-2.9	-2.5	-2.5	-2.4	-2.4		-2.4	-2.4	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	20.7	25.2	25.2	30.4	37.5	37.5	16.5	53.0		10.4	41.9	41.9
Actuated g/C Ratio	0.16	0.19	0.19	0.23	0.29	0.29	0.13	0.41		0.08	0.32	0.32
v/c Ratio	0.13	0.32	0.14	0.81	0.67	0.05	0.66	0.71		0.24	0.54	0.23
Control Delay	45.0	44.6	0.7	51.9	25.7	0.1	87.4	29.8		59.7	40.4	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	45.0	44.6	0.7	51.9	25.7	0.1	87.4	29.8		59.7	40.4	1.7
LOS	D	D	A	D	C	A	F	C		E	D	A
Approach Delay		37.1			37.8			35.3			36.1	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	6.8	22.8	0.0	83.0	75.5	0.0	35.7	117.2		8.1	74.6	0.0
Queue Length 95th (m)	13.9	33.7	0.0	104.4	84.9	m0.0	60.4	#157.0		18.4	90.3	2.4
Internal Link Dist (m)		132.3			135.6			202.6			118.5	
Turn Bay Length (m)				160.0			60.0			60.0		45.0
Base Capacity (vph)	534	860	496	809	1408	689	234	1903		234	1571	582
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.12	0.25	0.12	0.77	0.46	0.03	0.60	0.71		0.14	0.54	0.23

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

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

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 36.4

Intersection LOS: D

Intersection Capacity Utilization 87.7%

ICU Level of Service E

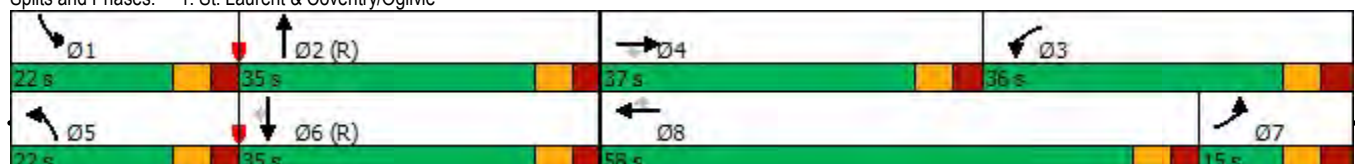
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

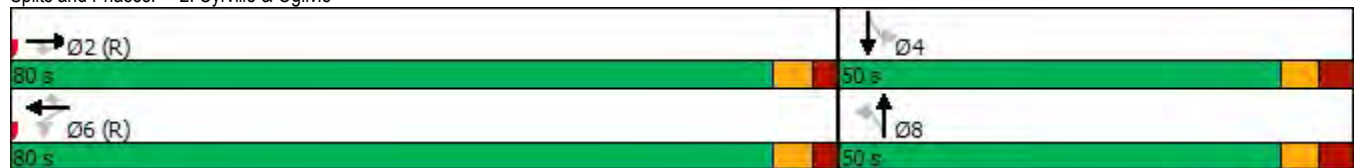
Splits and Phases: 1: St. Laurent & Coventry/Ogilvie



Background 2027 AM
2: Cyrville & Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	582	227	25	1076	166	165	256	12	47	166	45
Future Volume (vph)	0	582	227	25	1076	166	165	256	12	47	166	45
Satd. Flow (prot)	0	3390	1517	1695	3390	1517	1695	1771	0	1695	1720	0
Flt Permitted				0.392			0.529			0.456		
Satd. Flow (perm)	0	3390	1422	691	3390	1381	939	1771	0	812	1720	0
Satd. Flow (RTOR)			227			148		2			12	
Lane Group Flow (vph)	0	582	227	25	1076	166	165	268	0	47	211	0
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases			2	6		6	8			4		
Detector Phase		2	2	6	6	6	8	8		4	4	
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)		32.2	32.2	32.2	32.2	32.2	47.1	47.1		47.1	47.1	
Total Split (s)		80.0	80.0	80.0	80.0	80.0	50.0	50.0		50.0	50.0	
Total Split (%)		61.5%	61.5%	61.5%	61.5%	61.5%	38.5%	38.5%		38.5%	38.5%	
Yellow Time (s)		3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)		2.5	2.5	2.5	2.5	2.5	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)		-2.2	-2.2	-2.2	-2.2	-2.2	-3.1	-3.1		-3.1	-3.1	
Total Lost Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max	C-Max	C-Max	C-Max	C-Max	Max	Max		Max	Max	
Act Effct Green (s)		76.0	76.0	76.0	76.0	76.0	46.0	46.0		46.0	46.0	
Actuated g/C Ratio		0.58	0.58	0.58	0.58	0.58	0.35	0.35		0.35	0.35	
v/c Ratio		0.29	0.25	0.06	0.54	0.19	0.50	0.43		0.16	0.34	
Control Delay		7.8	1.6	2.5	5.9	1.0	39.3	34.3		30.9	31.0	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		7.8	1.6	2.5	5.9	1.0	39.3	34.3		30.9	31.0	
LOS		A	A	A	A	A	D	C		C	C	
Approach Delay		6.1			5.2			36.2			30.9	
Approach LOS		A			A			D			C	
Queue Length 50th (m)		15.9	1.5	0.6	50.3	2.2	33.0	51.6		8.2	37.2	
Queue Length 95th (m)		13.9	m0.0	m1.0	53.4	m2.7	55.5	76.4		17.7	58.0	
Internal Link Dist (m)		135.6			311.6			406.7			100.8	
Turn Bay Length (m)				50.0		50.0	50.0					
Base Capacity (vph)		1981	925	403	1981	868	332	627		287	616	
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		0.29	0.25	0.06	0.54	0.19	0.50	0.43		0.16	0.34	
Intersection Summary												
Cycle Length: 130												
Actuated Cycle Length: 130												
Offset: 10 (8%), Referenced to phase 2:EBT and 6:WBTL, Start of Green												
Natural Cycle: 80												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.54												
Intersection Signal Delay: 12.7						Intersection LOS: B						
Intersection Capacity Utilization 84.4%						ICU Level of Service E						
Analysis Period (min) 15												
m Volume for 95th percentile queue is metered by upstream signal.												

Splits and Phases: 2: Cyrville & Ogilvie



Background 2027 AM
3: Cummings & Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	608	11	163	1177	170	18	12	63	138	127	112
Future Volume (vph)	48	608	11	163	1177	170	18	12	63	138	127	112
Satd. Flow (prot)	1695	3375	0	1695	3297	0	1695	1784	1517	1695	1645	0
Flt Permitted	0.093			0.346			0.610			0.650		
Satd. Flow (perm)	166	3375	0	607	3297	0	1083	1784	1397	1089	1645	0
Satd. Flow (RTOR)		2			18				98		37	
Lane Group Flow (vph)	48	619	0	163	1347	0	18	12	63	138	239	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	8	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	9.7	24.7		9.7	24.7		36.6	36.6	36.6	9.3	36.6	
Total Split (s)	11.0	71.0		11.0	71.0		37.0	37.0	37.0	11.0	48.0	
Total Split (%)	8.5%	54.6%		8.5%	54.6%		28.5%	28.5%	28.5%	8.5%	36.9%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.0	2.0		1.0	2.0		3.3	3.3	3.3	1.0	3.3	
Lost Time Adjust (s)	0.7	-1.7		0.7	-1.7		-2.6	-2.6	-2.6	0.3	-2.6	
Total Lost Time (s)	5.4	4.0		5.4	4.0		4.0	4.0	4.0	4.6	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	None	Max	
Act Effct Green (s)	71.0	67.0		72.3	69.2		33.0	33.0	33.0	43.4	44.0	
Actuated g/C Ratio	0.55	0.52		0.56	0.53		0.25	0.25	0.25	0.33	0.34	
v/c Ratio	0.31	0.36		0.42	0.76		0.07	0.03	0.15	0.35	0.41	
Control Delay	29.4	22.8		13.3	19.1		37.8	36.8	2.9	34.6	30.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	29.4	22.8		13.3	19.1		37.8	36.8	2.9	34.6	30.2	
LOS	C	C		B	B		D	D	A	C	C	
Approach Delay		23.3			18.4			14.1			31.8	
Approach LOS		C			B			B			C	
Queue Length 50th (m)	6.2	45.7		15.8	71.2		3.5	2.3	0.0	25.6	39.4	
Queue Length 95th (m)	18.5	59.0		m17.6	m79.3		10.1	7.5	4.1	42.1	62.9	
Internal Link Dist (m)		311.6			386.5			299.5			235.7	
Turn Bay Length (m)	75.0			90.0			40.0		15.0	150.0		
Base Capacity (vph)	156	1740		384	1763		274	452	427	393	581	
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	0.31	0.36		0.42	0.76		0.07	0.03	0.15	0.35	0.41	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 110 (85%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 21.4

Intersection LOS: C

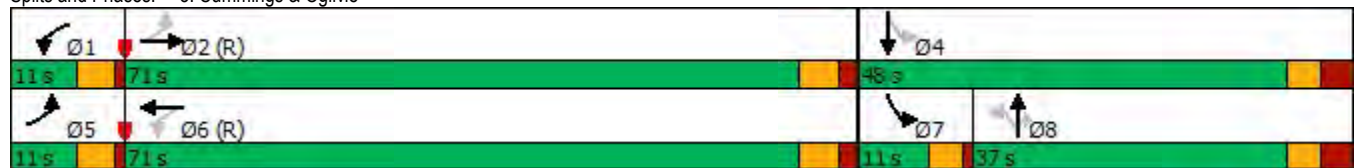
Intersection Capacity Utilization 80.7%

ICU Level of Service D

Analysis Period (min) 15

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

Splits and Phases: 3: Cummings & Ogilvie



Background 2027 AM
4: Aviation Parkway & Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	301	551	49	153	932	121	351	615	415	133	360	238
Future Volume (vph)	301	551	49	153	932	121	351	615	415	133	360	238
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	3169	0	1695	3168	0
Flt Permitted	0.092			0.347			0.950			0.950		
Satd. Flow (perm)	164	3390	1474	616	3390	1492	1693	3169	0	1694	3168	0
Satd. Flow (RTOR)			164			164		132			107	
Lane Group Flow (vph)	301	551	49	153	932	121	351	1030	0	133	598	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		10.9	30.1	
Total Split (s)	20.0	47.0	47.0	20.0	47.0	47.0	33.0	45.0		18.0	30.0	
Total Split (%)	15.4%	36.2%	36.2%	15.4%	36.2%	36.2%	25.4%	34.6%		13.8%	23.1%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		2.2	2.4	
Lost Time Adjust (s)	0.7	-2.1	-2.1	0.7	-2.1	-2.1	-1.9	-2.1		-1.9	-2.1	
Total Lost Time (s)	5.4	4.0	4.0	5.4	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max		None	Max	
Act Effct Green (s)	59.1	46.2	46.2	53.0	43.0	43.0	28.8	41.4		13.6	26.2	
Actuated g/C Ratio	0.45	0.36	0.36	0.41	0.33	0.33	0.22	0.32		0.10	0.20	
v/c Ratio	1.22	0.46	0.08	0.44	0.83	0.20	0.94	0.94		0.75	0.83	
Control Delay	168.3	29.3	1.0	24.5	47.8	2.3	82.5	53.5		82.1	51.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	168.3	29.3	1.0	24.5	47.8	2.3	82.5	53.5		82.1	51.4	
LOS	F	C	A	C	D	A	F	D		F	D	
Approach Delay		74.2			40.3			60.9			57.0	
Approach LOS		E			D			E			E	
Queue Length 50th (m)	~81.4	46.3	0.2	22.1	115.7	0.0	88.7	121.3		33.5	65.0	
Queue Length 95th (m)	#140.4	64.5	1.0	35.8	141.8	5.3	#145.3	#164.3		#63.2	#88.9	
Internal Link Dist (m)		386.5			205.1			147.2			200.4	
Turn Bay Length (m)	75.0		60.0	55.0		70.0	110.0			110.0		
Base Capacity (vph)	246	1205	629	387	1121	603	378	1098		182	724	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	1.22	0.46	0.08	0.40	0.83	0.20	0.93	0.94		0.73	0.83	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 105 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.22

Intersection Signal Delay: 57.2

Intersection LOS: E

Intersection Capacity Utilization 99.8%

ICU Level of Service F

Analysis Period (min) 15

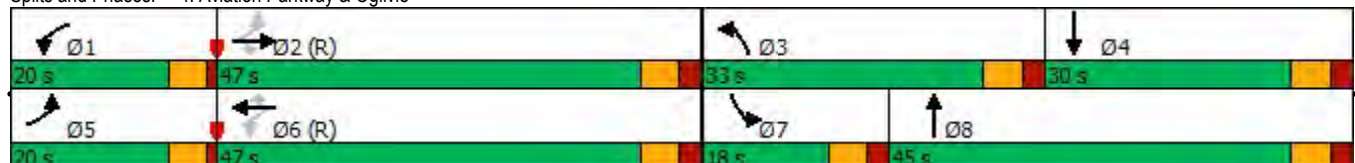
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

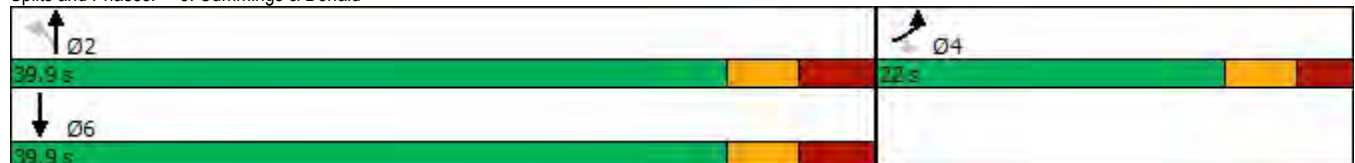
Splits and Phases: 4: Aviation Parkway & Ogilvie



Background 2027 AM
5: Cummings & Donald

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	42	148	215	136	210	104
Future Volume (vph)	42	148	215	136	210	104
Satd. Flow (prot)	1695	1517	1695	1784	1683	0
Flt Permitted	0.950		0.569			
Satd. Flow (perm)	1662	1447	1005	1784	1683	0
Satd. Flow (RTOR)		148			69	
Lane Group Flow (vph)	42	148	215	136	314	0
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	22.0	22.0	24.9	24.9	32.9	
Total Split (s)	22.0	22.0	39.9	39.9	39.9	
Total Split (%)	35.5%	35.5%	64.5%	64.5%	64.5%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7	3.6	3.6	3.6	
Lost Time Adjust (s)	-2.0	-2.0	-2.9	-2.9	-2.9	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	
Act Effct Green (s)	13.1	13.1	39.9	39.9	39.9	
Actuated g/C Ratio	0.23	0.23	0.70	0.70	0.70	
v/c Ratio	0.11	0.33	0.31	0.11	0.26	
Control Delay	17.8	6.0	6.8	4.9	4.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	17.8	6.0	6.8	4.9	4.5	
LOS	B	A	A	A	A	
Approach Delay	8.6			6.0	4.5	
Approach LOS	A			A	A	
Queue Length 50th (m)	3.5	0.0	8.1	4.4	8.5	
Queue Length 95th (m)	9.5	10.8	23.6	12.5	23.2	
Internal Link Dist (m)	138.1			235.7	73.1	
Turn Bay Length (m)		50.0	60.0			
Base Capacity (vph)	536	559	704	1251	1201	
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	0.26	0.31	0.11	0.26	
Intersection Summary						
Cycle Length: 61.9						
Actuated Cycle Length: 56.9						
Natural Cycle: 55						
Control Type: Actuated-Uncoordinated						
Maximum v/c Ratio: 0.33						
Intersection Signal Delay: 6.0				Intersection LOS: A		
Intersection Capacity Utilization 54.3%				ICU Level of Service A		
Analysis Period (min) 15						

Splits and Phases: 5: Cummings & Donald



Background 2027 AM
6: Cyrville & Labelle/Cummings

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	26	24	132	119	21	160	468	136	30	185	96
Future Volume (vph)	9	26	24	132	119	21	160	468	136	30	185	96
Satd. Flow (prot)	1695	1611	0	1695	1735	0	1695	1710	0	1695	1677	0
Flt Permitted	0.652			0.724			0.577			0.343		
Satd. Flow (perm)	1154	1611	0	1249	1735	0	1025	1710	0	609	1677	0
Satd. Flow (RTOR)		24			12			28			50	
Lane Group Flow (vph)	9	50	0	132	140	0	160	604	0	30	281	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		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	
Minimum Split (s)	27.5	27.5		27.5	27.5		34.3	34.3		34.3	34.3	
Total Split (s)	28.0	28.0		28.0	28.0		42.0	42.0		42.0	42.0	
Total Split (%)	37.3%	37.3%		37.3%	37.3%		56.0%	56.0%		56.0%	56.0%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	2.2	2.2		2.2	2.2		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.5	-1.5		-1.5	-1.5		-2.3	-2.3		-2.3	-2.3	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lag	Lag		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)	14.8	14.8		14.8	14.8		41.1	41.1		41.1	41.1	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.63	0.63		0.63	0.63	
v/c Ratio	0.03	0.13		0.46	0.35		0.25	0.55		0.08	0.26	
Control Delay	18.1	12.5		26.2	20.5		8.1	10.3		7.5	6.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	18.1	12.5		26.2	20.5		8.1	10.3		7.5	6.2	
LOS	B	B		C	C		A	B		A	A	
Approach Delay		13.4			23.3			9.8			6.3	
Approach LOS		B			C			A			A	
Queue Length 50th (m)	0.8	2.2		12.5	11.7		6.0	27.5		1.0	8.5	
Queue Length 95th (m)	3.9	9.5		27.8	26.0		24.2	92.2		6.3	31.6	
Internal Link Dist (m)		133.5			299.5			94.0			406.7	
Turn Bay Length (m)	30.0			40.0						55.0		
Base Capacity (vph)	432	618		467	657		649	1094		386	1081	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.02	0.08		0.28	0.21		0.25	0.55		0.08	0.26	
Intersection Summary												
Cycle Length: 75												
Actuated Cycle Length: 64.9												
Natural Cycle: 70												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.55												
Intersection Signal Delay: 11.8						Intersection LOS: B						
Intersection Capacity Utilization 68.4%						ICU Level of Service C						
Analysis Period (min) 15												

Splits and Phases: 6: Cyrville & Labelle/Cummings



Background 2027 AM
6: Cyrville & Labelle/Cummings

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	7%	7%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Background 2027 AM
7: St. Laurent & Lemieux

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	589	153	1272	228	6	1497
Future Volume (vph)	589	153	1272	228	6	1497
Satd. Flow (prot)	3288	1517	4871	1517	1695	4871
Flt Permitted	0.950				0.184	
Satd. Flow (perm)	3288	1450	4871	1477	328	4871
Satd. Flow (RTOR)		59		228		
Lane Group Flow (vph)	589	153	1272	228	6	1497
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	37.5	37.5	24.0	24.0
Total Split (s)	50.0	50.0	80.0	80.0	80.0	80.0
Total Split (%)	38.5%	38.5%	61.5%	61.5%	61.5%	61.5%
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	-2.1	-2.1	-1.5	-1.5	-1.5	-1.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	31.4	31.4	90.6	90.6	90.6	90.6
Actuated g/C Ratio	0.24	0.24	0.70	0.70	0.70	0.70
v/c Ratio	0.74	0.39	0.37	0.21	0.03	0.44
Control Delay	51.3	26.7	8.9	1.5	7.0	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.3	26.7	8.9	1.5	7.0	10.3
LOS	D	C	A	A	A	B
Approach Delay	46.2		7.8			10.3
Approach LOS	D		A			B
Queue Length 50th (m)	72.0	19.6	45.0	0.0	0.5	63.3
Queue Length 95th (m)	85.8	37.0	62.4	8.6	m0.9	70.1
Internal Link Dist (m)	109.2		139.3			202.6
Turn Bay Length (m)		25.0		60.0	125.0	
Base Capacity (vph)	1163	551	3394	1098	228	3394
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.28	0.37	0.21	0.03	0.44

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 124 (95%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 16.4

Intersection LOS: B

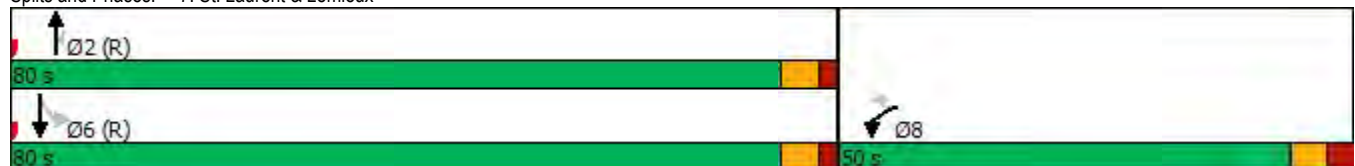
Intersection Capacity Utilization 59.0%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 7: St. Laurent & Lemieux



Background 2027 AM
11: 417/Lemieux & Labelle

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	0	0	0	0	125	133	673	44	0	0	178
Future Vol, veh/h	30	0	0	0	0	125	133	673	44	0	0	178
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	-	-	Free	-	-	Free
Storage Length	0	-	-	-	-	0	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
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	30	0	0	0	0	125	133	673	44	0	0	178

Major/Minor	Minor2	Minor1				Major1		
Conflicting Flow All	603	-	-	-	-	337	0	0
Stage 1	0	-	-	-	-	-	-	-
Stage 2	603	-	-	-	-	-	-	-
Critical Hdwy	7.54	-	-	-	-	6.94	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	-	-	-	-	3.32	2.22	-
Pot Cap-1 Maneuver	383	0	0	0	0	659	-	0
Stage 1	-	0	0	0	0	-	-	0
Stage 2	453	0	0	0	0	-	-	0
Platoon blocked, %								-
Mov Cap-1 Maneuver	310	-	-	-	-	659	-	-
Mov Cap-2 Maneuver	310	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	367	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	17.9	11.7	
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1
Capacity (veh/h)	-	-	310	659
HCM Lane V/C Ratio	-	-	0.097	0.19
HCM Control Delay (s)	-	-	17.9	11.7
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	0.3	0.7

Background 2027 PM

1: St. Laurent & Coventry/Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	302	628	205	466	401	30	182	925	609	71	829	192
Future Volume (vph)	302	628	205	466	401	30	182	925	609	71	829	192
Satd. Flow (prot)	3288	3390	1517	3288	3390	1517	1695	4492	0	1695	4871	1517
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3264	3390	1392	3225	3390	1459	1659	4492	0	1688	4871	1403
Satd. Flow (RTOR)			210			210		148				211
Lane Group Flow (vph)	302	628	205	466	401	30	182	1534	0	71	829	192
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	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		5.0	10.0	10.0
Minimum Split (s)	11.9	37.5	37.5	11.9	37.5	37.5	11.4	35.4		11.4	35.4	35.4
Total Split (s)	24.0	37.0	37.0	24.0	37.0	37.0	24.0	44.0		15.0	35.0	35.0
Total Split (%)	20.0%	30.8%	30.8%	20.0%	30.8%	30.8%	20.0%	36.7%		12.5%	29.2%	29.2%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	3.2	2.8	2.8	3.2	2.8	2.8	2.7	2.7		2.7	2.7	2.7
Lost Time Adjust (s)	-2.9	-2.5	-2.5	-2.9	-2.5	-2.5	-2.4	-2.4		-2.4	-2.4	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	24.0	30.5	30.5	20.7	27.2	27.2	18.3	44.8		10.6	34.5	34.5
Actuated g/C Ratio	0.20	0.25	0.25	0.17	0.23	0.23	0.15	0.37		0.09	0.29	0.29
v/c Ratio	0.46	0.73	0.40	0.82	0.52	0.06	0.71	0.94dr		0.48	0.59	0.35
Control Delay	46.0	46.1	6.7	54.4	43.2	0.2	73.0	32.0		63.1	39.7	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	46.0	46.1	6.7	54.4	43.2	0.2	73.0	32.0		63.1	39.7	5.3
LOS	D	D	A	D	D	A	E	C		E	D	A
Approach Delay		39.0			47.6			36.3			35.2	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	34.0	69.3	0.0	46.2	52.6	0.0	33.8	120.9		16.1	64.1	0.0
Queue Length 95th (m)	48.3	89.5	16.7	#78.7	68.7	m0.0	62.4	#153.3		31.1	78.6	13.7
Internal Link Dist (m)		132.3			135.6			202.6			118.5	
Turn Bay Length (m)				160.0			60.0			60.0		45.0
Base Capacity (vph)	658	932	535	567	932	553	282	1768		155	1398	552
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.46	0.67	0.38	0.82	0.43	0.05	0.65	0.87		0.46	0.59	0.35

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 38.8

Intersection LOS: D

Intersection Capacity Utilization 89.7%

ICU Level of Service E

Analysis Period (min) 15

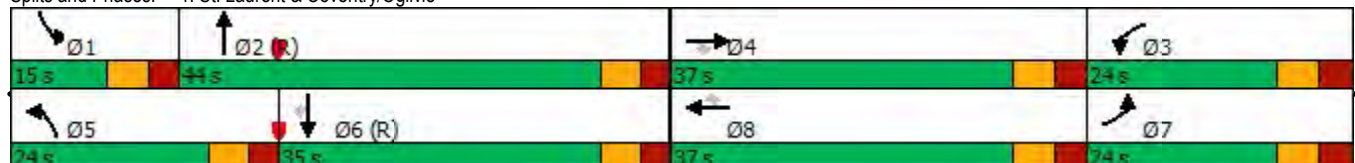
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 1: St. Laurent & Coventry/Ogilvie



Background 2027 PM
2: Cyrville & Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1076	257	40	701	124	117	230	32	134	233	80
Future Volume (vph)	0	1076	257	40	701	124	117	230	32	134	233	80
Satd. Flow (prot)	0	3390	1517	1695	3390	1517	1695	1749	0	1695	1708	0
Flt Permitted				0.182			0.427			0.486		
Satd. Flow (perm)	0	3390	1425	323	3390	1388	759	1749	0	865	1708	0
Satd. Flow (RTOR)			257			124		7			17	
Lane Group Flow (vph)	0	1076	257	40	701	124	117	262	0	134	313	0
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases			2	6		6	8			4		
Detector Phase		2	2	6	6	6	8	8		4	4	
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)		32.2	32.2	32.2	32.2	32.2	47.1	47.1		47.1	47.1	
Total Split (s)		70.0	70.0	70.0	70.0	70.0	50.0	50.0		50.0	50.0	
Total Split (%)		58.3%	58.3%	58.3%	58.3%	58.3%	41.7%	41.7%		41.7%	41.7%	
Yellow Time (s)		3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)		2.5	2.5	2.5	2.5	2.5	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)		-2.2	-2.2	-2.2	-2.2	-2.2	-3.1	-3.1		-3.1	-3.1	
Total Lost Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max	C-Max	C-Max	C-Max	C-Max	Max	Max		Max	Max	
Act Effct Green (s)		66.0	66.0	66.0	66.0	66.0	46.0	46.0		46.0	46.0	
Actuated g/C Ratio		0.55	0.55	0.55	0.55	0.55	0.38	0.38		0.38	0.38	
v/c Ratio		0.58	0.29	0.23	0.38	0.15	0.40	0.39		0.40	0.47	
Control Delay		9.7	1.4	24.8	23.2	9.5	32.3	28.2		31.6	29.1	
Queue Delay		0.5	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		10.2	1.4	24.8	23.2	9.5	32.3	28.2		31.6	29.1	
LOS		B	A	C	C	A	C	C		C	C	
Approach Delay		8.5			21.3			29.4			29.9	
Approach LOS		A			C			C			C	
Queue Length 50th (m)		56.2	2.8	5.0	46.2	5.5	19.9	43.0		22.8	51.8	
Queue Length 95th (m)		68.0	m5.7	m7.1	m60.3	m9.9	37.2	65.3		40.8	77.7	
Internal Link Dist (m)		135.6			311.6			406.7			100.8	
Turn Bay Length (m)				50.0		50.0	50.0					
Base Capacity (vph)		1864	899	177	1864	819	290	674		331	665	
Starvation Cap Reductn		345	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		0.71	0.29	0.23	0.38	0.15	0.40	0.39		0.40	0.47	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 20 (17%), Referenced to phase 2:EBT and 6:WBTL, Start of Green												
Natural Cycle: 80												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.58												
Intersection Signal Delay: 18.0						Intersection LOS: B						
Intersection Capacity Utilization 86.8%						ICU Level of Service E						
Analysis Period (min) 15												
m Volume for 95th percentile queue is metered by upstream signal.												

Splits and Phases: 2: Cyrville & Ogilvie



Background 2027 PM
3: Cummings & Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	1183	23	109	797	209	36	177	216	258	178	84
Future Volume (vph)	110	1183	23	109	797	209	36	177	216	258	178	84
Satd. Flow (prot)	1695	3375	0	1695	3241	0	1695	1784	1517	1695	1689	0
Flt Permitted	0.101			0.101			0.597			0.485		
Satd. Flow (perm)	180	3375	0	180	3241	0	1061	1784	1405	830	1689	0
Satd. Flow (RTOR)		2			30				156		27	
Lane Group Flow (vph)	110	1206	0	109	1006	0	36	177	216	258	262	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	8	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	9.7	24.7		9.7	24.7		36.6	36.6	36.6	9.3	36.6	
Total Split (s)	15.0	45.0		15.0	45.0		40.0	40.0	40.0	20.0	60.0	
Total Split (%)	12.5%	37.5%		12.5%	37.5%		33.3%	33.3%	33.3%	16.7%	50.0%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.0	2.0		1.0	2.0		3.3	3.3	3.3	1.0	3.3	
Lost Time Adjust (s)	0.7	-1.7		0.7	-1.7		-2.6	-2.6	-2.6	0.3	-2.6	
Total Lost Time (s)	5.4	4.0		5.4	4.0		4.0	4.0	4.0	4.6	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	None	Max	
Act Effct Green (s)	49.2	42.1		49.2	42.1		37.0	37.0	37.0	55.4	56.0	
Actuated g/C Ratio	0.41	0.35		0.41	0.35		0.31	0.31	0.31	0.46	0.47	
v/c Ratio	0.61	1.02		0.60	0.87		0.11	0.32	0.40	0.53	0.33	
Control Delay	48.7	48.9		47.2	39.9		31.7	34.3	12.5	25.1	19.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	48.7	48.9		47.2	39.9		31.7	34.3	12.5	25.1	19.3	
LOS	D	D		D	D		C	C	B	C	B	
Approach Delay		48.9			40.6			23.1			22.1	
Approach LOS		D			D			C			C	
Queue Length 50th (m)	12.1	~160.7		18.5	72.4		6.1	32.4	10.3	37.6	33.7	
Queue Length 95th (m)	30.6	#200.3		36.8	#115.2		14.4	51.7	30.7	57.2	52.7	
Internal Link Dist (m)		311.6			386.5			299.5			235.7	
Turn Bay Length (m)	75.0			90.0			40.0		15.0	150.0		
Base Capacity (vph)	196	1185		196	1155		327	550	541	494	802	
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	0.56	1.02		0.56	0.87		0.11	0.32	0.40	0.52	0.33	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 46 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 38.8

Intersection LOS: D

Intersection Capacity Utilization 96.8%

ICU Level of Service F

Analysis Period (min) 15

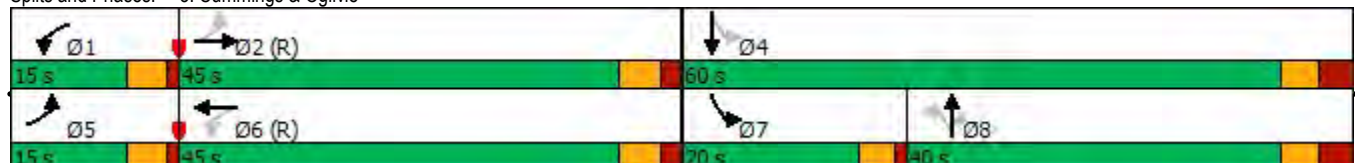
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: Cummings & Ogilvie



Background 2027 PM
4: Aviation Parkway & Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	183	787	83	136	632	112	124	224	180	112	261	168
Future Volume (vph)	183	787	83	136	632	112	124	224	180	112	261	168
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	3144	0	1695	3172	0
Flt Permitted	0.299			0.245			0.950			0.950		
Satd. Flow (perm)	533	3390	1476	436	3390	1493	1692	3144	0	1694	3172	0
Satd. Flow (RTOR)			125			125		157			111	
Lane Group Flow (vph)	183	787	83	136	632	112	124	404	0	112	429	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		10.9	30.1	
Total Split (s)	20.0	51.0	51.0	20.0	51.0	51.0	19.0	30.0		19.0	30.0	
Total Split (%)	16.7%	42.5%	42.5%	16.7%	42.5%	42.5%	15.8%	25.0%		15.8%	25.0%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		2.2	2.4	
Lost Time Adjust (s)	0.7	-2.1	-2.1	0.7	-2.1	-2.1	-1.9	-2.1		-1.9	-2.1	
Total Lost Time (s)	5.4	4.0	4.0	5.4	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max		None	Max	
Act Effct Green (s)	61.9	52.0	52.0	58.5	50.3	50.3	13.8	27.4		13.6	27.2	
Actuated g/C Ratio	0.52	0.43	0.43	0.49	0.42	0.42	0.12	0.23		0.11	0.23	
v/c Ratio	0.48	0.54	0.12	0.44	0.44	0.16	0.64	0.48		0.59	0.53	
Control Delay	21.7	26.1	3.4	18.3	26.5	3.7	65.7	26.5		63.0	32.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	21.7	26.1	3.4	18.3	26.5	3.7	65.7	26.5		63.0	32.9	
LOS	C	C	A	B	C	A	E	C		E	C	
Approach Delay		23.5			22.4			35.7			39.1	
Approach LOS		C			C			D			D	
Queue Length 50th (m)	22.1	52.7	1.0	15.1	54.9	0.0	28.0	26.5		25.1	35.1	
Queue Length 95th (m)	m25.9	m56.7	m1.8	25.4	74.5	9.0	48.0	42.2		43.7	51.5	
Internal Link Dist (m)		386.5			205.1			147.2			200.4	
Turn Bay Length (m)	75.0		60.0	55.0		70.0	110.0			110.0		
Base Capacity (vph)	427	1470	710	382	1421	698	211	839		211	804	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.43	0.54	0.12	0.36	0.44	0.16	0.59	0.48		0.53	0.53	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 50 (42%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 28.1

Intersection LOS: C

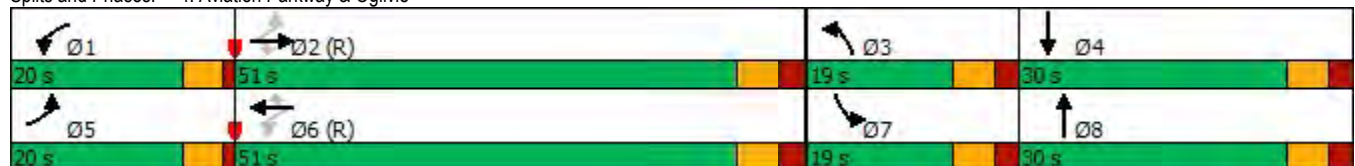
Intersection Capacity Utilization 75.8%

ICU Level of Service D

Analysis Period (min) 15

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

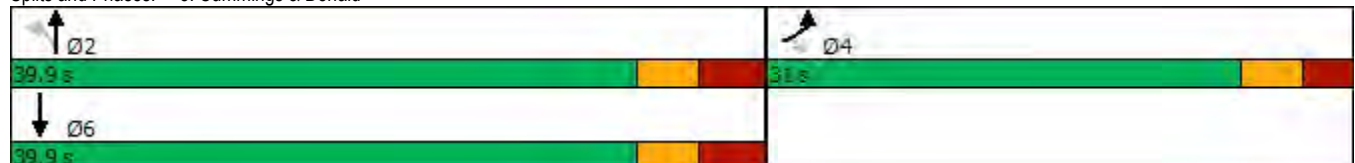
Splits and Phases: 4: Aviation Parkway & Ogilvie



Background 2027 PM
5: Cummings & Donald

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	88	306	244	260	260	90
Future Volume (vph)	88	306	244	260	260	90
Satd. Flow (prot)	1695	1517	1695	1784	1705	0
Flt Permitted	0.950		0.534			
Satd. Flow (perm)	1658	1442	943	1784	1705	0
Satd. Flow (RTOR)		306			36	
Lane Group Flow (vph)	88	306	244	260	350	0
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	22.0	22.0	24.9	24.9	32.9	
Total Split (s)	31.0	31.0	39.9	39.9	39.9	
Total Split (%)	43.7%	43.7%	56.3%	56.3%	56.3%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7	3.6	3.6	3.6	
Lost Time Adjust (s)	-2.0	-2.0	-2.9	-2.9	-2.9	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	
Act Effct Green (s)	13.1	13.1	36.0	36.0	36.0	
Actuated g/C Ratio	0.23	0.23	0.63	0.63	0.63	
v/c Ratio	0.23	0.54	0.41	0.23	0.32	
Control Delay	19.3	6.6	8.4	5.6	5.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	19.3	6.6	8.4	5.6	5.7	
LOS	B	A	A	A	A	
Approach Delay	9.5			7.0	5.7	
Approach LOS	A			A	A	
Queue Length 50th (m)	7.5	0.0	9.7	9.0	11.4	
Queue Length 95th (m)	16.6	15.1	28.9	23.0	29.4	
Internal Link Dist (m)	138.1			235.7	73.1	
Turn Bay Length (m)		50.0	60.0			
Base Capacity (vph)	802	843	593	1123	1086	
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	0.11	0.36	0.41	0.23	0.32	
Intersection Summary						
Cycle Length: 70.9						
Actuated Cycle Length: 57.1						
Natural Cycle: 55						
Control Type: Actuated-Uncoordinated						
Maximum v/c Ratio: 0.54						
Intersection Signal Delay: 7.4				Intersection LOS: A		
Intersection Capacity Utilization 56.0%				ICU Level of Service B		
Analysis Period (min) 15						

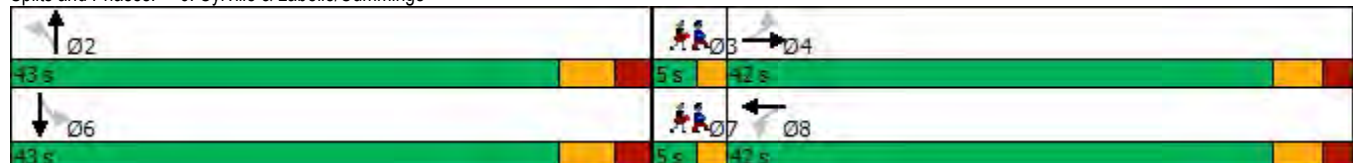
Splits and Phases: 5: Cummings & Donald



Background 2027 PM
6: Cyrville & Labelle/Cummings

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	79	104	198	35	26	46	313	234	59	511	17
Future Volume (vph)	25	79	104	198	35	26	46	313	234	59	511	17
Satd. Flow (prot)	1695	1574	0	1695	1646	0	1695	1642	0	1695	1774	0
Flt Permitted	0.717			0.585			0.370			0.356		
Satd. Flow (perm)	1265	1574	0	1011	1646	0	658	1642	0	632	1774	0
Satd. Flow (RTOR)		91			26			53			2	
Lane Group Flow (vph)	25	183	0	198	61	0	46	547	0	59	528	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		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	
Minimum Split (s)	27.5	27.5		27.5	27.5		34.3	34.3		34.3	34.3	
Total Split (s)	42.0	42.0		42.0	42.0		43.0	43.0		43.0	43.0	
Total Split (%)	46.7%	46.7%		46.7%	46.7%		47.8%	47.8%		47.8%	47.8%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	2.2	2.2		2.2	2.2		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.5	-1.5		-1.5	-1.5		-2.3	-2.3		-2.3	-2.3	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lag	Lag		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)	19.3	19.3		19.3	19.3		39.9	39.9		39.9	39.9	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.59	0.59		0.59	0.59	
v/c Ratio	0.07	0.36		0.69	0.13		0.12	0.56		0.16	0.51	
Control Delay	17.4	11.8		34.9	11.9		10.2	12.4		10.7	12.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	17.4	11.8		34.9	11.9		10.2	12.4		10.7	12.5	
LOS	B	B		C	B		B	B		B	B	
Approach Delay		12.5			29.5			12.2			12.3	
Approach LOS		B			C			B			B	
Queue Length 50th (m)	2.2	8.5		21.3	3.1		2.2	31.5		2.9	32.7	
Queue Length 95th (m)	7.3	23.2		44.7	10.9		10.2	93.1		12.7	91.2	
Internal Link Dist (m)		133.5			299.5			94.0			406.7	
Turn Bay Length (m)	30.0			40.0						55.0		
Base Capacity (vph)	714	928		570	940		385	984		370	1040	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.04	0.20		0.35	0.06		0.12	0.56		0.16	0.51	
Intersection Summary												
Cycle Length: 90												
Actuated Cycle Length: 68.1												
Natural Cycle: 70												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.69												
Intersection Signal Delay: 15.0						Intersection LOS: B						
Intersection Capacity Utilization 81.5%						ICU Level of Service D						
Analysis Period (min) 15												

Splits and Phases: 6: Cyrville & Labelle/Cummings



Background 2027 PM
6: Cyrville & Labelle/Cummings

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Background 2027 PM
7: St. Laurent & Lemieux

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	496	156	1671	246	9	1859
Future Volume (vph)	496	156	1671	246	9	1859
Satd. Flow (prot)	3288	1517	4871	1517	1695	4871
Flt Permitted	0.950				0.113	
Satd. Flow (perm)	3288	1454	4871	1477	202	4871
Satd. Flow (RTOR)		33		246		
Lane Group Flow (vph)	496	156	1671	246	9	1859
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	37.5	37.5	24.0	24.0
Total Split (s)	38.0	38.0	82.0	82.0	82.0	82.0
Total Split (%)	31.7%	31.7%	68.3%	68.3%	68.3%	68.3%
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	-2.1	-2.1	-1.5	-1.5	-1.5	-1.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	26.5	26.5	85.5	85.5	85.5	85.5
Actuated g/C Ratio	0.22	0.22	0.71	0.71	0.71	0.71
v/c Ratio	0.68	0.45	0.48	0.22	0.06	0.54
Control Delay	47.4	34.8	8.6	1.4	4.0	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.4	34.8	8.6	1.4	4.0	5.5
LOS	D	C	A	A	A	A
Approach Delay	44.4		7.7			5.5
Approach LOS	D		A			A
Queue Length 50th (m)	56.2	25.3	54.0	0.0	0.2	44.9
Queue Length 95th (m)	69.0	42.8	77.6	7.9	m0.9	70.6
Internal Link Dist (m)	109.2		139.3			202.6
Turn Bay Length (m)		25.0		60.0	125.0	
Base Capacity (vph)	931	435	3469	1122	143	3469
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.36	0.48	0.22	0.06	0.54

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 99 (83%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 12.2

Intersection LOS: B

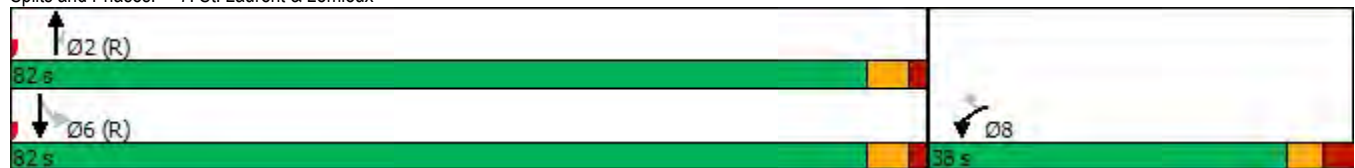
Intersection Capacity Utilization 65.2%

ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 7: St. Laurent & Lemieux



Background 2027 PM
11: 417 & Labelle

Intersection												
Int Delay, s/veh	6.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	170	0	0	0	0	204	112	448	27	0	0	279
Future Vol, veh/h	170	0	0	0	0	204	112	448	27	0	0	279
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	-	-	Free	-	-	Free
Storage Length	0	-	-	-	-	0	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
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	170	0	0	0	0	204	112	448	27	0	0	279

Major/Minor	Minor2	Minor1				Major1			
Conflicting Flow All	448	-	-	-	-	224	0	0	-
Stage 1	0	-	-	-	-	-	-	-	-
Stage 2	448	-	-	-	-	-	-	-	-
Critical Hdwy	7.54	-	-	-	-	6.94	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	-	-	-	-	3.32	2.22	-	-
Pot Cap-1 Maneuver	494	0	0	0	0	779	-	-	0
Stage 1	-	0	0	0	0	-	-	-	0
Stage 2	560	0	0	0	0	-	-	-	0
Platoon blocked, %									
Mov Cap-1 Maneuver	365	-	-	-	-	779	-	-	-
Mov Cap-2 Maneuver	365	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	413	-	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	23.2	11.3	
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1
Capacity (veh/h)	-	-	365	779
HCM Lane V/C Ratio	-	-	0.466	0.262
HCM Control Delay (s)	-	-	23.2	11.3
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	2.4	1

Appendix N

Future Projected Traffic SYNCHRO Analysis

Lanes, Volumes, Timings
1: St. Laurent & Coventry/Ogilvie

Projected 2020 AM

06/07/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	199	58	641	608	24	141	786	521	33	799	132
Future Volume (vph)	66	199	58	641	608	24	141	786	521	33	799	132
Satd. Flow (prot)	3288	3390	1517	3288	3390	1517	1695	4485	0	1695	4871	1517
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3269	3390	1384	3163	3390	1464	1656	4485	0	1685	4871	1395
Satd. Flow (RTOR)			195			140		121				196
Lane Group Flow (vph)	66	199	58	641	608	24	141	1307	0	33	799	132
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	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		5.0	10.0	10.0
Minimum Split (s)	11.9	37.5	37.5	11.9	37.5	37.5	11.4	35.4		11.4	35.4	35.4
Total Split (s)	15.0	37.0	37.0	36.0	58.0	58.0	22.0	35.0		22.0	35.0	35.0
Total Split (%)	11.5%	28.5%	28.5%	27.7%	44.6%	44.6%	16.9%	26.9%		16.9%	26.9%	26.9%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	3.2	2.8	2.8	3.2	2.8	2.8	2.7	2.7		2.7	2.7	2.7
Lost Time Adjust (s)	-2.9	-2.5	-2.5	-2.9	-2.5	-2.5	-2.4	-2.4		-2.4	-2.4	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	22.0	25.1	25.1	30.6	36.3	36.3	16.5	52.8		10.4	41.8	41.8
Actuated g/C Ratio	0.17	0.19	0.19	0.24	0.28	0.28	0.13	0.41		0.08	0.32	0.32
v/c Ratio	0.12	0.30	0.14	0.83	0.64	0.05	0.66	0.69		0.24	0.51	0.23
Control Delay	43.5	44.4	0.7	53.9	27.4	0.2	87.4	29.2		59.7	39.8	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	43.5	44.4	0.7	53.9	27.4	0.2	87.4	29.2		59.7	39.8	1.7
LOS	D	D	A	D	C	A	F	C		E	D	A
Approach Delay		36.3			40.3			34.9			35.3	
Approach LOS		D			D			C			D	
Queue Length 50th (m)	6.8	21.3	0.0	84.1	71.7	0.0	35.6	110.9		8.1	68.7	0.0
Queue Length 95th (m)	13.6	31.9	0.0	106.5	83.2	m0.0	59.5	#147.8		18.4	83.7	2.4
Internal Link Dist (m)		132.3			135.6			202.6			118.5	
Turn Bay Length (m)				160.0			60.0			60.0		45.0
Base Capacity (vph)	566	860	496	809	1408	689	234	1894		234	1565	581
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.12	0.23	0.12	0.79	0.43	0.03	0.60	0.69		0.14	0.51	0.23

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

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

Natural Cycle: 110

Control Type: Actuated-Coordinated

Lanes, Volumes, Timings

1: St. Laurent & Coventry/Ogilvie

Projected 2020 AM
06/07/2019

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 36.8

Intersection LOS: D

Intersection Capacity Utilization 87.4%

ICU Level of Service E

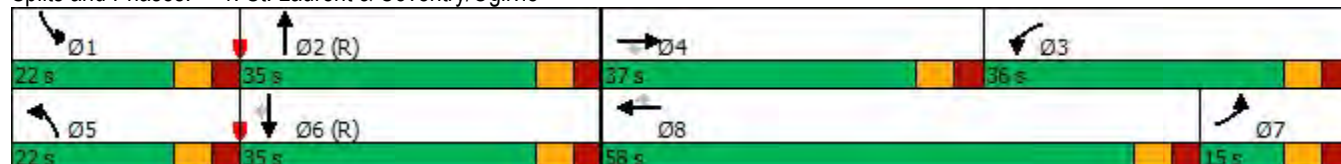
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 1: St. Laurent & Coventry/Ogilvie



Lanes, Volumes, Timings
2: Cyrville & Ogilvie

Projected 2020 AM
06/07/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗	↖	↑↑	↗	↖	↗		↖	↗	
Traffic Volume (vph)	0	558	227	25	1022	166	165	239	12	47	155	45
Future Volume (vph)	0	558	227	25	1022	166	165	239	12	47	155	45
Satd. Flow (prot)	0	3390	1517	1695	3390	1517	1695	1770	0	1695	1716	0
Flt Permitted				0.405			0.543			0.477		
Satd. Flow (perm)	0	3390	1422	713	3390	1381	964	1770	0	849	1716	0
Satd. Flow (RTOR)			227			156		2			12	
Lane Group Flow (vph)	0	558	227	25	1022	166	165	251	0	47	200	0
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases			2	6		6	8			4		
Detector Phase		2	2	6	6	6	8	8		4	4	
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)		32.2	32.2	32.2	32.2	32.2	47.1	47.1		47.1	47.1	
Total Split (s)		80.0	80.0	80.0	80.0	80.0	50.0	50.0		50.0	50.0	
Total Split (%)		61.5%	61.5%	61.5%	61.5%	61.5%	38.5%	38.5%		38.5%	38.5%	
Yellow Time (s)		3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)		2.5	2.5	2.5	2.5	2.5	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)		-2.2	-2.2	-2.2	-2.2	-2.2	-3.1	-3.1		-3.1	-3.1	
Total Lost Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max	C-Max	C-Max	C-Max	C-Max	Max	Max		Max	Max	
Act Effct Green (s)		76.0	76.0	76.0	76.0	76.0	46.0	46.0		46.0	46.0	
Actuated g/C Ratio		0.58	0.58	0.58	0.58	0.58	0.35	0.35		0.35	0.35	
v/c Ratio		0.28	0.25	0.06	0.52	0.19	0.48	0.40		0.16	0.33	
Control Delay		7.7	1.7	3.0	6.3	1.0	38.6	33.7		30.6	30.6	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		7.7	1.7	3.0	6.3	1.0	38.6	33.7		30.6	30.6	
LOS		A	A	A	A	A	D	C		C	C	
Approach Delay		6.0			5.5			35.7			30.6	
Approach LOS		A			A			D			C	
Queue Length 50th (m)		15.1	1.8	0.7	49.2	2.3	32.8	47.7		8.2	34.9	
Queue Length 95th (m)		12.1	0.0	m1.2	57.6	m3.1	55.0	71.2		17.6	54.9	
Internal Link Dist (m)		135.6			179.4			406.7			100.8	
Turn Bay Length (m)				50.0		50.0	50.0					
Base Capacity (vph)		1981	925	416	1981	872	341	627		300	614	
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		0.28	0.25	0.06	0.52	0.19	0.48	0.40		0.16	0.33	
Intersection Summary												
Cycle Length: 130												
Actuated Cycle Length: 130												
Offset: 10 (8%), Referenced to phase 2:EBT and 6:WBTL, Start of Green												
Natural Cycle: 80												
Control Type: Actuated-Coordinated												

Lanes, Volumes, Timings

2: Cyrville & Ogilvie

Projected 2020 AM

06/07/2019

Maximum v/c Ratio: 0.52

Intersection Signal Delay: 12.7

Intersection LOS: B

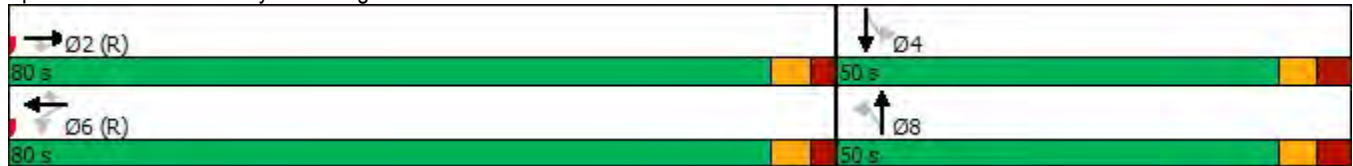
Intersection Capacity Utilization 82.8%

ICU Level of Service E

Analysis Period (min) 15

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

Splits and Phases: 2: Cyrville & Ogilvie



Lanes, Volumes, Timings
3: Ogilvie & Cummings

Projected 2020 AM

06/07/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	575	11	166	1098	170	36	16	65	138	121	112
Future Volume (vph)	48	575	11	166	1098	170	36	16	65	138	121	112
Satd. Flow (prot)	1695	3380	0	1695	3292	0	1695	1784	1517	1695	1641	0
Flt Permitted	0.109			0.361			0.613			0.627		
Satd. Flow (perm)	194	3380	0	644	3292	0	1094	1784	1517	1050	1641	0
Satd. Flow (RTOR)		2			20				98		38	
Lane Group Flow (vph)	48	586	0	166	1268	0	36	16	65	138	233	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	8	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	9.7	24.7		11.0	24.7		36.6	36.6	36.6	9.3	36.6	
Total Split (s)	11.0	71.0		11.0	71.0		37.0	37.0	37.0	11.0	48.0	
Total Split (%)	8.5%	54.6%		8.5%	54.6%		28.5%	28.5%	28.5%	8.5%	36.9%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.0	2.0		1.0	2.0		3.3	3.3	3.3	1.0	3.3	
Lost Time Adjust (s)	0.7	-1.7		0.0	-1.7		0.0	0.0	0.0	0.3	0.0	
Total Lost Time (s)	5.4	4.0		4.7	4.0		6.6	6.6	6.6	4.6	6.6	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	Max	
Act Effct Green (s)	71.0	67.0		73.5	69.2		26.3	26.3	26.3	43.4	41.4	
Actuated g/C Ratio	0.55	0.52		0.57	0.53		0.20	0.20	0.20	0.33	0.32	
v/c Ratio	0.29	0.34		0.40	0.72		0.16	0.04	0.17	0.33	0.43	
Control Delay	26.4	22.1		13.7	19.4		41.8	39.1	3.4	34.3	31.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	26.4	22.1		13.7	19.4		41.8	39.1	3.4	34.3	31.8	
LOS	C	C		B	B		D	D	A	C	C	
Approach Delay		22.4			18.8			20.1			32.7	
Approach LOS		C			B			C			C	
Queue Length 50th (m)	5.8	41.5		17.1	69.4		7.4	3.2	0.0	25.6	39.1	
Queue Length 95th (m)	17.1	55.0		m19.9	m77.7		16.8	9.3	4.8	42.1	62.9	
Internal Link Dist (m)		108.2			386.5			96.6			235.7	
Turn Bay Length (m)	85.0			90.0			40.0		16.0	150.0		
Base Capacity (vph)	170	1742		415	1761		255	417	429	419	548	
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	0.28	0.34		0.40	0.72		0.14	0.04	0.15	0.33	0.43	
Intersection Summary												
Cycle Length: 130												
Actuated Cycle Length: 130												
Offset: 110 (85%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green												
Natural Cycle: 95												
Control Type: Actuated-Coordinated												

Lanes, Volumes, Timings 3: Ogilvie & Cummings

Projected 2020 AM
06/07/2019

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 21.8

Intersection LOS: C

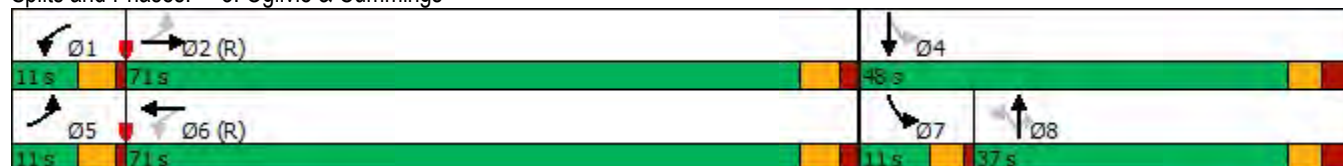
Intersection Capacity Utilization 87.2%

ICU Level of Service E

Analysis Period (min) 15

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

Splits and Phases: 3: Ogilvie & Cummings



Lanes, Volumes, Timings
4: Aviation Parkway & Ogilvie

Projected 2020 AM

06/07/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	301	520	53	153	870	121	353	573	415	133	336	238
Future Volume (vph)	301	520	53	153	870	121	353	573	415	133	336	238
Satd. Flow (prot)	1695	3247	1380	1695	3390	1517	1695	3158	0	1695	3160	0
Flt Permitted	0.109			0.353			0.950			0.950		
Satd. Flow (perm)	194	3247	1341	626	3390	1492	1693	3158	0	1694	3160	0
Satd. Flow (RTOR)			164			164		147			123	
Lane Group Flow (vph)	301	520	53	153	870	121	353	988	0	133	574	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		10.9	30.1	
Total Split (s)	20.0	47.0	47.0	20.0	47.0	47.0	33.0	45.0		18.0	30.0	
Total Split (%)	15.4%	36.2%	36.2%	15.4%	36.2%	36.2%	25.4%	34.6%		13.8%	23.1%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		2.2	2.4	
Lost Time Adjust (s)	0.7	-2.1	-2.1	0.7	-2.1	-2.1	-1.9	-2.1		-1.9	-2.1	
Total Lost Time (s)	5.4	4.0	4.0	5.4	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max		None	Max	
Act Effct Green (s)	59.1	46.2	46.2	53.0	43.0	43.0	28.9	41.4		13.6	26.1	
Actuated g/C Ratio	0.45	0.36	0.36	0.41	0.33	0.33	0.22	0.32		0.10	0.20	
v/c Ratio	1.18	0.45	0.09	0.44	0.78	0.20	0.94	0.89		0.75	0.78	
Control Delay	148.7	28.8	1.2	24.4	44.9	2.3	83.2	47.3		82.1	46.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	148.7	28.8	1.2	24.4	44.9	2.3	83.2	47.3		82.1	46.9	
LOS	F	C	A	C	D	A	F	D		F	D	
Approach Delay		68.4			37.6			56.7			53.5	
Approach LOS		E			D			E			D	
Queue Length 50th (m)	~75.4	47.0	0.1	22.1	105.3	0.0	89.4	111.4		33.5	59.0	
Queue Length 95th (m)	#135.9	63.0	1.0	35.8	130.0	5.3	#146.3	#149.6		#63.2	80.2	
Internal Link Dist (m)		386.5			205.1			147.2			200.4	
Turn Bay Length (m)	75.0		60.0	55.0		70.0	110.0			110.0		
Base Capacity (vph)	256	1154	582	390	1121	603	378	1105		182	733	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	1.18	0.45	0.09	0.39	0.78	0.20	0.93	0.89		0.73	0.78	
Intersection Summary												
Cycle Length: 130												
Actuated Cycle Length: 130												
Offset: 105 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green												
Natural Cycle: 115												
Control Type: Actuated-Coordinated												

Lanes, Volumes, Timings

4: Aviation Parkway & Ogilvie

Projected 2020 AM

06/07/2019

Maximum v/c Ratio: 1.18

Intersection Signal Delay: 53.3

Intersection LOS: D

Intersection Capacity Utilization 98.1%

ICU Level of Service F

Analysis Period (min) 15

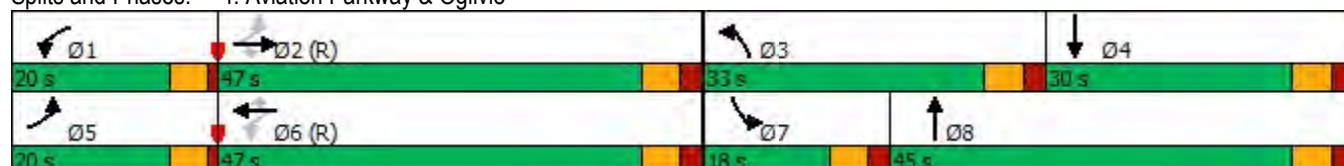
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Aviation Parkway & Ogilvie



Lanes, Volumes, Timings
5: Cummings & Donald

Projected 2020 AM

06/07/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	42	151	220	126	196	104
Future Volume (vph)	42	151	220	126	196	104
Satd. Flow (prot)	1695	1517	1695	1784	1679	0
Flt Permitted	0.950		0.577			
Satd. Flow (perm)	1662	1447	1019	1784	1679	0
Satd. Flow (RTOR)		151			73	
Lane Group Flow (vph)	42	151	220	126	300	0
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	22.0	22.0	24.9	24.9	32.9	
Total Split (s)	22.0	22.0	39.9	39.9	39.9	
Total Split (%)	35.5%	35.5%	64.5%	64.5%	64.5%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7	3.6	3.6	3.6	
Lost Time Adjust (s)	-2.0	-2.0	-2.9	-2.9	-2.9	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	
Act Effect Green (s)	13.1	13.1	39.9	39.9	39.9	
Actuated g/C Ratio	0.23	0.23	0.70	0.70	0.70	
v/c Ratio	0.11	0.34	0.31	0.10	0.25	
Control Delay	17.8	6.0	6.8	4.9	4.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	17.8	6.0	6.8	4.9	4.4	
LOS	B	A	A	A	A	
Approach Delay	8.6			6.1	4.4	
Approach LOS	A			A	A	
Queue Length 50th (m)	3.5	0.0	8.3	4.0	7.7	
Queue Length 95th (m)	9.5	10.9	24.1	11.7	21.7	
Internal Link Dist (m)	138.1			235.7	73.1	
Turn Bay Length (m)		50.0	60.0			
Base Capacity (vph)	536	561	714	1251	1199	
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	0.27	0.31	0.10	0.25	
Intersection Summary						
Cycle Length: 61.9						
Actuated Cycle Length: 56.9						
Natural Cycle: 55						
Control Type: Actuated-Uncoordinated						
Maximum v/c Ratio: 0.34						

Lanes, Volumes, Timings
5: Cummings & Donald

Projected 2020 AM

06/07/2019

Intersection Signal Delay: 6.0

Intersection LOS: A

Intersection Capacity Utilization 54.6%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 5: Cummings & Donald



Lanes, Volumes, Timings
6: Cyrville & Labelle

Projected 2020 AM

06/07/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	26	24	134	115	21	160	437	137	30	172	96
Future Volume (vph)	9	26	24	134	115	21	160	437	137	30	172	96
Satd. Flow (prot)	1695	1611	0	1695	1743	0	1695	1720	0	1695	1671	0
Flt Permitted	0.670			0.724			0.588			0.358		
Satd. Flow (perm)	1183	1611	0	1292	1743	0	1045	1720	0	639	1671	0
Satd. Flow (RTOR)		24			13			31			54	
Lane Group Flow (vph)	9	50	0	134	136	0	160	574	0	30	268	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		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	
Minimum Split (s)	27.5	27.5		27.5	27.5		34.3	34.3		34.3	34.3	
Total Split (s)	28.0	28.0		28.0	28.0		42.0	42.0		42.0	42.0	
Total Split (%)	37.3%	37.3%		37.3%	37.3%		56.0%	56.0%		56.0%	56.0%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	2.2	2.2		2.2	2.2		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.5	0.0		0.0	0.0		-2.3	-2.3		0.0	-2.3	
Total Lost Time (s)	4.0	5.5		5.5	5.5		4.0	4.0		6.3	4.0	
Lead/Lag	Lag	Lag		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)	14.7	13.2		13.2	13.2		41.1	41.1		38.8	41.1	
Actuated g/C Ratio	0.23	0.20		0.20	0.20		0.63	0.63		0.60	0.63	
v/c Ratio	0.03	0.14		0.51	0.37		0.24	0.52		0.08	0.25	
Control Delay	18.1	13.5		29.1	21.9		7.9	9.7		8.6	5.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	18.1	13.5		29.1	21.9		7.9	9.7		8.6	5.9	
LOS	B	B		C	C		A	A		A	A	
Approach Delay		14.2			25.5			9.3			6.2	
Approach LOS		B			C			A			A	
Queue Length 50th (m)	0.8	2.3		13.1	11.6		5.9	24.8		1.1	7.6	
Queue Length 95th (m)	3.9	9.8		28.8	25.9		24.1	84.0		6.7	29.6	
Internal Link Dist (m)		133.5			129.3			94.0			406.7	
Turn Bay Length (m)	30.0			40.0						55.0		
Base Capacity (vph)	443	581		454	620		663	1103		382	1080	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.02	0.09		0.30	0.22		0.24	0.52		0.08	0.25	
Intersection Summary												
Cycle Length: 75												
Actuated Cycle Length: 64.8												
Natural Cycle: 70												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.52												

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	7%	7%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Lanes, Volumes, Timings 6: Cyrville & Labelle

Projected 2020 AM

06/07/2019

Intersection Signal Delay: 12.0

Intersection LOS: B

Intersection Capacity Utilization 69.1%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 6: Cyrville & Labelle



Lanes, Volumes, Timings
7: St. Laurent & Lemieux

Projected 2020 AM
06/07/2019

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	593	153	1200	228	6	1413
Future Volume (vph)	593	153	1200	228	6	1413
Satd. Flow (prot)	3288	1517	4871	1517	1695	4871
Flt Permitted	0.950				0.201	
Satd. Flow (perm)	3288	1450	4871	1477	358	4871
Satd. Flow (RTOR)		70		228		
Lane Group Flow (vph)	593	153	1200	228	6	1413
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	37.5	37.5	24.0	24.0
Total Split (s)	50.0	50.0	80.0	80.0	80.0	80.0
Total Split (%)	38.5%	38.5%	61.5%	61.5%	61.5%	61.5%
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	-2.1	-2.1	-1.5	-1.5	-1.5	-1.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	31.5	31.5	90.5	90.5	90.5	90.5
Actuated g/C Ratio	0.24	0.24	0.70	0.70	0.70	0.70
v/c Ratio	0.74	0.38	0.35	0.21	0.02	0.42
Control Delay	51.2	23.4	8.8	1.5	7.2	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.2	23.4	8.8	1.5	7.2	10.7
LOS	D	C	A	A	A	B
Approach Delay	45.5		7.6			10.7
Approach LOS	D		A			B
Queue Length 50th (m)	72.4	17.1	41.9	0.0	0.5	62.9
Queue Length 95th (m)	86.5	34.4	58.2	8.7	m0.9	70.0
Internal Link Dist (m)	109.2		139.3			202.6
Turn Bay Length (m)		25.0		60.0	125.0	
Base Capacity (vph)	1163	558	3389	1097	249	3389
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.27	0.35	0.21	0.02	0.42
Intersection Summary						
Cycle Length: 130						
Actuated Cycle Length: 130						
Offset: 124 (95%), Referenced to phase 2:NBT and 6:SBTL, Start of Green						
Natural Cycle: 75						
Control Type: Actuated-Coordinated						

Lanes, Volumes, Timings
7: St. Laurent & Lemieux

Projected 2020 AM

06/07/2019

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 16.7

Intersection LOS: B

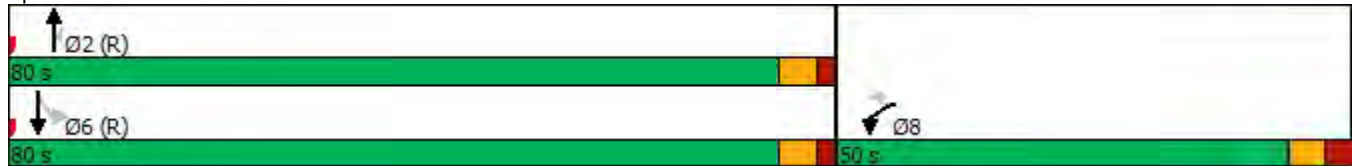
Intersection Capacity Utilization 57.4%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 7: St. Laurent & Lemieux



Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↱			↑↑		↱
Traffic Vol, veh/h	603	15	0	1248	0	8
Future Vol, veh/h	603	15	0	1248	0	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
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	603	15	0	1248	0	8
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	309
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	687
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	687
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		10.3	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT		
Capacity (veh/h)	687	-	-	-		
HCM Lane V/C Ratio	0.012	-	-	-		
HCM Control Delay (s)	10.3	-	-	-		
HCM Lane LOS	B	-	-	-		
HCM 95th %tile Q(veh)	0	-	-	-		

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	25	6	1	94	296	6
Future Vol, veh/h	25	6	1	94	296	6
Conflicting Peds, #/hr	0	0	0	0	0	0
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
Mvmt Flow	25	6	1	94	296	6
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	395	299	302	0	-	0
Stage 1	299	-	-	-	-	-
Stage 2	96	-	-	-	-	-
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	610	741	1259	-	-	-
Stage 1	752	-	-	-	-	-
Stage 2	928	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	609	741	1259	-	-	-
Mov Cap-2 Maneuver	609	-	-	-	-	-
Stage 1	751	-	-	-	-	-
Stage 2	928	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11	0.1		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1259	-	631	-	-	
HCM Lane V/C Ratio	0.001	-	0.049	-	-	
HCM Control Delay (s)	7.9	0	11	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0	-	0.2	-	-	

Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰					↰	↰	↰				↰
Traffic Vol, veh/h	30	0	0	0	0	129	133	627	44	0	0	178
Future Vol, veh/h	30	0	0	0	0	129	133	627	44	0	0	178
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	-	-	Free	-	-	Free
Storage Length	0	-	-	-	-	0	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
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	30	0	0	0	0	129	133	627	44	0	0	178

Major/Minor	Minor2	Minor1				Major1			
Conflicting Flow All	580	-	-	-	-	314	0	0	-
Stage 1	0	-	-	-	-	-	-	-	-
Stage 2	580	-	-	-	-	-	-	-	-
Critical Hdwy	7.54	-	-	-	-	6.94	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	-	-	-	-	3.32	2.22	-	-
Pot Cap-1 Maneuver	398	0	0	0	0	682	-	-	0
Stage 1	-	0	0	0	0	-	-	-	0
Stage 2	467	0	0	0	0	-	-	-	0
Platoon blocked, %									-
Mov Cap-1 Maneuver	323	-	-	-	-	682	-	-	-
Mov Cap-2 Maneuver	323	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	379	-	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	17.3	11.5	
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1WBLn1
Capacity (veh/h)	-	-	323 682
HCM Lane V/C Ratio	-	-	0.093 0.189
HCM Control Delay (s)	-	-	17.3 11.5
HCM Lane LOS	-	-	C B
HCM 95th %tile Q(veh)	-	-	0.3 0.7

Lanes, Volumes, Timings
1: St. Laurent & Coventry/Ogilvie

Projected 2020 PM

06/07/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	302	587	205	477	375	30	182	863	628	71	773	192
Future Volume (vph)	302	587	205	477	375	30	182	863	628	71	773	192
Satd. Flow (prot)	3288	3390	1517	3288	3390	1517	1695	4472	0	1695	4871	1517
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3263	3390	1392	3221	3390	1459	1658	4472	0	1688	4871	1403
Satd. Flow (RTOR)			210			210		164				211
Lane Group Flow (vph)	302	587	205	477	375	30	182	1491	0	71	773	192
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	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		5.0	10.0	10.0
Minimum Split (s)	11.9	37.5	37.5	11.9	37.5	37.5	11.4	35.4		11.4	35.4	35.4
Total Split (s)	24.0	37.0	37.0	24.0	37.0	37.0	24.0	44.0		15.0	35.0	35.0
Total Split (%)	20.0%	30.8%	30.8%	20.0%	30.8%	30.8%	20.0%	36.7%		12.5%	29.2%	29.2%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	3.2	2.8	2.8	3.2	2.8	2.8	2.7	2.7		2.7	2.7	2.7
Lost Time Adjust (s)	-2.9	-2.5	-2.5	-2.9	-2.5	-2.5	-2.4	-2.4		-2.4	-2.4	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	23.9	29.9	29.9	20.9	26.9	26.9	18.3	45.2		10.6	34.9	34.9
Actuated g/C Ratio	0.20	0.25	0.25	0.17	0.22	0.22	0.15	0.38		0.09	0.29	0.29
v/c Ratio	0.46	0.70	0.41	0.83	0.49	0.06	0.71	0.95dr		0.48	0.55	0.34
Control Delay	46.1	45.4	6.8	55.7	42.6	0.2	73.0	29.8		63.1	38.6	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	46.1	45.4	6.8	55.7	42.6	0.2	73.0	29.8		63.1	38.6	5.3
LOS	D	D	A	E	D	A	E	C		E	D	A
Approach Delay		38.4			48.2			34.5			34.1	
Approach LOS		D			D			C			C	
Queue Length 50th (m)	34.0	63.9	0.0	47.9	48.7	0.0	33.2	114.3		16.1	58.9	0.0
Queue Length 95th (m)	48.3	83.0	16.7	#82.1	63.1	m0.1	62.0	#144.0		31.1	72.9	13.7
Internal Link Dist (m)		132.3			135.6			202.6			118.5	
Turn Bay Length (m)				160.0			60.0			60.0		45.0
Base Capacity (vph)	655	932	535	573	932	553	282	1786		155	1416	557
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.46	0.63	0.38	0.83	0.40	0.05	0.65	0.83		0.46	0.55	0.34

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 110

Control Type: Actuated-Coordinated

Lanes, Volumes, Timings

1: St. Laurent & Coventry/Ogilvie

Projected 2020 PM

06/07/2019

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 37.9

Intersection LOS: D

Intersection Capacity Utilization 88.9%

ICU Level of Service E

Analysis Period (min) 15

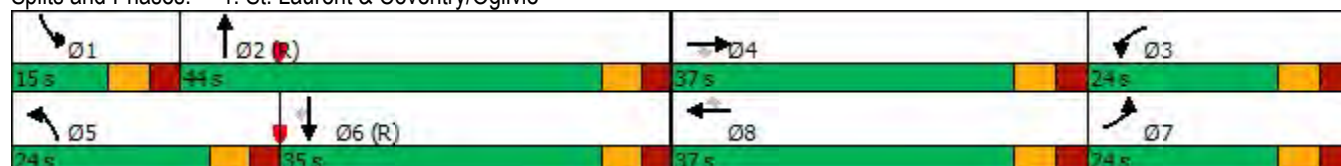
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 1: St. Laurent & Coventry/Ogilvie



Lanes, Volumes, Timings
2: Cyrville & Ogilvie

Projected 2020 PM

06/07/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗	↖	↑↑	↗	↖	↗		↖	↗	
Traffic Volume (vph)	0	1024	257	40	666	124	117	214	32	134	217	80
Future Volume (vph)	0	1024	257	40	666	124	117	214	32	134	217	80
Satd. Flow (prot)	0	3390	1517	1695	3390	1517	1695	1745	0	1695	1704	0
Flt Permitted				0.199			0.445			0.505		
Satd. Flow (perm)	0	3390	1425	353	3390	1388	791	1745	0	899	1704	0
Satd. Flow (RTOR)			257			124		7			18	
Lane Group Flow (vph)	0	1024	257	40	666	124	117	246	0	134	297	0
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases			2	6		6	8			4		
Detector Phase		2	2	6	6	6	8	8		4	4	
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)		32.2	32.2	32.2	32.2	32.2	47.1	47.1		47.1	47.1	
Total Split (s)		70.0	70.0	70.0	70.0	70.0	50.0	50.0		50.0	50.0	
Total Split (%)		58.3%	58.3%	58.3%	58.3%	58.3%	41.7%	41.7%		41.7%	41.7%	
Yellow Time (s)		3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)		2.5	2.5	2.5	2.5	2.5	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)		-2.2	-2.2	-2.2	-2.2	-2.2	-3.1	-3.1		-3.1	-3.1	
Total Lost Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max	C-Max	C-Max	C-Max	C-Max	Max	Max		Max	Max	
Act Effct Green (s)		66.0	66.0	66.0	66.0	66.0	46.0	46.0		46.0	46.0	
Actuated g/C Ratio		0.55	0.55	0.55	0.55	0.55	0.38	0.38		0.38	0.38	
v/c Ratio		0.55	0.29	0.21	0.36	0.15	0.39	0.37		0.39	0.45	
Control Delay		10.1	1.6	23.9	22.5	9.0	31.5	27.7		31.0	28.4	
Queue Delay		0.4	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		10.5	1.6	23.9	22.5	9.0	31.5	27.7		31.0	28.4	
LOS		B	A	C	C	A	C	C		C	C	
Approach Delay		8.7			20.5			28.9			29.2	
Approach LOS		A			C			C			C	
Queue Length 50th (m)		57.6	3.7	4.9	44.2	5.2	19.7	39.8		22.6	48.2	
Queue Length 95th (m)		66.8	m6.7	m7.5	m60.7	m10.2	36.7	61.0		40.4	73.1	
Internal Link Dist (m)		135.6			179.4			406.7			100.8	
Turn Bay Length (m)				50.0		50.0	50.0					
Base Capacity (vph)		1864	899	194	1864	819	303	673		344	664	
Starvation Cap Reductn		355	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		0.68	0.29	0.21	0.36	0.15	0.39	0.37		0.39	0.45	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 20 (17%), Referenced to phase 2:EBT and 6:WBTL, Start of Green												
Natural Cycle: 80												
Control Type: Actuated-Coordinated												

Lanes, Volumes, Timings

2: Cyrville & Ogilvie

Projected 2020 PM

06/07/2019

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 17.6

Intersection LOS: B

Intersection Capacity Utilization 86.8%

ICU Level of Service E

Analysis Period (min) 15

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

Splits and Phases: 2: Cyrville & Ogilvie



Lanes, Volumes, Timings
3: Ogilvie & Cummings

Projected 2020 PM

06/07/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	1110	23	114	744	209	48	169	218	258	171	84
Future Volume (vph)	110	1110	23	114	744	209	48	169	218	258	171	84
Satd. Flow (prot)	1695	3375	0	1695	3231	0	1695	1784	1517	1695	1687	0
Flt Permitted	0.103			0.101			0.601			0.496		
Satd. Flow (perm)	184	3375	0	180	3231	0	1068	1784	1406	848	1687	0
Satd. Flow (RTOR)		2			33				172		28	
Lane Group Flow (vph)	110	1133	0	114	953	0	48	169	218	258	255	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	8	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	9.7	24.7		9.7	24.7		36.6	36.6	36.6	9.3	36.6	
Total Split (s)	15.0	45.0		15.0	45.0		40.0	40.0	40.0	20.0	60.0	
Total Split (%)	12.5%	37.5%		12.5%	37.5%		33.3%	33.3%	33.3%	16.7%	50.0%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.0	2.0		1.0	2.0		3.3	3.3	3.3	1.0	3.3	
Lost Time Adjust (s)	0.7	-1.7		0.7	-1.7		-2.6	-2.6	-2.6	0.3	-2.6	
Total Lost Time (s)	5.4	4.0		5.4	4.0		4.0	4.0	4.0	4.6	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	None	Max	
Act Effct Green (s)	49.1	42.0		49.3	42.1		37.0	37.0	37.0	55.4	56.0	
Actuated g/C Ratio	0.41	0.35		0.41	0.35		0.31	0.31	0.31	0.46	0.47	
v/c Ratio	0.60	0.96		0.62	0.83		0.15	0.31	0.39	0.52	0.32	
Control Delay	48.3	35.5		49.0	36.6		32.4	34.0	10.7	24.9	19.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	48.3	35.5		49.0	36.6		32.4	34.0	10.7	24.9	19.0	
LOS	D	D		D	D		C	C	B	C	B	
Approach Delay		36.6			37.9			22.1			22.0	
Approach LOS		D			D			C			C	
Queue Length 50th (m)	11.9	110.9		19.9	67.6		8.3	30.8	7.8	37.6	32.3	
Queue Length 95th (m)	30.9	#181.1		38.7	102.7		18.0	49.5	27.8	57.2	51.1	
Internal Link Dist (m)		108.2			386.5			96.6			235.7	
Turn Bay Length (m)	85.0			90.0			40.0		16.0	150.0		
Base Capacity (vph)	197	1182		196	1153		329	550	553	500	802	
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	0.56	0.96		0.58	0.83		0.15	0.31	0.39	0.52	0.32	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 46 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green												
Natural Cycle: 85												
Control Type: Actuated-Coordinated												

Lanes, Volumes, Timings

3: Ogilvie & Cummings

Projected 2020 PM

06/07/2019

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 32.8

Intersection LOS: C

Intersection Capacity Utilization 94.9%

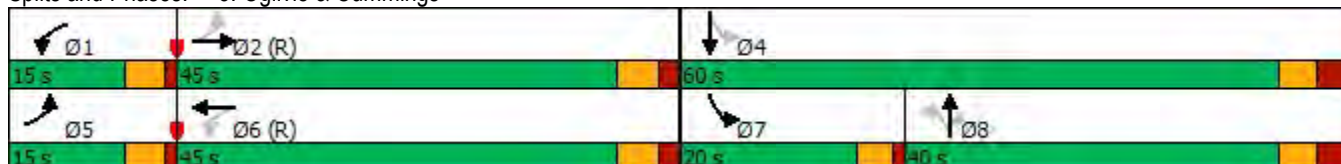
ICU Level of Service F

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: Ogilvie & Cummings



Lanes, Volumes, Timings
4: Aviation Parkway & Ogilvie

Projected 2020 PM

06/07/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	183	738	86	136	592	112	127	209	180	112	244	168
Future Volume (vph)	183	738	86	136	592	112	127	209	180	112	244	168
Satd. Flow (prot)	1695	3247	1380	1695	3390	1517	1695	3137	0	1695	3164	0
Flt Permitted	0.321			0.253			0.950			0.950		
Satd. Flow (perm)	572	3247	1343	450	3390	1493	1692	3137	0	1694	3164	0
Satd. Flow (RTOR)			125			125		168			131	
Lane Group Flow (vph)	183	738	86	136	592	112	127	389	0	112	412	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		10.9	30.1	
Total Split (s)	20.0	51.0	51.0	20.0	51.0	51.0	19.0	30.0		19.0	30.0	
Total Split (%)	16.7%	42.5%	42.5%	16.7%	42.5%	42.5%	15.8%	25.0%		15.8%	25.0%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		2.2	2.4	
Lost Time Adjust (s)	0.7	-2.1	-2.1	0.7	-2.1	-2.1	-1.9	-2.1		-1.9	-2.1	
Total Lost Time (s)	5.4	4.0	4.0	5.4	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max		None	Max	
Act Effct Green (s)	61.9	52.0	52.0	58.5	50.3	50.3	13.9	27.4		13.6	27.1	
Actuated g/C Ratio	0.52	0.43	0.43	0.49	0.42	0.42	0.12	0.23		0.11	0.23	
v/c Ratio	0.46	0.52	0.13	0.43	0.42	0.16	0.65	0.46		0.59	0.51	
Control Delay	20.6	25.7	3.8	18.1	26.1	3.7	66.3	24.4		63.0	29.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	20.6	25.7	3.8	18.1	26.1	3.7	66.3	24.4		63.0	29.9	
LOS	C	C	A	B	C	A	E	C		E	C	
Approach Delay		22.9			21.8			34.7			37.0	
Approach LOS		C			C			C			D	
Queue Length 50th (m)	21.9	51.3	1.2	15.1	50.7	0.0	28.7	23.4		25.1	30.5	
Queue Length 95th (m)	m27.4	m58.9	m2.3	25.4	69.3	9.0	49.0	38.6		43.7	46.6	
Internal Link Dist (m)		386.5			205.1			147.2			200.4	
Turn Bay Length (m)	75.0		60.0	55.0		70.0	110.0			110.0		
Base Capacity (vph)	444	1407	653	388	1421	698	211	845		211	815	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.41	0.52	0.13	0.35	0.42	0.16	0.60	0.46		0.53	0.51	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 50 (42%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Lanes, Volumes, Timings

4: Aviation Parkway & Ogilvie

Projected 2020 PM

06/07/2019

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 27.3

Intersection LOS: C

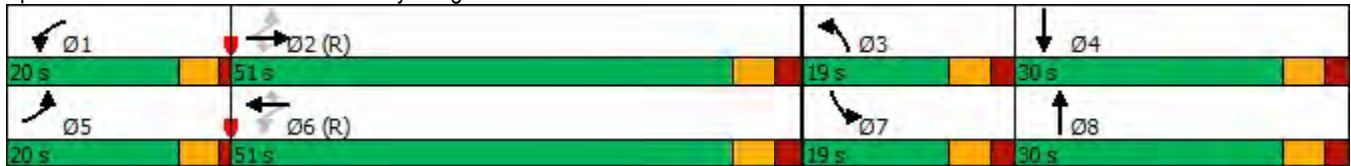
Intersection Capacity Utilization 76.0%

ICU Level of Service D

Analysis Period (min) 15

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

Splits and Phases: 4: Aviation Parkway & Ogilvie



Lanes, Volumes, Timings
5: Cummings & Donald

Projected 2020 PM
06/07/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	88	311	248	243	243	90
Future Volume (vph)	88	311	248	243	243	90
Satd. Flow (prot)	1695	1517	1695	1784	1702	0
Flt Permitted	0.950		0.548			
Satd. Flow (perm)	1658	1442	968	1784	1702	0
Satd. Flow (RTOR)		311			38	
Lane Group Flow (vph)	88	311	248	243	333	0
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	22.0	22.0	24.9	24.9	32.9	
Total Split (s)	31.0	31.0	39.9	39.9	39.9	
Total Split (%)	43.7%	43.7%	56.3%	56.3%	56.3%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7	3.6	3.6	3.6	
Lost Time Adjust (s)	-2.0	-2.0	-2.9	-2.9	-2.9	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	
Act Effect Green (s)	13.1	13.1	36.0	36.0	36.0	
Actuated g/C Ratio	0.23	0.23	0.63	0.63	0.63	
v/c Ratio	0.23	0.55	0.41	0.22	0.31	
Control Delay	19.3	6.6	8.3	5.5	5.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	19.3	6.6	8.3	5.5	5.5	
LOS	B	A	A	A	A	
Approach Delay	9.4			6.9	5.5	
Approach LOS	A			A	A	
Queue Length 50th (m)	7.5	0.0	9.9	8.3	10.6	
Queue Length 95th (m)	16.6	15.3	28.9	21.4	27.5	
Internal Link Dist (m)	138.1			235.7	73.1	
Turn Bay Length (m)		50.0	60.0			
Base Capacity (vph)	802	846	609	1123	1085	
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	0.11	0.37	0.41	0.22	0.31	
Intersection Summary						
Cycle Length: 70.9						
Actuated Cycle Length: 57.1						
Natural Cycle: 55						
Control Type: Actuated-Uncoordinated						
Maximum v/c Ratio: 0.55						

Lanes, Volumes, Timings
5: Cummings & Donald

Projected 2020 PM

06/07/2019

Intersection Signal Delay: 7.4

Intersection LOS: A

Intersection Capacity Utilization 56.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 5: Cummings & Donald



Lanes, Volumes, Timings
6: Cyrville & Labelle

Projected 2020 PM

06/07/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	79	104	199	36	26	46	292	236	59	476	17
Future Volume (vph)	25	79	104	199	36	26	46	292	236	59	476	17
Satd. Flow (prot)	1695	1574	0	1695	1649	0	1695	1637	0	1695	1774	0
Flt Permitted	0.717			0.585			0.395			0.370		
Satd. Flow (perm)	1265	1574	0	1011	1649	0	703	1637	0	656	1774	0
Satd. Flow (RTOR)		91			26			57			3	
Lane Group Flow (vph)	25	183	0	199	62	0	46	528	0	59	493	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		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	
Minimum Split (s)	27.5	27.5		27.5	27.5		34.3	34.3		34.3	34.3	
Total Split (s)	42.0	42.0		42.0	42.0		43.0	43.0		43.0	43.0	
Total Split (%)	46.7%	46.7%		46.7%	46.7%		47.8%	47.8%		47.8%	47.8%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	2.2	2.2		2.2	2.2		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.5	-1.5		-1.5	-1.5		-2.3	-2.3		-2.3	-2.3	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lag	Lag		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effect Green (s)	19.4	19.4		19.4	19.4		40.1	40.1		40.1	40.1	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.59	0.59		0.59	0.59	
v/c Ratio	0.07	0.36		0.70	0.13		0.11	0.54		0.15	0.47	
Control Delay	17.4	11.8		35.0	12.0		10.0	12.0		10.6	12.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	17.4	11.8		35.0	12.0		10.0	12.0		10.6	12.0	
LOS	B	B		D	B		B	B		B	B	
Approach Delay		12.4			29.6			11.8			11.8	
Approach LOS		B			C			B			B	
Queue Length 50th (m)	2.2	8.5		21.5	3.2		2.2	29.5		2.9	29.8	
Queue Length 95th (m)	7.3	23.2		44.9	11.1		10.1	88.1		12.6	83.3	
Internal Link Dist (m)		133.5			129.3			94.0			406.7	
Turn Bay Length (m)	30.0			40.0						55.0		
Base Capacity (vph)	710	924		568	938		411	982		384	1040	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.04	0.20		0.35	0.07		0.11	0.54		0.15	0.47	
Intersection Summary												
Cycle Length: 90												
Actuated Cycle Length: 68.4												
Natural Cycle: 70												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.70												

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Lanes, Volumes, Timings
6: Cyrville & Labelle

Projected 2020 PM

06/07/2019

Intersection Signal Delay: 14.8

Intersection LOS: B

Intersection Capacity Utilization 80.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 6: Cyrville & Labelle



Lanes, Volumes, Timings
7: St. Laurent & Lemieux

Projected 2020 PM

06/07/2019

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	499	156	1578	246	9	1745
Future Volume (vph)	499	156	1578	246	9	1745
Satd. Flow (prot)	3288	1517	4871	1517	1695	4871
Flt Permitted	0.950				0.128	
Satd. Flow (perm)	3288	1454	4871	1477	228	4871
Satd. Flow (RTOR)		41		246		
Lane Group Flow (vph)	499	156	1578	246	9	1745
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	37.5	37.5	24.0	24.0
Total Split (s)	38.0	38.0	82.0	82.0	82.0	82.0
Total Split (%)	31.7%	31.7%	68.3%	68.3%	68.3%	68.3%
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	-2.1	-2.1	-1.5	-1.5	-1.5	-1.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	26.6	26.6	85.4	85.4	85.4	85.4
Actuated g/C Ratio	0.22	0.22	0.71	0.71	0.71	0.71
v/c Ratio	0.69	0.44	0.46	0.22	0.06	0.50
Control Delay	47.5	32.3	8.4	1.4	3.8	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.5	32.3	8.4	1.4	3.8	5.4
LOS	D	C	A	A	A	A
Approach Delay	43.9		7.4			5.4
Approach LOS	D		A			A
Queue Length 50th (m)	56.5	23.5	49.9	0.0	0.2	36.9
Queue Length 95th (m)	69.4	41.1	71.6	7.9	m0.8	68.9
Internal Link Dist (m)	109.2		139.3			202.6
Turn Bay Length (m)		25.0		60.0	125.0	
Base Capacity (vph)	931	441	3466	1121	162	3466
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.35	0.46	0.22	0.06	0.50
Intersection Summary						
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 99 (83%), Referenced to phase 2:NBT and 6:SBTL, Start of Green						
Natural Cycle: 75						
Control Type: Actuated-Coordinated						

Lanes, Volumes, Timings
7: St. Laurent & Lemieux

Projected 2020 PM
06/07/2019

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 12.2

Intersection LOS: B

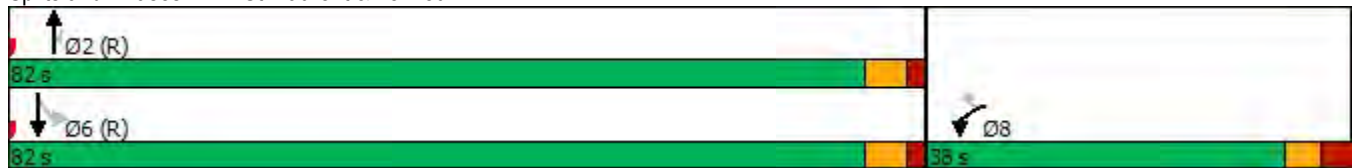
Intersection Capacity Utilization 62.9%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 7: St. Laurent & Lemieux



Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↱			↑↑		↱
Traffic Vol, veh/h	1173	20	0	878	0	5
Future Vol, veh/h	1173	20	0	878	0	5
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	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1173	20	0	878	0	5
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	597
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	446
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	446
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		13.2	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT		
Capacity (veh/h)	446	-	-	-		
HCM Lane V/C Ratio	0.011	-	-	-		
HCM Control Delay (s)	13.2	-	-	-		
HCM Lane LOS	B	-	-	-		
HCM 95th %tile Q(veh)	0	-	-	-		

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	18	4	2	422	301	10
Future Vol, veh/h	18	4	2	422	301	10
Conflicting Peds, #/hr	0	0	0	0	0	0
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
Mvmt Flow	18	4	2	422	301	10
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	732	306	311	0	-	0
Stage 1	306	-	-	-	-	-
Stage 2	426	-	-	-	-	-
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	388	734	1249	-	-	-
Stage 1	747	-	-	-	-	-
Stage 2	659	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	387	734	1249	-	-	-
Mov Cap-2 Maneuver	387	-	-	-	-	-
Stage 1	746	-	-	-	-	-
Stage 2	659	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	14	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1249	-	423	-	-	
HCM Lane V/C Ratio	0.002	-	0.052	-	-	
HCM Control Delay (s)	7.9	0	14	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0	-	0.2	-	-	

Intersection												
Int Delay, s/veh	6.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	170	0	0	0	0	207	112	418	27	0	0	279
Future Vol, veh/h	170	0	0	0	0	207	112	418	27	0	0	279
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	-	-	Free	-	-	Free
Storage Length	0	-	-	-	-	0	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
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	170	0	0	0	0	207	112	418	27	0	0	279

Major/Minor	Minor2	Minor1				Major1			
Conflicting Flow All	433	-	-	-	-	209	0	0	-
Stage 1	0	-	-	-	-	-	-	-	-
Stage 2	433	-	-	-	-	-	-	-	-
Critical Hdwy	7.54	-	-	-	-	6.94	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	-	-	-	-	3.32	2.22	-	-
Pot Cap-1 Maneuver	507	0	0	0	0	797	-	-	0
Stage 1	-	0	0	0	0	-	-	-	0
Stage 2	571	0	0	0	0	-	-	-	0
Platoon blocked, %									-
Mov Cap-1 Maneuver	375	-	-	-	-	797	-	-	-
Mov Cap-2 Maneuver	375	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	423	-	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	22.3	11.1	
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1WBLn1
Capacity (veh/h)	-	-	375 797
HCM Lane V/C Ratio	-	-	0.453 0.26
HCM Control Delay (s)	-	-	22.3 11.1
HCM Lane LOS	-	-	C B
HCM 95th %tile Q(veh)	-	-	2.3 1

Lanes, Volumes, Timings
1: St. Laurent & Coventry/Ogilvie

Projected 2022 AM

06/07/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 			  			  	
Traffic Volume (vph)	66	205	58	682	625	24	141	802	549	33	815	132
Future Volume (vph)	66	205	58	682	625	24	141	802	549	33	815	132
Satd. Flow (prot)	3288	3390	1517	3288	3390	1517	1695	4478	0	1695	4871	1517
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3269	3390	1384	3164	3390	1464	1658	4478	0	1685	4871	1395
Satd. Flow (RTOR)			195			140		125				196
Lane Group Flow (vph)	66	205	58	682	625	24	141	1351	0	33	815	132
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	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		5.0	10.0	10.0
Minimum Split (s)	11.9	37.5	37.5	11.9	37.5	37.5	11.4	35.4		11.4	35.4	35.4
Total Split (s)	15.0	37.0	37.0	36.0	58.0	58.0	22.0	35.0		22.0	35.0	35.0
Total Split (%)	11.5%	28.5%	28.5%	27.7%	44.6%	44.6%	16.9%	26.9%		16.9%	26.9%	26.9%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	3.2	2.8	2.8	3.2	2.8	2.8	2.7	2.7		2.7	2.7	2.7
Lost Time Adjust (s)	-2.9	-2.5	-2.5	-2.9	-2.5	-2.5	-2.4	-2.4		-2.4	-2.4	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	21.9	25.1	25.1	31.4	37.2	37.2	16.5	52.1		10.4	41.0	41.0
Actuated g/C Ratio	0.17	0.19	0.19	0.24	0.29	0.29	0.13	0.40		0.08	0.32	0.32
v/c Ratio	0.12	0.31	0.14	0.86	0.65	0.05	0.66	0.72		0.24	0.53	0.23
Control Delay	43.8	44.5	0.7	55.7	26.9	0.2	87.9	30.0		59.7	40.5	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	43.8	44.5	0.7	55.7	26.9	0.2	87.9	30.0		59.7	40.5	1.7
LOS	D	D	A	E	C	A	F	C		E	D	A
Approach Delay		36.6			41.2			35.4			36.0	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	6.8	22.0	0.0	89.8	74.5	0.0	36.3	116.1		8.1	70.3	0.0
Queue Length 95th (m)	13.7	32.7	0.0	#114.0	79.7	m0.0	60.3	#156.1		18.4	85.5	2.4
Internal Link Dist (m)		132.3			135.6			202.6			118.5	
Turn Bay Length (m)				160.0			60.0			60.0		45.0
Base Capacity (vph)	565	860	496	811	1408	689	234	1868		234	1536	573
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.12	0.24	0.12	0.84	0.44	0.03	0.60	0.72		0.14	0.53	0.23

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

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

Natural Cycle: 110

Control Type: Actuated-Coordinated

Lanes, Volumes, Timings

1: St. Laurent & Coventry/Ogilvie

Projected 2022 AM
06/07/2019

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 37.5

Intersection LOS: D

Intersection Capacity Utilization 89.6%

ICU Level of Service E

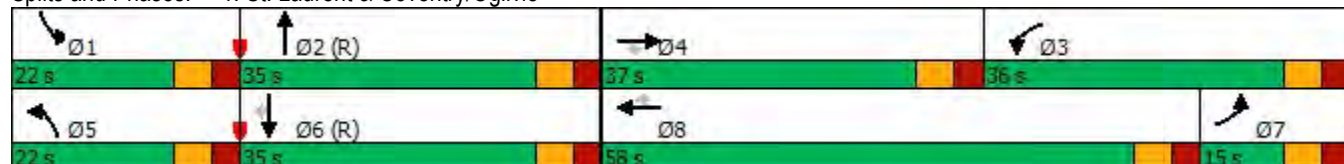
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 1: St. Laurent & Coventry/Ogilvie



Lanes, Volumes, Timings
2: Cyrville & Ogilvie

Projected 2022 AM

06/07/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗	↖	↑↑	↗	↖	↗		↖	↗	
Traffic Volume (vph)	0	599	227	25	1088	166	165	244	12	47	158	45
Future Volume (vph)	0	599	227	25	1088	166	165	244	12	47	158	45
Satd. Flow (prot)	0	3390	1517	1695	3390	1517	1695	1770	0	1695	1718	0
Flt Permitted				0.384			0.539			0.471		
Satd. Flow (perm)	0	3390	1422	677	3390	1381	957	1770	0	838	1718	0
Satd. Flow (RTOR)			227			146		2			12	
Lane Group Flow (vph)	0	599	227	25	1088	166	165	256	0	47	203	0
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases			2	6		6	8			4		
Detector Phase		2	2	6	6	6	8	8		4	4	
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)		32.2	32.2	32.2	32.2	32.2	47.1	47.1		47.1	47.1	
Total Split (s)		80.0	80.0	80.0	80.0	80.0	50.0	50.0		50.0	50.0	
Total Split (%)		61.5%	61.5%	61.5%	61.5%	61.5%	38.5%	38.5%		38.5%	38.5%	
Yellow Time (s)		3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)		2.5	2.5	2.5	2.5	2.5	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)		-2.2	-2.2	-2.2	-2.2	-2.2	-3.1	-3.1		-3.1	-3.1	
Total Lost Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max	C-Max	C-Max	C-Max	C-Max	Max	Max		Max	Max	
Act Effct Green (s)		76.0	76.0	76.0	76.0	76.0	46.0	46.0		46.0	46.0	
Actuated g/C Ratio		0.58	0.58	0.58	0.58	0.58	0.35	0.35		0.35	0.35	
v/c Ratio		0.30	0.25	0.06	0.55	0.19	0.49	0.41		0.16	0.33	
Control Delay		7.7	1.7	4.6	8.3	1.1	38.8	33.9		30.7	30.7	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		7.7	1.7	4.6	8.3	1.1	38.8	33.9		30.7	30.7	
LOS		A	A	A	A	A	D	C		C	C	
Approach Delay		6.1			7.3			35.8			30.7	
Approach LOS		A			A			D			C	
Queue Length 50th (m)		16.5	1.6	0.9	63.5	2.1	32.9	48.9		8.2	35.5	
Queue Length 95th (m)		13.8	m0.0	m1.6	77.3	m2.9	55.1	73.0		17.6	55.6	
Internal Link Dist (m)		135.6			179.4			406.7			100.8	
Turn Bay Length (m)				50.0		50.0	50.0					
Base Capacity (vph)		1981	925	395	1981	868	338	627		296	615	
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		0.30	0.25	0.06	0.55	0.19	0.49	0.41		0.16	0.33	
Intersection Summary												
Cycle Length: 130												
Actuated Cycle Length: 130												
Offset: 10 (8%), Referenced to phase 2:EBT and 6:WBTL, Start of Green												
Natural Cycle: 80												
Control Type: Actuated-Coordinated												

Lanes, Volumes, Timings

2: Cyrville & Ogilvie

Projected 2022 AM

06/07/2019

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 13.4

Intersection LOS: B

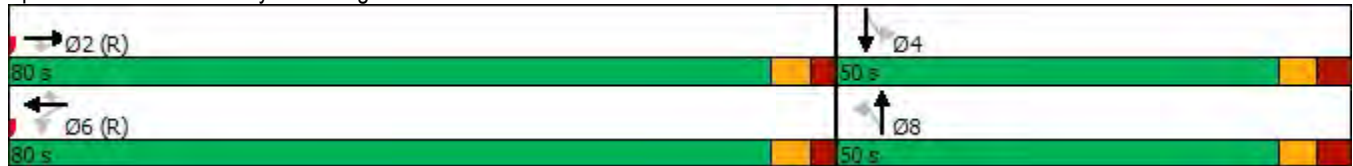
Intersection Capacity Utilization 84.7%

ICU Level of Service E

Analysis Period (min) 15

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

Splits and Phases: 2: Cyrville & Ogilvie



Lanes, Volumes, Timings
3: Ogilvie & Cummings

Projected 2022 AM

06/07/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	607	11	173	1120	170	82	31	71	138	131	112
Future Volume (vph)	48	607	11	173	1120	170	82	31	71	138	131	112
Satd. Flow (prot)	1695	3380	0	1695	3292	0	1695	1784	1517	1695	1647	0
Flt Permitted	0.108			0.347			0.608			0.639		
Satd. Flow (perm)	193	3380	0	619	3292	0	1085	1784	1517	1072	1647	0
Satd. Flow (RTOR)		2			19				98		35	
Lane Group Flow (vph)	48	618	0	173	1290	0	82	31	71	138	243	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	8	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	9.7	24.7		11.0	24.7		36.6	36.6	36.6	9.3	36.6	
Total Split (s)	11.0	71.0		11.0	71.0		37.0	37.0	37.0	11.0	48.0	
Total Split (%)	8.5%	54.6%		8.5%	54.6%		28.5%	28.5%	28.5%	8.5%	36.9%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.0	2.0		1.0	2.0		3.3	3.3	3.3	1.0	3.3	
Lost Time Adjust (s)	0.7	-1.7		0.0	-1.7		0.0	0.0	0.0	0.3	0.0	
Total Lost Time (s)	5.4	4.0		4.7	4.0		6.6	6.6	6.6	4.6	6.6	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	Max	
Act Effct Green (s)	71.0	67.0		73.5	69.2		30.4	30.4	30.4	43.4	41.4	
Actuated g/C Ratio	0.55	0.52		0.57	0.53		0.23	0.23	0.23	0.33	0.32	
v/c Ratio	0.29	0.35		0.43	0.73		0.32	0.07	0.17	0.36	0.44	
Control Delay	26.0	22.3		13.9	19.4		45.6	39.6	4.1	34.7	32.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	26.0	22.3		13.9	19.4		45.6	39.6	4.1	34.7	32.9	
LOS	C	C		B	B		D	D	A	C	C	
Approach Delay		22.6			18.7			28.6			33.5	
Approach LOS		C			B			C			C	
Queue Length 50th (m)	5.9	44.8		17.7	70.2		17.5	6.2	0.0	25.6	42.1	
Queue Length 95th (m)	17.0	58.1		m20.1	m78.2		32.8	14.6	6.5	42.1	66.5	
Internal Link Dist (m)		108.2			386.5			96.6			235.7	
Turn Bay Length (m)	85.0			90.0			40.0		16.0	150.0		
Base Capacity (vph)	170	1742		402	1760		253	417	429	388	548	
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	0.28	0.35		0.43	0.73		0.32	0.07	0.17	0.36	0.44	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 110 (85%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Lanes, Volumes, Timings 3: Ogilvie & Cummings

Projected 2022 AM
06/07/2019

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 22.5

Intersection LOS: C

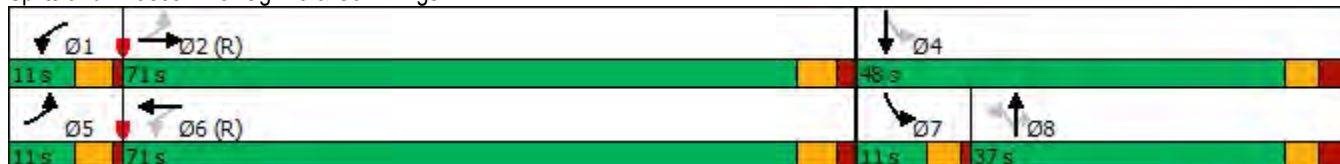
Intersection Capacity Utilization 95.1%

ICU Level of Service F

Analysis Period (min) 15

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

Splits and Phases: 3: Ogilvie & Cummings



Lanes, Volumes, Timings
4: Aviation Parkway & Ogilvie

Projected 2022 AM

06/07/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	301	545	64	153	890	121	358	585	415	133	342	238
Future Volume (vph)	301	545	64	153	890	121	358	585	415	133	342	238
Satd. Flow (prot)	1695	3247	1380	1695	3390	1517	1695	3162	0	1695	3160	0
Flt Permitted	0.100			0.334			0.950			0.950		
Satd. Flow (perm)	178	3247	1341	593	3390	1492	1693	3162	0	1694	3160	0
Satd. Flow (RTOR)			164			164		143			121	
Lane Group Flow (vph)	301	545	64	153	890	121	358	1000	0	133	580	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		10.9	30.1	
Total Split (s)	20.0	47.0	47.0	20.0	47.0	47.0	33.0	45.0		18.0	30.0	
Total Split (%)	15.4%	36.2%	36.2%	15.4%	36.2%	36.2%	25.4%	34.6%		13.8%	23.1%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		2.2	2.4	
Lost Time Adjust (s)	0.7	-2.1	-2.1	0.7	-2.1	-2.1	-1.9	-2.1		-1.9	-2.1	
Total Lost Time (s)	5.4	4.0	4.0	5.4	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max		None	Max	
Act Effct Green (s)	59.1	46.2	46.2	53.0	43.0	43.0	29.0	41.4		13.6	26.0	
Actuated g/C Ratio	0.45	0.36	0.36	0.41	0.33	0.33	0.22	0.32		0.10	0.20	
v/c Ratio	1.20	0.47	0.11	0.45	0.79	0.20	0.95	0.91		0.75	0.80	
Control Delay	158.7	29.8	1.8	24.7	45.7	2.3	84.7	48.8		82.1	48.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	158.7	29.8	1.8	24.7	45.7	2.3	84.7	48.8		82.1	48.1	
LOS	F	C	A	C	D	A	F	D		F	D	
Approach Delay		70.4			38.5			58.2			54.4	
Approach LOS		E			D			E			D	
Queue Length 50th (m)	~78.6	48.4	0.3	22.1	108.6	0.0	91.0	114.2		33.5	60.3	
Queue Length 95th (m)	#138.9	66.9	3.8	35.8	133.7	5.3	#149.5	#154.0		#63.2	81.5	
Internal Link Dist (m)		386.5			205.1			147.2			200.4	
Turn Bay Length (m)	75.0		60.0	55.0		70.0	110.0			110.0		
Base Capacity (vph)	251	1154	582	380	1121	603	378	1104		182	728	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	1.20	0.47	0.11	0.40	0.79	0.20	0.95	0.91		0.73	0.80	
Intersection Summary												
Cycle Length: 130												
Actuated Cycle Length: 130												
Offset: 105 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green												
Natural Cycle: 115												
Control Type: Actuated-Coordinated												

Maximum v/c Ratio: 1.20

Intersection Signal Delay: 54.7

Intersection LOS: D

Intersection Capacity Utilization 99.0%

ICU Level of Service F

Analysis Period (min) 15

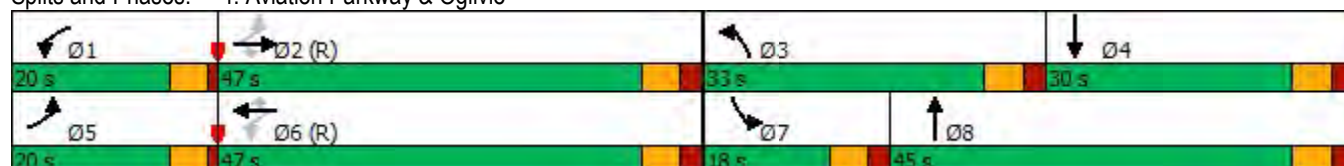
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Aviation Parkway & Ogilvie



Lanes, Volumes, Timings
5: Cummings & Donald

Projected 2022 AM

06/07/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	42	158	235	129	200	104
Future Volume (vph)	42	158	235	129	200	104
Satd. Flow (prot)	1695	1517	1695	1784	1681	0
Flt Permitted	0.950		0.575			
Satd. Flow (perm)	1662	1447	1016	1784	1681	0
Satd. Flow (RTOR)		158			72	
Lane Group Flow (vph)	42	158	235	129	304	0
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	22.0	22.0	24.9	24.9	32.9	
Total Split (s)	22.0	22.0	39.9	39.9	39.9	
Total Split (%)	35.5%	35.5%	64.5%	64.5%	64.5%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7	3.6	3.6	3.6	
Lost Time Adjust (s)	-2.0	-2.0	-2.9	-2.9	-2.9	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	
Act Effect Green (s)	13.1	13.1	39.9	39.9	39.9	
Actuated g/C Ratio	0.23	0.23	0.70	0.70	0.70	
v/c Ratio	0.11	0.35	0.33	0.10	0.25	
Control Delay	17.8	6.0	7.0	4.9	4.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	17.8	6.0	7.0	4.9	4.4	
LOS	B	A	A	A	A	
Approach Delay	8.5			6.3	4.4	
Approach LOS	A			A	A	
Queue Length 50th (m)	3.5	0.0	9.1	4.1	8.0	
Queue Length 95th (m)	9.5	11.1	26.1	12.0	22.2	
Internal Link Dist (m)	138.1			235.7	73.1	
Turn Bay Length (m)		50.0	60.0			
Base Capacity (vph)	536	566	712	1251	1200	
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	0.28	0.33	0.10	0.25	
Intersection Summary						
Cycle Length: 61.9						
Actuated Cycle Length: 56.9						
Natural Cycle: 55						
Control Type: Actuated-Uncoordinated						
Maximum v/c Ratio: 0.35						

Lanes, Volumes, Timings
5: Cummings & Donald

Projected 2022 AM
06/07/2019

Intersection Signal Delay: 6.1

Intersection LOS: A

Intersection Capacity Utilization 55.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 5: Cummings & Donald



Lanes, Volumes, Timings
6: Cyrville & Labelle

Projected 2022 AM

06/07/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	26	24	139	127	21	160	445	139	30	176	96
Future Volume (vph)	9	26	24	139	127	21	160	445	139	30	176	96
Satd. Flow (prot)	1695	1611	0	1695	1747	0	1695	1720	0	1695	1673	0
Flt Permitted	0.663			0.724			0.585			0.351		
Satd. Flow (perm)	1173	1611	0	1292	1747	0	1039	1720	0	626	1673	0
Satd. Flow (RTOR)		24			11			30			53	
Lane Group Flow (vph)	9	50	0	139	148	0	160	584	0	30	272	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		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	
Minimum Split (s)	27.5	27.5		27.5	27.5		34.3	34.3		34.3	34.3	
Total Split (s)	28.0	28.0		28.0	28.0		42.0	42.0		42.0	42.0	
Total Split (%)	37.3%	37.3%		37.3%	37.3%		56.0%	56.0%		56.0%	56.0%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	2.2	2.2		2.2	2.2		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.5	0.0		0.0	0.0		-2.3	-2.3		0.0	-2.3	
Total Lost Time (s)	4.0	5.5		5.5	5.5		4.0	4.0		6.3	4.0	
Lead/Lag	Lag	Lag		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)	14.8	13.3		13.3	13.3		41.1	41.1		38.8	41.1	
Actuated g/C Ratio	0.23	0.20		0.20	0.20		0.63	0.63		0.60	0.63	
v/c Ratio	0.03	0.14		0.53	0.40		0.24	0.53		0.08	0.25	
Control Delay	18.1	13.4		29.5	23.0		8.0	9.9		8.7	6.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	18.1	13.4		29.5	23.0		8.0	9.9		8.7	6.0	
LOS	B	B		C	C		A	A		A	A	
Approach Delay		14.1			26.1			9.5			6.3	
Approach LOS		B			C			A			A	
Queue Length 50th (m)	0.8	2.3		13.7	13.0		6.0	26.1		1.2	8.0	
Queue Length 95th (m)	3.9	9.8		30.0	28.3		24.1	86.5		6.7	30.2	
Internal Link Dist (m)		133.5			129.3			94.0			406.7	
Turn Bay Length (m)	30.0			40.0						55.0		
Base Capacity (vph)	438	580		452	619		658	1100		373	1079	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.02	0.09		0.31	0.24		0.24	0.53		0.08	0.25	
Intersection Summary												
Cycle Length: 75												
Actuated Cycle Length: 64.9												
Natural Cycle: 70												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.53												

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	7%	7%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Lanes, Volumes, Timings 6: Cyrville & Labelle

Projected 2022 AM

06/07/2019

Intersection Signal Delay: 12.4

Intersection LOS: B

Intersection Capacity Utilization 69.9%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 6: Cyrville & Labelle



Lanes, Volumes, Timings
7: St. Laurent & Lemieux

Projected 2022 AM
06/07/2019

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	603	153	1252	228	6	1482
Future Volume (vph)	603	153	1252	228	6	1482
Satd. Flow (prot)	3288	1517	4871	1517	1695	4871
Flt Permitted	0.950				0.188	
Satd. Flow (perm)	3288	1450	4871	1477	335	4871
Satd. Flow (RTOR)		61		228		
Lane Group Flow (vph)	603	153	1252	228	6	1482
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	37.5	37.5	24.0	24.0
Total Split (s)	50.0	50.0	80.0	80.0	80.0	80.0
Total Split (%)	38.5%	38.5%	61.5%	61.5%	61.5%	61.5%
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	-2.1	-2.1	-1.5	-1.5	-1.5	-1.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	32.0	32.0	90.0	90.0	90.0	90.0
Actuated g/C Ratio	0.25	0.25	0.69	0.69	0.69	0.69
v/c Ratio	0.75	0.38	0.37	0.21	0.03	0.44
Control Delay	51.0	25.7	9.1	1.5	7.5	11.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.0	25.7	9.1	1.5	7.5	11.2
LOS	D	C	A	A	A	B
Approach Delay	45.9		7.9			11.2
Approach LOS	D		A			B
Queue Length 50th (m)	73.6	19.1	44.8	0.0	0.6	67.6
Queue Length 95th (m)	87.6	36.2	62.1	8.8	m1.0	74.9
Internal Link Dist (m)	109.2		139.3			202.6
Turn Bay Length (m)		25.0		60.0	125.0	
Base Capacity (vph)	1163	552	3373	1092	231	3373
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.28	0.37	0.21	0.03	0.44
Intersection Summary						
Cycle Length: 130						
Actuated Cycle Length: 130						
Offset: 124 (95%), Referenced to phase 2:NBT and 6:SBTL, Start of Green						
Natural Cycle: 75						
Control Type: Actuated-Coordinated						

Lanes, Volumes, Timings
7: St. Laurent & Lemieux

Projected 2022 AM
06/07/2019

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 17.0

Intersection LOS: B

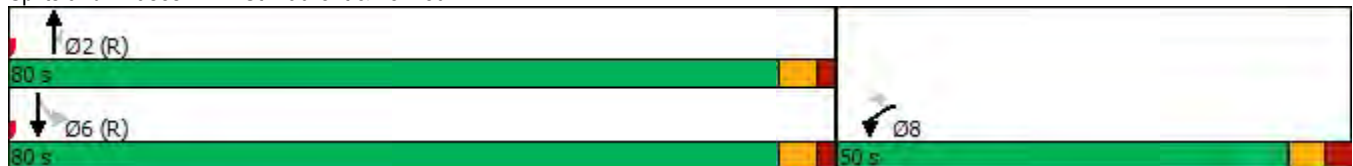
Intersection Capacity Utilization 58.9%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 7: St. Laurent & Lemieux



Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↱			↑↑		↱
Traffic Vol, veh/h	615	45	0	1319	0	28
Future Vol, veh/h	615	45	0	1319	0	28
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	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	615	45	0	1319	0	28
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	330
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	666
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	666
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		10.6	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT		
Capacity (veh/h)	666	-	-	-		
HCM Lane V/C Ratio	0.042	-	-	-		
HCM Control Delay (s)	10.6	-	-	-		
HCM Lane LOS	B	-	-	-		
HCM 95th %tile Q(veh)	0.1	-	-	-		

Intersection						
Int Delay, s/veh	2.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	92	21	3	96	302	20
Future Vol, veh/h	92	21	3	96	302	20
Conflicting Peds, #/hr	0	0	0	0	0	0
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
Mvmt Flow	92	21	3	96	302	20
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	414	312	322	0	-	0
Stage 1	312	-	-	-	-	-
Stage 2	102	-	-	-	-	-
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	595	728	1238	-	-	-
Stage 1	742	-	-	-	-	-
Stage 2	922	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	593	728	1238	-	-	-
Mov Cap-2 Maneuver	593	-	-	-	-	-
Stage 1	740	-	-	-	-	-
Stage 2	922	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	12.2	0.2		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1238	-	614	-	-	
HCM Lane V/C Ratio	0.002	-	0.184	-	-	
HCM Control Delay (s)	7.9	0	12.2	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0	-	0.7	-	-	

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	0	0	0	0	139	133	640	44	0	0	178
Future Vol, veh/h	30	0	0	0	0	139	133	640	44	0	0	178
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	-	-	Free	-	-	Free
Storage Length	0	-	-	-	-	0	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
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	30	0	0	0	0	139	133	640	44	0	0	178

Major/Minor	Minor2	Minor1				Major1			
Conflicting Flow All	586	-	-	-	-	320	0	0	-
Stage 1	0	-	-	-	-	-	-	-	-
Stage 2	586	-	-	-	-	-	-	-	-
Critical Hdwy	7.54	-	-	-	-	6.94	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	-	-	-	-	3.32	2.22	-	-
Pot Cap-1 Maneuver	394	0	0	0	0	676	-	-	0
Stage 1	-	0	0	0	0	-	-	-	0
Stage 2	463	0	0	0	0	-	-	-	0
Platoon blocked, %									
Mov Cap-1 Maneuver	313	-	-	-	-	676	-	-	-
Mov Cap-2 Maneuver	313	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	368	-	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	17.7	11.7	
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1WBLn1
Capacity (veh/h)	-	-	313 676
HCM Lane V/C Ratio	-	-	0.096 0.206
HCM Control Delay (s)	-	-	17.7 11.7
HCM Lane LOS	-	-	C B
HCM 95th %tile Q(veh)	-	-	0.3 0.8

Lanes, Volumes, Timings
1: St. Laurent & Coventry/Ogilvie

Projected 2022 PM

06/07/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	302	601	205	500	386	30	182	880	672	71	789	192
Future Volume (vph)	302	601	205	500	386	30	182	880	672	71	789	192
Satd. Flow (prot)	3288	3390	1517	3288	3390	1517	1695	4460	0	1695	4871	1517
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3264	3390	1392	3222	3390	1459	1658	4460	0	1688	4871	1403
Satd. Flow (RTOR)			210			210		172				211
Lane Group Flow (vph)	302	601	205	500	386	30	182	1552	0	71	789	192
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	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		5.0	10.0	10.0
Minimum Split (s)	11.9	37.5	37.5	11.9	37.5	37.5	11.4	35.4		11.4	35.4	35.4
Total Split (s)	24.0	37.0	37.0	24.0	37.0	37.0	24.0	44.0		15.0	35.0	35.0
Total Split (%)	20.0%	30.8%	30.8%	20.0%	30.8%	30.8%	20.0%	36.7%		12.5%	29.2%	29.2%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	3.2	2.8	2.8	3.2	2.8	2.8	2.7	2.7		2.7	2.7	2.7
Lost Time Adjust (s)	-2.9	-2.5	-2.5	-2.9	-2.5	-2.5	-2.4	-2.4		-2.4	-2.4	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	24.5	30.0	30.0	21.5	27.0	27.0	18.3	44.5		10.6	34.2	34.2
Actuated g/C Ratio	0.20	0.25	0.25	0.18	0.22	0.22	0.15	0.37		0.09	0.28	0.28
v/c Ratio	0.45	0.71	0.41	0.85	0.51	0.06	0.71	1.02dr		0.48	0.57	0.35
Control Delay	45.7	45.7	6.8	55.6	41.6	0.2	72.9	32.4		63.1	39.4	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	45.7	45.7	6.8	55.6	41.6	0.2	72.9	32.4		63.1	39.4	5.3
LOS	D	D	A	E	D	A	E	C		E	D	A
Approach Delay		38.5			47.9			36.6			34.8	
Approach LOS		D			D			D			C	
Queue Length 50th (m)	34.0	65.7	0.0	52.0	49.8	0.0	34.1	121.2		16.1	60.5	0.0
Queue Length 95th (m)	48.3	85.2	16.7	#88.6	62.3	m0.0	62.3	#154.5		31.1	74.6	13.7
Internal Link Dist (m)		132.3			135.6			202.6			118.5	
Turn Bay Length (m)				160.0			60.0			60.0		45.0
Base Capacity (vph)	670	932	535	588	932	553	282	1761		155	1387	550
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.45	0.64	0.38	0.85	0.41	0.05	0.65	0.88		0.46	0.57	0.35

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 110

Control Type: Actuated-Coordinated

Lanes, Volumes, Timings

1: St. Laurent & Coventry/Ogilvie

Projected 2022 PM

06/07/2019

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 38.8

Intersection LOS: D

Intersection Capacity Utilization 91.2%

ICU Level of Service F

Analysis Period (min) 15

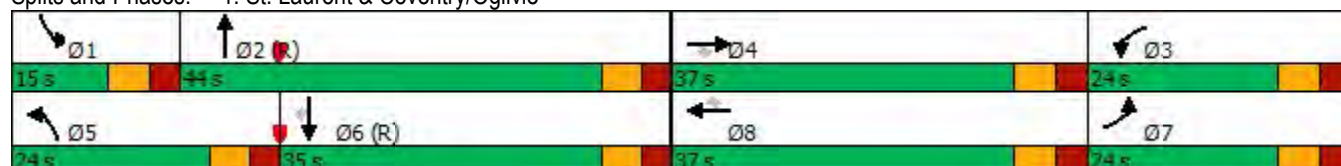
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 1: St. Laurent & Coventry/Ogilvie



Lanes, Volumes, Timings
2: Cyrville & Ogilvie

Projected 2022 PM

06/07/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗	↖	↑↑	↗	↖	↗		↖	↗	
Traffic Volume (vph)	0	1091	257	40	705	124	117	219	32	134	222	80
Future Volume (vph)	0	1091	257	40	705	124	117	219	32	134	222	80
Satd. Flow (prot)	0	3390	1517	1695	3390	1517	1695	1747	0	1695	1704	0
Flt Permitted				0.177			0.439			0.499		
Satd. Flow (perm)	0	3390	1425	315	3390	1388	780	1747	0	888	1704	0
Satd. Flow (RTOR)			257			124		7			18	
Lane Group Flow (vph)	0	1091	257	40	705	124	117	251	0	134	302	0
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases			2	6		6	8			4		
Detector Phase		2	2	6	6	6	8	8		4	4	
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)		32.2	32.2	32.2	32.2	32.2	47.1	47.1		47.1	47.1	
Total Split (s)		70.0	70.0	70.0	70.0	70.0	50.0	50.0		50.0	50.0	
Total Split (%)		58.3%	58.3%	58.3%	58.3%	58.3%	41.7%	41.7%		41.7%	41.7%	
Yellow Time (s)		3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)		2.5	2.5	2.5	2.5	2.5	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)		-2.2	-2.2	-2.2	-2.2	-2.2	-3.1	-3.1		-3.1	-3.1	
Total Lost Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max	C-Max	C-Max	C-Max	C-Max	Max	Max		Max	Max	
Act Effct Green (s)		66.0	66.0	66.0	66.0	66.0	46.0	46.0		46.0	46.0	
Actuated g/C Ratio		0.55	0.55	0.55	0.55	0.55	0.38	0.38		0.38	0.38	
v/c Ratio		0.59	0.29	0.23	0.38	0.15	0.39	0.37		0.39	0.45	
Control Delay		10.3	1.6	24.3	22.4	8.7	31.8	27.8		31.2	28.6	
Queue Delay		0.5	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		10.8	1.6	24.3	22.4	8.7	31.8	27.8		31.2	28.6	
LOS		B	A	C	C	A	C	C		C	C	
Approach Delay		9.0			20.6			29.1			29.4	
Approach LOS		A			C			C			C	
Queue Length 50th (m)		62.2	3.4	5.1	47.8	5.0	19.8	40.8		22.7	49.3	
Queue Length 95th (m)		m76.5	m6.5	m7.7	m64.6	m9.7	36.9	62.7		40.5	74.6	
Internal Link Dist (m)		135.6			179.4			406.7			100.8	
Turn Bay Length (m)				50.0		50.0	50.0					
Base Capacity (vph)		1864	899	173	1864	819	299	674		340	664	
Starvation Cap Reductn		346	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		0.72	0.29	0.23	0.38	0.15	0.39	0.37		0.39	0.45	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 20 (17%), Referenced to phase 2:EBT and 6:WBTL, Start of Green												
Natural Cycle: 80												
Control Type: Actuated-Coordinated												

Lanes, Volumes, Timings

2: Cyrville & Ogilvie

Projected 2022 PM

06/07/2019

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 17.7

Intersection LOS: B

Intersection Capacity Utilization 86.8%

ICU Level of Service E

Analysis Period (min) 15

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

Splits and Phases: 2: Cyrville & Ogilvie



Lanes, Volumes, Timings
3: Ogilvie & Cummings

Projected 2022 PM

06/07/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	1144	23	125	759	209	74	182	221	258	186	84
Future Volume (vph)	110	1144	23	125	759	209	74	182	221	258	186	84
Satd. Flow (prot)	1695	3376	0	1695	3236	0	1695	1784	1517	1695	1691	0
Flt Permitted	0.102			0.101			0.593			0.478		
Satd. Flow (perm)	182	3376	0	180	3236	0	1054	1784	1406	818	1691	0
Satd. Flow (RTOR)		2			32				162		25	
Lane Group Flow (vph)	110	1167	0	125	968	0	74	182	221	258	270	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	8	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	9.7	24.7		9.7	24.7		36.6	36.6	36.6	9.3	36.6	
Total Split (s)	15.0	45.0		15.0	45.0		40.0	40.0	40.0	20.0	60.0	
Total Split (%)	12.5%	37.5%		12.5%	37.5%		33.3%	33.3%	33.3%	16.7%	50.0%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.0	2.0		1.0	2.0		3.3	3.3	3.3	1.0	3.3	
Lost Time Adjust (s)	0.7	-1.7		0.7	-1.7		-2.6	-2.6	-2.6	0.3	-2.6	
Total Lost Time (s)	5.4	4.0		5.4	4.0		4.0	4.0	4.0	4.6	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	None	Max	
Act Effct Green (s)	48.9	41.8		49.5	42.1		37.0	37.0	37.0	55.4	56.0	
Actuated g/C Ratio	0.41	0.35		0.41	0.35		0.31	0.31	0.31	0.46	0.47	
v/c Ratio	0.61	0.99		0.67	0.84		0.23	0.33	0.40	0.54	0.34	
Control Delay	48.8	42.3		52.9	37.5		33.8	34.5	12.2	25.2	19.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	48.8	42.3		52.9	37.5		33.8	34.5	12.2	25.2	19.7	
LOS	D	D		D	D		C	C	B	C	B	
Approach Delay		42.9			39.2			24.1			22.4	
Approach LOS		D			D			C			C	
Queue Length 50th (m)	12.1	~154.1		22.7	68.8		13.1	33.4	10.2	37.6	35.4	
Queue Length 95th (m)	30.3	#190.2		m#44.1	105.3		25.9	53.3	31.1	57.2	54.9	
Internal Link Dist (m)		108.2			386.5			96.6			235.7	
Turn Bay Length (m)	85.0			90.0			40.0		16.0	150.0		
Base Capacity (vph)	196	1176		196	1154		325	550	546	490	802	
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	0.56	0.99		0.64	0.84		0.23	0.33	0.40	0.53	0.34	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 46 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green												
Natural Cycle: 85												
Control Type: Actuated-Coordinated												

Lanes, Volumes, Timings

3: Ogilvie & Cummings

Projected 2022 PM

06/07/2019

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 35.8

Intersection LOS: D

Intersection Capacity Utilization 96.6%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

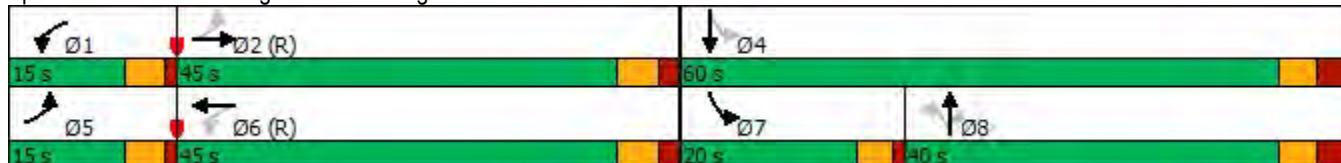
Queue shown is maximum after two cycles.

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: 3: Ogilvie & Cummings



Lanes, Volumes, Timings
4: Aviation Parkway & Ogilvie

Projected 2022 PM

06/07/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	183	762	92	136	607	112	134	213	180	112	249	168
Future Volume (vph)	183	762	92	136	607	112	134	213	180	112	249	168
Satd. Flow (prot)	1695	3247	1380	1695	3390	1517	1695	3137	0	1695	3168	0
Flt Permitted	0.313			0.241			0.950			0.950		
Satd. Flow (perm)	558	3247	1343	429	3390	1493	1692	3137	0	1694	3168	0
Satd. Flow (RTOR)			125			125		164			126	
Lane Group Flow (vph)	183	762	92	136	607	112	134	393	0	112	417	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		10.9	30.1	
Total Split (s)	20.0	51.0	51.0	20.0	51.0	51.0	19.0	30.0		19.0	30.0	
Total Split (%)	16.7%	42.5%	42.5%	16.7%	42.5%	42.5%	15.8%	25.0%		15.8%	25.0%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		2.2	2.4	
Lost Time Adjust (s)	0.7	-2.1	-2.1	0.7	-2.1	-2.1	-1.9	-2.1		-1.9	-2.1	
Total Lost Time (s)	5.4	4.0	4.0	5.4	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max		None	Max	
Act Effct Green (s)	61.9	52.0	52.0	58.5	50.3	50.3	14.1	27.4		13.6	26.9	
Actuated g/C Ratio	0.52	0.43	0.43	0.49	0.42	0.42	0.12	0.23		0.11	0.22	
v/c Ratio	0.46	0.54	0.14	0.44	0.43	0.16	0.68	0.47		0.59	0.52	
Control Delay	21.0	26.2	4.4	18.4	26.2	3.7	67.9	25.1		63.0	30.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	21.0	26.2	4.4	18.4	26.2	3.7	67.9	25.1		63.0	30.9	
LOS	C	C	A	B	C	A	E	C		E	C	
Approach Delay		23.4			22.0			36.0			37.7	
Approach LOS		C			C			D			D	
Queue Length 50th (m)	22.3	54.0	1.5	15.1	52.3	0.0	30.4	24.3		25.1	31.7	
Queue Length 95th (m)	m26.6	m59.2	m2.5	25.4	71.1	9.0	#51.8	39.7		43.7	47.9	
Internal Link Dist (m)		386.5			205.1			147.2			200.4	
Turn Bay Length (m)	75.0		60.0	55.0		70.0	110.0			110.0		
Base Capacity (vph)	438	1407	653	380	1421	698	211	843		211	808	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.42	0.54	0.14	0.36	0.43	0.16	0.64	0.47		0.53	0.52	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 50 (42%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green												
Natural Cycle: 85												
Control Type: Actuated-Coordinated												

Lanes, Volumes, Timings

4: Aviation Parkway & Ogilvie

Projected 2022 PM

06/07/2019

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 27.8

Intersection LOS: C

Intersection Capacity Utilization 76.4%

ICU Level of Service D

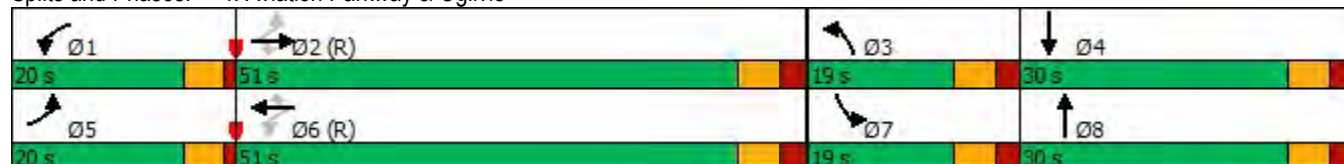
Analysis Period (min) 15

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: 4: Aviation Parkway & Ogilvie



Lanes, Volumes, Timings
5: Cummings & Donald

Projected 2022 PM

06/07/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	88	322	257	248	248	90
Future Volume (vph)	88	322	257	248	248	90
Satd. Flow (prot)	1695	1517	1695	1784	1702	0
Flt Permitted	0.950		0.544			
Satd. Flow (perm)	1658	1442	961	1784	1702	0
Satd. Flow (RTOR)		322			37	
Lane Group Flow (vph)	88	322	257	248	338	0
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	22.0	22.0	24.9	24.9	32.9	
Total Split (s)	31.0	31.0	39.9	39.9	39.9	
Total Split (%)	43.7%	43.7%	56.3%	56.3%	56.3%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7	3.6	3.6	3.6	
Lost Time Adjust (s)	-2.0	-2.0	-2.9	-2.9	-2.9	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	
Act Effect Green (s)	13.1	13.1	36.0	36.0	36.0	
Actuated g/C Ratio	0.23	0.23	0.63	0.63	0.63	
v/c Ratio	0.23	0.56	0.42	0.22	0.31	
Control Delay	19.3	6.7	8.6	5.5	5.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	19.3	6.7	8.6	5.5	5.6	
LOS	B	A	A	A	A	
Approach Delay	9.4			7.1	5.6	
Approach LOS	A			A	A	
Queue Length 50th (m)	7.5	0.0	10.4	8.6	10.8	
Queue Length 95th (m)	16.6	15.4	30.5	21.9	28.1	
Internal Link Dist (m)	138.1			235.7	73.1	
Turn Bay Length (m)		50.0	60.0			
Base Capacity (vph)	802	852	605	1123	1085	
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	0.11	0.38	0.42	0.22	0.31	
Intersection Summary						
Cycle Length: 70.9						
Actuated Cycle Length: 57.1						
Natural Cycle: 55						
Control Type: Actuated-Uncoordinated						
Maximum v/c Ratio: 0.56						

Lanes, Volumes, Timings
5: Cummings & Donald

Projected 2022 PM

06/07/2019

Intersection Signal Delay: 7.4

Intersection LOS: A

Intersection Capacity Utilization 56.8%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 5: Cummings & Donald



Lanes, Volumes, Timings
6: Cyrville & Labelle

Projected 2022 PM

06/07/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	79	104	201	42	26	46	298	240	59	486	17
Future Volume (vph)	25	79	104	201	42	26	46	298	240	59	486	17
Satd. Flow (prot)	1695	1574	0	1695	1662	0	1695	1637	0	1695	1774	0
Flt Permitted	0.713			0.586			0.387			0.362		
Satd. Flow (perm)	1258	1574	0	1012	1662	0	688	1637	0	642	1774	0
Satd. Flow (RTOR)		91			26			57			2	
Lane Group Flow (vph)	25	183	0	201	68	0	46	538	0	59	503	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		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	
Minimum Split (s)	27.5	27.5		27.5	27.5		34.3	34.3		34.3	34.3	
Total Split (s)	42.0	42.0		42.0	42.0		43.0	43.0		43.0	43.0	
Total Split (%)	46.7%	46.7%		46.7%	46.7%		47.8%	47.8%		47.8%	47.8%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	2.2	2.2		2.2	2.2		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.5	-1.5		-1.5	-1.5		-2.3	-2.3		-2.3	-2.3	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lag	Lag		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)	19.5	19.5		19.5	19.5		40.0	40.0		40.0	40.0	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.58	0.58		0.58	0.58	
v/c Ratio	0.07	0.36		0.70	0.14		0.11	0.55		0.16	0.49	
Control Delay	17.4	11.7		35.0	12.5		10.2	12.3		10.8	12.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	17.4	11.7		35.0	12.5		10.2	12.3		10.8	12.2	
LOS	B	B		D	B		B	B		B	B	
Approach Delay		12.4			29.3			12.2			12.1	
Approach LOS		B			C			B			B	
Queue Length 50th (m)	2.2	8.5		21.7	3.7		2.2	30.8		2.9	31.1	
Queue Length 95th (m)	7.3	23.2		45.4	12.0		10.2	91.2		12.8	86.2	
Internal Link Dist (m)		133.5			129.3			94.0			406.7	
Turn Bay Length (m)	30.0			40.0						55.0		
Base Capacity (vph)	705	923		567	944		401	980		375	1037	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.04	0.20		0.35	0.07		0.11	0.55		0.16	0.49	
Intersection Summary												
Cycle Length: 90												
Actuated Cycle Length: 68.5												
Natural Cycle: 70												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.70												

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Lanes, Volumes, Timings 6: Cyrville & Labelle

Projected 2022 PM

06/07/2019

Intersection Signal Delay: 15.0

Intersection LOS: B

Intersection Capacity Utilization 81.3%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 6: Cyrville & Labelle



Lanes, Volumes, Timings
7: St. Laurent & Lemieux

Projected 2022 PM
06/07/2019

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		  			  
Traffic Volume (vph)	505	156	1653	246	9	1803
Future Volume (vph)	505	156	1653	246	9	1803
Satd. Flow (prot)	3288	1517	4871	1517	1695	4871
Flt Permitted	0.950				0.116	
Satd. Flow (perm)	3288	1454	4871	1477	207	4871
Satd. Flow (RTOR)		35		246		
Lane Group Flow (vph)	505	156	1653	246	9	1803
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	37.5	37.5	24.0	24.0
Total Split (s)	38.0	38.0	82.0	82.0	82.0	82.0
Total Split (%)	31.7%	31.7%	68.3%	68.3%	68.3%	68.3%
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	-2.1	-2.1	-1.5	-1.5	-1.5	-1.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	26.7	26.7	85.3	85.3	85.3	85.3
Actuated g/C Ratio	0.22	0.22	0.71	0.71	0.71	0.71
v/c Ratio	0.69	0.45	0.48	0.22	0.06	0.52
Control Delay	47.6	34.0	8.6	1.4	3.8	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.6	34.0	8.6	1.4	3.8	5.6
LOS	D	C	A	A	A	A
Approach Delay	44.4		7.7			5.6
Approach LOS	D		A			A
Queue Length 50th (m)	57.2	24.8	53.8	0.0	0.2	42.1
Queue Length 95th (m)	70.3	42.4	76.5	7.9	m0.9	72.1
Internal Link Dist (m)	109.2		139.3			202.6
Turn Bay Length (m)		25.0		60.0	125.0	
Base Capacity (vph)	931	437	3461	1120	146	3461
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.36	0.48	0.22	0.06	0.52
Intersection Summary						
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 99 (83%), Referenced to phase 2:NBT and 6:SBTL, Start of Green						
Natural Cycle: 75						
Control Type: Actuated-Coordinated						

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 12.4

Intersection LOS: B

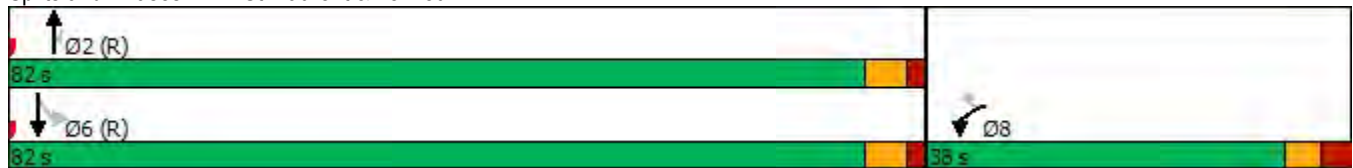
Intersection Capacity Utilization 64.2%

ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 7: St. Laurent & Lemieux



Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↱			↑↑		↱
Traffic Vol, veh/h	1197	67	0	921	0	17
Future Vol, veh/h	1197	67	0	921	0	17
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	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1197	67	0	921	0	17
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	632
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	423
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	423
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		13.9	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT		
Capacity (veh/h)	423	-	-	-		
HCM Lane V/C Ratio	0.04	-	-	-		
HCM Control Delay (s)	13.9	-	-	-		
HCM Lane LOS	B	-	-	-		
HCM 95th %tile Q(veh)	0.1	-	-	-		

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	56	12	6	431	307	32
Future Vol, veh/h	56	12	6	431	307	32
Conflicting Peds, #/hr	0	0	0	0	0	0
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
Mvmt Flow	56	12	6	431	307	32
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	766	323	339	0	-	0
Stage 1	323	-	-	-	-	-
Stage 2	443	-	-	-	-	-
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	371	718	1220	-	-	-
Stage 1	734	-	-	-	-	-
Stage 2	647	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	369	718	1220	-	-	-
Mov Cap-2 Maneuver	369	-	-	-	-	-
Stage 1	730	-	-	-	-	-
Stage 2	647	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	15.7	0.1		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1220	-	404	-	-	
HCM Lane V/C Ratio	0.005	-	0.168	-	-	
HCM Control Delay (s)	8	0	15.7	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0	-	0.6	-	-	

Intersection												
Int Delay, s/veh	6.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	170	0	0	0	0	213	112	427	27	0	0	279
Future Vol, veh/h	170	0	0	0	0	213	112	427	27	0	0	279
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	-	-	Free	-	-	Free
Storage Length	0	-	-	-	-	0	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
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	170	0	0	0	0	213	112	427	27	0	0	279

Major/Minor	Minor2	Minor1				Major1			
Conflicting Flow All	438	-	-	-	-	214	0	0	-
Stage 1	0	-	-	-	-	-	-	-	-
Stage 2	438	-	-	-	-	-	-	-	-
Critical Hdwy	7.54	-	-	-	-	6.94	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	-	-	-	-	3.32	2.22	-	-
Pot Cap-1 Maneuver	502	0	0	0	0	791	-	-	0
Stage 1	-	0	0	0	0	-	-	-	0
Stage 2	567	0	0	0	0	-	-	-	0
Platoon blocked, %									-
Mov Cap-1 Maneuver	367	-	-	-	-	791	-	-	-
Mov Cap-2 Maneuver	367	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	414	-	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	23	11.2	
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1WBLn1
Capacity (veh/h)	-	-	367 791
HCM Lane V/C Ratio	-	-	0.463 0.269
HCM Control Delay (s)	-	-	23 11.2
HCM Lane LOS	-	-	C B
HCM 95th %tile Q(veh)	-	-	2.4 1.1

Lanes, Volumes, Timings
1: St. Laurent & Coventry/Ogilvie

Projected 2027 AM

06/07/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	215	58	682	657	24	141	843	549	33	856	132
Future Volume (vph)	66	215	58	682	657	24	141	843	549	33	856	132
Satd. Flow (prot)	3288	3390	1517	3288	3390	1517	1695	4491	0	1695	4871	1517
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3269	3390	1384	3166	3390	1464	1658	4491	0	1686	4871	1395
Satd. Flow (RTOR)			195			140		119				196
Lane Group Flow (vph)	66	215	58	682	657	24	141	1392	0	33	856	132
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	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		5.0	10.0	10.0
Minimum Split (s)	11.9	37.5	37.5	11.9	37.5	37.5	11.4	35.4		11.4	35.4	35.4
Total Split (s)	15.0	37.0	37.0	36.0	58.0	58.0	22.0	35.0		22.0	35.0	35.0
Total Split (%)	11.5%	28.5%	28.5%	27.7%	44.6%	44.6%	16.9%	26.9%		16.9%	26.9%	26.9%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	3.2	2.8	2.8	3.2	2.8	2.8	2.7	2.7		2.7	2.7	2.7
Lost Time Adjust (s)	-2.9	-2.5	-2.5	-2.9	-2.5	-2.5	-2.4	-2.4		-2.4	-2.4	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	21.0	25.2	25.2	31.4	38.1	38.1	16.5	52.0		10.4	40.9	40.9
Actuated g/C Ratio	0.16	0.19	0.19	0.24	0.29	0.29	0.13	0.40		0.08	0.31	0.31
v/c Ratio	0.12	0.33	0.14	0.86	0.66	0.05	0.66	0.75		0.24	0.56	0.23
Control Delay	44.9	44.7	0.7	54.6	25.7	0.1	88.0	30.6		59.7	41.1	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	44.9	44.7	0.7	54.6	25.7	0.1	88.0	30.6		59.7	41.1	1.8
LOS	D	D	A	D	C	A	F	C		E	D	A
Approach Delay		37.2			39.8			35.9			36.6	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	6.8	23.2	0.0	90.1	77.6	0.0	36.3	119.0		8.1	74.6	0.0
Queue Length 95th (m)	14.0	34.2	0.0	#114.3	80.1	m0.0	59.9	#164.9		18.4	90.3	2.4
Internal Link Dist (m)		132.3			135.6			202.6			118.5	
Turn Bay Length (m)				160.0			60.0			60.0		45.0
Base Capacity (vph)	542	860	496	811	1408	689	234	1867		234	1533	573
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.12	0.25	0.12	0.84	0.47	0.03	0.60	0.75		0.14	0.56	0.23

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

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

Natural Cycle: 110

Control Type: Actuated-Coordinated

Lanes, Volumes, Timings

1: St. Laurent & Coventry/Ogilvie

Projected 2027 AM
06/07/2019

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 37.4

Intersection LOS: D

Intersection Capacity Utilization 90.4%

ICU Level of Service E

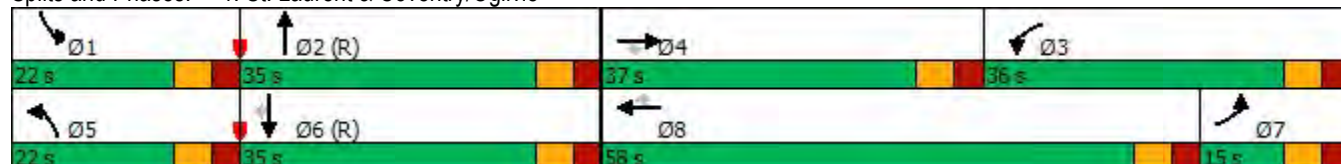
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 1: St. Laurent & Coventry/Ogilvie



Lanes, Volumes, Timings
2: Cyrville & Ogilvie

Projected 2027 AM
06/07/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗	↖	↑↑	↗	↖	↗		↖	↗	
Traffic Volume (vph)	0	627	227	25	1140	166	165	256	12	47	166	45
Future Volume (vph)	0	627	227	25	1140	166	165	256	12	47	166	45
Satd. Flow (prot)	0	3390	1517	1695	3390	1517	1695	1771	0	1695	1720	0
Flt Permitted				0.370			0.529			0.456		
Satd. Flow (perm)	0	3390	1422	653	3390	1381	939	1771	0	812	1720	0
Satd. Flow (RTOR)			227			140		2			12	
Lane Group Flow (vph)	0	627	227	25	1140	166	165	268	0	47	211	0
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases			2	6		6	8			4		
Detector Phase		2	2	6	6	6	8	8		4	4	
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)		32.2	32.2	32.2	32.2	32.2	47.1	47.1		47.1	47.1	
Total Split (s)		80.0	80.0	80.0	80.0	80.0	50.0	50.0		50.0	50.0	
Total Split (%)		61.5%	61.5%	61.5%	61.5%	61.5%	38.5%	38.5%		38.5%	38.5%	
Yellow Time (s)		3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)		2.5	2.5	2.5	2.5	2.5	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)		-2.2	-2.2	-2.2	-2.2	-2.2	-3.1	-3.1		-3.1	-3.1	
Total Lost Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max	C-Max	C-Max	C-Max	C-Max	Max	Max		Max	Max	
Act Effct Green (s)		76.0	76.0	76.0	76.0	76.0	46.0	46.0		46.0	46.0	
Actuated g/C Ratio		0.58	0.58	0.58	0.58	0.58	0.35	0.35		0.35	0.35	
v/c Ratio		0.32	0.25	0.07	0.58	0.19	0.50	0.43		0.16	0.34	
Control Delay		7.8	1.6	4.6	8.4	1.0	39.3	34.3		30.9	31.0	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		7.8	1.6	4.6	8.4	1.0	39.3	34.3		30.9	31.0	
LOS		A	A	A	A	A	D	C		C	C	
Approach Delay		6.2			7.4			36.2			30.9	
Approach LOS		A			A			D			C	
Queue Length 50th (m)		17.4	1.5	0.9	68.2	2.1	33.0	51.6		8.2	37.2	
Queue Length 95th (m)		15.6	m0.0	m1.5	79.9	m2.6	55.5	76.4		17.7	58.0	
Internal Link Dist (m)		135.6			179.4			406.7			100.8	
Turn Bay Length (m)				50.0		50.0	50.0					
Base Capacity (vph)		1981	925	381	1981	865	332	627		287	616	
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		0.32	0.25	0.07	0.58	0.19	0.50	0.43		0.16	0.34	
Intersection Summary												
Cycle Length: 130												
Actuated Cycle Length: 130												
Offset: 10 (8%), Referenced to phase 2:EBT and 6:WBTL, Start of Green												
Natural Cycle: 80												
Control Type: Actuated-Coordinated												

Lanes, Volumes, Timings

2: Cyrville & Ogilvie

Projected 2027 AM

06/07/2019

Maximum v/c Ratio: 0.58

Intersection Signal Delay: 13.5

Intersection LOS: B

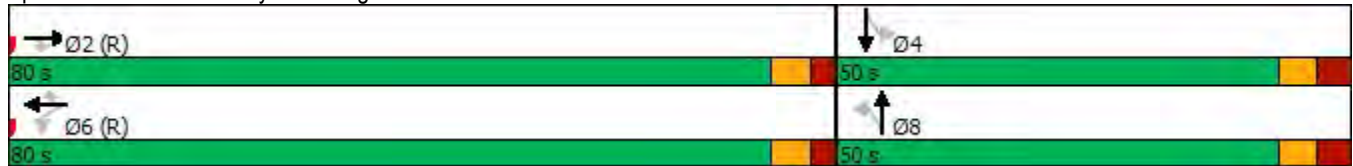
Intersection Capacity Utilization 86.2%

ICU Level of Service E

Analysis Period (min) 15

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

Splits and Phases: 2: Cyrville & Ogilvie



Lanes, Volumes, Timings
3: Ogilvie & Cummings

Projected 2027 AM

06/07/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	636	11	173	1177	170	82	32	71	138	137	112
Future Volume (vph)	48	636	11	173	1177	170	82	32	71	138	137	112
Satd. Flow (prot)	1695	3380	0	1695	3297	0	1695	1784	1517	1695	1650	0
Flt Permitted	0.093			0.333			0.605			0.639		
Satd. Flow (perm)	166	3380	0	594	3297	0	1080	1784	1517	1072	1650	0
Satd. Flow (RTOR)		2			18				98		33	
Lane Group Flow (vph)	48	647	0	173	1347	0	82	32	71	138	249	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	8	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	9.7	24.7		11.0	24.7		36.6	36.6	36.6	9.3	36.6	
Total Split (s)	11.0	71.0		11.0	71.0		37.0	37.0	37.0	11.0	48.0	
Total Split (%)	8.5%	54.6%		8.5%	54.6%		28.5%	28.5%	28.5%	8.5%	36.9%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.0	2.0		1.0	2.0		3.3	3.3	3.3	1.0	3.3	
Lost Time Adjust (s)	0.7	-1.7		0.0	-1.7		0.0	0.0	0.0	0.3	0.0	
Total Lost Time (s)	5.4	4.0		4.7	4.0		6.6	6.6	6.6	4.6	6.6	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	Max	
Act Effct Green (s)	71.0	67.0		73.5	69.2		30.4	30.4	30.4	43.4	41.4	
Actuated g/C Ratio	0.55	0.52		0.57	0.53		0.23	0.23	0.23	0.33	0.32	
v/c Ratio	0.31	0.37		0.44	0.76		0.33	0.08	0.17	0.36	0.46	
Control Delay	28.9	22.8		13.4	19.2		45.6	39.6	4.1	34.7	33.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	28.9	22.8		13.4	19.2		45.6	39.6	4.1	34.7	33.5	
LOS	C	C		B	B		D	D	A	C	C	
Approach Delay		23.2			18.5			28.7			34.0	
Approach LOS		C			B			C			C	
Queue Length 50th (m)	6.1	48.4		17.0	71.6		17.5	6.4	0.0	25.6	43.9	
Queue Length 95th (m)	17.9	60.9		m18.8	m79.4		32.9	15.1	6.5	42.1	68.8	
Internal Link Dist (m)		108.2			386.5			96.6			235.7	
Turn Bay Length (m)	85.0			90.0			40.0		16.0	150.0		
Base Capacity (vph)	156	1742		389	1763		252	417	429	388	547	
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	0.31	0.37		0.44	0.76		0.33	0.08	0.17	0.36	0.46	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 110 (85%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Lanes, Volumes, Timings

3: Ogilvie & Cummings

Projected 2027 AM

06/07/2019

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 22.5

Intersection LOS: C

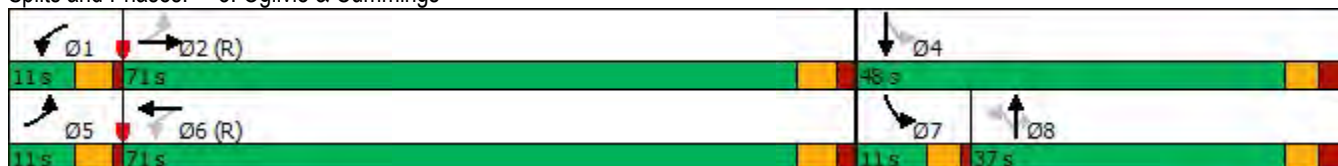
Intersection Capacity Utilization 96.7%

ICU Level of Service F

Analysis Period (min) 15

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

Splits and Phases: 3: Ogilvie & Cummings



Lanes, Volumes, Timings
4: Aviation Parkway & Ogilvie

Projected 2027 AM

06/07/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	301	572	64	153	935	121	358	615	415	133	360	238
Future Volume (vph)	301	572	64	153	935	121	358	615	415	133	360	238
Satd. Flow (prot)	1695	3247	1380	1695	3390	1517	1695	3169	0	1695	3168	0
Flt Permitted	0.092			0.315			0.950			0.950		
Satd. Flow (perm)	164	3247	1341	559	3390	1492	1693	3169	0	1694	3168	0
Satd. Flow (RTOR)			164			164		132			107	
Lane Group Flow (vph)	301	572	64	153	935	121	358	1030	0	133	598	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		10.9	30.1	
Total Split (s)	20.0	47.0	47.0	20.0	47.0	47.0	33.0	45.0		18.0	30.0	
Total Split (%)	15.4%	36.2%	36.2%	15.4%	36.2%	36.2%	25.4%	34.6%		13.8%	23.1%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		2.2	2.4	
Lost Time Adjust (s)	0.7	-2.1	-2.1	0.7	-2.1	-2.1	-1.9	-2.1		-1.9	-2.1	
Total Lost Time (s)	5.4	4.0	4.0	5.4	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max		None	Max	
Act Effct Green (s)	59.1	46.2	46.2	53.0	43.0	43.0	29.0	41.4		13.6	26.0	
Actuated g/C Ratio	0.45	0.36	0.36	0.41	0.33	0.33	0.22	0.32		0.10	0.20	
v/c Ratio	1.22	0.50	0.11	0.47	0.83	0.20	0.95	0.94		0.75	0.83	
Control Delay	168.3	30.4	1.9	25.2	48.0	2.3	84.7	53.5		82.1	51.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	168.3	30.4	1.9	25.2	48.0	2.3	84.7	53.5		82.1	51.9	
LOS	F	C	A	C	D	A	F	D		F	D	
Approach Delay		72.8			40.5			61.6			57.4	
Approach LOS		E			D			E			E	
Queue Length 50th (m)	~81.9	49.8	0.3	22.1	116.2	0.0	91.0	121.3		33.5	65.0	
Queue Length 95th (m)	#141.7	71.2	4.0	35.8	142.6	5.3	#149.5	#164.3		#63.2	#88.9	
Internal Link Dist (m)		386.5			205.1			147.2			200.4	
Turn Bay Length (m)	75.0		60.0	55.0		70.0	110.0			110.0		
Base Capacity (vph)	246	1154	582	369	1121	603	378	1098		182	719	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	1.22	0.50	0.11	0.41	0.83	0.20	0.95	0.94		0.73	0.83	
Intersection Summary												
Cycle Length: 130												
Actuated Cycle Length: 130												
Offset: 105 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green												
Natural Cycle: 115												
Control Type: Actuated-Coordinated												

Maximum v/c Ratio: 1.22

Intersection Signal Delay: 57.3

Intersection LOS: E

Intersection Capacity Utilization 100.3%

ICU Level of Service G

Analysis Period (min) 15

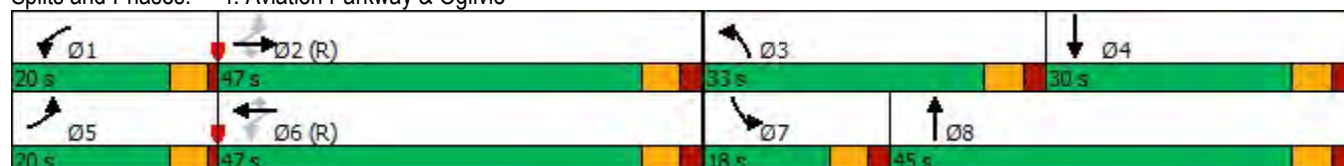
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Aviation Parkway & Ogilvie



Lanes, Volumes, Timings
5: Cummings & Donald

Projected 2027 AM
06/07/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	42	158	235	136	210	104
Future Volume (vph)	42	158	235	136	210	104
Satd. Flow (prot)	1695	1517	1695	1784	1683	0
Flt Permitted	0.950		0.569			
Satd. Flow (perm)	1662	1447	1005	1784	1683	0
Satd. Flow (RTOR)		158			69	
Lane Group Flow (vph)	42	158	235	136	314	0
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	22.0	22.0	24.9	24.9	32.9	
Total Split (s)	22.0	22.0	39.9	39.9	39.9	
Total Split (%)	35.5%	35.5%	64.5%	64.5%	64.5%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7	3.6	3.6	3.6	
Lost Time Adjust (s)	-2.0	-2.0	-2.9	-2.9	-2.9	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	
Act Effect Green (s)	13.1	13.1	39.9	39.9	39.9	
Actuated g/C Ratio	0.23	0.23	0.70	0.70	0.70	
v/c Ratio	0.11	0.35	0.33	0.11	0.26	
Control Delay	17.8	6.0	7.1	4.9	4.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	17.8	6.0	7.1	4.9	4.5	
LOS	B	A	A	A	A	
Approach Delay	8.5			6.3	4.5	
Approach LOS	A			A	A	
Queue Length 50th (m)	3.5	0.0	9.1	4.4	8.5	
Queue Length 95th (m)	9.5	11.1	26.2	12.5	23.2	
Internal Link Dist (m)	138.1			235.7	73.1	
Turn Bay Length (m)		50.0	60.0			
Base Capacity (vph)	536	566	704	1251	1201	
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	0.28	0.33	0.11	0.26	
Intersection Summary						
Cycle Length: 61.9						
Actuated Cycle Length: 56.9						
Natural Cycle: 55						
Control Type: Actuated-Uncoordinated						
Maximum v/c Ratio: 0.35						

Lanes, Volumes, Timings
5: Cummings & Donald

Projected 2027 AM

06/07/2019

Intersection Signal Delay: 6.1

Intersection LOS: A

Intersection Capacity Utilization 55.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 5: Cummings & Donald



Lanes, Volumes, Timings
6: Cyrville & Labelle

Projected 2027 AM

06/07/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	26	24	139	133	21	160	468	139	30	185	96
Future Volume (vph)	9	26	24	139	133	21	160	468	139	30	185	96
Satd. Flow (prot)	1695	1611	0	1695	1749	0	1695	1724	0	1695	1677	0
Flt Permitted	0.659			0.724			0.577			0.335		
Satd. Flow (perm)	1166	1611	0	1292	1749	0	1025	1724	0	598	1677	0
Satd. Flow (RTOR)		24			11			29			50	
Lane Group Flow (vph)	9	50	0	139	154	0	160	607	0	30	281	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		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	
Minimum Split (s)	27.5	27.5		27.5	27.5		34.3	34.3		34.3	34.3	
Total Split (s)	28.0	28.0		28.0	28.0		42.0	42.0		42.0	42.0	
Total Split (%)	37.3%	37.3%		37.3%	37.3%		56.0%	56.0%		56.0%	56.0%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	2.2	2.2		2.2	2.2		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.5	0.0		0.0	0.0		-2.3	-2.3		0.0	-2.3	
Total Lost Time (s)	4.0	5.5		5.5	5.5		4.0	4.0		6.3	4.0	
Lead/Lag	Lag	Lag		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effect Green (s)	14.8	13.3		13.3	13.3		41.1	41.1		38.8	41.1	
Actuated g/C Ratio	0.23	0.20		0.20	0.20		0.63	0.63		0.60	0.63	
v/c Ratio	0.03	0.14		0.53	0.42		0.25	0.55		0.08	0.26	
Control Delay	18.1	13.4		29.5	23.3		8.1	10.2		8.8	6.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	18.1	13.4		29.5	23.3		8.1	10.2		8.8	6.2	
LOS	B	B		C	C		A	B		A	A	
Approach Delay		14.1			26.3			9.8			6.4	
Approach LOS		B			C			A			A	
Queue Length 50th (m)	0.8	2.3		13.7	13.7		6.0	27.7		1.2	8.5	
Queue Length 95th (m)	3.9	9.8		30.0	29.4		24.2	92.1		6.8	31.6	
Internal Link Dist (m)		133.5			129.3			94.0			406.7	
Turn Bay Length (m)	30.0			40.0						55.0		
Base Capacity (vph)	436	580		452	620		649	1103		357	1080	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.02	0.09		0.31	0.25		0.25	0.55		0.08	0.26	
Intersection Summary												
Cycle Length: 75												
Actuated Cycle Length: 64.9												
Natural Cycle: 70												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.55												

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	7%	7%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Lanes, Volumes, Timings 6: Cyrville & Labelle

Projected 2027 AM

06/07/2019

Intersection Signal Delay: 12.6

Intersection LOS: B

Intersection Capacity Utilization 71.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 6: Cyrville & Labelle



Lanes, Volumes, Timings
7: St. Laurent & Lemieux

Projected 2027 AM

06/07/2019

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		  			  
Traffic Volume (vph)	603	153	1314	228	6	1554
Future Volume (vph)	603	153	1314	228	6	1554
Satd. Flow (prot)	3288	1517	4871	1517	1695	4871
Flt Permitted	0.950				0.174	
Satd. Flow (perm)	3288	1450	4871	1477	310	4871
Satd. Flow (RTOR)		53		228		
Lane Group Flow (vph)	603	153	1314	228	6	1554
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	37.5	37.5	24.0	24.0
Total Split (s)	50.0	50.0	80.0	80.0	80.0	80.0
Total Split (%)	38.5%	38.5%	61.5%	61.5%	61.5%	61.5%
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	-2.1	-2.1	-1.5	-1.5	-1.5	-1.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	32.0	32.0	90.0	90.0	90.0	90.0
Actuated g/C Ratio	0.25	0.25	0.69	0.69	0.69	0.69
v/c Ratio	0.75	0.39	0.39	0.21	0.03	0.46
Control Delay	51.0	28.1	9.3	1.5	7.3	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.0	28.1	9.3	1.5	7.3	11.1
LOS	D	C	A	A	A	B
Approach Delay	46.4		8.1			11.1
Approach LOS	D		A			B
Queue Length 50th (m)	73.6	20.9	47.9	0.0	0.5	69.1
Queue Length 95th (m)	87.6	38.1	66.2	8.8	m1.0	76.2
Internal Link Dist (m)	109.2		139.3			202.6
Turn Bay Length (m)		25.0		60.0	125.0	
Base Capacity (vph)	1163	547	3373	1092	214	3373
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.28	0.39	0.21	0.03	0.46
Intersection Summary						
Cycle Length: 130						
Actuated Cycle Length: 130						
Offset: 124 (95%), Referenced to phase 2:NBT and 6:SBTL, Start of Green						
Natural Cycle: 75						
Control Type: Actuated-Coordinated						

Lanes, Volumes, Timings
7: St. Laurent & Lemieux

Projected 2027 AM
06/07/2019

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 16.8

Intersection LOS: B

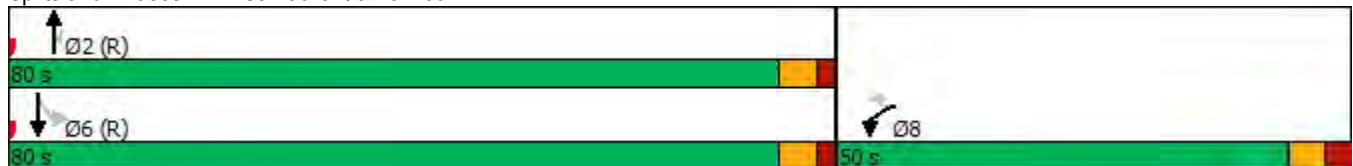
Intersection Capacity Utilization 60.4%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 7: St. Laurent & Lemieux



Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↱			↑↑		↱
Traffic Vol, veh/h	646	45	0	1383	0	28
Future Vol, veh/h	646	45	0	1383	0	28
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	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	646	45	0	1383	0	28
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	346
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	650
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	650
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		10.8	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT		
Capacity (veh/h)	650	-	-	-		
HCM Lane V/C Ratio	0.043	-	-	-		
HCM Control Delay (s)	10.8	-	-	-		
HCM Lane LOS	B	-	-	-		
HCM 95th %tile Q(veh)	0.1	-	-	-		

Intersection						
Int Delay, s/veh	2.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	92	21	3	101	317	20
Future Vol, veh/h	92	21	3	101	317	20
Conflicting Peds, #/hr	0	0	0	0	0	0
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
Mvmt Flow	92	21	3	101	317	20
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	434	327	337	0	-	0
Stage 1	327	-	-	-	-	-
Stage 2	107	-	-	-	-	-
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	579	714	1222	-	-	-
Stage 1	731	-	-	-	-	-
Stage 2	917	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	577	714	1222	-	-	-
Mov Cap-2 Maneuver	577	-	-	-	-	-
Stage 1	729	-	-	-	-	-
Stage 2	917	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	12.4	0.2		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1222	-	598	-	-	
HCM Lane V/C Ratio	0.002	-	0.189	-	-	
HCM Control Delay (s)	8	0	12.4	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0	-	0.7	-	-	

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	0	0	0	0	139	133	673	44	0	0	178
Future Vol, veh/h	30	0	0	0	0	139	133	673	44	0	0	178
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	-	-	Free	-	-	Free
Storage Length	0	-	-	-	-	0	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
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	30	0	0	0	0	139	133	673	44	0	0	178

Major/Minor	Minor2	Minor1				Major1			
Conflicting Flow All	603	-	-	-	-	337	0	0	-
Stage 1	0	-	-	-	-	-	-	-	-
Stage 2	603	-	-	-	-	-	-	-	-
Critical Hdwy	7.54	-	-	-	-	6.94	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	-	-	-	-	3.32	2.22	-	-
Pot Cap-1 Maneuver	383	0	0	0	0	659	-	-	0
Stage 1	-	0	0	0	0	-	-	-	0
Stage 2	453	0	0	0	0	-	-	-	0
Platoon blocked, %									-
Mov Cap-1 Maneuver	302	-	-	-	-	659	-	-	-
Mov Cap-2 Maneuver	302	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	357	-	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	18.2	11.9	
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1WBLn1
Capacity (veh/h)	-	-	302 659
HCM Lane V/C Ratio	-	-	0.099 0.211
HCM Control Delay (s)	-	-	18.2 11.9
HCM Lane LOS	-	-	C B
HCM 95th %tile Q(veh)	-	-	0.3 0.8

Lanes, Volumes, Timings
1: St. Laurent & Coventry/Ogilvie

Projected 2027 PM

06/07/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 			  			  	
Traffic Volume (vph)	302	632	205	500	405	30	182	925	672	71	829	192
Future Volume (vph)	302	632	205	500	405	30	182	925	672	71	829	192
Satd. Flow (prot)	3288	3390	1517	3288	3390	1517	1695	4472	0	1695	4871	1517
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3264	3390	1392	3225	3390	1459	1659	4472	0	1689	4871	1403
Satd. Flow (RTOR)			210			210		163				211
Lane Group Flow (vph)	302	632	205	500	405	30	182	1597	0	71	829	192
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	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		5.0	10.0	10.0
Minimum Split (s)	11.9	37.5	37.5	11.9	37.5	37.5	11.4	35.4		11.4	35.4	35.4
Total Split (s)	24.0	37.0	37.0	24.0	37.0	37.0	24.0	44.0		15.0	35.0	35.0
Total Split (%)	20.0%	30.8%	30.8%	20.0%	30.8%	30.8%	20.0%	36.7%		12.5%	29.2%	29.2%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	3.2	2.8	2.8	3.2	2.8	2.8	2.7	2.7		2.7	2.7	2.7
Lost Time Adjust (s)	-2.9	-2.5	-2.5	-2.9	-2.5	-2.5	-2.4	-2.4		-2.4	-2.4	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	24.5	30.6	30.6	21.2	27.3	27.3	18.3	44.2		10.5	33.9	33.9
Actuated g/C Ratio	0.20	0.26	0.26	0.18	0.23	0.23	0.15	0.37		0.09	0.28	0.28
v/c Ratio	0.45	0.73	0.40	0.86	0.53	0.06	0.71	1.03dr		0.48	0.60	0.35
Control Delay	45.7	46.3	6.7	56.4	41.6	0.2	73.0	34.9		63.1	40.2	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	45.7	46.3	6.7	56.4	41.6	0.2	73.0	34.9		63.1	40.2	5.4
LOS	D	D	A	E	D	A	E	C		E	D	A
Approach Delay		39.0			48.2			38.8			35.5	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	34.0	69.8	0.0	52.2	52.4	0.0	34.5	127.8		16.1	64.1	0.0
Queue Length 95th (m)	48.3	90.0	16.7	#88.2	65.2	m0.0	62.7	#163.4		31.1	78.6	13.7
Internal Link Dist (m)		132.3			135.6			202.6			118.5	
Turn Bay Length (m)				160.0			60.0			60.0		45.0
Base Capacity (vph)	671	932	535	581	932	553	282	1751		155	1376	547
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.45	0.68	0.38	0.86	0.43	0.05	0.65	0.91		0.46	0.60	0.35

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 110

Control Type: Actuated-Coordinated

Lanes, Volumes, Timings
4: Aviation Parkway & Ogilvie

Optimized Projected 2027 AM

09/12/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	301	572	64	153	935	121	358	615	415	133	360	238
Future Volume (vph)	301	572	64	153	935	121	358	615	415	133	360	238
Satd. Flow (prot)	1695	3247	1380	1695	3390	1517	1695	3169	0	1695	3168	0
Flt Permitted	0.098			0.362			0.950			0.950		
Satd. Flow (perm)	175	3247	1341	642	3390	1492	1693	3169	0	1694	3168	0
Satd. Flow (RTOR)			164			204		136			107	
Lane Group Flow (vph)	301	572	64	153	935	121	358	1030	0	133	598	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		10.9	30.1	
Total Split (s)	24.6	48.9	48.9	18.0	42.3	42.3	33.0	47.4		15.7	30.1	
Total Split (%)	18.9%	37.6%	37.6%	13.8%	32.5%	32.5%	25.4%	36.5%		12.1%	23.2%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		2.2	2.4	
Lost Time Adjust (s)	0.7	-2.1	-2.1	0.7	-2.1	-2.1	-1.9	-2.1		-1.9	-2.1	
Total Lost Time (s)	5.4	4.0	4.0	5.4	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max		None	Max	
Act Effct Green (s)	61.5	46.6	46.6	47.8	38.3	38.3	29.0	43.4		11.7	26.1	
Actuated g/C Ratio	0.47	0.36	0.36	0.37	0.29	0.29	0.22	0.33		0.09	0.20	
v/c Ratio	0.98	0.49	0.11	0.47	0.94	0.21	0.95	0.90		0.88	0.83	
Control Delay	88.6	35.6	2.3	25.9	61.7	0.8	84.7	47.0		104.2	51.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	88.6	35.6	2.3	25.9	61.7	0.8	84.7	47.0		104.2	51.6	
LOS	F	D	A	C	E	A	F	D		F	D	
Approach Delay		50.3			51.1			56.7			61.2	
Approach LOS		D			D			E			E	
Queue Length 50th (m)	73.5	60.3	0.3	22.2	122.9	0.0	91.0	117.2		34.2	64.9	
Queue Length 95th (m)	#122.7	81.5	4.0	35.8	#162.6	0.0	#149.5	#155.8		#71.2	#88.4	
Internal Link Dist (m)		386.5			205.1			147.2			200.4	
Turn Bay Length (m)	75.0		60.0	55.0		70.0	110.0			110.0		
Base Capacity (vph)	307	1164	586	346	998	583	378	1148		152	721	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.98	0.49	0.11	0.44	0.94	0.21	0.95	0.90		0.88	0.83	
Intersection Summary												
Cycle Length: 130												
Actuated Cycle Length: 130												
Offset: 105 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green												
Natural Cycle: 115												
Control Type: Actuated-Coordinated												

Lanes, Volumes, Timings

4: Aviation Parkway & Ogilvie

Optimized Projected 2027 AM

09/12/2019

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 54.5

Intersection LOS: D

Intersection Capacity Utilization 100.3%

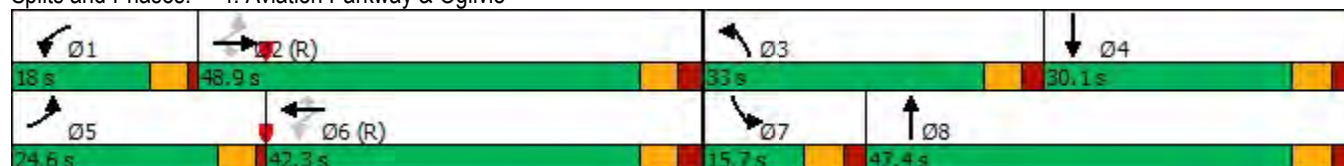
ICU Level of Service G

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Aviation Parkway & Ogilvie



Lanes, Volumes, Timings

1: St. Laurent & Coventry/Ogilvie

Projected 2027 PM
06/07/2019

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 39.9

Intersection LOS: D

Intersection Capacity Utilization 92.3%

ICU Level of Service F

Analysis Period (min) 15

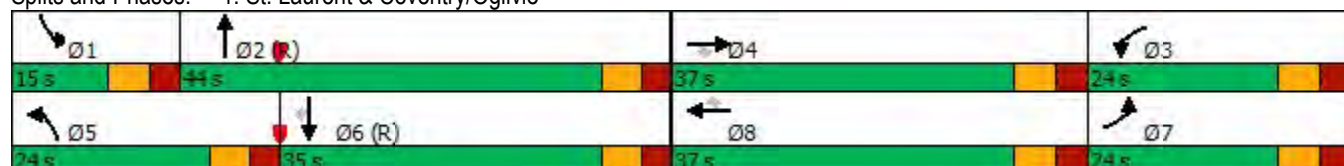
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 1: St. Laurent & Coventry/Ogilvie



Lanes, Volumes, Timings
2: Cyrville & Ogilvie

Projected 2027 PM

06/07/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗	↖	↑↑	↗	↖	↗		↖	↗	
Traffic Volume (vph)	0	1143	257	40	739	124	117	230	32	134	233	80
Future Volume (vph)	0	1143	257	40	739	124	117	230	32	134	233	80
Satd. Flow (prot)	0	3390	1517	1695	3390	1517	1695	1749	0	1695	1708	0
Flt Permitted				0.161			0.427			0.486		
Satd. Flow (perm)	0	3390	1425	286	3390	1388	759	1749	0	865	1708	0
Satd. Flow (RTOR)			257			124		7			17	
Lane Group Flow (vph)	0	1143	257	40	739	124	117	262	0	134	313	0
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases			2	6		6	8			4		
Detector Phase		2	2	6	6	6	8	8		4	4	
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)		32.2	32.2	32.2	32.2	32.2	47.1	47.1		47.1	47.1	
Total Split (s)		70.0	70.0	70.0	70.0	70.0	50.0	50.0		50.0	50.0	
Total Split (%)		58.3%	58.3%	58.3%	58.3%	58.3%	41.7%	41.7%		41.7%	41.7%	
Yellow Time (s)		3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)		2.5	2.5	2.5	2.5	2.5	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)		-2.2	-2.2	-2.2	-2.2	-2.2	-3.1	-3.1		-3.1	-3.1	
Total Lost Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max	C-Max	C-Max	C-Max	C-Max	Max	Max		Max	Max	
Act Effct Green (s)		66.0	66.0	66.0	66.0	66.0	46.0	46.0		46.0	46.0	
Actuated g/C Ratio		0.55	0.55	0.55	0.55	0.55	0.38	0.38		0.38	0.38	
v/c Ratio		0.61	0.29	0.25	0.40	0.15	0.40	0.39		0.40	0.47	
Control Delay		10.3	1.4	25.5	22.9	8.8	32.3	28.2		31.6	29.1	
Queue Delay		0.6	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		10.8	1.4	25.5	22.9	8.8	32.3	28.2		31.6	29.1	
LOS		B	A	C	C	A	C	C		C	C	
Approach Delay		9.1			21.1			29.4			29.9	
Approach LOS		A			C			C			C	
Queue Length 50th (m)		62.6	2.9	5.0	50.2	5.0	19.9	43.0		22.8	51.8	
Queue Length 95th (m)		m77.7	m5.9	m7.8	m65.3	m9.3	37.2	65.3		40.8	77.7	
Internal Link Dist (m)		135.6			179.4			406.7			100.8	
Turn Bay Length (m)				50.0		50.0	50.0					
Base Capacity (vph)		1864	899	157	1864	819	290	674		331	665	
Starvation Cap Reductn		338	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		0.75	0.29	0.25	0.40	0.15	0.40	0.39		0.40	0.47	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 20 (17%), Referenced to phase 2:EBT and 6:WBTL, Start of Green												
Natural Cycle: 80												
Control Type: Actuated-Coordinated												

Lanes, Volumes, Timings

2: Cyrville & Ogilvie

Projected 2027 PM

06/07/2019

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 18.0

Intersection LOS: B

Intersection Capacity Utilization 86.8%

ICU Level of Service E

Analysis Period (min) 15

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

Splits and Phases: 2: Cyrville & Ogilvie



Lanes, Volumes, Timings
3: Ogilvie & Cummings

Projected 2027 PM

06/07/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	1201	23	125	797	209	74	190	221	258	194	84
Future Volume (vph)	110	1201	23	125	797	209	74	190	221	258	194	84
Satd. Flow (prot)	1695	3376	0	1695	3241	0	1695	1784	1517	1695	1695	0
Flt Permitted	0.102			0.101			0.589			0.467		
Satd. Flow (perm)	182	3376	0	180	3241	0	1047	1784	1406	800	1695	0
Satd. Flow (RTOR)		2			30				155		24	
Lane Group Flow (vph)	110	1224	0	125	1006	0	74	190	221	258	278	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	8	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	9.7	24.7		9.7	24.7		36.6	36.6	36.6	9.3	36.6	
Total Split (s)	15.0	45.0		15.0	45.0		40.0	40.0	40.0	20.0	60.0	
Total Split (%)	12.5%	37.5%		12.5%	37.5%		33.3%	33.3%	33.3%	16.7%	50.0%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.0	2.0		1.0	2.0		3.3	3.3	3.3	1.0	3.3	
Lost Time Adjust (s)	0.7	-1.7		0.7	-1.7		-2.6	-2.6	-2.6	0.3	-2.6	
Total Lost Time (s)	5.4	4.0		5.4	4.0		4.0	4.0	4.0	4.6	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	None	Max	
Act Effct Green (s)	48.9	41.8		49.5	42.1		37.0	37.0	37.0	55.4	56.0	
Actuated g/C Ratio	0.41	0.35		0.41	0.35		0.31	0.31	0.31	0.46	0.47	
v/c Ratio	0.61	1.04		0.67	0.87		0.23	0.35	0.41	0.54	0.35	
Control Delay	48.5	55.8		52.9	40.0		33.9	34.7	13.1	25.3	19.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	48.5	55.8		52.9	40.0		33.9	34.7	13.1	25.3	19.9	
LOS	D	E		D	D		C	C	B	C	B	
Approach Delay		55.2			41.4			24.8			22.5	
Approach LOS		E			D			C			C	
Queue Length 50th (m)	12.3	~166.6		22.5	72.6		13.1	35.0	11.4	37.6	36.8	
Queue Length 95th (m)	m29.9	#205.8		m#43.9	#116.2		26.0	55.4	32.7	57.2	56.9	
Internal Link Dist (m)		108.2			386.5			96.6			235.7	
Turn Bay Length (m)	85.0			90.0			40.0		16.0	150.0		
Base Capacity (vph)	196	1176		196	1155		323	550	541	484	803	
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	0.56	1.04		0.64	0.87		0.23	0.35	0.41	0.53	0.35	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 46 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green												
Natural Cycle: 95												
Control Type: Actuated-Coordinated												

Lanes, Volumes, Timings

3: Ogilvie & Cummings

Projected 2027 PM

06/07/2019

Maximum v/c Ratio: 1.04

Intersection Signal Delay: 41.5

Intersection LOS: D

Intersection Capacity Utilization 98.2%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

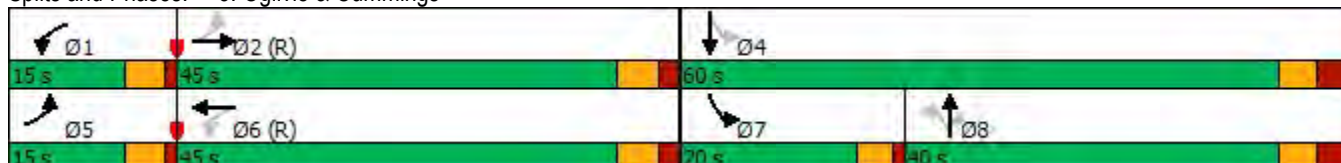
Queue shown is maximum after two cycles.

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: 3: Ogilvie & Cummings



Lanes, Volumes, Timings
4: Aviation Parkway & Ogilvie

Projected 2027 PM

06/07/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	183	800	92	136	638	112	134	224	180	112	261	168
Future Volume (vph)	183	800	92	136	638	112	134	224	180	112	261	168
Satd. Flow (prot)	1695	3247	1380	1695	3390	1517	1695	3144	0	1695	3172	0
Flt Permitted	0.296			0.222			0.950			0.950		
Satd. Flow (perm)	527	3247	1343	395	3390	1493	1692	3144	0	1694	3172	0
Satd. Flow (RTOR)			125			125		157			111	
Lane Group Flow (vph)	183	800	92	136	638	112	134	404	0	112	429	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		10.9	30.1	
Total Split (s)	20.0	51.0	51.0	20.0	51.0	51.0	19.0	30.0		19.0	30.0	
Total Split (%)	16.7%	42.5%	42.5%	16.7%	42.5%	42.5%	15.8%	25.0%		15.8%	25.0%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		2.2	2.4	
Lost Time Adjust (s)	0.7	-2.1	-2.1	0.7	-2.1	-2.1	-1.9	-2.1		-1.9	-2.1	
Total Lost Time (s)	5.4	4.0	4.0	5.4	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max		None	Max	
Act Effct Green (s)	61.9	52.0	52.0	58.5	50.3	50.3	14.1	27.4		13.6	26.9	
Actuated g/C Ratio	0.52	0.43	0.43	0.49	0.42	0.42	0.12	0.23		0.11	0.22	
v/c Ratio	0.48	0.57	0.14	0.46	0.45	0.16	0.68	0.48		0.59	0.54	
Control Delay	21.8	26.6	4.3	19.1	26.6	3.7	67.9	26.5		63.0	33.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	21.8	26.6	4.3	19.1	26.6	3.7	67.9	26.5		63.0	33.1	
LOS	C	C	A	B	C	A	E	C		E	C	
Approach Delay		23.9			22.6			36.8			39.3	
Approach LOS		C			C			D			D	
Queue Length 50th (m)	22.2	56.4	1.6	15.1	55.6	0.0	30.4	26.5		25.1	35.1	
Queue Length 95th (m)	m25.5	m59.3	m2.4	25.4	75.2	9.0	#51.8	42.2		43.7	51.5	
Internal Link Dist (m)		386.5			205.1			147.2			200.4	
Turn Bay Length (m)	75.0		60.0	55.0		70.0	110.0			110.0		
Base Capacity (vph)	425	1407	653	366	1421	698	211	839		211	797	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.43	0.57	0.14	0.37	0.45	0.16	0.64	0.48		0.53	0.54	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 50 (42%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green												
Natural Cycle: 85												
Control Type: Actuated-Coordinated												

Lanes, Volumes, Timings

4: Aviation Parkway & Ogilvie

Projected 2027 PM

06/07/2019

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 28.5

Intersection LOS: C

Intersection Capacity Utilization 76.4%

ICU Level of Service D

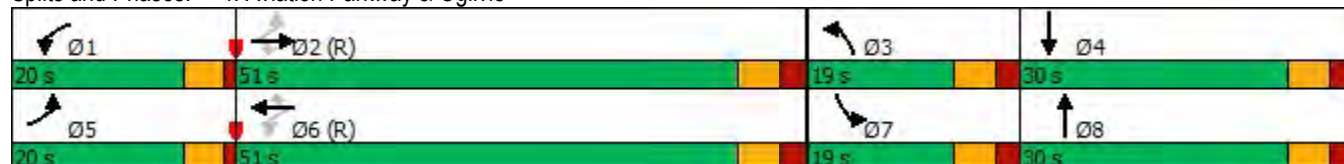
Analysis Period (min) 15

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: 4: Aviation Parkway & Ogilvie



Lanes, Volumes, Timings
5: Cummings & Donald

Projected 2027 PM
06/07/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	88	322	257	260	260	90
Future Volume (vph)	88	322	257	260	260	90
Satd. Flow (prot)	1695	1517	1695	1784	1705	0
Flt Permitted	0.950		0.534			
Satd. Flow (perm)	1658	1442	943	1784	1705	0
Satd. Flow (RTOR)		322			36	
Lane Group Flow (vph)	88	322	257	260	350	0
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	22.0	22.0	24.9	24.9	32.9	
Total Split (s)	31.0	31.0	39.9	39.9	39.9	
Total Split (%)	43.7%	43.7%	56.3%	56.3%	56.3%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7	3.6	3.6	3.6	
Lost Time Adjust (s)	-2.0	-2.0	-2.9	-2.9	-2.9	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	
Act Effect Green (s)	13.1	13.1	36.0	36.0	36.0	
Actuated g/C Ratio	0.23	0.23	0.63	0.63	0.63	
v/c Ratio	0.23	0.56	0.43	0.23	0.32	
Control Delay	19.3	6.7	8.8	5.6	5.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	19.3	6.7	8.8	5.6	5.7	
LOS	B	A	A	A	A	
Approach Delay	9.4			7.2	5.7	
Approach LOS	A			A	A	
Queue Length 50th (m)	7.5	0.0	10.5	9.0	11.4	
Queue Length 95th (m)	16.6	15.4	30.9	23.0	29.4	
Internal Link Dist (m)	138.1			235.7	73.1	
Turn Bay Length (m)		50.0	60.0			
Base Capacity (vph)	802	852	593	1123	1086	
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	0.11	0.38	0.43	0.23	0.32	
Intersection Summary						
Cycle Length: 70.9						
Actuated Cycle Length: 57.1						
Natural Cycle: 55						
Control Type: Actuated-Uncoordinated						
Maximum v/c Ratio: 0.56						

Lanes, Volumes, Timings
5: Cummings & Donald

Projected 2027 PM

06/07/2019

Intersection Signal Delay: 7.5

Intersection LOS: A

Intersection Capacity Utilization 56.8%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 5: Cummings & Donald



Lanes, Volumes, Timings
6: Cyrville & Labelle

Projected 2027 PM

06/07/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	79	104	201	44	26	46	313	240	59	511	17
Future Volume (vph)	25	79	104	201	44	26	46	313	240	59	511	17
Satd. Flow (prot)	1695	1574	0	1695	1664	0	1695	1641	0	1695	1774	0
Flt Permitted	0.711			0.586			0.369			0.351		
Satd. Flow (perm)	1254	1574	0	1012	1664	0	657	1641	0	623	1774	0
Satd. Flow (RTOR)		91			26			54			2	
Lane Group Flow (vph)	25	183	0	201	70	0	46	553	0	59	528	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		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	
Minimum Split (s)	27.5	27.5		27.5	27.5		34.3	34.3		34.3	34.3	
Total Split (s)	42.0	42.0		42.0	42.0		43.0	43.0		43.0	43.0	
Total Split (%)	46.7%	46.7%		46.7%	46.7%		47.8%	47.8%		47.8%	47.8%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	2.2	2.2		2.2	2.2		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.5	-1.5		-1.5	-1.5		-2.3	-2.3		-2.3	-2.3	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lag	Lag		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)	19.5	19.5		19.5	19.5		40.0	40.0		40.0	40.0	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.58	0.58		0.58	0.58	
v/c Ratio	0.07	0.36		0.70	0.14		0.12	0.56		0.16	0.51	
Control Delay	17.4	11.7		35.0	12.7		10.3	12.7		10.9	12.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	17.4	11.7		35.0	12.7		10.3	12.7		10.9	12.6	
LOS	B	B		D	B		B	B		B	B	
Approach Delay		12.4			29.2			12.5			12.5	
Approach LOS		B			C			B			B	
Queue Length 50th (m)	2.2	8.5		21.7	3.9		2.2	32.4		2.9	33.2	
Queue Length 95th (m)	7.3	23.2		45.4	12.5		10.3	95.5		12.9	92.0	
Internal Link Dist (m)		133.5			129.3			94.0			406.7	
Turn Bay Length (m)	30.0			40.0						55.0		
Base Capacity (vph)	704	923		568	945		384	981		364	1037	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.04	0.20		0.35	0.07		0.12	0.56		0.16	0.51	
Intersection Summary												
Cycle Length: 90												
Actuated Cycle Length: 68.5												
Natural Cycle: 70												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.70												

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Lanes, Volumes, Timings 6: Cyrville & Labelle

Projected 2027 PM

06/07/2019

Intersection Signal Delay: 15.2

Intersection LOS: B

Intersection Capacity Utilization 82.1%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 6: Cyrville & Labelle



Lanes, Volumes, Timings
7: St. Laurent & Lemieux

Projected 2027 PM

06/07/2019

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		  			  
Traffic Volume (vph)	505	156	1734	246	9	1893
Future Volume (vph)	505	156	1734	246	9	1893
Satd. Flow (prot)	3288	1517	4871	1517	1695	4871
Flt Permitted	0.950				0.104	
Satd. Flow (perm)	3288	1454	4871	1477	186	4871
Satd. Flow (RTOR)		29		246		
Lane Group Flow (vph)	505	156	1734	246	9	1893
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	37.5	37.5	24.0	24.0
Total Split (s)	38.0	38.0	82.0	82.0	82.0	82.0
Total Split (%)	31.7%	31.7%	68.3%	68.3%	68.3%	68.3%
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	-2.1	-2.1	-1.5	-1.5	-1.5	-1.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	26.7	26.7	85.3	85.3	85.3	85.3
Actuated g/C Ratio	0.22	0.22	0.71	0.71	0.71	0.71
v/c Ratio	0.69	0.45	0.50	0.22	0.07	0.55
Control Delay	47.6	35.8	8.9	1.4	4.2	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.6	35.8	8.9	1.4	4.2	5.7
LOS	D	D	A	A	A	A
Approach Delay	44.8		8.0			5.7
Approach LOS	D		A			A
Queue Length 50th (m)	57.2	26.1	57.8	0.0	0.2	48.7
Queue Length 95th (m)	70.3	43.8	82.1	7.9	m0.9	74.4
Internal Link Dist (m)	109.2		139.3			202.6
Turn Bay Length (m)		25.0		60.0	125.0	
Base Capacity (vph)	931	432	3461	1120	132	3461
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.36	0.50	0.22	0.07	0.55
Intersection Summary						
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 99 (83%), Referenced to phase 2:NBT and 6:SBTL, Start of Green						
Natural Cycle: 75						
Control Type: Actuated-Coordinated						

Lanes, Volumes, Timings
7: St. Laurent & Lemieux

Projected 2027 PM

06/07/2019

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 12.4

Intersection LOS: B

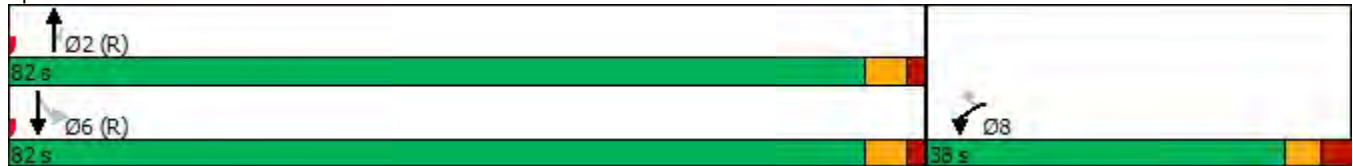
Intersection Capacity Utilization 66.0%

ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 7: St. Laurent & Lemieux



Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↱			↑↑		↱
Traffic Vol, veh/h	1258	67	0	967	0	17
Future Vol, veh/h	1258	67	0	967	0	17
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	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1258	67	0	967	0	17
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	663
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	404
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	404
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		14.3	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT		
Capacity (veh/h)	404	-	-	-		
HCM Lane V/C Ratio	0.042	-	-	-		
HCM Control Delay (s)	14.3	-	-	-		
HCM Lane LOS	B	-	-	-		
HCM 95th %tile Q(veh)	0.1	-	-	-		

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	56	12	6	453	323	32
Future Vol, veh/h	56	12	6	453	323	32
Conflicting Peds, #/hr	0	0	0	0	0	0
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
Mvmt Flow	56	12	6	453	323	32
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	804	339	355	0	-	0
Stage 1	339	-	-	-	-	-
Stage 2	465	-	-	-	-	-
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	352	703	1204	-	-	-
Stage 1	722	-	-	-	-	-
Stage 2	632	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	350	703	1204	-	-	-
Mov Cap-2 Maneuver	350	-	-	-	-	-
Stage 1	717	-	-	-	-	-
Stage 2	632	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	16.4	0.1		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1204	-	384	-	-	
HCM Lane V/C Ratio	0.005	-	0.177	-	-	
HCM Control Delay (s)	8	0	16.4	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0	-	0.6	-	-	

Intersection												
Int Delay, s/veh	6.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	170	0	0	0	0	213	112	448	27	0	0	279
Future Vol, veh/h	170	0	0	0	0	213	112	448	27	0	0	279
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	-	-	Free	-	-	Free
Storage Length	0	-	-	-	-	0	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
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	170	0	0	0	0	213	112	448	27	0	0	279

Major/Minor	Minor2	Minor1				Major1			
Conflicting Flow All	448	-	-	-	-	224	0	0	-
Stage 1	0	-	-	-	-	-	-	-	-
Stage 2	448	-	-	-	-	-	-	-	-
Critical Hdwy	7.54	-	-	-	-	6.94	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	-	-	-	-	3.32	2.22	-	-
Pot Cap-1 Maneuver	494	0	0	0	0	779	-	-	0
Stage 1	-	0	0	0	0	-	-	-	0
Stage 2	560	0	0	0	0	-	-	-	0
Platoon blocked, %									-
Mov Cap-1 Maneuver	359	-	-	-	-	779	-	-	-
Mov Cap-2 Maneuver	359	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	407	-	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	23.7	11.4	
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1WBLn1
Capacity (veh/h)	-	-	359 779
HCM Lane V/C Ratio	-	-	0.474 0.273
HCM Control Delay (s)	-	-	23.7 11.4
HCM Lane LOS	-	-	C B
HCM 95th %tile Q(veh)	-	-	2.4 1.1

Lanes, Volumes, Timings
3: Ogilvie & Cummings

Optimized Projected 2027 PM

09/12/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	1201	23	125	797	209	74	190	221	258	194	84
Future Volume (vph)	110	1201	23	125	797	209	74	190	221	258	194	84
Satd. Flow (prot)	1695	3376	0	1695	3241	0	1695	1784	1517	1695	1695	0
Flt Permitted	0.136			0.084			0.589			0.437		
Satd. Flow (perm)	243	3376	0	150	3241	0	1047	1784	1406	749	1695	0
Satd. Flow (RTOR)		2			33				149		22	
Lane Group Flow (vph)	110	1224	0	125	1006	0	74	190	221	258	278	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	8	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	9.7	24.7		9.7	24.7		36.6	36.6	36.6	9.3	36.6	
Total Split (s)	13.2	52.2		14.4	53.4		36.8	36.8	36.8	16.6	53.4	
Total Split (%)	11.0%	43.5%		12.0%	44.5%		30.7%	30.7%	30.7%	13.8%	44.5%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.0	2.0		1.0	2.0		3.3	3.3	3.3	1.0	3.3	
Lost Time Adjust (s)	0.7	-1.7		0.7	-1.7		-2.6	-2.6	-2.6	0.3	-2.6	
Total Lost Time (s)	5.4	4.0		5.4	4.0		4.0	4.0	4.0	4.6	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	None	Max	
Act Effct Green (s)	54.8	48.8		56.8	49.8		32.8	32.8	32.8	48.8	49.4	
Actuated g/C Ratio	0.46	0.41		0.47	0.42		0.27	0.27	0.27	0.41	0.41	
v/c Ratio	0.55	0.89		0.70	0.74		0.26	0.39	0.45	0.65	0.39	
Control Delay	30.4	23.3		52.9	25.3		37.1	38.3	15.5	34.1	24.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	30.4	23.3		52.9	25.3		37.1	38.3	15.5	34.1	24.7	
LOS	C	C		D	C		D	D	B	C	C	
Approach Delay		23.9			28.3			27.7			29.2	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	4.6	123.8		21.2	64.6		13.7	36.4	13.0	41.9	41.4	
Queue Length 95th (m)	m21.4	#183.0		m#44.7	85.0		27.0	57.7	35.6	63.6	63.7	
Internal Link Dist (m)		108.2			386.5			96.6			235.7	
Turn Bay Length (m)	85.0			90.0			40.0		16.0	150.0		
Base Capacity (vph)	205	1373		187	1363		286	488	492	399	710	
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	0.54	0.89		0.67	0.74		0.26	0.39	0.45	0.65	0.39	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 46 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Lanes, Volumes, Timings

3: Ogilvie & Cummings

Optimized Projected 2027 PM

09/12/2019

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 26.7

Intersection LOS: C

Intersection Capacity Utilization 98.2%

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: 3: Ogilvie & Cummings



Lanes, Volumes, Timings
1: St. Laurent & Coventry/Ogilvie

2027 AM TOD Not Met
06/10/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	221	58	778	669	24	141	843	610	33	856	132
Future Volume (vph)	66	221	58	778	669	24	141	843	610	33	856	132
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	160.0		0.0	60.0		15.0	60.0		45.0
Storage Lanes	2		1	2		1	1		0	1		1
Taper Length (m)	0.0			7.5			7.5			7.5		
Satd. Flow (prot)	3288	3390	1517	3288	3390	1517	1695	4466	0	1695	4871	1517
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3270	3390	1384	3167	3390	1464	1660	4466	0	1687	4871	1395
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			195			140			132			196
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		156.3			159.6			226.6			142.5	
Travel Time (s)		9.4			9.6			13.6			8.6	
Lane Group Flow (vph)	66	221	58	778	669	24	141	1453	0	33	856	132
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	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		5.0	10.0	10.0
Minimum Split (s)	11.9	37.5	37.5	11.9	37.5	37.5	11.4	35.4		11.4	35.4	35.4
Total Split (s)	15.0	37.0	37.0	36.0	58.0	58.0	22.0	35.0		22.0	35.0	35.0
Total Split (%)	11.5%	28.5%	28.5%	27.7%	44.6%	44.6%	16.9%	26.9%		16.9%	26.9%	26.9%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	3.2	2.8	2.8	3.2	2.8	2.8	2.7	2.7		2.7	2.7	2.7
Lost Time Adjust (s)	-2.9	-2.5	-2.5	-2.9	-2.5	-2.5	-2.4	-2.4		-2.4	-2.4	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Act Effect Green (s)	21.9	25.3	25.3	33.7	39.7	39.7	16.5	49.6		10.4	38.5	38.5
Actuated g/C Ratio	0.17	0.19	0.19	0.26	0.31	0.31	0.13	0.38		0.08	0.30	0.30
v/c Ratio	0.12	0.34	0.14	0.91	0.65	0.04	0.66	0.94dr		0.24	0.59	0.24
Control Delay	44.5	44.8	0.7	56.8	22.9	0.1	89.2	32.6		59.7	42.9	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	44.5	44.8	0.7	56.8	22.9	0.1	89.2	32.6		59.7	42.9	1.8
LOS	D	D	A	E	C	A	F	C		E	D	A
Approach Delay		37.3			40.5			37.6			38.1	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	6.8	23.8	0.0	106.7	70.8	0.0	37.3	~131.8		8.1	74.6	0.0
Queue Length 95th (m)	14.0	35.1	0.0	#142.6	72.7	m0.0	59.9	#175.4		18.4	90.3	2.4
Internal Link Dist (m)		132.3			135.6			202.6			118.5	
Turn Bay Length (m)				160.0			60.0			60.0		45.0
Base Capacity (vph)	564	860	496	853	1408	689	234	1785		234	1443	551
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0

Lanes, Volumes, Timings
1: St. Laurent & Coventry/Ogilvie

2027 AM TOD Not Met
06/10/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.12	0.26	0.12	0.91	0.48	0.03	0.60	0.81		0.14	0.59	0.24

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

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

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 38.7

Intersection LOS: D

Intersection Capacity Utilization 94.8%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

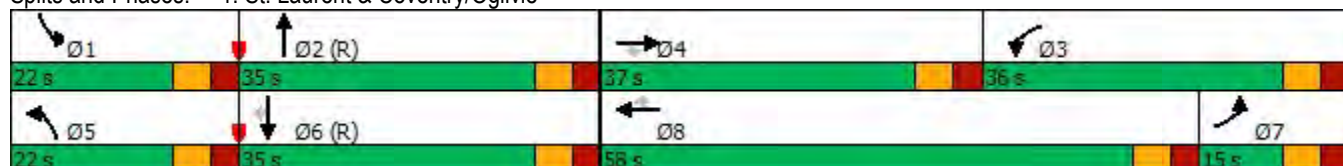
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 1: St. Laurent & Coventry/Ogilvie



Lanes, Volumes, Timings
2: Cyrville & Ogilvie

2027 AM TOD Not Met
06/10/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗	↖	↑↑	↗	↖	↗		↖	↗	
Traffic Volume (vph)	0	694	227	25	1248	166	165	256	12	47	166	45
Future Volume (vph)	0	694	227	25	1248	166	165	256	12	47	166	45
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	50.0		50.0	50.0		0.0	0.0		0.0
Storage Lanes	0		1	1		1	1		0	1		0
Taper Length (m)	0.0			7.5			7.5			0.0		
Satd. Flow (prot)	0	3390	1517	1695	3390	1517	1695	1771	0	1695	1720	0
Flt Permitted				0.338			0.529			0.456		
Satd. Flow (perm)	0	3390	1422	597	3390	1381	939	1771	0	812	1720	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			227			128		2			12	
Link Speed (k/h)		60			60			60			50	
Link Distance (m)		159.6			203.4			430.7			124.8	
Travel Time (s)		9.6			12.2			25.8			9.0	
Lane Group Flow (vph)	0	694	227	25	1248	166	165	268	0	47	211	0
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases			2	6		6	8			4		
Detector Phase		2	2	6	6	6	8	8		4	4	
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)		32.2	32.2	32.2	32.2	32.2	47.1	47.1		47.1	47.1	
Total Split (s)		80.0	80.0	80.0	80.0	80.0	50.0	50.0		50.0	50.0	
Total Split (%)		61.5%	61.5%	61.5%	61.5%	61.5%	38.5%	38.5%		38.5%	38.5%	
Yellow Time (s)		3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)		2.5	2.5	2.5	2.5	2.5	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)		-2.2	-2.2	-2.2	-2.2	-2.2	-3.1	-3.1		-3.1	-3.1	
Total Lost Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max	C-Max	C-Max	C-Max	C-Max	Max	Max		Max	Max	
Act Effect Green (s)		76.0	76.0	76.0	76.0	76.0	46.0	46.0		46.0	46.0	
Actuated g/C Ratio		0.58	0.58	0.58	0.58	0.58	0.35	0.35		0.35	0.35	
v/c Ratio		0.35	0.25	0.07	0.63	0.19	0.50	0.43		0.16	0.34	
Control Delay		7.6	1.6	7.3	13.9	1.3	39.3	34.3		30.9	31.0	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		7.6	1.6	7.3	13.9	1.3	39.3	34.3		30.9	31.0	
LOS		A	A	A	B	A	D	C		C	C	
Approach Delay		6.1			12.4			36.2			30.9	
Approach LOS		A			B			D			C	
Queue Length 50th (m)		20.4	1.5	1.4	109.6	1.9	33.0	51.6		8.2	37.2	
Queue Length 95th (m)		18.8	m0.0	m2.0	125.5	m2.3	55.5	76.4		17.7	58.0	
Internal Link Dist (m)		135.6			179.4			406.7			100.8	
Turn Bay Length (m)				50.0		50.0	50.0					
Base Capacity (vph)		1981	925	349	1981	860	332	627		287	616	
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	

Lanes, Volumes, Timings

2: Cyrville & Ogilvie

2027 AM TOD Not Met
06/10/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.35	0.25	0.07	0.63	0.19	0.50	0.43		0.16	0.34	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 10 (8%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 15.4

Intersection LOS: B

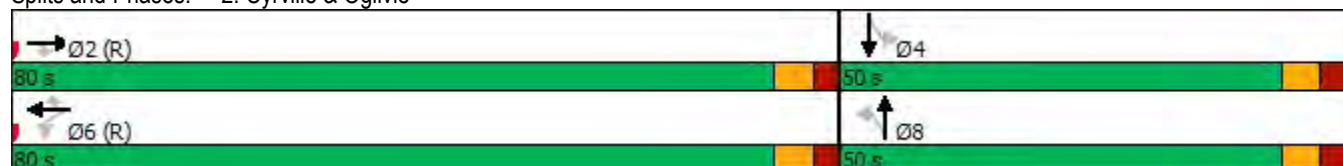
Intersection Capacity Utilization 89.4%

ICU Level of Service E

Analysis Period (min) 15

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

Splits and Phases: 2: Cyrville & Ogilvie



Lanes, Volumes, Timings
3: Ogilvie & Cummings

2027 AM TOD Not Met
06/10/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	684	11	189	1177	170	190	69	83	138	153	112
Future Volume (vph)	48	684	11	189	1177	170	190	69	83	138	153	112
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0		0.0	90.0		0.0	40.0		16.0	150.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1695	3383	0	1695	3297	0	1695	1784	1517	1695	1658	0
Flt Permitted	0.093			0.310			0.596			0.618		
Satd. Flow (perm)	166	3383	0	553	3297	0	1063	1784	1517	1040	1658	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			18				98			30
Link Speed (k/h)		60			60			50				50
Link Distance (m)		132.2			410.5			120.6				259.7
Travel Time (s)		7.9			24.6			8.7				18.7
Lane Group Flow (vph)	48	695	0	189	1347	0	190	69	83	138	265	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	8	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	9.7	24.7		11.0	24.7		36.6	36.6	36.6	9.3	36.6	
Total Split (s)	11.0	71.0		11.0	71.0		37.0	37.0	37.0	11.0	48.0	
Total Split (%)	8.5%	54.6%		8.5%	54.6%		28.5%	28.5%	28.5%	8.5%	36.9%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.0	2.0		1.0	2.0		3.3	3.3	3.3	1.0	3.3	
Lost Time Adjust (s)	0.7	-1.7		0.0	-1.7		0.0	0.0	0.0	0.3	0.0	
Total Lost Time (s)	5.4	4.0		4.7	4.0		6.6	6.6	6.6	4.6	6.6	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	Max	
Act Effect Green (s)	71.0	67.0		73.5	69.2		30.4	30.4	30.4	43.4	41.4	
Actuated g/C Ratio	0.55	0.52		0.57	0.53		0.23	0.23	0.23	0.33	0.32	
v/c Ratio	0.31	0.40		0.51	0.76		0.77	0.17	0.19	0.36	0.48	
Control Delay	27.8	22.7		14.3	19.3		67.5	41.0	6.3	34.9	35.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	27.8	22.7		14.3	19.3		67.5	41.0	6.3	34.9	35.0	
LOS	C	C		B	B		E	D	A	C	C	
Approach Delay		23.1			18.7			47.3			34.9	
Approach LOS		C			B			D			C	
Queue Length 50th (m)	6.2	52.4		18.9	72.2		45.7	14.2	0.0	25.6	48.4	
Queue Length 95th (m)	17.2	64.9		m20.6	m79.4		#81.8	27.0	9.8	42.1	74.4	
Internal Link Dist (m)		108.2			386.5			96.6			235.7	
Turn Bay Length (m)	85.0			90.0			40.0		16.0	150.0		
Base Capacity (vph)	156	1744		368	1763		248	417	429	379	548	
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	

Lanes, Volumes, Timings

3: Ogilvie & Cummings

2027 AM TOD Not Met

06/10/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.31	0.40		0.51	0.76		0.77	0.17	0.19	0.36	0.48	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 110 (85%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 25.2

Intersection LOS: C

Intersection Capacity Utilization 99.5%

ICU Level of Service F

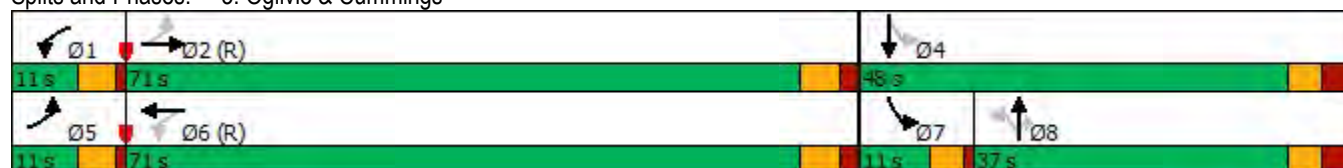
Analysis Period (min) 15

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: 3: Ogilvie & Cummings



Lanes, Volumes, Timings
4: Aviation Parkway & Ogilvie

2027 AM TOD Not Met

06/10/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	301	608	88	153	941	121	368	615	415	133	360	238
Future Volume (vph)	301	608	88	153	941	121	368	615	415	133	360	238
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	75.0		60.0	55.0		70.0	110.0		0.0	110.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1695	3247	1380	1695	3390	1517	1695	3169	0	1695	3168	0
Flt Permitted	0.092			0.289			0.950			0.950		
Satd. Flow (perm)	164	3247	1341	513	3390	1492	1693	3169	0	1694	3168	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164			164		132			107	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		410.5			229.1			171.2			224.4	
Travel Time (s)		24.6			13.7			12.3			16.2	
Lane Group Flow (vph)	301	608	88	153	941	121	368	1030	0	133	598	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		10.9	30.1	
Total Split (s)	20.0	47.0	47.0	20.0	47.0	47.0	33.0	45.0		18.0	30.0	
Total Split (%)	15.4%	36.2%	36.2%	15.4%	36.2%	36.2%	25.4%	34.6%		13.8%	23.1%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		2.2	2.4	
Lost Time Adjust (s)	0.7	-2.1	-2.1	0.7	-2.1	-2.1	-1.9	-2.1		-1.9	-2.1	
Total Lost Time (s)	5.4	4.0	4.0	5.4	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max		None	Max	
Act Effect Green (s)	59.1	46.2	46.2	53.0	43.0	43.0	29.0	41.4		13.6	26.0	
Actuated g/C Ratio	0.45	0.36	0.36	0.41	0.33	0.33	0.22	0.32		0.10	0.20	
v/c Ratio	1.22	0.53	0.15	0.49	0.84	0.20	0.97	0.94		0.75	0.83	
Control Delay	168.3	32.3	3.6	25.8	48.3	2.3	90.3	53.5		82.1	51.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	168.3	32.3	3.6	25.8	48.3	2.3	90.3	53.5		82.1	51.9	
LOS	F	C	A	C	D	A	F	D		F	D	
Approach Delay		70.8			40.9			63.2			57.4	
Approach LOS		E			D			E			E	
Queue Length 50th (m)	~81.6	54.7	0.9	22.1	117.2	0.0	94.3	121.3		33.5	65.0	
Queue Length 95th (m)	#140.8	77.2	5.8	35.8	143.8	5.3	#155.4	#164.3		#63.2	#88.9	
Internal Link Dist (m)		386.5			205.1			147.2			200.4	
Turn Bay Length (m)	75.0		60.0	55.0		70.0	110.0			110.0		
Base Capacity (vph)	246	1154	582	354	1121	603	378	1098		182	719	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	

Lanes, Volumes, Timings

4: Aviation Parkway & Ogilvie

2027 AM TOD Not Met
06/10/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	1.22	0.53	0.15	0.43	0.84	0.20	0.97	0.94		0.73	0.83	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 105 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.22

Intersection Signal Delay: 57.7

Intersection LOS: E

Intersection Capacity Utilization 101.1%

ICU Level of Service G

Analysis Period (min) 15

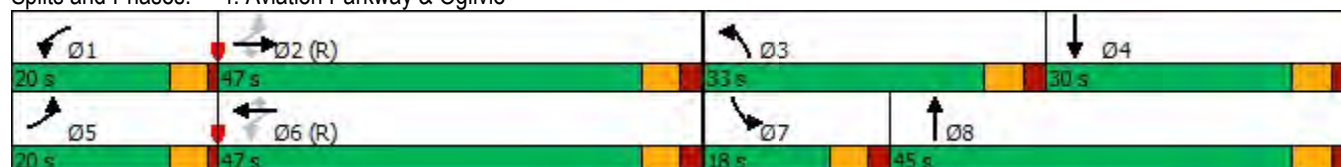
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Aviation Parkway & Ogilvie



Lanes, Volumes, Timings
5: Cummings & Donald

2027 AM TOD Not Met
06/10/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	42	174	272	136	210	104
Future Volume (vph)	42	174	272	136	210	104
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0	50.0	60.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	0.0		7.5			
Satd. Flow (prot)	1695	1517	1695	1784	1683	0
Flt Permitted	0.950		0.569			
Satd. Flow (perm)	1662	1447	1005	1784	1683	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		174			69	
Link Speed (k/h)	50			50	50	
Link Distance (m)	162.1			259.7	97.1	
Travel Time (s)	11.7			18.7	7.0	
Lane Group Flow (vph)	42	174	272	136	314	0
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	22.0	22.0	24.9	24.9	32.9	
Total Split (s)	22.0	22.0	39.9	39.9	39.9	
Total Split (%)	35.5%	35.5%	64.5%	64.5%	64.5%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7	3.6	3.6	3.6	
Lost Time Adjust (s)	-2.0	-2.0	-2.9	-2.9	-2.9	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	
Act Effect Green (s)	13.1	13.1	39.9	39.9	39.9	
Actuated g/C Ratio	0.23	0.23	0.70	0.70	0.70	
v/c Ratio	0.11	0.37	0.39	0.11	0.26	
Control Delay	17.8	6.0	7.7	4.9	4.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	17.8	6.0	7.7	4.9	4.5	
LOS	B	A	A	A	A	
Approach Delay	8.3			6.8	4.5	
Approach LOS	A			A	A	
Queue Length 50th (m)	3.5	0.0	11.1	4.4	8.5	
Queue Length 95th (m)	9.5	11.6	31.9	12.5	23.2	
Internal Link Dist (m)	138.1			235.7	73.1	
Turn Bay Length (m)		50.0	60.0			
Base Capacity (vph)	536	577	704	1251	1201	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Reduced v/c Ratio	0.08	0.30	0.39	0.11	0.26	

Intersection Summary

Area Type: Other

Cycle Length: 61.9

Actuated Cycle Length: 56.9

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.39

Intersection Signal Delay: 6.4

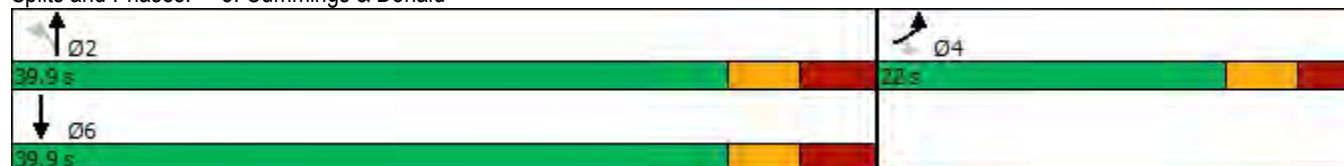
Intersection LOS: A

Intersection Capacity Utilization 57.7%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 5: Cummings & Donald



Lanes, Volumes, Timings
6: Cyrville & Labelle

2027 AM TOD Not Met

06/10/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	26	24	151	157	21	160	468	145	30	185	96
Future Volume (vph)	9	26	24	151	157	21	160	468	145	30	185	96
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0		0.0	40.0		0.0	0.0		0.0	55.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			0.0			7.5		
Satd. Flow (prot)	1695	1611	0	1695	1752	0	1695	1722	0	1695	1677	0
Flt Permitted	0.634			0.724			0.577			0.329		
Satd. Flow (perm)	1122	1611	0	1292	1752	0	1025	1722	0	587	1677	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24			9			30			50	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		157.5			153.3			118.0			430.7	
Travel Time (s)		11.3			11.0			7.1			25.8	
Lane Group Flow (vph)	9	50	0	151	178	0	160	613	0	30	281	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		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	
Minimum Split (s)	27.5	27.5		27.5	27.5		34.3	34.3		34.3	34.3	
Total Split (s)	28.0	28.0		28.0	28.0		42.0	42.0		42.0	42.0	
Total Split (%)	37.3%	37.3%		37.3%	37.3%		56.0%	56.0%		56.0%	56.0%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	2.2	2.2		2.2	2.2		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.5	0.0		0.0	0.0		-2.3	-2.3		0.0	-2.3	
Total Lost Time (s)	4.0	5.5		5.5	5.5		4.0	4.0		6.3	4.0	
Lead/Lag	Lag	Lag		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effect Green (s)	15.1	13.5		13.5	13.5		40.5	40.5		38.2	40.5	
Actuated g/C Ratio	0.23	0.21		0.21	0.21		0.63	0.63		0.59	0.63	
v/c Ratio	0.03	0.14		0.56	0.48		0.25	0.56		0.09	0.26	
Control Delay	18.0	13.3		30.3	24.8		8.2	10.6		8.9	6.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	18.0	13.3		30.3	24.8		8.2	10.6		8.9	6.3	
LOS	B	B		C	C		A	B		A	A	
Approach Delay		14.0			27.3			10.1			6.6	
Approach LOS		B			C			B			A	
Queue Length 50th (m)	0.8	2.3		15.0	16.4		6.2	29.3		1.2	8.8	
Queue Length 95th (m)	3.9	9.8		32.5	34.1		24.2	93.4		6.8	31.6	
Internal Link Dist (m)		133.5			129.3			94.0			406.7	
Turn Bay Length (m)	30.0			40.0						55.0		
Base Capacity (vph)	421	582		454	622		643	1092		347	1071	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	7%	7%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		

Lanes, Volumes, Timings
6: Cyrville & Labelle

2027 AM TOD Not Met
06/10/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.02	0.09		0.33	0.29		0.25	0.56		0.09	0.26	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 64.5

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 13.3

Intersection LOS: B

Intersection Capacity Utilization 72.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 6: Cyrville & Labelle



Lane Group	Ø3	Ø7
Reduced v/c Ratio		
Intersection Summary		

Lanes, Volumes, Timings
7: St. Laurent & Lemieux

2027 AM TOD Not Met
06/10/2019

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		  			  
Traffic Volume (vph)	627	153	1375	228	6	1650
Future Volume (vph)	627	153	1375	228	6	1650
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0	25.0		60.0	125.0	
Storage Lanes	2	1		1	1	
Taper Length (m)	0.0				7.5	
Satd. Flow (prot)	3288	1517	4871	1517	1695	4871
Flt Permitted	0.950				0.160	
Satd. Flow (perm)	3288	1450	4871	1477	285	4871
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		46		228		
Link Speed (k/h)	50		60			60
Link Distance (m)	133.2		163.3			226.6
Travel Time (s)	9.6		9.8			13.6
Lane Group Flow (vph)	627	153	1375	228	6	1650
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	37.5	37.5	24.0	24.0
Total Split (s)	50.0	50.0	80.0	80.0	80.0	80.0
Total Split (%)	38.5%	38.5%	61.5%	61.5%	61.5%	61.5%
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	-2.1	-2.1	-1.5	-1.5	-1.5	-1.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	33.1	33.1	88.9	88.9	88.9	88.9
Actuated g/C Ratio	0.25	0.25	0.68	0.68	0.68	0.68
v/c Ratio	0.75	0.38	0.41	0.21	0.03	0.50
Control Delay	50.3	29.2	10.0	1.6	8.3	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.3	29.2	10.0	1.6	8.3	12.6
LOS	D	C	B	A	A	B
Approach Delay	46.2		8.8			12.6
Approach LOS	D		A			B
Queue Length 50th (m)	76.4	22.3	52.3	0.0	0.5	78.8
Queue Length 95th (m)	89.9	38.9	72.8	9.1	m1.0	86.5
Internal Link Dist (m)	109.2		139.3			202.6
Turn Bay Length (m)		25.0		60.0	125.0	
Base Capacity (vph)	1163	542	3332	1082	194	3332
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Reduced v/c Ratio	0.54	0.28	0.41	0.21	0.03	0.50

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 124 (95%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 17.6

Intersection LOS: B

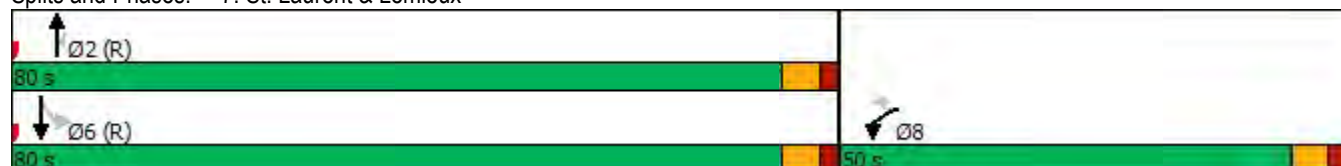
Intersection Capacity Utilization 62.7%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 7: St. Laurent & Lemieux



Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↱			↑↑		↱
Traffic Vol, veh/h	646	112	0	1491	0	76
Future Vol, veh/h	646	112	0	1491	0	76
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	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	646	112	0	1491	0	76
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	379
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	619
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	619
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		11.6	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT		
Capacity (veh/h)	619	-	-	-		
HCM Lane V/C Ratio	0.123	-	-	-		
HCM Control Delay (s)	11.6	-	-	-		
HCM Lane LOS	B	-	-	-		
HCM 95th %tile Q(veh)	0.4	-	-	-		

Intersection						
Int Delay, s/veh	7.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	249	57	9	101	317	52
Future Vol, veh/h	249	57	9	101	317	52
Conflicting Peds, #/hr	0	0	0	0	0	0
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
Mvmt Flow	249	57	9	101	317	52
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	462	343	369	0	-	0
Stage 1	343	-	-	-	-	-
Stage 2	119	-	-	-	-	-
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	558	700	1190	-	-	-
Stage 1	719	-	-	-	-	-
Stage 2	906	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	554	700	1190	-	-	-
Mov Cap-2 Maneuver	554	-	-	-	-	-
Stage 1	713	-	-	-	-	-
Stage 2	906	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	18.1	0.7		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1190	-	576	-	-	
HCM Lane V/C Ratio	0.008	-	0.531	-	-	
HCM Control Delay (s)	8	0	18.1	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0	-	3.1	-	-	

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	0	0	0	0	163	133	673	44	0	0	178
Future Vol, veh/h	30	0	0	0	0	163	133	673	44	0	0	178
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	-	-	Free	-	-	Free
Storage Length	0	-	-	-	-	0	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
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	30	0	0	0	0	163	133	673	44	0	0	178

Major/Minor	Minor2	Minor1				Major1			
Conflicting Flow All	603	-	-	-	-	337	0	0	-
Stage 1	0	-	-	-	-	-	-	-	-
Stage 2	603	-	-	-	-	-	-	-	-
Critical Hdwy	7.54	-	-	-	-	6.94	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	-	-	-	-	3.32	2.22	-	-
Pot Cap-1 Maneuver	383	0	0	0	0	659	-	-	0
Stage 1	-	0	0	0	0	-	-	-	0
Stage 2	453	0	0	0	0	-	-	-	0
Platoon blocked, %									-
Mov Cap-1 Maneuver	288	-	-	-	-	659	-	-	-
Mov Cap-2 Maneuver	288	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	341	-	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	18.9	12.2	
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1WBLn1
Capacity (veh/h)	-	-	288 659
HCM Lane V/C Ratio	-	-	0.104 0.247
HCM Control Delay (s)	-	-	18.9 12.2
HCM Lane LOS	-	-	C B
HCM 95th %tile Q(veh)	-	-	0.3 1

Lanes, Volumes, Timings
1: St. Laurent & Coventry/Ogilvie

2027 PM TOD not Met
06/10/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	302	648	205	588	416	30	182	925	854	71	829	192
Future Volume (vph)	302	648	205	588	416	30	182	925	854	71	829	192
Satd. Flow (prot)	3288	3390	1517	3288	3390	1517	1695	4416	0	1695	4871	1517
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3265	3390	1392	3226	3390	1459	1661	4416	0	1690	4871	1403
Satd. Flow (RTOR)			210			210		208				211
Lane Group Flow (vph)	302	648	205	588	416	30	182	1779	0	71	829	192
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Detector Phase	7	4	4	3	8	8	5	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		5.0	10.0	10.0
Minimum Split (s)	11.9	37.5	37.5	11.9	37.5	37.5	11.4	35.4		11.4	35.4	35.4
Total Split (s)	24.0	37.0	37.0	24.0	37.0	37.0	24.0	44.0		15.0	35.0	35.0
Total Split (%)	20.0%	30.8%	30.8%	20.0%	30.8%	30.8%	20.0%	36.7%		12.5%	29.2%	29.2%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	3.2	2.8	2.8	3.2	2.8	2.8	2.7	2.7		2.7	2.7	2.7
Lost Time Adjust (s)	-2.9	-2.5	-2.5	-2.9	-2.5	-2.5	-2.4	-2.4		-2.4	-2.4	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	25.6	30.8	30.8	22.2	27.4	27.4	18.3	43.0		10.5	32.7	32.7
Actuated g/C Ratio	0.21	0.26	0.26	0.18	0.23	0.23	0.15	0.36		0.09	0.27	0.27
v/c Ratio	0.43	0.75	0.40	0.97	0.54	0.06	0.71	1.29dr		0.48	0.63	0.36
Control Delay	44.9	46.7	6.7	69.4	38.6	0.2	73.8	57.9		63.1	41.1	5.5
Queue Delay	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.2		0.0	0.0	0.0
Total Delay	44.9	47.1	6.7	69.4	38.6	0.2	73.8	58.1		63.1	41.1	5.5
LOS	D	D	A	E	D	A	E	E		E	D	A
Approach Delay		39.3			55.0			59.6			36.3	
Approach LOS		D			D			E			D	
Queue Length 50th (m)	34.0	72.1	0.0	~77.2	46.7	0.0	36.3	~162.7		16.1	64.1	0.0
Queue Length 95th (m)	48.3	92.5	16.7	#112.4	58.2	m0.0	64.1	#90.8		31.1	78.6	13.7
Internal Link Dist (m)		132.3			135.6			202.6			118.5	
Turn Bay Length (m)				160.0			60.0			60.0		45.0
Base Capacity (vph)	701	932	535	609	932	553	282	1715		155	1326	535
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	52	0	0	0	0	0	1		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.43	0.74	0.38	0.97	0.45	0.05	0.65	1.04		0.46	0.63	0.36

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 120

Control Type: Actuated-Coordinated

Lanes, Volumes, Timings

1: St. Laurent & Coventry/Ogilvie

2027 PM TOD not Met
06/10/2019

Maximum v/c Ratio: 1.04

Intersection Signal Delay: 49.4

Intersection LOS: D

Intersection Capacity Utilization 99.5%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

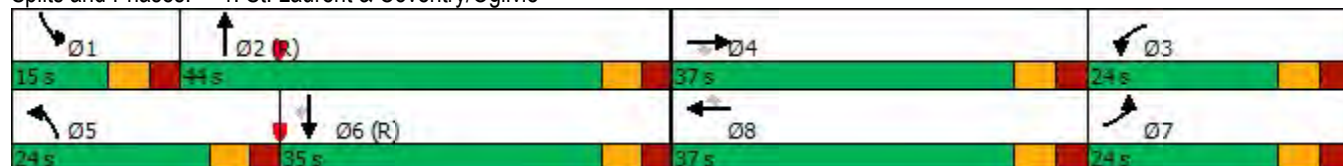
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 1: St. Laurent & Coventry/Ogilvie



Lanes, Volumes, Timings
2: Cyrville & Ogilvie

2027 PM TOD not Met
06/10/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑	↑	↑	↑		↑	↑	
Traffic Volume (vph)	0	1342	257	40	839	124	117	230	32	134	233	80
Future Volume (vph)	0	1342	257	40	839	124	117	230	32	134	233	80
Satd. Flow (prot)	0	3390	1517	1695	3390	1517	1695	1749	0	1695	1708	0
Flt Permitted				0.108			0.427			0.486		
Satd. Flow (perm)	0	3390	1425	193	3390	1388	759	1749	0	865	1708	0
Satd. Flow (RTOR)			257			124		7			17	
Lane Group Flow (vph)	0	1342	257	40	839	124	117	262	0	134	313	0
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases			2	6		6	8			4		
Detector Phase		2	2	6	6	6	8	8		4	4	
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)		32.2	32.2	32.2	32.2	32.2	47.1	47.1		47.1	47.1	
Total Split (s)		70.0	70.0	70.0	70.0	70.0	50.0	50.0		50.0	50.0	
Total Split (%)		58.3%	58.3%	58.3%	58.3%	58.3%	41.7%	41.7%		41.7%	41.7%	
Yellow Time (s)		3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)		2.5	2.5	2.5	2.5	2.5	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)		-2.2	-2.2	-2.2	-2.2	-2.2	-3.1	-3.1		-3.1	-3.1	
Total Lost Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max	C-Max	C-Max	C-Max	C-Max	Max	Max		Max	Max	
Act Effct Green (s)		66.0	66.0	66.0	66.0	66.0	46.0	46.0		46.0	46.0	
Actuated g/C Ratio		0.55	0.55	0.55	0.55	0.55	0.38	0.38		0.38	0.38	
v/c Ratio		0.72	0.29	0.38	0.45	0.15	0.40	0.39		0.40	0.47	
Control Delay		12.8	1.5	29.5	21.9	7.1	32.3	28.2		31.6	29.1	
Queue Delay		1.5	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		14.3	1.5	29.5	21.9	7.1	32.3	28.2		31.6	29.1	
LOS		B	A	C	C	A	C	C		C	C	
Approach Delay		12.2			20.4			29.4			29.9	
Approach LOS		B			C			C			C	
Queue Length 50th (m)		100.7	3.8	5.4	61.2	3.9	19.9	43.0		22.8	51.8	
Queue Length 95th (m)		m104.7	m6.1	m7.9	m74.6	m8.1	37.2	65.3		40.8	77.7	
Internal Link Dist (m)		135.6			179.4			406.7			100.8	
Turn Bay Length (m)				50.0		50.0	50.0					
Base Capacity (vph)		1864	899	106	1864	819	290	674		331	665	
Starvation Cap Reductn		319	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		0.87	0.29	0.38	0.45	0.15	0.40	0.39		0.40	0.47	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 20 (17%), Referenced to phase 2:EBT and 6:WBTL, Start of Green												
Natural Cycle: 90												
Control Type: Actuated-Coordinated												

Lanes, Volumes, Timings

2: Cyrville & Ogilvie

2027 PM TOD not Met
06/10/2019

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 18.8

Intersection LOS: B

Intersection Capacity Utilization 90.8%

ICU Level of Service E

Analysis Period (min) 15

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

Splits and Phases: 2: Cyrville & Ogilvie



Lanes, Volumes, Timings
3: Ogilvie & Cummings

2027 PM TOD not Met

06/10/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	1245	23	170	797	209	174	223	232	258	240	84
Future Volume (vph)	110	1245	23	170	797	209	174	223	232	258	240	84
Satd. Flow (prot)	1695	3376	0	1695	3241	0	1695	1784	1517	1695	1707	0
Flt Permitted	0.104			0.101			0.564			0.422		
Satd. Flow (perm)	186	3376	0	180	3241	0	1002	1784	1406	726	1707	0
Satd. Flow (RTOR)		2			30				138		20	
Lane Group Flow (vph)	110	1268	0	170	1006	0	174	223	232	258	324	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	8	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	9.7	24.7		9.7	24.7		36.6	36.6	36.6	9.3	36.6	
Total Split (s)	15.0	45.0		15.0	45.0		40.0	40.0	40.0	20.0	60.0	
Total Split (%)	12.5%	37.5%		12.5%	37.5%		33.3%	33.3%	33.3%	16.7%	50.0%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.0	2.0		1.0	2.0		3.3	3.3	3.3	1.0	3.3	
Lost Time Adjust (s)	0.7	-1.7		0.7	-1.7		-2.6	-2.6	-2.6	0.3	-2.6	
Total Lost Time (s)	5.4	4.0		5.4	4.0		4.0	4.0	4.0	4.6	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	None	Max	
Act Effct Green (s)	48.1	41.0		50.3	42.1		37.0	37.0	37.0	55.4	56.0	
Actuated g/C Ratio	0.40	0.34		0.42	0.35		0.31	0.31	0.31	0.46	0.47	
v/c Ratio	0.61	1.10		0.87	0.87		0.56	0.41	0.44	0.57	0.40	
Control Delay	45.8	76.4		74.9	40.5		43.6	35.9	16.5	26.2	21.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	45.8	76.4		74.9	40.5		43.6	35.9	16.5	26.2	21.4	
LOS	D	E		E	D		D	D	B	C	C	
Approach Delay		73.9			45.5			30.9			23.5	
Approach LOS		E			D			C			C	
Queue Length 50th (m)	11.8	~177.4		34.2	74.8		34.7	42.0	16.6	37.6	45.6	
Queue Length 95th (m)	m24.2	#216.1		m#61.7	#117.8		59.1	64.8	39.6	57.2	68.4	
Internal Link Dist (m)		108.2			386.5			96.6			235.7	
Turn Bay Length (m)	85.0			90.0			40.0		16.0	150.0		
Base Capacity (vph)	196	1154		196	1155		309	550	529	459	807	
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	0.56	1.10		0.87	0.87		0.56	0.41	0.44	0.56	0.40	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 46 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green												
Natural Cycle: 105												
Control Type: Actuated-Coordinated												

Lanes, Volumes, Timings

3: Ogilvie & Cummings

2027 PM TOD not Met
06/10/2019

Maximum v/c Ratio: 1.10

Intersection Signal Delay: 50.1

Intersection LOS: D

Intersection Capacity Utilization 102.2%

ICU Level of Service G

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

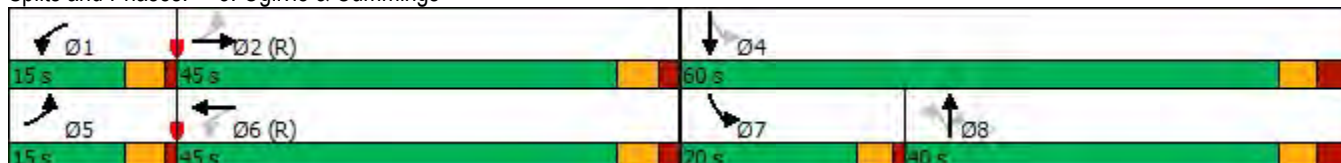
Queue shown is maximum after two cycles.

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: 3: Ogilvie & Cummings



Lanes, Volumes, Timings
4: Aviation Parkway & Ogilvie

2027 PM TOD not Met

06/10/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	183	833	114	136	652	112	164	224	180	112	261	168
Future Volume (vph)	183	833	114	136	652	112	164	224	180	112	261	168
Satd. Flow (prot)	1695	3247	1380	1695	3390	1517	1695	3144	0	1695	3172	0
Flt Permitted	0.288			0.206			0.950			0.950		
Satd. Flow (perm)	513	3247	1343	367	3390	1493	1692	3144	0	1694	3172	0
Satd. Flow (RTOR)			125			125		157			111	
Lane Group Flow (vph)	183	833	114	136	652	112	164	404	0	112	429	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		10.9	30.1	
Total Split (s)	20.0	51.0	51.0	20.0	51.0	51.0	19.0	30.0		19.0	30.0	
Total Split (%)	16.7%	42.5%	42.5%	16.7%	42.5%	42.5%	15.8%	25.0%		15.8%	25.0%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		2.2	2.4	
Lost Time Adjust (s)	0.7	-2.1	-2.1	0.7	-2.1	-2.1	-1.9	-2.1		-1.9	-2.1	
Total Lost Time (s)	5.4	4.0	4.0	5.4	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max		None	Max	
Act Effct Green (s)	61.9	52.0	52.0	58.5	50.3	50.3	14.6	27.4		13.6	26.4	
Actuated g/C Ratio	0.52	0.43	0.43	0.49	0.42	0.42	0.12	0.23		0.11	0.22	
v/c Ratio	0.49	0.59	0.17	0.48	0.46	0.16	0.80	0.48		0.59	0.55	
Control Delay	22.1	27.5	6.2	19.7	26.8	3.7	78.2	26.5		63.0	33.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	22.1	27.5	6.2	19.7	26.8	3.7	78.2	26.5		63.0	33.4	
LOS	C	C	A	B	C	A	E	C		E	C	
Approach Delay		24.4			22.8			41.4			39.6	
Approach LOS		C			C			D			D	
Queue Length 50th (m)	22.4	59.1	2.7	15.1	57.1	0.0	38.0	26.5		25.1	35.1	
Queue Length 95th (m)	m24.8	m59.6	m3.4	25.4	77.2	9.0	#71.1	42.2		43.7	51.5	
Internal Link Dist (m)		386.5			205.1			147.2			200.4	
Turn Bay Length (m)	75.0		60.0	55.0		70.0	110.0			110.0		
Base Capacity (vph)	419	1407	653	354	1421	698	211	839		211	783	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.44	0.59	0.17	0.38	0.46	0.16	0.78	0.48		0.53	0.55	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 50 (42%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green												
Natural Cycle: 85												
Control Type: Actuated-Coordinated												

Lanes, Volumes, Timings

4: Aviation Parkway & Ogilvie

2027 PM TOD not Met
06/10/2019

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 29.7

Intersection LOS: C

Intersection Capacity Utilization 78.1%

ICU Level of Service D

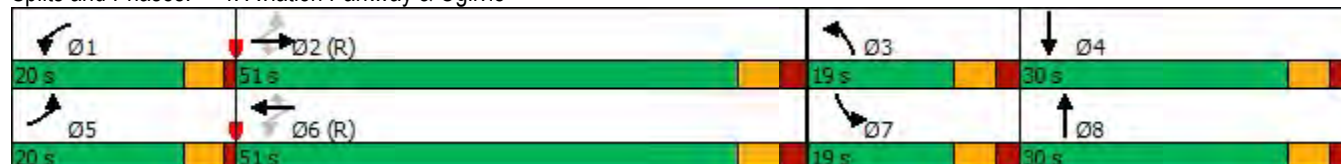
Analysis Period (min) 15

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: 4: Aviation Parkway & Ogilvie



Lanes, Volumes, Timings
5: Cummings & Donald

2027 PM TOD not Met
06/10/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	88	368	290	260	260	90
Future Volume (vph)	88	368	290	260	260	90
Satd. Flow (prot)	1695	1517	1695	1784	1705	0
Flt Permitted	0.950		0.534			
Satd. Flow (perm)	1658	1442	943	1784	1705	0
Satd. Flow (RTOR)		368			36	
Lane Group Flow (vph)	88	368	290	260	350	0
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	22.0	22.0	24.9	24.9	32.9	
Total Split (s)	31.0	31.0	39.9	39.9	39.9	
Total Split (%)	43.7%	43.7%	56.3%	56.3%	56.3%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7	3.6	3.6	3.6	
Lost Time Adjust (s)	-2.0	-2.0	-2.9	-2.9	-2.9	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	
Act Effect Green (s)	13.1	13.1	36.0	36.0	36.0	
Actuated g/C Ratio	0.23	0.23	0.63	0.63	0.63	
v/c Ratio	0.23	0.60	0.49	0.23	0.32	
Control Delay	19.3	7.0	9.7	5.6	5.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	19.3	7.0	9.7	5.6	5.7	
LOS	B	A	A	A	A	
Approach Delay	9.4			7.8	5.7	
Approach LOS	A			A	A	
Queue Length 50th (m)	7.5	0.0	12.4	9.0	11.4	
Queue Length 95th (m)	16.6	16.5	37.1	23.0	29.4	
Internal Link Dist (m)	138.1			235.7	73.1	
Turn Bay Length (m)		50.0	60.0			
Base Capacity (vph)	802	876	593	1123	1086	
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	0.11	0.42	0.49	0.23	0.32	
Intersection Summary						
Cycle Length: 70.9						
Actuated Cycle Length: 57.1						
Natural Cycle: 55						
Control Type: Actuated-Uncoordinated						
Maximum v/c Ratio: 0.60						

Lanes, Volumes, Timings
5: Cummings & Donald

2027 PM TOD not Met
06/10/2019

Intersection Signal Delay: 7.8

Intersection LOS: A

Intersection Capacity Utilization 58.7%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 5: Cummings & Donald



Lanes, Volumes, Timings
6: Cyrville & Labelle

2027 PM TOD not Met
06/10/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	79	104	213	66	26	46	313	254	59	511	17
Future Volume (vph)	25	79	104	213	66	26	46	313	254	59	511	17
Satd. Flow (prot)	1695	1574	0	1695	1694	0	1695	1637	0	1695	1774	0
Flt Permitted	0.697			0.589			0.364			0.335		
Satd. Flow (perm)	1230	1574	0	1017	1694	0	648	1637	0	595	1774	0
Satd. Flow (RTOR)		91			26			57			2	
Lane Group Flow (vph)	25	183	0	213	92	0	46	567	0	59	528	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		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	
Minimum Split (s)	27.5	27.5		27.5	27.5		34.3	34.3		34.3	34.3	
Total Split (s)	42.0	42.0		42.0	42.0		43.0	43.0		43.0	43.0	
Total Split (%)	46.7%	46.7%		46.7%	46.7%		47.8%	47.8%		47.8%	47.8%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	2.2	2.2		2.2	2.2		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.5	-1.5		-1.5	-1.5		-2.3	-2.3		-2.3	-2.3	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lag	Lag		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)	20.4	20.4		20.4	20.4		39.7	39.7		39.7	39.7	
Actuated g/C Ratio	0.30	0.30		0.30	0.30		0.57	0.57		0.57	0.57	
v/c Ratio	0.07	0.35		0.71	0.18		0.12	0.59		0.17	0.52	
Control Delay	17.0	11.4		35.1	13.9		10.9	13.6		11.7	13.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	17.0	11.4		35.1	13.9		10.9	13.6		11.7	13.3	
LOS	B	B		D	B		B	B		B	B	
Approach Delay		12.1			28.7			13.4			13.1	
Approach LOS		B			C			B			B	
Queue Length 50th (m)	2.2	8.5		23.3	5.9		2.3	35.0		3.0	34.6	
Queue Length 95th (m)	7.3	22.9		48.1	16.0		10.7	103.3		13.5	95.8	
Internal Link Dist (m)		133.5			129.3			94.0			406.7	
Turn Bay Length (m)	30.0			40.0						55.0		
Base Capacity (vph)	686	918		567	956		372	965		342	1020	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.04	0.20		0.38	0.10		0.12	0.59		0.17	0.52	
Intersection Summary												
Cycle Length: 90												
Actuated Cycle Length: 69.1												
Natural Cycle: 70												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.71												

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Lanes, Volumes, Timings
6: Cyrville & Labelle

2027 PM TOD not Met
06/10/2019

Intersection Signal Delay: 15.9

Intersection LOS: B

Intersection Capacity Utilization 83.7%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 6: Cyrville & Labelle



Lanes, Volumes, Timings
7: St. Laurent & Lemieux

2027 PM TOD not Met
06/10/2019

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		  			  
Traffic Volume (vph)	527	156	1916	246	9	1981
Future Volume (vph)	527	156	1916	246	9	1981
Satd. Flow (prot)	3288	1517	4871	1517	1695	4871
Flt Permitted	0.950				0.081	
Satd. Flow (perm)	3288	1454	4871	1477	144	4871
Satd. Flow (RTOR)		19		246		
Lane Group Flow (vph)	527	156	1916	246	9	1981
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	37.5	37.5	24.0	24.0
Total Split (s)	38.0	38.0	82.0	82.0	82.0	82.0
Total Split (%)	31.7%	31.7%	68.3%	68.3%	68.3%	68.3%
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	-2.1	-2.1	-1.5	-1.5	-1.5	-1.5
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	27.3	27.3	84.7	84.7	84.7	84.7
Actuated g/C Ratio	0.23	0.23	0.71	0.71	0.71	0.71
v/c Ratio	0.70	0.45	0.56	0.22	0.09	0.58
Control Delay	47.6	38.2	9.9	1.4	5.3	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	47.6	38.2	9.9	1.4	5.3	6.5
LOS	D	D	A	A	A	A
Approach Delay	45.5		8.9			6.5
Approach LOS	D		A			A
Queue Length 50th (m)	59.7	28.1	69.8	0.0	0.2	75.8
Queue Length 95th (m)	73.0	45.5	97.9	8.1	m1.0	m83.2
Internal Link Dist (m)	109.2		139.3			202.6
Turn Bay Length (m)		25.0		60.0	125.0	
Base Capacity (vph)	931	425	3437	1114	101	3437
Starvation Cap Reductn	0	0	0	0	0	389
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.37	0.56	0.22	0.09	0.65
Intersection Summary						
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 99 (83%), Referenced to phase 2:NBT and 6:SBTL, Start of Green						
Natural Cycle: 75						
Control Type: Actuated-Coordinated						

Lanes, Volumes, Timings
7: St. Laurent & Lemieux

2027 PM TOD not Met
06/10/2019

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 13.1

Intersection LOS: B

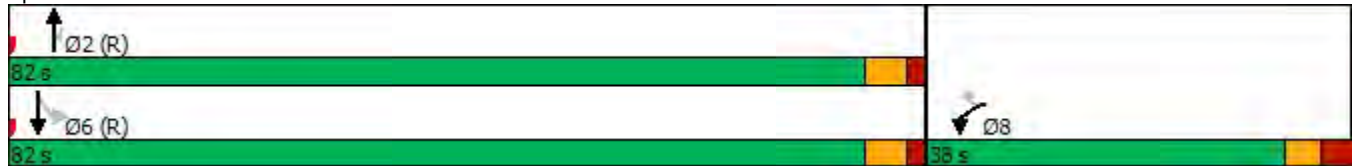
Intersection Capacity Utilization 68.1%

ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 7: St. Laurent & Lemieux



Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↱			↑↑		↱
Traffic Vol, veh/h	1258	266	0	1067	0	61
Future Vol, veh/h	1258	266	0	1067	0	61
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	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1258	266	0	1067	0	61
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	762
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	347
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	347
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		17.6	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT		
Capacity (veh/h)	347	-	-	-		
HCM Lane V/C Ratio	0.176	-	-	-		
HCM Control Delay (s)	17.6	-	-	-		
HCM Lane LOS	C	-	-	-		
HCM 95th %tile Q(veh)	0.6	-	-	-		

Intersection						
Int Delay, s/veh	8.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	199	46	20	453	323	123
Future Vol, veh/h	199	46	20	453	323	123
Conflicting Peds, #/hr	0	0	0	0	0	0
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
Mvmt Flow	199	46	20	453	323	123
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	878	385	446	0	-	0
Stage 1	385	-	-	-	-	-
Stage 2	493	-	-	-	-	-
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	318	663	1114	-	-	-
Stage 1	688	-	-	-	-	-
Stage 2	614	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	310	663	1114	-	-	-
Mov Cap-2 Maneuver	310	-	-	-	-	-
Stage 1	671	-	-	-	-	-
Stage 2	614	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	37.6	0.4		0		
HCM LOS	E					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1114	-	344	-	-	
HCM Lane V/C Ratio	0.018	-	0.712	-	-	
HCM Control Delay (s)	8.3	0	37.6	-	-	
HCM Lane LOS	A	A	E	-	-	
HCM 95th %tile Q(veh)	0.1	-	5.2	-	-	

Intersection												
Int Delay, s/veh	7.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	170	0	0	0	0	235	112	448	27	0	0	279
Future Vol, veh/h	170	0	0	0	0	235	112	448	27	0	0	279
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	-	-	Free	-	-	Free
Storage Length	0	-	-	-	-	0	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
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	170	0	0	0	0	235	112	448	27	0	0	279

Major/Minor	Minor2	Minor1				Major1			
Conflicting Flow All	448	-	-	-	-	224	0	0	-
Stage 1	0	-	-	-	-	-	-	-	-
Stage 2	448	-	-	-	-	-	-	-	-
Critical Hdwy	7.54	-	-	-	-	6.94	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	-	-	-	-	3.32	2.22	-	-
Pot Cap-1 Maneuver	494	0	0	0	0	779	-	-	0
Stage 1	-	0	0	0	0	-	-	-	0
Stage 2	560	0	0	0	0	-	-	-	0
Platoon blocked, %									-
Mov Cap-1 Maneuver	345	-	-	-	-	779	-	-	-
Mov Cap-2 Maneuver	345	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	391	-	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	25.2	11.6	
HCM LOS	D	B	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1WBLn1
Capacity (veh/h)	-	-	345 779
HCM Lane V/C Ratio	-	-	0.493 0.302
HCM Control Delay (s)	-	-	25.2 11.6
HCM Lane LOS	-	-	D B
HCM 95th %tile Q(veh)	-	-	2.6 1.3