

St. Laurent/Donald Shopping Centre Expansion

• TRANSPORTATION BRIEF •

November 30, 2012

St. Laurent/Donald, Ottawa - Shopping Centre Expansion Transportation Brief

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1. INTRODUCTION

It is our understanding that the existing Zellers, Metro and small multi-tenant building, located at the southeast quadrant of the St. Laurent/Donald intersection and at the north end of the retail plaza, are to be demolished and replaced by a new larger Target and Metro retail stores. The approximate total gross floor area of the proposed Target retail store is 152,745 ft² and the proposed Metro retail food store is 42,100 ft². This equates to an approximate net increase in total gross floor area of 72,547 ft². The site's local context is depicted in Figure 1 and the preliminary Site Plan is depicted in Figure 2.

Figure 1: Local Context



As part of the Site Plan Approval process, the City of Ottawa requires submission of a Transportation Impact Assessment (TIA) consistent with their Guidelines dated October 2006. Based on the ensuing trip generation for the proposed change in land use/floor area, a Transportation Brief (TB) is the appropriate level of study for the subject application.

GENERAL SITE INFORMATION

GENERAL NOTES

PROPERTY BOUNDARY INFORMATION TAKEN FROM
MUNICIPALITY OF ST. LAURENT, QUEBEC
LEGISLATION
LEGISLATION
LEGISLATION

MUNICIPAL ADDRESS

1000 RUE ST. LAURENT, ST. LAURENT, QUEBEC

SITE AREA

AREA OF THE SITE: 4000 SQM

SITE ZONING

CITY OF ST. LAURENT: B-101

STANDARD: 1000 SQM

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LEGEND

1. PROPOSED BUILDING PARKING

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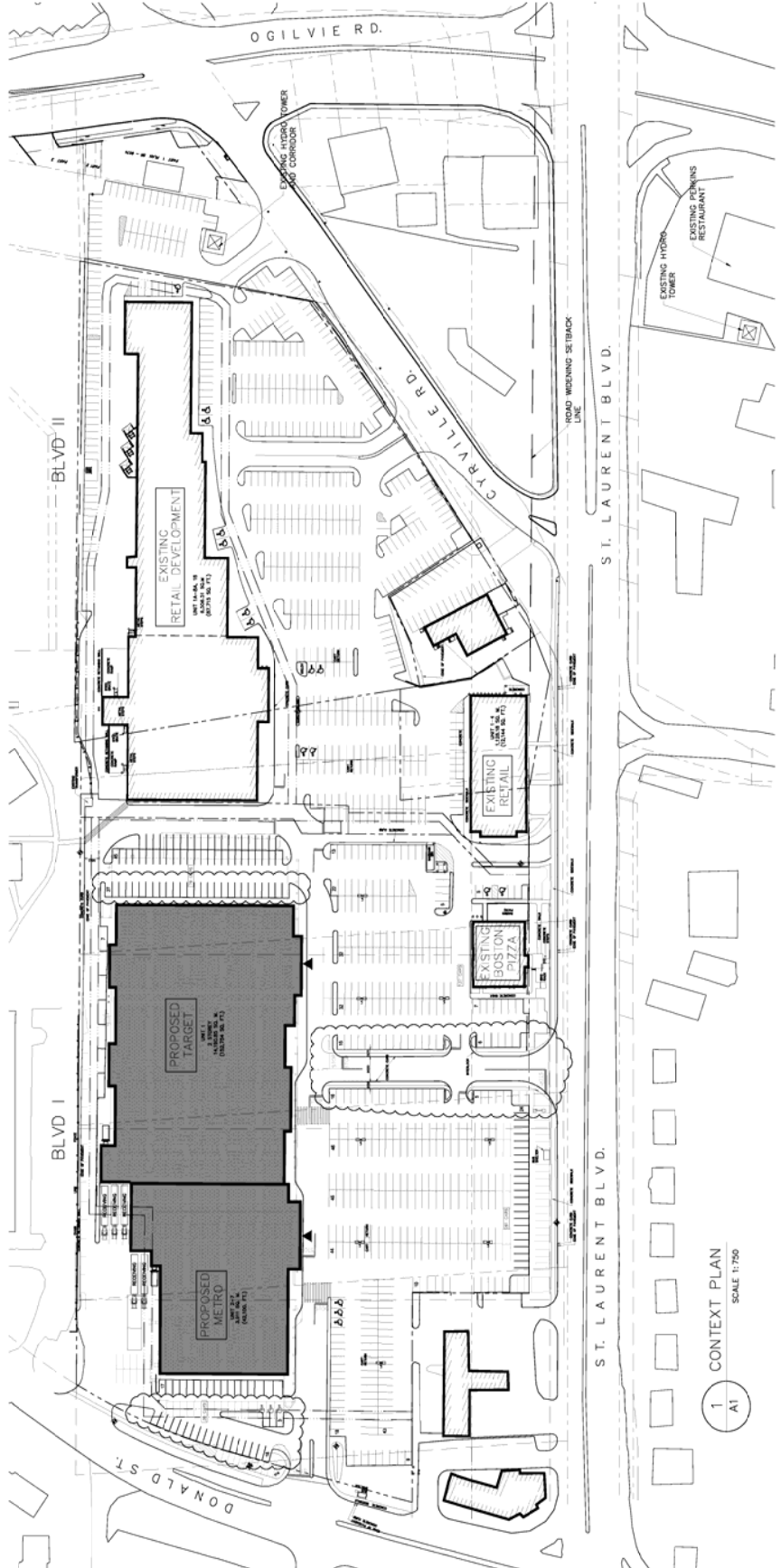
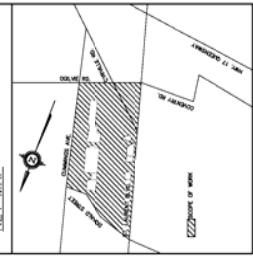
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KEY MAP



1 CONTEXT PLAN
A1

SCALE 1:750

RIO+CAN
MANAGEMENT INC.

100 LAMARQUE AVENUE, SUITE 100
ST. LAURENT, QUEBEC H4S 1Y4
TEL: (514) 763-1010
WWW.RIOCAN.COM

Les Labellés
Architect

100 LAMARQUE AVENUE, SUITE 100
ST. LAURENT, QUEBEC H4S 1Y4
TEL: (514) 763-1010
WWW.LESLABELLES.COM

RIOCAN
ST. LAURENT

SITE PLAN

DATE: 01/10/2013

SA11

2. EXISTING CONDITIONS

St. Laurent Boulevard is an arterial roadway on the site's western boundary and has a six-lane cross-section south of Cyrville Road and a four-lane 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.

Donald Street is a major collector roadway on the site's northern boundary and has a two-lane cross-section. Auxiliary turn lanes are provided at major intersections and it has a posted speed limit of 50 km/h.

Cyrville Road is local roadway on the site's southern boundary and it has a two-lane cross-section. Auxiliary turn lanes are provided at major intersections and it has a posted speed limit of 60 km/h.

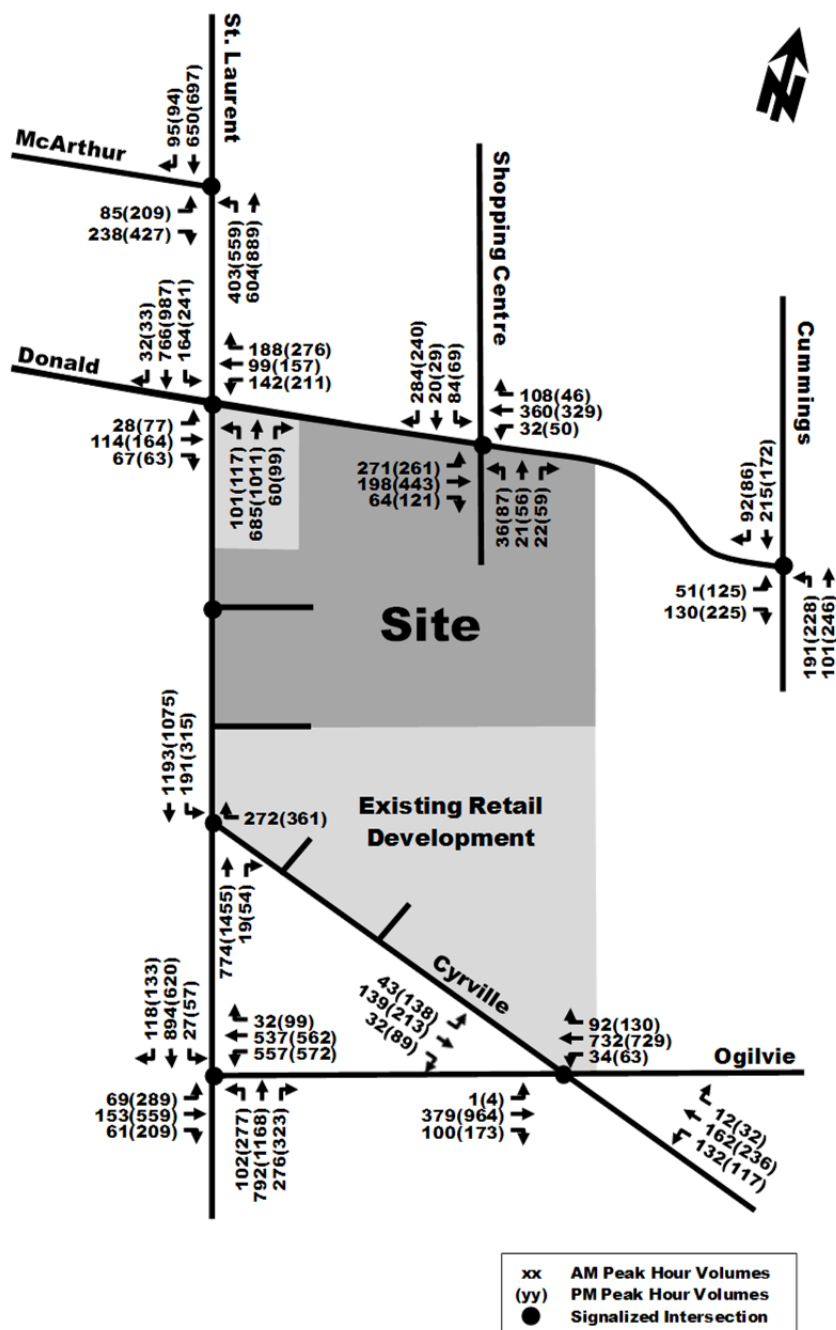
Ogilvie Road is an arterial roadway within the study area and it has a four-lane cross-section. Auxiliary turn lanes are provided at major intersections and it has a posted speed limit of 60 km/h.

McArthur Avenue is an arterial roadway with a four-lane cross-section. Auxiliary turn lanes are provided at major intersections and its unposted speed limit is understood to be 50 km/h.

Cummings Avenue is a major collector roadway within the study area and it has a two-lane cross-section. Auxiliary turn lanes are provided at major intersections and its unposted is understood to be 50 km/h.

Illustrated in Figure 3, are the most recent weekday morning and afternoon peak hour traffic volumes obtained from the City of Ottawa for the St. Laurent/McArthur, St. Laurent/Donald, St. Laurent/Cyrville, St. Laurent/Ogilvie, Donald/Shopping Centre and Donald/Cummings intersections. Peak hour traffic volumes are included as Appendix A.

Figure 3: Existing Peak Hour Traffic Volumes



The ensuing Table 1 provides a summary of existing traffic operations at key study area intersections, based on the Synchro (V8) 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 intersections 'as a whole' were assessed based on a weighted v/c ratio and the Synchro model output of existing conditions is provided within Appendix B.

Table 1: Existing Performance 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
St. Laurent/McArthur	C(E)	0.77(0.98)	NBL(NBL)	13.5(20.4)	A(B)	0.55(0.69)
St. Laurent/Donald	C(E)	0.76(0.92)	WBL(WBL)	19.4(29.9)	A(C)	0.46(0.73)
St. Laurent/Cyrville	C(C)	0.71(0.77)	SBL(SBL)	12.6(14.7)	A(A)	0.39(0.57)
St. Laurent/Ogilvie	D(F)	0.81(1.18)	WBL(NBL)	33.8(55.2)	B(D)	0.63(0.83)
Cyrville/Ogilvie	A(A)	0.41(0.59)	NBL(EBT)	19.3(23.9)	A(A)	0.34(0.55)
Donald/Shopping Centre	B(B)	0.65(0.68)	SBR(SBT)	12.1(14.0)	A(A)	0.39(0.34)
Donald/Cummings	A(A)	0.33(0.47)	EBR(EBR)	7.8(9.5)	A(A)	0.31(0.39)
Note: Analysis of signalized intersections assumes a PHF of 0.95 and a saturation flow rate of 1800 veh/h/lane.						

As shown in Table 1, study area intersections 'as a whole' are currently operating at an acceptable LoS 'D' or better during the weekday morning and afternoon peak hours, with respect to the City of Ottawa operating standards of LoS 'D' or better ($0.90 > v/c > 0.00$).

With regard to 'critical movements' at study area intersections, the northbound left-turn at the St. Laurent/McArthur is currently failing during the afternoon peak hour. The northbound left-turn and westbound left-turn movements at the St. Laurent/Ogilvie and St. Laurent/Donald intersections are currently operating at capacity (LoS 'E') during the afternoon peak hours, respectively. All other 'critical movements' at study area intersections are currently operating at an acceptable LoS 'D' or better during peak hours.

3. DEMAND FORECASTING

3.1 Background Traffic Growth

Summarized in Table 2, is the percent rate of growth in traffic volumes at the St. Laurent/Ogilvie intersection from 2008 to 2010, which is the busiest intersection in the vicinity of the proposed development and it is the study area intersection where historic volume data is available.

Table 2: Historical Trends – St. Laurent/Ogilvie Intersection

Time Period	Percent Annual Change 2008 to 2010				
	North Leg	South Leg	East Leg	West Leg	Overall
8 hrs	-6.40%	-2.70%	-7.69%	-12.87%	-6.48%
AM Peak	-8.28%	-7.97%	-19.83%	-28.05%	-13.34%
PM Peak	-5.13%	-3.02%	0.39%	-1.64%	-2.51%

As shown in Table 2, the total traffic volumes have historically decreased over the three-year period at the St. Laurent/Ogilvie intersection. Therefore, for the purpose of this assessment, the subsequent analysis will assume existing traffic volumes as baseline traffic volumes.

3.2 Site Vehicle Trip Generation

It is noteworthy that this section of the report only focuses on the portion of the existing plaza/site that is being redeveloped and not the whole site. So when we refer to existing land uses and existing/proposed trip generation, the resultant values are only for the portion to be redeveloped.

Summarized in Table 3, are the appropriate vehicle trip generation rates for the proposed land uses obtained from the 8th Edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual. The vehicle trip generation rates for the existing land uses, which are to be replaced by the proposed land uses, were also obtained from the 8th Edition of the ITE Trip Generation Manual and are summarized in Table 3.

Table 3: ITE Trip Generation Rates

Land Use	Data Source	Trip Rates	
		AM Peak	PM Peak
Supermarket	ITE 850	$T = 3.59(X);$	$T = 10.50(X);$ $\ln(T) = 0.61 \ln(X) + 3.95$
Specialty Retail ¹	ITE 814	$T = 1.36(X);$ $T = 1.20(X) + 10.74$	$T = 2.71(X);$ $T = 2.40(X) + 21.48$
<i>Notes: T = Average Vehicle Trip Ends X = 1000 ft² Gross Floor Area 1. Rates for specialty retail during the AM Peak is assumed to be 50% of the PM Peak</i>			

As ITE trip generation surveys only record vehicle trips and typically reflect highly suburban locations (with little to no access by travel modes other than private automobiles), adjustment factors appropriate to the more urban study area context were applied to attain estimates of person trips for the proposed development. This approach is considered appropriate within the industry for urban infill developments.

To convert ITE vehicle trip rates to person trips, an auto occupancy factor and a non-auto trip factor were applied to the ITE vehicle trip rates. Our review of available literature suggests that a combined factor of approximately 1.3 is considered reasonable to account for typical North American auto occupancy values of approximately 1.15 and combined

transit and non-motorized modal shares of less than 10%. As such, the person trip generation for the proposed land uses is summarized in Table 4.

Table 4: Modified Person Trip Generation for Proposed Land Uses

Land Use	Data Source	Area	AM Peak (persons)			PM Peak (persons)		
			In	Out	Total	In	Out	Total
Supermarket	ITE 850	42,100 ft ²	119	77	196	337	324	661
Specialty Retail	ITE 814	152,754 ft ²	141	111	252	222	283	505
Proposed Site Persons Trips			260	188	448	559	607	1,166
Note: 1.3 factor to account for typical North American auto occupancy values of approximately 1.15 and combined transit and non-motorized modal shares of less than 10%								

Summarized in Table 5 is the person trip generation for the existing land uses to be replaced.

Table 5: Modified Person Trip Generation for Existing Land Uses

Land Use	Data Source	Area	AM Peak (persons)			PM Peak (persons)		
			In	Out	Total	In	Out	Total
Supermarket	ITE 850	25,769 ft ²	73	47	120	249	241	490
Specialty Retail	ITE 814	96,538 ft ²	92	73	165	144	185	329
Existing Site Persons Trips			165	120	285	393	426	819
Note: 1.3 factor to account for typical North American auto occupancy values of approximately 1.15 and combined transit and non-motorized modal shares of less than 10%								

The person trips shown in Table 4 and 5 for the proposed and existing land uses were then reduced by modal share values based on the 2005 TRANS O-D survey to reflect the site's location and proximity to adjacent communities, employment, other shopping uses and transit availability. Modal share and 'pass-by' values for the existing and proposed uses are summarized in Tables 6 and 7, respectively.

Table 6: Proposed Site Person Trip Breakdown

Travel Mode	Mode Share	AM Peak (Persons/hr)			PM Peak (Persons/hr)		
		In	Out	Total	In	Out	Total
Auto Driver	60%	157	114	271	337	365	702
Auto Passenger	10%	25	18	43	55	60	115
Transit	20%	52	38	90	112	122	234
Non-motorized	10%	26	18	44	55	60	115
Total Person Trips	100%	260	188	448	559	607	1,166
Less Pass-By (30%)		-41	-41	-82	-106	-106	-212
Total Proposed 'New' Site Auto Trips		116	73	189	231	259	490

Table 7: Existing Site Person Trip Breakdown

Travel Mode	Mode Share	AM Peak (Persons/hr)			PM Peak (Persons/hr)		
		In	Out	Total	In	Out	Total
Auto Driver	60%	100	73	173	237	256	493
Auto Passenger	10%	16	11	27	38	42	80
Transit	20%	33	24	57	79	85	164
Non-motorized	10%	16	12	28	39	43	82
Total Person Trips	100%	165	120	285	393	426	819
Less Pass-By (30%)		-26	-26	-52	-74	-74	-148
Total Existing 'New' Site Auto Trips		74	47	121	163	182	345

The existing site vehicle trips (Table 7) were then removed from the proposed site vehicle trips (Table 6). The resulting total 'net' change in vehicle trips are summarized in Table 8.

Table 8: 'Net' Change in Site-Generated Vehicle Trip Generation

Land Use	AM Peak (veh/hr)			PM Peak (veh/hr)		
	In	Out	Total	In	Out	Total
Proposed Site Vehicle Trips	157	114	271	337	365	702
Existing Site Vehicle Trips	-100	-73	-173	-237	-256	-493
'Net' New Auto Trips	57	41	98	100	109	209

The 'pass-by' trips generated by the existing land uses were also removed from the projected 'pass-by' trips generated by the proposed land uses. The resulting 'net' change in 'pass-by' trips are summarized in Table 9.

Table 9: 'Net' Site-Generated 'Pass-By' Vehicle Trip Generation

Land Use	AM Peak (veh/hr)			PM Peak (veh/hr)		
	In	Out	Total	In	Out	Total
Proposed 'Pass-By' Trip Generation	-41	-41	-82	-106	-106	-212
Existing 'Pass-By' Trip Generation	26	26	52	74	74	148
'Net' Pass-By Trips	-15	-15	-30	-32	-32	-64

In addition, a reduction of 5% has also been assumed to address the likelihood of shared trips between individual stores within the RioCan complex. The resulting total increase in 'new' site-generated vehicle trips are summarized in Table 10 and total approximately 65 and 138 veh/h more during the weekday morning and afternoon peak hours, respectively, compared to what is being generated now. This amount of 'new' traffic equates to approximately 1 to 2 new vehicles per minute divided five (5) site driveway connections. As such, the resultant impact on traffic operations is likely negligible.

Table 10: Total 'New' Vehicle Trips

Land Use	AM Peak (veh/hr)			PM Peak (veh/hr)		
	In	Out	Total	In	Out	Total
'Net' Site-Generated Vehicle Trips	57	41	98	100	109	209
'Net' Site-Generated 'Pass-By' Trips	-15	-15	-30	-32	-32	-64
Multi-Purpose Trips (5%)	-2	-1	-3	-3	-4	-7
Total 'New' Vehicle Trips	40	25	65	65	73	138

3.3 Traffic Distribution and Assignment

The distribution and assignment of the projected 'net' increase in peak hour vehicle trip generation was based on the site's connectivity to the existing road network and our knowledge of the surrounding area. The resultant distribution is outlined as follows, with the 'New' site-generated trips are illustrated in Figure 4 and the site-generated 'pass-by' trips are illustrated in Figure 5.

- 20% to/from the north;
 - 50% to/from the south;
 - 15% to/from the east; and
 - 15% to/from the west.
- 100%

4. FUTURE TRAFFIC OPERATIONS

Total projected traffic volumes associated with the proposed redevelopment are illustrated in Figure 6. They were derived by superimposing 'net' site-generated 'new' traffic volumes (Figure 4) and 'net' site-generated 'pass-by' volumes (Figure 5) onto existing volumes (Figure 3). Table 11 provides a summary of projected performance of the study area intersections and the Synchro model output of projected conditions is provided within Appendix B.

Figure 4: 'Net' Site-Generated 'New' Traffic Volumes

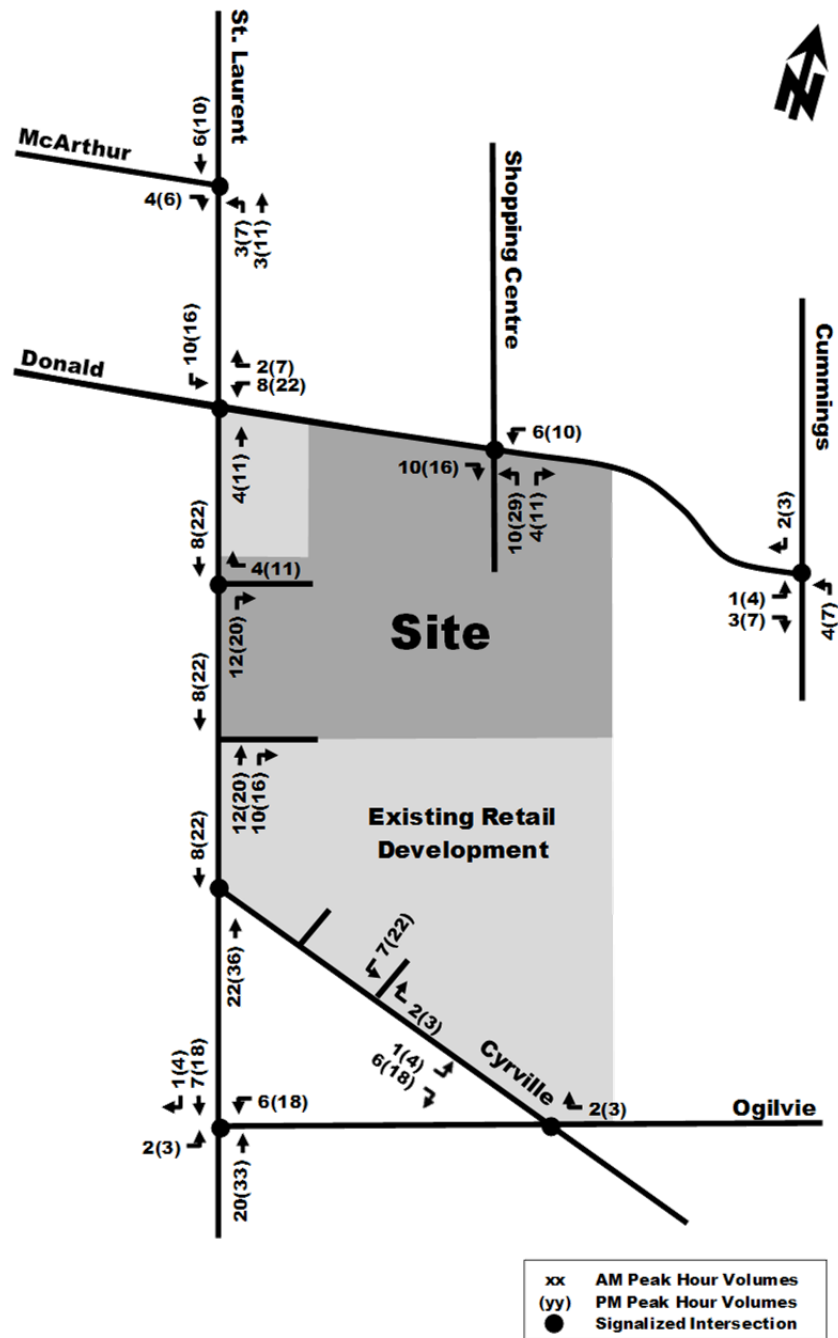




Figure 6: Projected Traffic Volumes

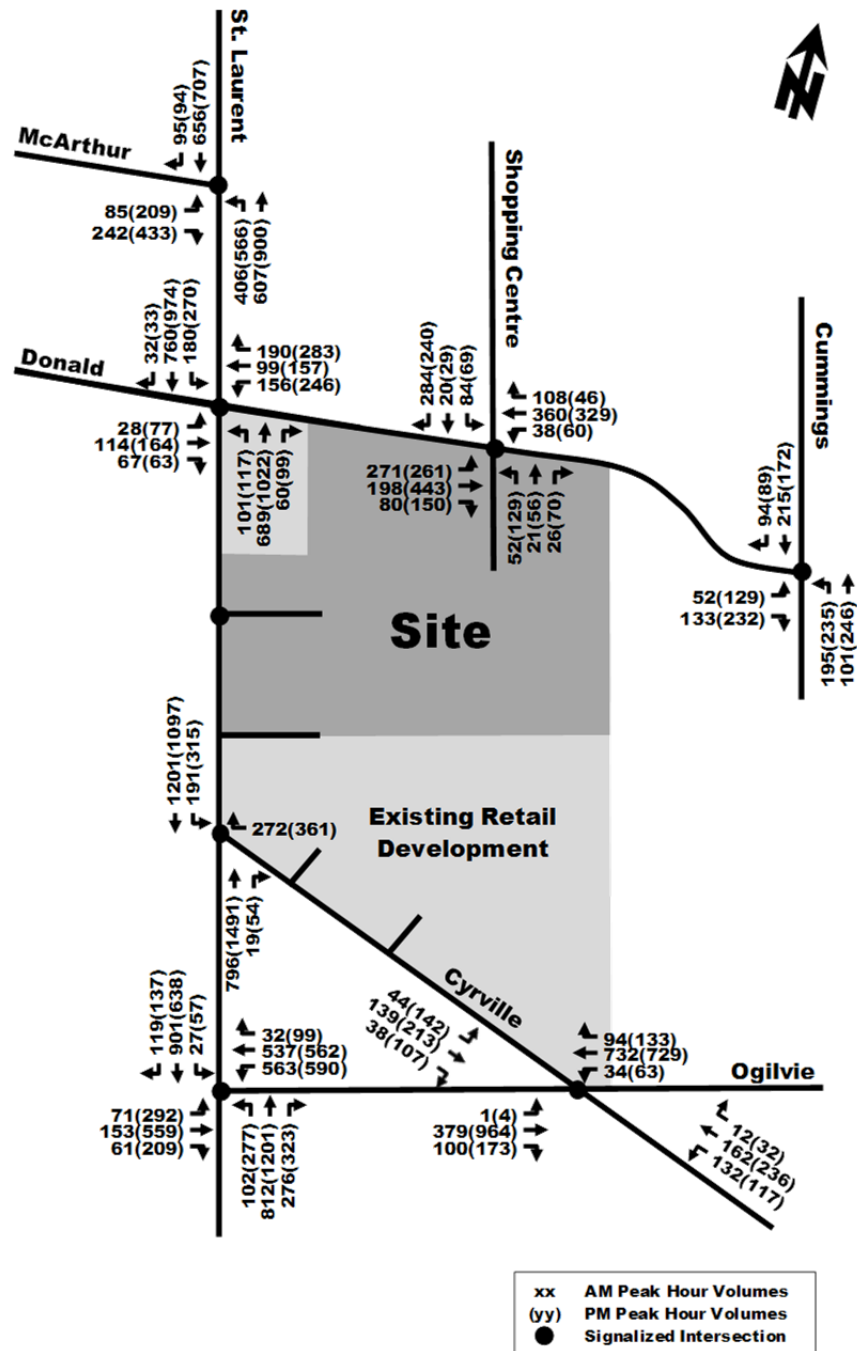


Table 11: Projected Performance at Study Area Intersections

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
St. Laurent/McArthur	C(E)	0.78(0.92)	NBL(NBL)	13.7(18.6)	A(B)	0.55(0.69)
St. Laurent/Donald	D(F)	0.84(1.03)	WBL(WBL)	20.4(31.3)	A(C)	0.47(0.80)
St. Laurent/Cyrville	C(C)	0.71(0.77)	SBL(SBL)	12.4(14.5)	A(A)	0.40(0.58)
St. Laurent/Ogilvie	D(F)	0.81(1.18)	WBL(NBL)	31.6(55.8)	B(D)	0.63(0.84)
Cyrville/Ogilvie	A(A)	0.41(0.59)	NBL(EBT)	20.6(25.2)	A(A)	0.35(0.56)
Donald/Shopping Centre	B(C)	0.66(0.73)	SBR(NBL)	12.6(15.1)	A(A)	0.40(0.37)
Donald/Cummings	A(A)	0.34(0.48)	EBR(EBR)	7.9(9.6)	A(A)	0.32(0.41)
Note: Analysis of signalized intersections assumes a PHF of 0.95 and a saturation flow rate of 1800 veh/h/lane.						

As shown in Table 11, with no signal timing plan modifications, the signalized study area intersections 'as a whole', are projected to operate similar to existing conditions summarized in Table 1.

As the proposed development only contributes a 1% to 5% in increased traffic volumes at study area intersections, it has no off-site transportation impacts or requirements.

With regard to existing site driveways, the proposed redevelopment is projected to add in the range of an additional 10 to 70 veh/h in two-way volumes at the site's driveway connections, which equates to approximately 1 additional vehicle every 1 to 6 minutes. This amount of additional traffic at the site's five (5) driveway connections does not warrant additional traffic control/auxiliary turn lanes and it will not impact the adjacent transportation network.

5. SITE PLAN REVIEW

This section provides an overview of site access, parking requirements, pedestrian circulation and transit accessibility. The proposed Site Plan was previously illustrated in Figure 2.

Parking

A total of 515 parking spaces are proposed to serve the subject site. This amount of parking is sufficient with respect to the City's Zoning By-Law requirements for Area B, identified in Schedule 1 of the City's Zoning By-Law.

Site Circulation

The proposed changes to the existing parking lot will not affect on-site circulation. As such, the site is currently laid out to efficiently accommodate two-way traffic.

Access Requirements

Based on projected the 'net' increase in peak hour traffic volumes and proximity to adjacent intersections, additional traffic control/auxiliary turn lanes are not warranted or required at the proposed driveway connections. Heavy trucks will access the site via the existing most easterly driveway connection to Donald Street where adequate turning radii for trucks should be provided.

Pedestrians/Transit

As summarized in Tables 6 and 7, the 'net' increase in transit ridership due to the proposed redevelopment is estimated to be in the 30 to 70 persons per peak hour, which should be easily accommodated by existing transit service.

To connect pedestrians to transit service and adjacent residential communities, other nearby employment, shopping and recreation opportunities, sidewalks are currently provided along both sides of all study area roadways with the exception of the south side of Cyrville Road. A multi-use pathway is also currently provided along the site's eastern frontage with a connection to the site provided just south of the proposed Target, connecting pedestrians and cyclist to the residential community east of the site.

Transit service is currently provided by OC Transpo regular (Black) Routes #5, 7 and 14 on St. Laurent Boulevard and by regular (Black) Route #5 on Donald Street, which provides frequent all-day service. Stops for these transit routes are currently provided along the frontage of the site on St. Laurent Boulevard and Donald Street.

Bicycles

The location of bicycle parking is not identified on the attached Site Plan. However, 73 bicycle parking spaces should be located in well-lit areas, close to the main building entrances to satisfy the City's By-Law requirements.

According to the City's 2008 Official Cycling Plan (OCP), St. Laurent Boulevard, Ogilvie Road and Cyrville Road are classified as "Spine or City-wide" cycling routes and Donald Street and Cummings Avenue are classified as "Community" cycling routes. Ogilvie Road has existing bicycle lanes and St. Laurent Boulevard and Cyrville Road have proposed bicycle lanes. Shared use lanes are proposed for Donald Street and Cummings Avenue.

6. FINDINGS AND RECOMMENDATIONS

Based on the foregoing analysis of the proposed site, the following transportation-related conclusions are offered:

- Study area intersections are currently operating at acceptable Levels of Service during the weekday morning and afternoon peak hours;

- With regard to 'critical movements' at study area intersections, the northbound left-turn at the St. Laurent/McArthur is currently failing during the afternoon peak hour. The northbound left-turn and westbound left-turn movements at the St. Laurent/Ogilvie and St. Laurent/Donald intersections are currently operating at capacity (LoS 'E') during the afternoon peak hours, respectively. All other 'critical movements' at study area intersections are currently operating at an acceptable LoS 'D' or better during peak hours;
- The proposed redevelopment is projected to generate a 'net' increase in 'new' two-way vehicle trips of approximately 65 and 138 veh/h during the weekday morning and afternoon peak hours, respectively. When including 'pass-by' trips, the increase in vehicle trips is approximately 100 and 200 veh/h divided by the five (5) site driveway connections;
- As the proposed development only contributes a 1% to 5% in increased traffic volumes (approximately 1 to 2 'new' vehicle a minute during peak hours) at study area intersections, it has no off-site transportation impacts or requirements;
- The proposed changes to the existing parking lot will not affect on-site circulation and the parking supply meets By-Law requirements; and
- The proposed change in land use/area fits well into the context of the surrounding area, and its location and design serves to promote use of walking, cycling, and transit modes, thus supporting City of Ottawa policies, goals and objectives with respect to redevelopment, intensification and modal share.

Based on the foregoing, approval of the proposed shopping centre redevelopment to accommodate the proposed Target and Metro stores is recommended from a transportation perspective.

Please call if you have any questions.

Prepared By:

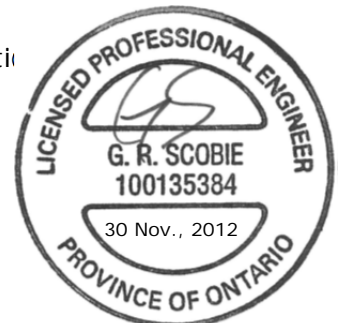


André Sponder, B.A.Sc.
Analyst, Transportation Division
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Reviewed By:



Gordon R. Scobie, P.Eng.
Project Engineer, Transportation
Ottawa Operations



Appendix A
Current Peak Hour Volumes

MCARTHUR AVE and ST. LAURENT BLVD

(ULRS Listing MCARTHUR & S.LAUREN)

Survey Date: Monday 11 July 2011

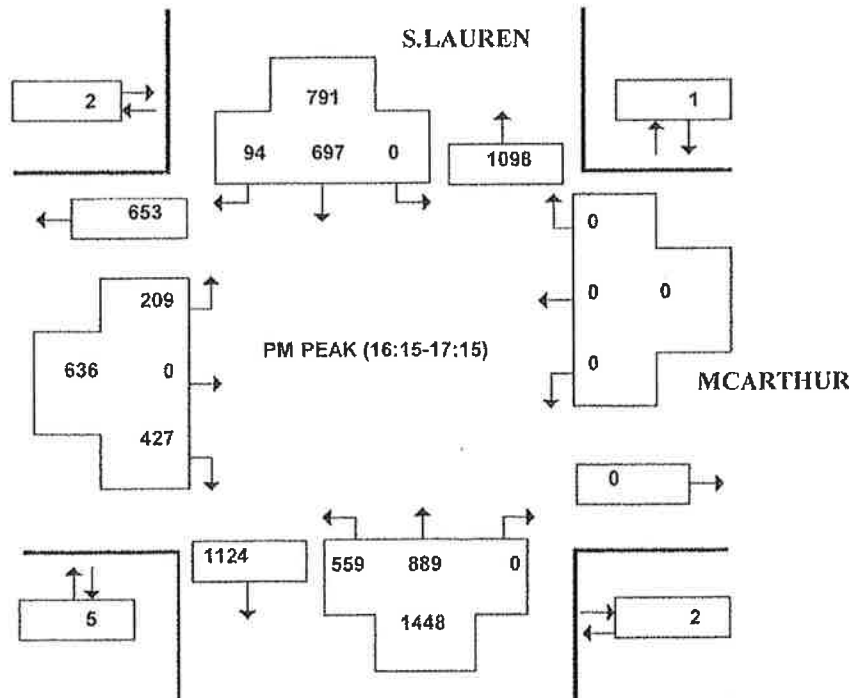
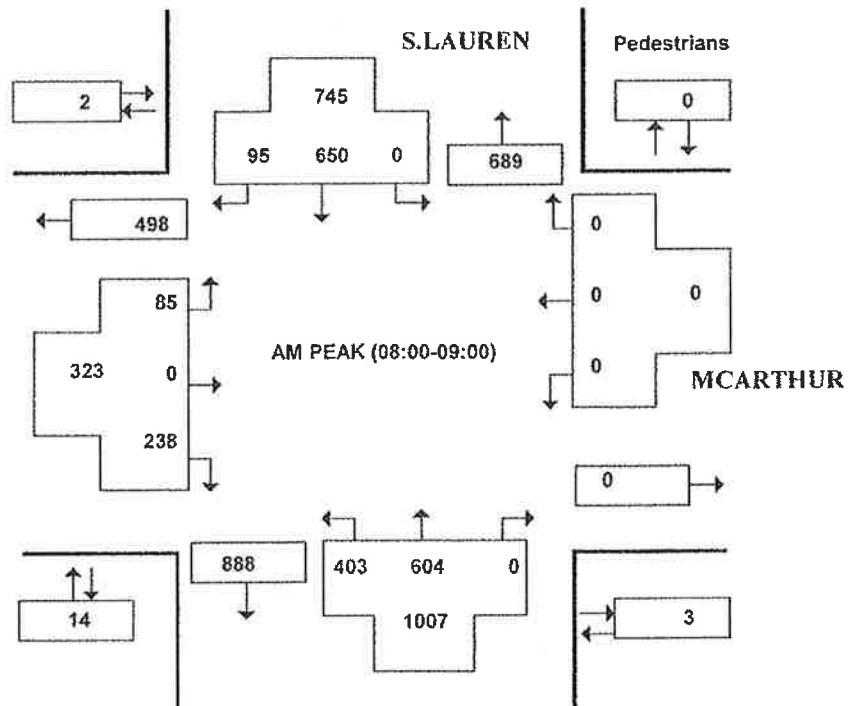
Conditions: dry

Start Time: 0700

Total Observed U-Turns

Northbound: 1 Southbound: 2
Eastbound: 0 Westbound: 0

AADT Factor

Monday in July is
1


DONALD ST and ST. LAURENT BLVD

(ULRS Listing DONALD & S.LAUREN)

Survey Date: Wednesday 4 August 2010

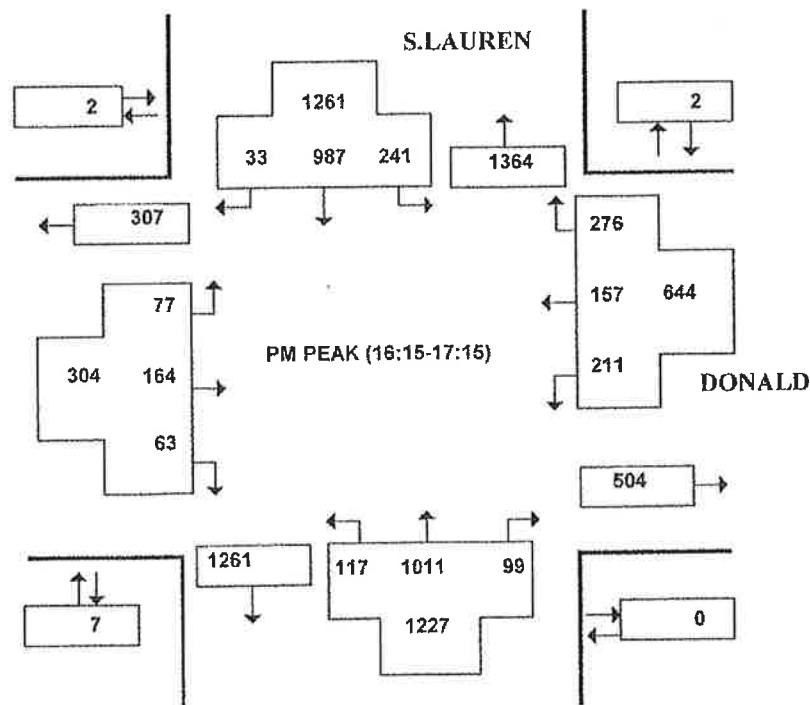
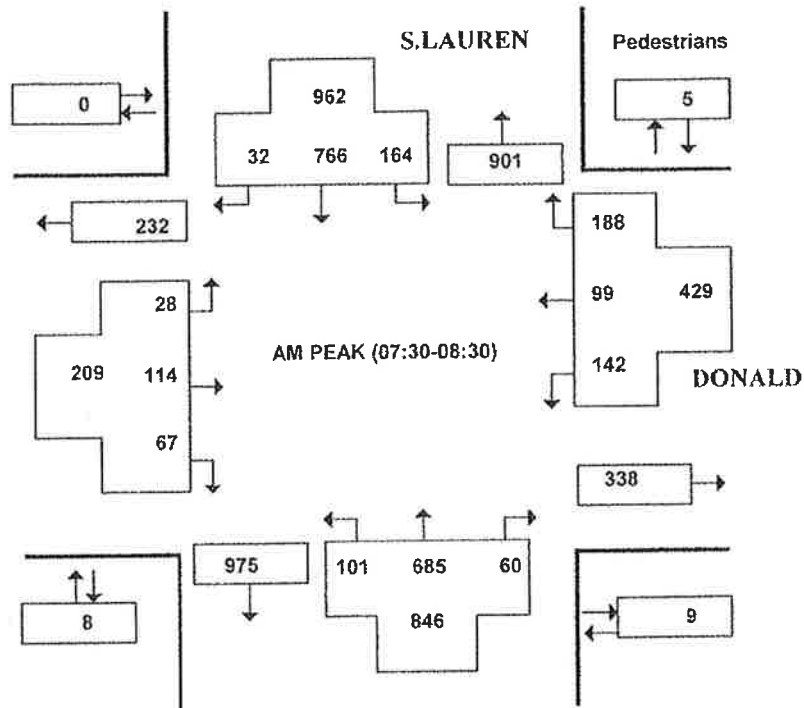
Conditions: wet

Start Time: 0700

Total Observed U-Turns

Northbound: 13 Southbound: 0
Eastbound: 0 Westbound: 0

AADT Factor

Wednesday in August
9


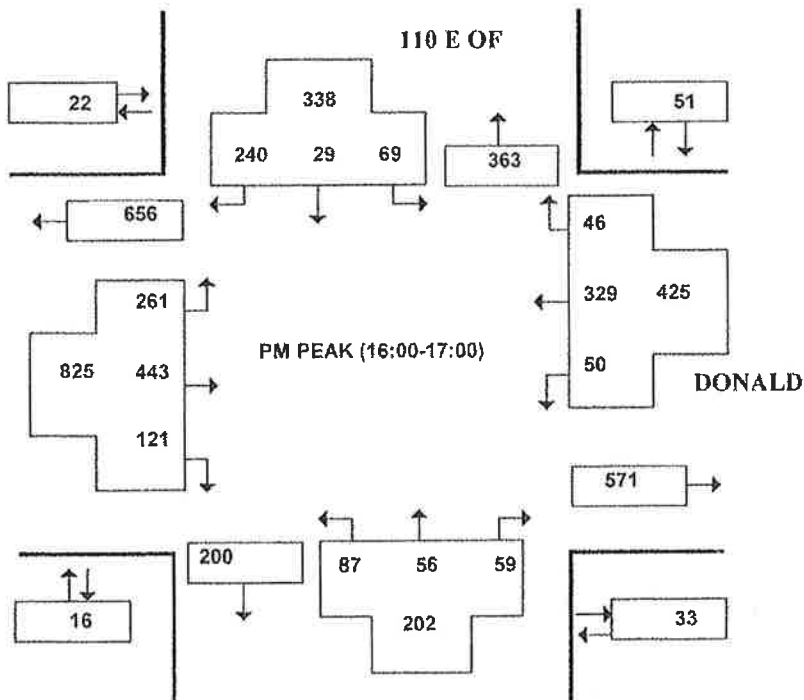
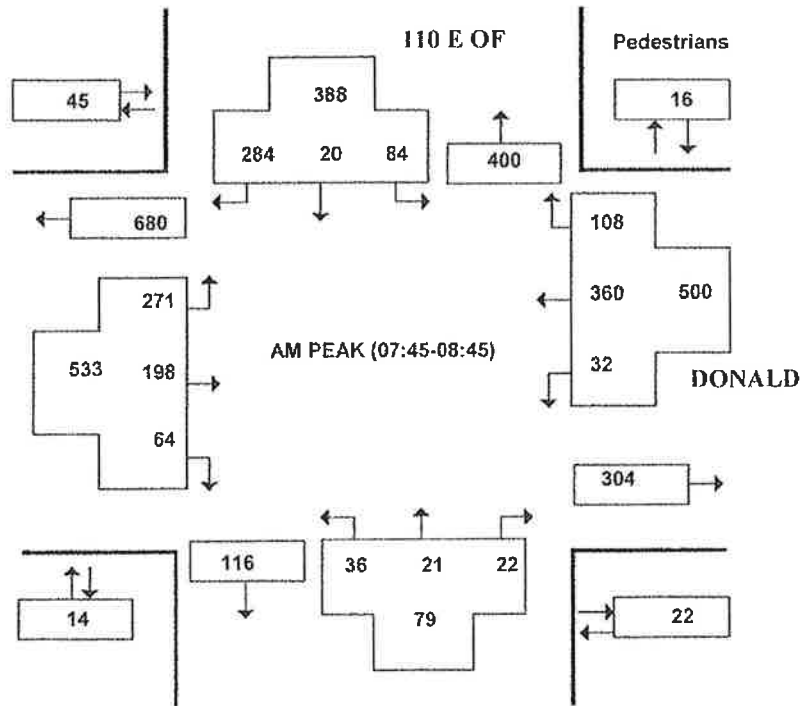
DONALD ST and 110 E OF ST. LAURENT

(ULRS Listing DONALD & 110 E OF)

Survey Date: Friday 28 September 2007
Conditions: dry
Start Time: 0700

Total Observed U-Turns
 Northbound: 0 Southbound: 0
 Eastbound: 49 Westbound: 0

AADT Factor
 Friday in September
 9

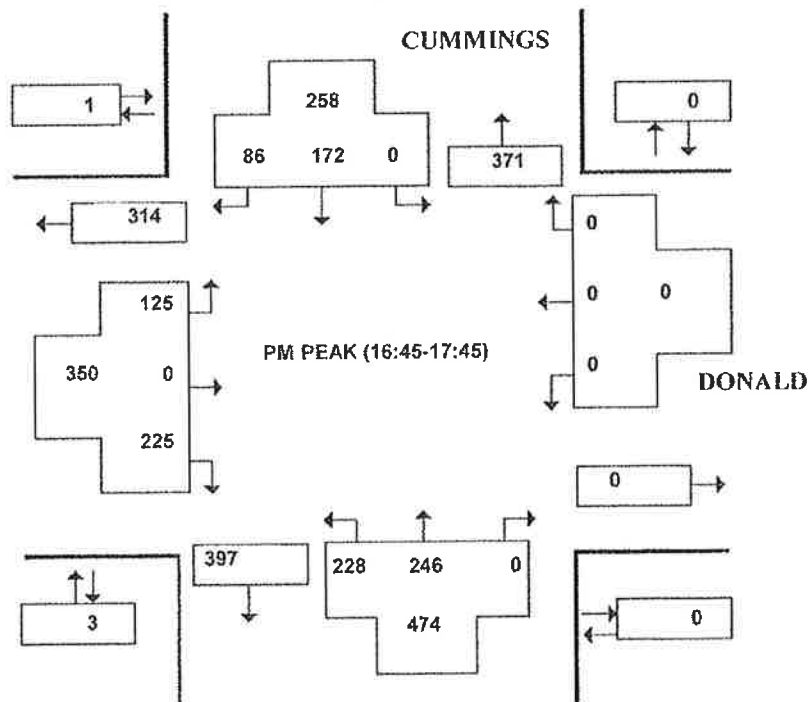
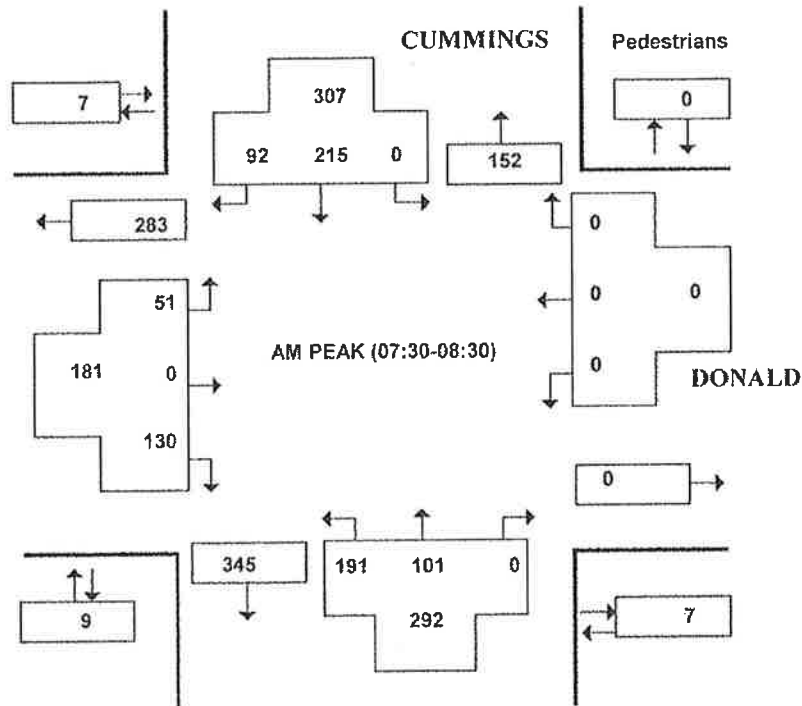


CUMMINGS AVE and DONALD ST (ULRS Listing CUMMINGS & DONALD)

Survey Date: Tuesday 3 August 2010
Conditions: Wet
Start Time: 0700

Total Observed U-Turns
Northbound: 0 Southbound: 0
Eastbound: 0 Westbound: 0

AADT Factor
Tuesday in August is
9

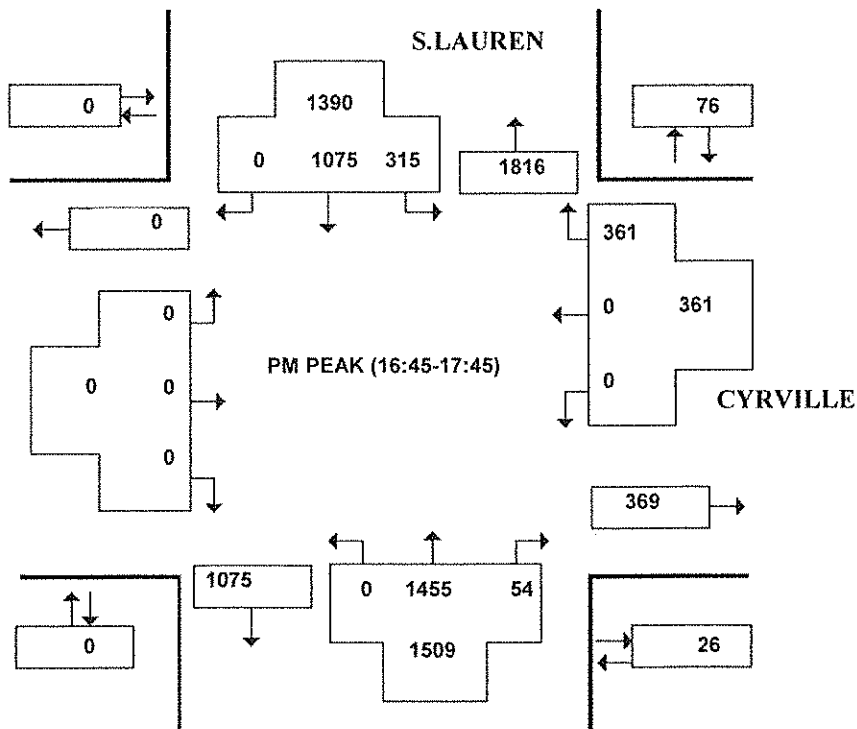
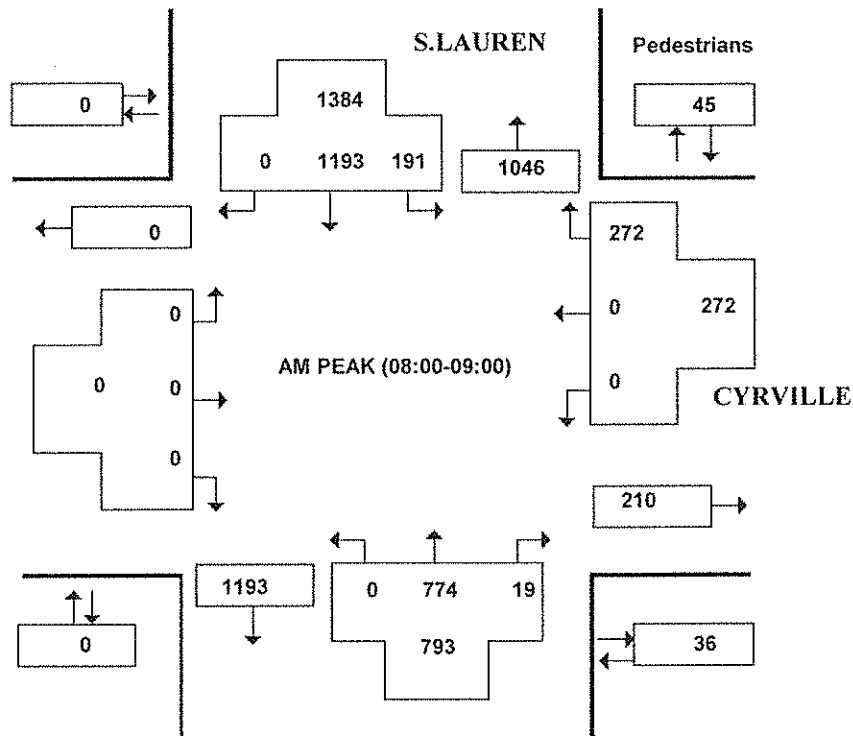


CYRVILLE RD and ST. LAURENT BLVD (ULRS Listing CYRVILLE & S.LAUREN)

Survey Date: Tuesday 24 August 2010
Conditions: Dry
Start Time: 0700

Total Observed U-Turns
 Northbound: 3 Southbound: 0
 Eastbound: 0 Westbound: 0

AADT Factor
 Tuesday in August is
 9



COVENTRY RD and ST. LAURENT BLVD

(ULRS Listing COVENTRY & S.LAUREN)

Survey Date: Thursday 19 August 2010

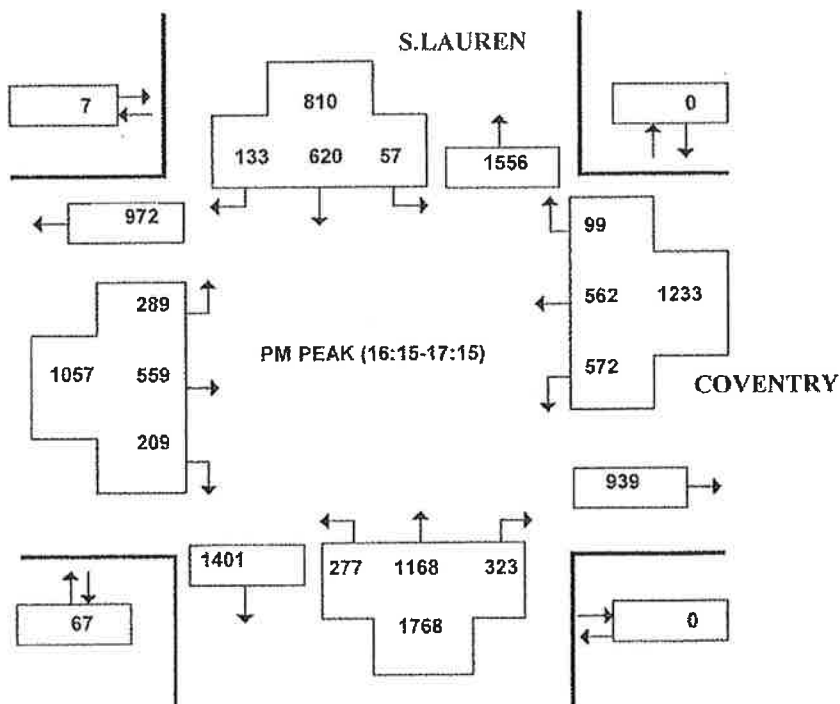
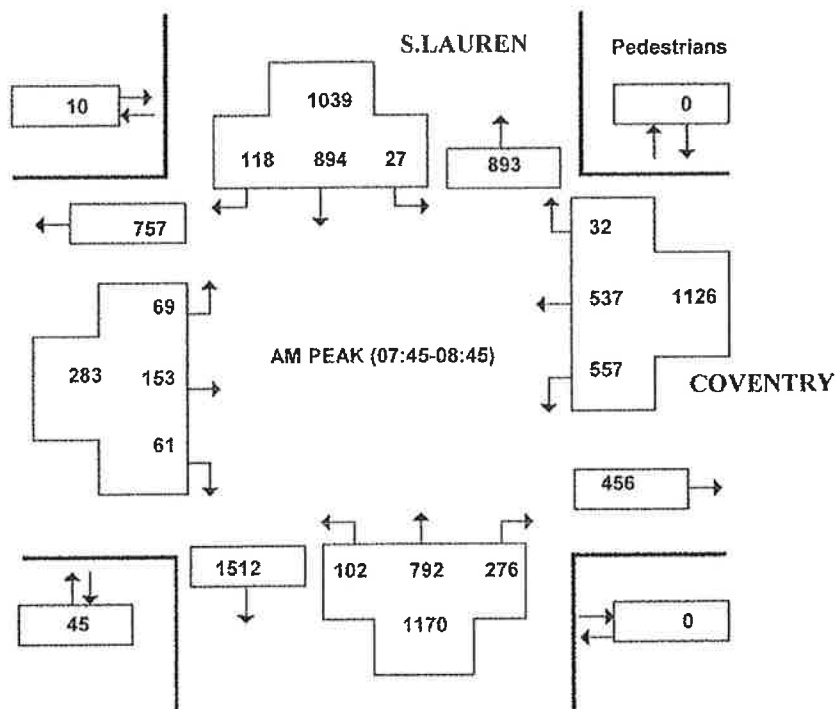
Conditions: wet

Start Time: 0700

Total Observed U-Turns

Northbound: 0 Southbound: 0
Eastbound: 0 Westbound: 1

AADT Factor

Thursday in August i
9


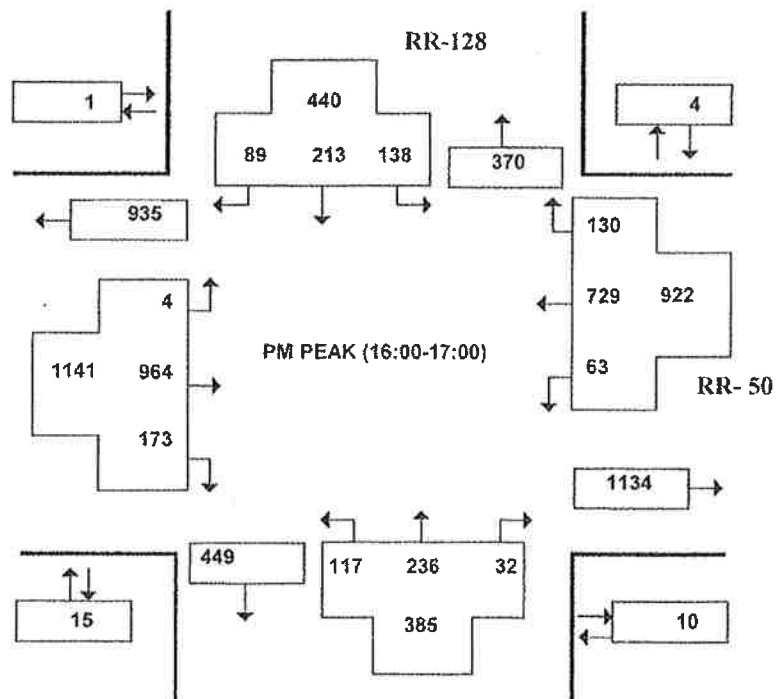
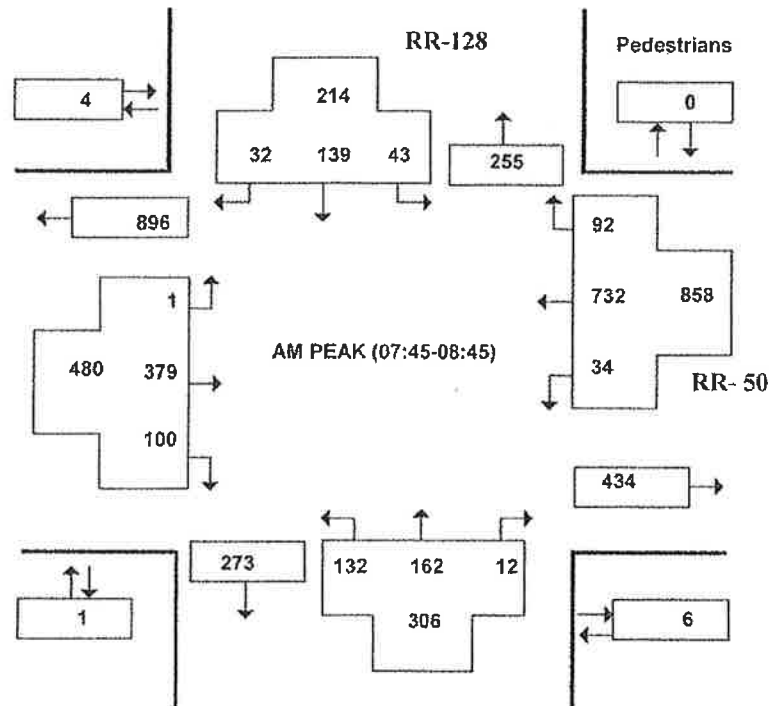
OGILVIE RD and CYRVILLE RD

(ULRS Listing RR- 50 & RR-128)

Survey Date: Friday 31 July 2009
 Conditions: wet
 Start Time: 0700













Total Observed U-Turns
 Northbound: 0 Southbound: 0
 Eastbound: 4 Westbound: 7

AADT Factor
 Friday in July is
 9



Appendix B
SYNCHRO Capacity Analysis:
Existing Conditions

AM Existing
1: St. Laurent & McArthur

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	85	238	403	604	650	95
Lane Group Flow (vph)	89	251	424	636	684	100
Turn Type	NA	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	27.8	27.8	10.5	15.5	22.5	22.5
Total Split (s)	25.0	25.0	25.0	75.0	50.0	50.0
Total Split (%)	25.0%	25.0%	25.0%	75.0%	50.0%	50.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.5	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.5	5.5	5.5	5.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	Max	Max	None	C-Max	C-Max	C-Max
Act Effect Green (s)	19.2	19.2	69.5	69.5	48.4	48.4
Actuated g/C Ratio	0.19	0.19	0.70	0.70	0.48	0.48
v/c Ratio	0.27	0.51	0.77	0.27	0.42	0.13
Control Delay	37.2	8.7	17.5	6.1	18.2	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.2	8.7	17.5	6.1	18.2	3.8
LOS	D	A	B	A	B	A
Approach Delay	16.1			10.6	16.4	
Approach LOS	B			B	B	
Queue Length 50th (m)	14.8	0.0	29.2	21.3	43.5	0.0
Queue Length 95th (m)	28.7	19.9	49.7	28.3	62.2	8.8
Internal Link Dist (m)	260.9			418.0	58.4	
Turn Bay Length (m)			85.0			50.0
Base Capacity (vph)	325	489	594	2356	1640	741
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	0.27	0.51	0.71	0.27	0.42	0.13

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 62 (62%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 13.6

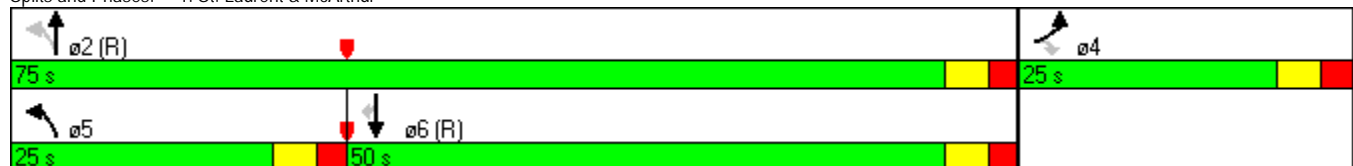
Intersection LOS: B

Intersection Capacity Utilization 74.9%























ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: St. Laurent & McArthur



AM Existing
2: St. Laurent & Donald

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	28	114	142	99	188	101	685	60	164	766	32
Lane Group Flow (vph)	29	191	149	104	198	106	721	63	173	806	34
Turn Type	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4	3	8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	4	4	3	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	30.3	30.3	11.3	30.3	30.3	11.3	30.1	30.1	11.3	30.1	30.1
Total Split (s)	35.0	35.0	13.0	48.0	48.0	17.0	55.0	55.0	17.0	55.0	55.0
Total Split (%)	29.2%	29.2%	10.8%	40.0%	40.0%	14.2%	45.8%	45.8%	14.2%	45.8%	45.8%
Yellow Time (s)	3.3	3.3	3.7	3.3	3.3	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.0	3.0	2.6	3.0	3.0	2.6	2.4	2.4	2.6	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3	6.3	6.3	6.3	6.1	6.1	6.3	6.1	6.1
Lead/Lag	Lag	Lag	Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	11.0	11.0	24.0	24.0	24.0	75.3	67.5	67.5	78.8	69.3	69.3
Actuated g/C Ratio	0.09	0.09	0.20	0.20	0.20	0.63	0.56	0.56	0.66	0.58	0.58
v/c Ratio	0.26	0.54	0.76	0.15	0.43	0.25	0.38	0.07	0.37	0.41	0.04
Control Delay	56.0	38.0	65.3	37.4	7.1	7.5	16.1	1.1	8.8	15.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.0	38.0	65.3	37.4	7.1	7.5	16.1	1.1	8.8	15.2	0.1
LOS	E	D	E	D	A	A	B	A	A	B	A
Approach Delay		40.4		33.3			14.0			13.6	
Approach LOS		D		C			B			B	
Queue Length 50th (m)	6.5	14.4	31.7	10.9	0.0	2.7	65.3	1.1	12.0	51.2	0.0
Queue Length 95th (m)	15.7	25.5	#57.3	18.0	22.1	5.5	90.3	2.9	21.9	73.2	0.0
Internal Link Dist (m)		320.4		90.8			332.0			418.0	
Turn Bay Length (m)	40.0				46.0	90.0			120.0		40.0
Base Capacity (vph)	292	812	195	1178	656	457	1907	900	490	1957	916
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	0.10	0.24	0.76	0.09	0.30	0.23	0.38	0.07	0.35	0.41	0.04

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 19.5

Intersection LOS: B

Intersection Capacity Utilization 70.1%

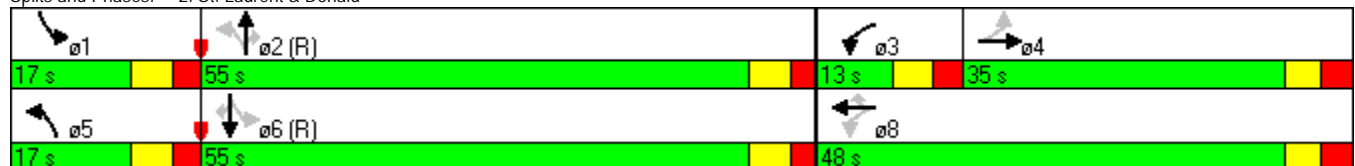
ICU Level of Service C

Analysis Period (min) 15

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





















Queue shown is maximum after two cycles.

Splits and Phases: 2: St. Laurent & Donald







AM Existing









3: Site/Shopping Centre & Donald

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	271	198	64	32	360	36	21	84	20	284
Lane Group Flow (vph)	285	208	67	34	493	38	45	0	109	299
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases		2			6		8		4	
Permitted Phases	2		2	6		8		4		4
Detector Phase	2	2	2	6	6	8	8	4	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	10.0
Minimum Split (s)	38.3	38.3	38.3	38.3	38.3	30.3	30.3	30.3	30.3	30.3
Total Split (s)	80.0	80.0	80.0	80.0	80.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	66.7%	66.7%	66.7%	66.7%	66.7%	33.3%	33.3%	33.3%	33.3%	33.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3	6.3	6.3	6.3	6.3		6.3	6.3
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	91.3	91.3	91.3	91.3	91.3	16.1	16.1		16.1	16.1
Actuated g/C Ratio	0.76	0.76	0.76	0.76	0.76	0.13	0.13		0.13	0.13
v/c Ratio	0.46	0.15	0.06	0.04	0.20	0.24	0.19		0.63	0.66
Control Delay	7.8	4.0	0.9	4.7	4.1	48.0	27.1		64.3	12.2
Queue Delay	0.6	0.5	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	8.5	4.6	0.9	4.7	4.1	48.0	27.1		64.3	12.2
LOS	A	A	A	A	A	D	C		E	B
Approach Delay		6.1			4.2		36.7		26.2	
Approach LOS		A			A		D		C	
Queue Length 50th (m)	16.0	8.9	0.0	1.7	12.2	8.2	4.6		24.8	0.0
Queue Length 95th (m)	34.9	19.1	2.6	5.3	22.6	17.6	14.5		40.9	24.3
Internal Link Dist (m)		90.8			403.7		54.5		52.0	
Turn Bay Length (m)				27.0		20.0				
Base Capacity (vph)	614	1357	1100	826	2444	329	470		362	627
Starvation Cap Reductn	109	802	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	0.37	0.06	0.04	0.20	0.12	0.10		0.30	0.48
Intersection Summary										
Cycle Length: 120										
Actuated Cycle Length: 120										
Offset: 100 (83%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green										
Natural Cycle: 70										
Control Type: Actuated-Coordinated										
Maximum v/c Ratio: 0.66										
Intersection Signal Delay: 12.3					Intersection LOS: B					
Intersection Capacity Utilization 75.6%					ICU Level of Service D					
Analysis Period (min) 15										

Splits and Phases: 3: Site/Shopping Centre & Donald

	ø2 (R)		ø4
80 s		40 s	
	ø6 (R)		ø8
80 s		40 s	





AM Existing
4: St. Laurent & Cyrville

					
Lane Group	WBR	NBT	SBL	SBT	ø4
Lane Configurations					
Volume (vph)	272	774	191	1193	
Lane Group Flow (vph)	286	835	201	1256	
Turn Type	Over	NA	Prot	NA	
Protected Phases	8	2	8	6	4
Permitted Phases					
Detector Phase	8	2	8	6	
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	31.8	25.8	31.8	25.8	16.5
Total Split (s)	65.0	40.0	65.0	40.0	15.0
Total Split (%)	54.2%	33.3%	54.2%	33.3%	13%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.1	2.1	2.1	2.1	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.8	5.8	5.8	5.8	
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	C-Max	None	C-Max	None
Act Effect Green (s)	20.1	88.3	20.1	88.3	
Actuated g/C Ratio	0.17	0.74	0.17	0.74	
v/c Ratio	0.64	0.23	0.71	0.35	
Control Delay	26.7	0.6	51.7	11.2	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	26.7	0.6	51.7	11.2	
LOS	C	A	D	B	
Approach Delay		0.6		16.8	
Approach LOS		A		B	
Queue Length 50th (m)	35.1	1.8	36.9	58.1	
Queue Length 95th (m)	58.9	2.5	m46.3	77.4	
Internal Link Dist (m)		166.6		332.0	
Turn Bay Length (m)			130.0		
Base Capacity (vph)	876	3556	836	3583	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.33	0.23	0.24	0.35	































Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 10 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 12.6	Intersection LOS: B
Intersection Capacity Utilization 44.1%	ICU Level of Service A
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 4: St. Laurent & Cyrville

 ø2 (R)	 ø4	 ø8
40 s	15 s	65 s
 ø6 (R)		
40 s		

AM Existing
5: St. Laurent & Conventry/Ogilvie

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	 	 		 	 			  		  	
Volume (vph)	69	153	61	557	537	32	102	792	27	894	118
Lane Group Flow (vph)	73	161	64	586	565	34	107	1125	28	941	124
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)	11.2	34.3	34.3	11.2	34.3	34.3	11.4	33.4	11.4	33.4	33.4
Total Split (s)	15.0	35.0	35.0	35.0	55.0	55.0	16.0	34.0	16.0	34.0	34.0
Total Split (%)	12.5%	29.2%	29.2%	29.2%	45.8%	45.8%	13.3%	28.3%	13.3%	28.3%	28.3%
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)	2.5	2.6	2.6	2.5	2.6	2.6	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.3	6.3	6.2	6.3	6.3	6.4	6.4	6.4	6.4	6.4
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)	10.1	11.5	11.5	26.5	30.4	30.4	13.6	54.1	7.5	43.1	43.1
Actuated g/C Ratio	0.08	0.10	0.10	0.22	0.25	0.25	0.11	0.45	0.06	0.36	0.36
v/c Ratio	0.27	0.50	0.19	0.81	0.66	0.07	0.56	0.52	0.27	0.54	0.20
Control Delay	53.1	56.6	1.3	44.9	36.5	0.3	60.8	25.6	79.5	22.6	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.1	56.6	1.3	44.9	36.5	0.3	60.8	25.6	79.5	22.6	5.1
LOS	D	E	A	D	D	A	E	C	E	C	A
Approach Delay		43.9			39.6			28.7		22.1	
Approach LOS		D			D			C		C	
Queue Length 50th (m)	8.4	19.3	0.0	69.4	47.8	0.0	24.2	68.6	6.1	67.0	8.2
Queue Length 95th (m)	15.5	29.6	0.0	84.3	52.5	0.0	40.9	98.3	13.3	93.1	24.2
Internal Link Dist (m)		157.6			126.0			62.8		166.6	
Turn Bay Length (m)	105.0		60.0	80.0			50.0		75.0		55.0
Base Capacity (vph)	291	810	517	811	1375	686	194	2148	136	1747	635
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	0.25	0.20	0.12	0.72	0.41	0.05	0.55	0.52	0.21	0.54	0.20

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: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 31.4

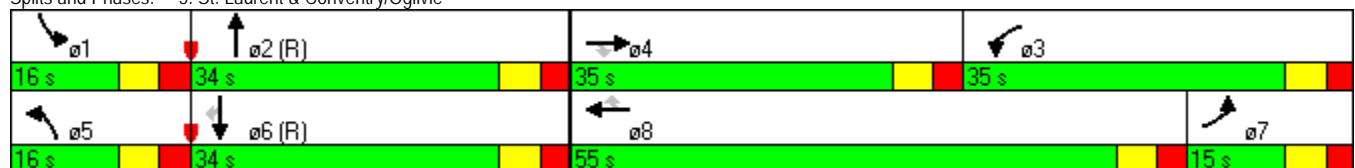
Intersection LOS: C

Intersection Capacity Utilization 74.7%




















ICU Level of Service D

Analysis Period (min) 15





Splits and Phases: 5: St. Laurent & Conventry/Ogilvie













AM Existing
6: Cyrville & Ogilvie

										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Volume (vph)	1	379	100	34	732	92	132	162	43	139
Lane Group Flow (vph)	0	400	105	36	771	97	139	184	45	180
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		2			6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	2	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	10.0
Minimum Split (s)	27.2	27.2	27.2	27.2	27.2	27.2	38.1	38.1	38.1	38.1
Total Split (s)	75.0	75.0	75.0	75.0	75.0	75.0	45.0	45.0	45.0	45.0
Total Split (%)	62.5%	62.5%	62.5%	62.5%	62.5%	62.5%	37.5%	37.5%	37.5%	37.5%
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)	2.5	2.5	2.5	2.5	2.5	2.5	3.4	3.4	3.4	3.4
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.2	6.2	6.2	6.2	6.2	7.1	7.1	7.1	7.1
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
Act Effct Green (s)		68.8	68.8	68.8	68.8	68.8	37.9	37.9	37.9	37.9
Actuated g/C Ratio		0.57	0.57	0.57	0.57	0.57	0.32	0.32	0.32	0.32
v/c Ratio		0.22	0.12	0.07	0.40	0.11	0.41	0.33	0.13	0.33
Control Delay		16.3	7.7	11.9	14.9	2.5	36.6	32.9	40.8	42.9
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		16.3	7.7	11.9	14.9	2.5	36.6	32.9	40.8	42.9
LOS		B	A	B	B	A	D	C	D	D
Approach Delay		14.5			13.5			34.5		42.5
Approach LOS		B			B			C		D
Queue Length 50th (m)		30.8	5.3	3.6	50.1	0.0	25.6	32.4	10.7	40.8
Queue Length 95th (m)		42.6	17.3	8.5	63.3	7.0	44.6	51.7	23.3	64.8
Internal Link Dist (m)		126.0			312.1			56.0		216.6
Turn Bay Length (m)				60.0		60.0	30.0		75.0	
Base Capacity (vph)		1854	882	518	1943	883	342	559	339	553
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		0.22	0.12	0.07	0.40	0.11	0.41	0.33	0.13	0.33
Intersection Summary										
Cycle Length: 120										
Actuated Cycle Length: 120										
Offset: 36 (30%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green										
Natural Cycle: 70										
Control Type: Actuated-Coordinated										
Maximum v/c Ratio: 0.41										
Intersection Signal Delay: 20.5					Intersection LOS: C					
Intersection Capacity Utilization 81.0%					ICU Level of Service D					
Analysis Period (min) 15										

Splits and Phases: 6: Cyrville & Ogilvie

	ø2 (R)		ø4
75 s		45 s	
	ø6 (R)		ø8
75 s		45 s	

AM Existing
7: Cummings & Donald




					
Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Volume (vph)	51	130	191	101	215
Lane Group Flow (vph)	54	137	201	106	323
Turn Type	NA	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)	20.7	20.7	32.1	32.1	32.1
Total Split (s)	25.0	25.0	25.0	25.0	25.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.4	3.4	3.8	3.8	3.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	7.1	7.1	7.1
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	None	Max	Max	Max
Act Effct Green (s)	10.0	10.0	31.1	31.1	31.1
Actuated g/C Ratio	0.20	0.20	0.62	0.62	0.62
v/c Ratio	0.16	0.34	0.32	0.10	0.30
Control Delay	17.6	6.7	8.9	6.5	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	17.6	6.7	8.9	6.5	6.6
LOS	B	A	A	A	A
Approach Delay	9.8			8.1	6.6
Approach LOS	A			A	A
Queue Length 50th (m)	3.9	0.0	9.5	4.2	12.4
Queue Length 95th (m)	10.8	10.3	21.3	9.8	24.7
Internal Link Dist (m)	403.7			123.9	126.8
Turn Bay Length (m)			55.0		
Base Capacity (vph)	623	627	623	1110	1074
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	0.22	0.32	0.10	0.30

Intersection Summary













Cycle Length: 50
 Actuated Cycle Length: 49.9
 Natural Cycle: 55
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.34
 Intersection Signal Delay: 7.9
 Intersection Capacity Utilization 58.4%
 Analysis Period (min) 15

Intersection LOS: A
 ICU Level of Service B

Splits and Phases: 7: Cummings & Donald

 Ø2	 Ø4
25 s	25 s
 Ø6	
25 s	

PM Existing
1: St. Laurent & McArthur

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	209	427	559	889	697	94
Lane Group Flow (vph)	220	449	588	936	734	99
Turn Type	NA	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	27.8	27.8	10.5	15.5	22.5	22.5
Total Split (s)	25.0	25.0	40.0	95.0	55.0	55.0
Total Split (%)	20.8%	20.8%	33.3%	79.2%	45.8%	45.8%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.5	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.5	5.5	5.5	5.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	Max	Max	None	C-Max	C-Max	C-Max
Act Effct Green (s)	19.2	19.2	89.5	89.5	55.2	55.2
Actuated g/C Ratio	0.16	0.16	0.75	0.75	0.46	0.46
v/c Ratio	0.81	0.73	0.91	0.37	0.47	0.14
Control Delay	72.0	11.9	24.1	1.8	24.7	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.0	11.9	24.1	1.8	24.7	4.7
LOS	E	B	C	A	C	A
Approach Delay	31.7			10.4	22.3	
Approach LOS	C			B	C	
Queue Length 50th (m)	50.6	0.0	7.4	6.0	64.6	0.0
Queue Length 95th (m)	#89.9	32.2	#51.5	6.1	85.2	10.2
Internal Link Dist (m)	260.9			418.0	58.4	
Turn Bay Length (m)			85.0			50.0
Base Capacity (vph)	271	616	703	2528	1560	725
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	0.81	0.73	0.84	0.37	0.47	0.14

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 98 (82%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 18.4

Intersection LOS: B

Intersection Capacity Utilization 85.4%

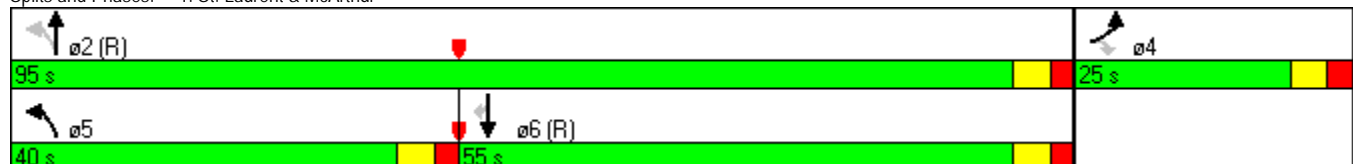
ICU Level of Service E

Analysis Period (min) 15























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

Queue shown is maximum after two cycles.

Splits and Phases: 1: St. Laurent & McArthur



PM Existing
2: St. Laurent & Donald

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	77	164	211	157	276	117	1011	99	241	987	33
Lane Group Flow (vph)	81	239	222	165	291	123	1064	104	254	1039	35
Turn Type	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4	3	8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	4	4	3	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	30.3	30.3	11.3	30.3	30.3	11.3	30.1	30.1	11.3	30.1	30.1
Total Split (s)	34.0	34.0	16.0	50.0	50.0	20.0	50.0	50.0	20.0	50.0	50.0
Total Split (%)	28.3%	28.3%	13.3%	41.7%	41.7%	16.7%	41.7%	41.7%	16.7%	41.7%	41.7%
Yellow Time (s)	3.3	3.3	3.7	3.3	3.3	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.0	3.0	2.6	3.0	3.0	2.6	2.4	2.4	2.6	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3	6.3	6.3	6.3	6.1	6.1	6.3	6.1	6.1
Lead/Lag	Lag	Lag	Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	14.5	14.5	30.5	30.5	30.5	59.4	49.8	49.8	76.8	61.1	61.1
Actuated g/C Ratio	0.12	0.12	0.25	0.25	0.25	0.50	0.42	0.42	0.64	0.51	0.51
v/c Ratio	0.58	0.56	0.88	0.19	0.50	0.40	0.76	0.15	0.65	0.60	0.04
Control Delay	65.8	44.9	70.7	32.3	7.5	10.0	24.0	1.7	19.0	19.7	0.5
Queue Delay	0.0	0.0	10.6	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.8	44.9	81.3	32.3	7.6	10.0	24.0	1.7	19.0	19.7	0.5
LOS	E	D	F	C	A	A	C	A	B	B	A
Approach Delay		50.2		37.8			20.9			19.0	
Approach LOS		D		D			C			B	
Queue Length 50th (m)	18.5	23.2	47.0	17.0	2.6	7.4	84.1	0.7	9.4	105.5	0.0
Queue Length 95th (m)	32.8	33.8	#78.2	24.6	32.6	9.8	159.0	3.0	m42.6	137.4	m0.4
Internal Link Dist (m)		320.4		90.8			332.0			418.0	
Turn Bay Length (m)	40.0				46.0	90.0			120.0		40.0
Base Capacity (vph)	266	783	252	1234	718	365	1408	705	392	1726	826
Starvation Cap Reductn	0	0	20	0	64	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	0.30	0.31	0.96	0.13	0.44	0.34	0.76	0.15	0.65	0.60	0.04

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 32 (27%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 26.0

Intersection LOS: C

Intersection Capacity Utilization 85.1%

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.

Splits and Phases: 2: St. Laurent & Donald





				
20 s	50 s	16 s	34 s	
				
20 s	50 s	50 s		

PM Existing









3: Site/Shopping Centre & Donald

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	261	443	121	50	329	87	56	69	29	240
Lane Group Flow (vph)	275	466	127	53	394	92	121	0	104	253
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases		2			6		8		4	
Permitted Phases	2		2	6		8		4		4
Detector Phase	2	2	2	6	6	8	8	4	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	10.0
Minimum Split (s)	38.3	38.3	38.3	38.3	38.3	30.3	30.3	30.3	30.3	30.3
Total Split (s)	80.0	80.0	80.0	80.0	80.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	66.7%	66.7%	66.7%	66.7%	66.7%	33.3%	33.3%	33.3%	33.3%	33.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3	6.3	6.3	6.3	6.3		6.3	6.3
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	91.5	91.5	91.5	91.5	91.5	15.9	15.9		15.9	15.9
Actuated g/C Ratio	0.76	0.76	0.76	0.76	0.76	0.13	0.13		0.13	0.13
v/c Ratio	0.40	0.34	0.12	0.08	0.16	0.58	0.49		0.70	0.61
Control Delay	6.3	5.0	0.6	4.9	4.2	62.4	36.0		72.3	12.1
Queue Delay	0.3	0.7	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	6.7	5.7	0.6	4.9	4.2	62.4	36.0		72.3	12.1
LOS	A	A	A	A	A	E	D		E	B
Approach Delay		5.3			4.3		47.4		29.6	
Approach LOS		A			A		D		C	
Queue Length 50th (m)	15.7	25.3	0.0	2.6	10.2	20.7	16.9		23.9	0.0
Queue Length 95th (m)	28.6	41.9	m2.7	7.8	19.2	35.4	33.1		39.9	21.8
Internal Link Dist (m)		90.8			407.4		54.5		52.0	
Turn Bay Length (m)				27.0		20.0				
Base Capacity (vph)	689	1360	1092	629	2524	336	473		316	592
Starvation Cap Reductn	113	556	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	0.48	0.58	0.12	0.08	0.16	0.27	0.26		0.33	0.43
Intersection Summary										
Cycle Length: 120										
Actuated Cycle Length: 120										
Offset: 80 (67%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green										
Natural Cycle: 70										
Control Type: Actuated-Coordinated										
Maximum v/c Ratio: 0.70										
Intersection Signal Delay: 14.4					Intersection LOS: B					
Intersection Capacity Utilization 78.8%					ICU Level of Service D					
Analysis Period (min) 15										
m Volume for 95th percentile queue is metered by upstream signal.										





Splits and Phases: 3: Site/Shopping Centre & Donald

					
80 s			40 s		
					
80 s			40 s		























PM Existing
4: St. Laurent & Cyrville

					
Lane Group	WBR	NBT	SBL	SBT	ø4
Lane Configurations					
Volume (vph)	361	1455	315	1075	
Lane Group Flow (vph)	380	1589	332	1132	
Turn Type	Over	NA	Prot	NA	
Protected Phases	8	2	8	6	4
Permitted Phases					
Detector Phase	8	2	8	6	
Switch Phase					
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	31.8	25.8	31.8	25.8	16.5
Total Split (s)	68.0	37.0	68.0	37.0	15.0
Total Split (%)	56.7%	30.8%	56.7%	30.8%	13%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.1	2.1	2.1	2.1	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.8	5.8	5.8	5.8	
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	C-Max	None	C-Max	None
Act Effect Green (s)	30.7	77.7	30.7	77.7	
Actuated g/C Ratio	0.26	0.65	0.26	0.65	
v/c Ratio	0.67	0.51	0.77	0.36	
Control Delay	30.9	2.1	35.7	20.8	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	30.9	2.1	35.7	20.8	
LOS	C	A	D	C	
Approach Delay		2.1		24.2	
Approach LOS		A		C	
Queue Length 50th (m)	55.0	5.6	77.1	59.3	
Queue Length 95th (m)	83.7	m36.1	m52.2	m102.9	
Internal Link Dist (m)		166.6		332.0	
Turn Bay Length (m)			130.0		
Base Capacity (vph)	912	3112	878	3154	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.42	0.51	0.38	0.36	
Intersection Summary					
Cycle Length: 120					
Actuated Cycle Length: 120					
Offset: 13 (11%), Referenced to phase 2:NBT and 6:SBT, Start of Green					
Natural Cycle: 80					
Control Type: Actuated-Coordinated					
Maximum v/c Ratio: 0.77					
Intersection Signal Delay: 14.7				Intersection LOS: B	
Intersection Capacity Utilization 64.4%				ICU Level of Service C	
Analysis Period (min) 15					
m Volume for 95th percentile queue is metered by upstream signal.					

Splits and Phases: 4: St. Laurent & Cyrville

		
ø2 (R)	ø4	ø8
37 s	15 s	68 s
		
ø6 (R)		
37 s		

PM Existing
5: St. Laurent & Conventry/Ogilvie

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	289	559	209	572	562	99	277	1168	57	620	133
Lane Group Flow (vph)	304	588	220	602	592	104	292	1569	60	653	140
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)	11.2	34.3	34.3	11.2	34.3	34.3	11.4	33.4	11.4	33.4	33.4
Total Split (s)	26.0	35.0	35.0	26.0	35.0	35.0	24.0	44.0	15.0	35.0	35.0
Total Split (%)	21.7%	29.2%	29.2%	21.7%	29.2%	29.2%	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)	2.5	2.6	2.6	2.5	2.6	2.6	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.3	6.3	6.2	6.3	6.3	6.4	6.4	6.4	6.4	6.4
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)	22.6	26.3	26.3	22.2	25.9	25.9	17.6	40.7	8.0	28.6	28.6
Actuated g/C Ratio	0.19	0.22	0.22	0.18	0.22	0.22	0.15	0.34	0.07	0.24	0.24
v/c Ratio	0.49	0.79	0.44	0.99	0.81	0.22	1.18	0.96	0.54	0.56	0.29
Control Delay	47.6	52.5	8.5	77.7	45.8	1.1	158.4	52.6	94.1	28.2	6.5
Queue Delay	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.6	53.6	8.5	77.7	45.8	1.1	158.4	52.6	94.1	28.2	6.5
LOS	D	D	A	E	D	A	F	D	F	C	A
Approach Delay		43.0			57.0			69.2		29.3	
Approach LOS		D			E			E		C	
Queue Length 50th (m)	33.9	67.7	1.3	~83.0	47.2	0.0	~82.2	~141.6	10.8	54.9	11.9
Queue Length 95th (m)	48.6	87.4	20.8	#120.0	64.0	0.0	#135.6	#171.6	29.7	39.4	14.2
Internal Link Dist (m)		157.6			126.0			62.8		166.6	
Turn Bay Length (m)	105.0		60.0	80.0			50.0		75.0		55.0
Base Capacity (vph)	618	810	524	607	810	510	248	1637	121	1160	480
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	75	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	0.49	0.80	0.42	0.99	0.73	0.20	1.18	0.96	0.50	0.56	0.29

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 1 (1%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.18

Intersection Signal Delay: 53.8

Intersection LOS: D

Intersection Capacity Utilization 93.3%

ICU Level of Service F

Analysis Period (min) 15

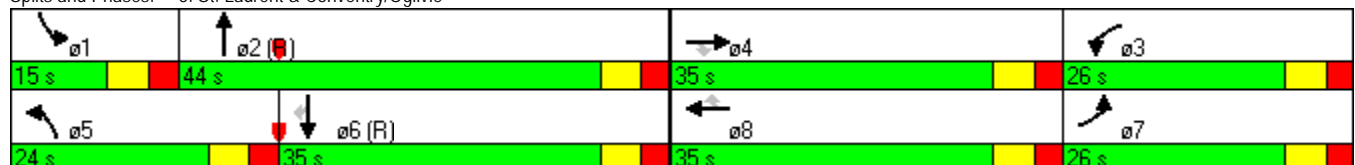
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.




















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

Queue shown is maximum after two cycles.

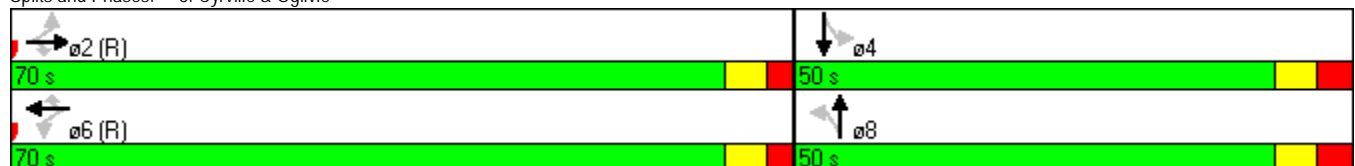
Splits and Phases: 5: St. Laurent & Conventry/Ogilvie













PM Existing
6: Cyrville & Ogilvie

										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Volume (vph)	4	964	173	63	729	130	117	236	138	213
Lane Group Flow (vph)	0	1019	182	66	767	137	123	282	145	318
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		2			6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	2	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	10.0
Minimum Split (s)	27.2	27.2	27.2	27.2	27.2	27.2	38.1	38.1	38.1	38.1
Total Split (s)	70.0	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%	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	3.7
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	3.4	3.4	3.4	3.4
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.2	6.2	6.2	6.2	6.2	7.1	7.1	7.1	7.1
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
Act Effect Green (s)		63.8	63.8	63.8	63.8	63.8	42.9	42.9	42.9	42.9
Actuated g/C Ratio		0.53	0.53	0.53	0.53	0.53	0.36	0.36	0.36	0.36
v/c Ratio		0.59	0.21	0.35	0.43	0.16	0.44	0.45	0.47	0.52
Control Delay		18.2	1.6	22.6	17.9	2.8	35.6	31.7	43.2	39.5
Queue Delay		9.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		27.5	1.6	22.6	17.9	2.8	35.6	31.7	43.2	39.5
LOS		C	A	C	B	A	D	C	D	D
Approach Delay		23.6			16.1			32.9		40.6
Approach LOS		C			B			C		D
Queue Length 50th (m)		123.6	0.6	8.6	55.3	0.0	21.9	49.4	34.4	72.4
Queue Length 95th (m)		m125.9	m4.7	20.3	69.8	9.1	40.6	74.1	54.7	100.4
Internal Link Dist (m)		126.0			312.1			56.0		216.6
Turn Bay Length (m)				60.0		60.0	30.0		75.0	
Base Capacity (vph)		1717	852	191	1802	852	279	629	310	617
Starvation Cap Reductn		667	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		0.97	0.21	0.35	0.43	0.16	0.44	0.45	0.47	0.52
Intersection Summary										
Cycle Length: 120										
Actuated Cycle Length: 120										
Offset: 36 (30%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green										
Natural Cycle: 70										
Control Type: Actuated-Coordinated										
Maximum v/c Ratio: 0.59										
Intersection Signal Delay: 25.0										
Intersection Capacity Utilization 105.9%										
Analysis Period (min) 15										
m Volume for 95th percentile queue is metered by upstream signal.										

Splits and Phases: 6: Cyrville & Ogilvie



PM Existing
7: Cummings & Donald




					
Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Volume (vph)	125	225	228	246	172
Lane Group Flow (vph)	132	237	240	259	272
Turn Type	NA	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)	20.7	20.7	32.1	32.1	32.1
Total Split (s)	25.0	25.0	25.0	25.0	25.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.4	3.4	3.8	3.8	3.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	7.1	7.1	7.1
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	None	Max	Max	Max
Act Effct Green (s)	10.8	10.8	27.7	27.7	27.7
Actuated g/C Ratio	0.21	0.21	0.53	0.53	0.53
v/c Ratio	0.38	0.47	0.43	0.27	0.30
Control Delay	20.3	6.4	11.1	8.2	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	20.3	6.4	11.1	8.2	6.8
LOS	C	A	B	A	A
Approach Delay	11.4			9.6	6.8
Approach LOS	B			A	A
Queue Length 50th (m)	9.9	0.0	11.7	11.4	9.3
Queue Length 95th (m)	21.4	13.0	29.0	24.8	22.3
Internal Link Dist (m)	407.4			123.9	126.8
Turn Bay Length (m)			55.0		
Base Capacity (vph)	597	688	557	943	920
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	0.22	0.34	0.43	0.27	0.30

Intersection Summary

Cycle Length: 50
 Actuated Cycle Length: 52.4
 Natural Cycle: 55
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.47
 Intersection Signal Delay: 9.5
 Intersection Capacity Utilization 59.9%
 Analysis Period (min) 15













Intersection LOS: A
 ICU Level of Service B

Splits and Phases: 7: Cummings & Donald

 Ø2	 Ø4
25 s	25 s
 Ø6	
25 s	

Appendix C
SYNCHRO Capacity Analysis:
Projected Conditions

AM Projected
1: St. Laurent & McArthur

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	85	240	404	608	656	95
Lane Group Flow (vph)	89	253	425	640	691	100
Turn Type	NA	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	27.8	27.8	10.5	15.5	22.5	22.5
Total Split (s)	25.0	25.0	25.0	75.0	50.0	50.0
Total Split (%)	25.0%	25.0%	25.0%	75.0%	50.0%	50.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.5	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.5	5.5	5.5	5.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	Max	Max	None	C-Max	C-Max	C-Max
Act Effect Green (s)	19.2	19.2	69.5	69.5	48.3	48.3
Actuated g/C Ratio	0.19	0.19	0.70	0.70	0.48	0.48
v/c Ratio	0.27	0.52	0.78	0.27	0.42	0.14
Control Delay	37.2	8.7	18.1	6.1	18.3	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.2	8.7	18.1	6.1	18.3	3.8
LOS	D	A	B	A	B	A
Approach Delay	16.1			10.9	16.5	
Approach LOS	B			B	B	
Queue Length 50th (m)	14.8	0.0	29.4	21.4	44.2	0.0
Queue Length 95th (m)	28.7	20.1	51.0	28.6	62.9	8.8
Internal Link Dist (m)	260.9			418.0	58.4	
Turn Bay Length (m)			85.0			50.0
Base Capacity (vph)	325	490	590	2356	1638	740
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	0.27	0.52	0.72	0.27	0.42	0.14

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 62 (62%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 13.7

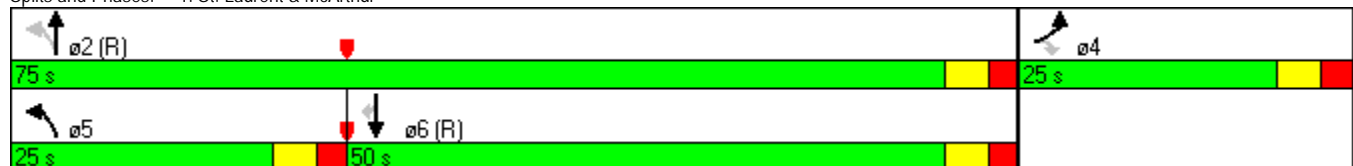
Intersection LOS: B

Intersection Capacity Utilization 75.1%























ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: St. Laurent & McArthur



AM Projected
2: St. Laurent & Donald

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	28	116	156	100	190	101	688	60	178	760	32
Lane Group Flow (vph)	29	193	164	105	200	106	724	63	187	800	34
Turn Type	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4	3	8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	4	4	3	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	30.3	30.3	11.3	30.3	30.3	11.3	30.1	30.1	11.3	30.1	30.1
Total Split (s)	35.0	35.0	13.0	48.0	48.0	17.0	55.0	55.0	17.0	55.0	55.0
Total Split (%)	29.2%	29.2%	10.8%	40.0%	40.0%	14.2%	45.8%	45.8%	14.2%	45.8%	45.8%
Yellow Time (s)	3.3	3.3	3.7	3.3	3.3	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.0	3.0	2.6	3.0	3.0	2.6	2.4	2.4	2.6	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3	6.3	6.3	6.3	6.1	6.1	6.3	6.1	6.1
Lead/Lag	Lag	Lag	Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	11.1	11.1	24.1	24.1	24.1	74.8	67.0	67.0	79.2	69.2	69.2
Actuated g/C Ratio	0.09	0.09	0.20	0.20	0.20	0.62	0.56	0.56	0.66	0.58	0.58
v/c Ratio	0.26	0.54	0.84	0.15	0.43	0.25	0.38	0.07	0.40	0.41	0.04
Control Delay	55.9	38.2	74.8	37.1	7.1	7.6	16.4	1.2	9.2	15.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.9	38.2	74.8	37.1	7.1	7.6	16.4	1.2	9.2	15.2	0.1
LOS	E	D	E	D	A	A	B	A	A	B	A
Approach Delay		40.5		37.5			14.3			13.6	
Approach LOS		D		D			B			B	
Queue Length 50th (m)	6.5	14.6	35.5	11.2	0.0	2.7	66.4	1.0	13.2	50.7	0.0
Queue Length 95th (m)	15.7	25.7	#67.8	18.3	21.9	5.5	91.8	3.1	23.5	72.7	0.0
Internal Link Dist (m)		320.4		90.8			332.0			418.0	
Turn Bay Length (m)	40.0				46.0	90.0			120.0		40.0
Base Capacity (vph)	292	813	195	1178	657	460	1893	894	487	1955	915
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	0.10	0.24	0.84	0.09	0.30	0.23	0.38	0.07	0.38	0.41	0.04

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 20.4

Intersection LOS: C

Intersection Capacity Utilization 71.8%

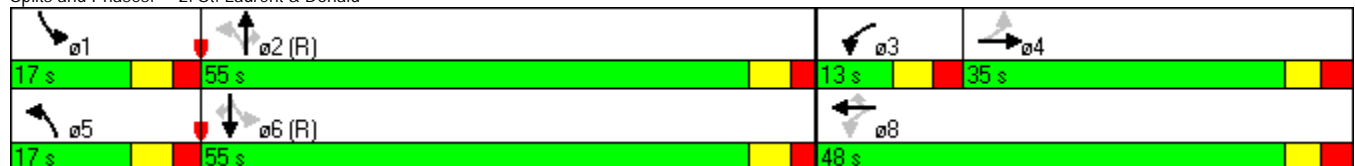
ICU Level of Service C

Analysis Period (min) 15




















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

Queue shown is maximum after two cycles.




Splits and Phases: 2: St. Laurent & Donald











AM Projected
3: Site/Shopping Centre & Donald

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	271	198	80	38	360	53	21	84	20	284
Lane Group Flow (vph)	285	208	84	40	493	56	49	0	109	299
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases		2			6		8		4	
Permitted Phases	2		2	6		8		4		4
Detector Phase	2	2	2	6	6	8	8	4	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	10.0
Minimum Split (s)	38.3	38.3	38.3	38.3	38.3	30.3	30.3	30.3	30.3	30.3
Total Split (s)	80.0	80.0	80.0	80.0	80.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	66.7%	66.7%	66.7%	66.7%	66.7%	33.3%	33.3%	33.3%	33.3%	33.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3	6.3	6.3	6.3	6.3		6.3	6.3
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effect Green (s)	91.3	91.3	91.3	91.3	91.3	16.1	16.1		16.1	16.1
Actuated g/C Ratio	0.76	0.76	0.76	0.76	0.76	0.13	0.13		0.13	0.13
v/c Ratio	0.46	0.15	0.08	0.05	0.20	0.36	0.21		0.63	0.66
Control Delay	7.9	4.1	0.8	4.7	4.1	51.7	25.8		64.4	12.2
Queue Delay	0.6	0.5	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	8.4	4.6	0.8	4.7	4.1	51.7	25.8		64.4	12.2
LOS	A	A	A	A	A	D	C		E	B
Approach Delay		5.9			4.2		39.6		26.2	
Approach LOS		A			A		D		C	
Queue Length 50th (m)	16.0	8.9	0.0	2.0	12.2	12.3	4.6		24.8	0.0
Queue Length 95th (m)	35.2	19.2	2.9	6.0	22.7	23.5	14.9		40.9	24.3
Internal Link Dist (m)		90.8			403.7		54.5		52.0	
Turn Bay Length (m)				27.0		20.0				
Base Capacity (vph)	614	1357	1103	826	2444	329	469		361	627
Starvation Cap Reductn	104	800	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	0.37	0.08	0.05	0.20	0.17	0.10		0.30	0.48
Intersection Summary										
Cycle Length: 120										
Actuated Cycle Length: 120										
Offset: 100 (83%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green										
Natural Cycle: 70										
Control Type: Actuated-Coordinated										
Maximum v/c Ratio: 0.66										
Intersection Signal Delay: 12.6					Intersection LOS: B					
Intersection Capacity Utilization 75.6%					ICU Level of Service D					
Analysis Period (min) 15										

Splits and Phases: 3: Site/Shopping Centre & Donald

	ø2 (R)		ø4
80 s		40 s	
	ø6 (R)		ø8
80 s		40 s	





AM Projected
4: St. Laurent & Cyrville

					
Lane Group	WBR	NBT	SBL	SBT	ø4
Lane Configurations					
Volume (vph)	272	796	191	1201	
Lane Group Flow (vph)	286	858	201	1264	
Turn Type	Over	NA	Prot	NA	
Protected Phases	8	2	8	6	4
Permitted Phases					
Detector Phase	8	2	8	6	
Switch Phase					
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	31.8	25.8	31.8	25.8	16.5
Total Split (s)	65.0	40.0	65.0	40.0	15.0
Total Split (%)	54.2%	33.3%	54.2%	33.3%	13%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.1	2.1	2.1	2.1	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.8	5.8	5.8	5.8	
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	C-Max	None	C-Max	None
Act Effect Green (s)	20.1	88.3	20.1	88.3	
Actuated g/C Ratio	0.17	0.74	0.17	0.74	
v/c Ratio	0.64	0.24	0.71	0.35	
Control Delay	26.7	0.5	51.7	11.0	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	26.7	0.5	51.7	11.0	
LOS	C	A	D	B	
Approach Delay		0.5		16.6	
Approach LOS		A		B	
Queue Length 50th (m)	35.2	1.7	37.3	57.8	
Queue Length 95th (m)	58.6	2.5	m45.6	77.0	
Internal Link Dist (m)		166.6		332.0	
Turn Bay Length (m)			130.0		
Base Capacity (vph)	876	3560	836	3583	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.33	0.24	0.24	0.35	































Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 10 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.71
 Intersection Signal Delay: 12.4
 Intersection Capacity Utilization 44.2%
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: St. Laurent & Cyrville

 ø2 (R)	 ø4	 ø8
40 s	15 s	65 s
 ø6 (R)		
40 s		

AM Projected
5: St. Laurent & Conventry/Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations	 	 		 	 			  		  		
Volume (vph)	71	153	61	563	537	32	102	812	27	901	119	
Lane Group Flow (vph)	75	161	64	593	565	34	107	1146	28	948	125	
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)	11.2	34.3	34.3	11.2	34.3	34.3	11.4	33.4	11.4	33.4	33.4	
Total Split (s)	15.0	35.0	35.0	35.0	55.0	55.0	16.0	34.0	16.0	34.0	34.0	
Total Split (%)	12.5%	29.2%	29.2%	29.2%	45.8%	45.8%	13.3%	28.3%	13.3%	28.3%	28.3%	
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)	2.5	2.6	2.6	2.5	2.6	2.6	2.7	2.7	2.7	2.7	2.7	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.2	6.3	6.3	6.2	6.3	6.3	6.4	6.4	6.4	6.4	6.4	
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)	10.2	11.5	11.5	26.7	30.4	30.4	13.6	53.9	7.5	42.8	42.8	
Actuated g/C Ratio	0.08	0.10	0.10	0.22	0.25	0.25	0.11	0.45	0.06	0.36	0.36	
v/c Ratio	0.27	0.50	0.19	0.81	0.66	0.07	0.56	0.54	0.27	0.55	0.20	
Control Delay	52.9	56.6	1.3	44.9	36.5	0.3	60.8	26.0	78.3	23.1	5.2	
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	52.9	56.6	1.3	44.9	36.5	0.3	60.8	26.0	78.3	23.1	5.2	
LOS	D	E	A	D	D	A	E	C	E	C	A	
Approach Delay		43.9			39.6			29.0		22.5		
Approach LOS		D			D			C		C		
Queue Length 50th (m)	8.6	19.3	0.0	70.2	47.9	0.0	24.2	70.9	6.1	68.0	8.1	
Queue Length 95th (m)	15.8	29.6	0.0	85.2	52.6	0.0	40.9	101.1	13.3	93.4	24.0	
Internal Link Dist (m)		157.6			126.0			62.8		166.6		
Turn Bay Length (m)	105.0		60.0	80.0			50.0		75.0		55.0	
Base Capacity (vph)	296	810	517	813	1375	686	194	2140	136	1738	632	
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	0.25	0.20	0.12	0.73	0.41	0.05	0.55	0.54	0.21	0.55	0.20	

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: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 31.6

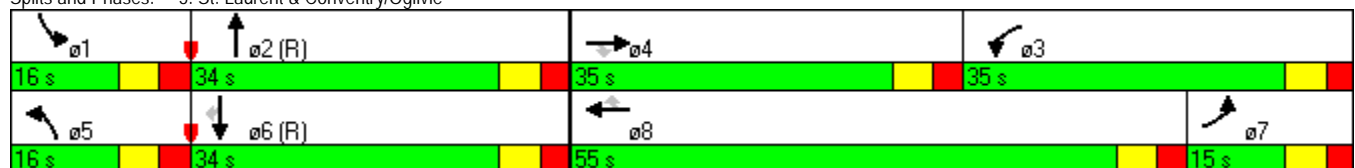
Intersection LOS: C

Intersection Capacity Utilization 74.8%




















ICU Level of Service D

Analysis Period (min) 15





Splits and Phases: 5: St. Laurent & Conventry/Ogilvie













AM Projected
6: Cyrville & Ogilvie

										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Volume (vph)	1	379	100	34	732	94	132	162	44	139
Lane Group Flow (vph)	0	400	105	36	771	99	139	184	46	186
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		2			6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	2	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	10.0
Minimum Split (s)	27.2	27.2	27.2	27.2	27.2	27.2	38.1	38.1	38.1	38.1
Total Split (s)	75.0	75.0	75.0	75.0	75.0	75.0	45.0	45.0	45.0	45.0
Total Split (%)	62.5%	62.5%	62.5%	62.5%	62.5%	62.5%	37.5%	37.5%	37.5%	37.5%
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)	2.5	2.5	2.5	2.5	2.5	2.5	3.4	3.4	3.4	3.4
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.2	6.2	6.2	6.2	6.2	7.1	7.1	7.1	7.1
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
Act Effect Green (s)		68.8	68.8	68.8	68.8	68.8	37.9	37.9	37.9	37.9
Actuated g/C Ratio		0.57	0.57	0.57	0.57	0.57	0.32	0.32	0.32	0.32
v/c Ratio		0.22	0.12	0.07	0.40	0.11	0.41	0.33	0.14	0.34
Control Delay		16.3	7.6	11.9	14.9	2.5	36.9	32.9	40.8	42.7
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		16.3	7.6	11.9	14.9	2.5	36.9	32.9	40.8	42.7
LOS		B	A	B	B	A	D	C	D	D
Approach Delay		14.5			13.4			34.6		42.3
Approach LOS		B			B			C		D
Queue Length 50th (m)		30.9	5.4	3.6	50.1	0.0	25.7	32.4	10.7	41.4
Queue Length 95th (m)		42.8	17.4	8.5	63.3	7.1	44.8	51.7	23.4	65.5
Internal Link Dist (m)		126.0			312.1			56.0		216.6
Turn Bay Length (m)				60.0		60.0	30.0		75.0	
Base Capacity (vph)		1854	882	518	1943	884	337	559	339	552
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		0.22	0.12	0.07	0.40	0.11	0.41	0.33	0.14	0.34
Intersection Summary										
Cycle Length: 120										
Actuated Cycle Length: 120										
Offset: 36 (30%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green										
Natural Cycle: 70										
Control Type: Actuated-Coordinated										
Maximum v/c Ratio: 0.41										
Intersection Signal Delay: 20.6					Intersection LOS: C					
Intersection Capacity Utilization 81.0%					ICU Level of Service D					
Analysis Period (min) 15										

Splits and Phases: 6: Cyrville & Ogilvie

 02 (R)	 04
75 s	45 s
 06 (R)	 08
75 s	45 s

AM Projected
7: Cummings & Donald




					
Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Volume (vph)	52	133	195	101	215
Lane Group Flow (vph)	55	140	205	106	325
Turn Type	NA	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)	20.7	20.7	32.1	32.1	32.1
Total Split (s)	25.0	25.0	25.0	25.0	25.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.4	3.4	3.8	3.8	3.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	7.1	7.1	7.1
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	None	Max	Max	Max
Act Effct Green (s)	10.0	10.0	30.9	30.9	30.9
Actuated g/C Ratio	0.20	0.20	0.62	0.62	0.62
v/c Ratio	0.16	0.34	0.33	0.10	0.30
Control Delay	17.7	6.7	9.0	6.5	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	17.7	6.7	9.0	6.5	6.6
LOS	B	A	A	A	A
Approach Delay	9.8			8.1	6.6
Approach LOS	A			A	A
Queue Length 50th (m)	4.0	0.0	9.7	4.2	12.4
Queue Length 95th (m)	10.9	10.4	21.8	9.8	24.8
Internal Link Dist (m)	403.7			123.9	126.8
Turn Bay Length (m)			55.0		
Base Capacity (vph)	624	629	621	1108	1072
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	0.22	0.33	0.10	0.30

Intersection Summary













Cycle Length: 50
 Actuated Cycle Length: 49.8
 Natural Cycle: 55
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.34
 Intersection Signal Delay: 7.9
 Intersection Capacity Utilization 58.7%
 Analysis Period (min) 15

Intersection LOS: A
 ICU Level of Service B

Splits and Phases: 7: Cummings & Donald

 Ø2	 Ø4
25 s	25 s
 Ø6	
25 s	

PM Projected
1: St. Laurent & McArthur

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	209	430	563	900	707	94
Lane Group Flow (vph)	220	453	593	947	744	99
Turn Type	NA	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	27.8	27.8	10.5	15.5	22.5	22.5
Total Split (s)	25.0	25.0	40.0	95.0	55.0	55.0
Total Split (%)	20.8%	20.8%	33.3%	79.2%	45.8%	45.8%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.5	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.5	5.5	5.5	5.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	Max	Max	None	C-Max	C-Max	C-Max
Act Effct Green (s)	19.2	19.2	89.5	89.5	54.7	54.7
Actuated g/C Ratio	0.16	0.16	0.75	0.75	0.46	0.46
v/c Ratio	0.81	0.73	0.92	0.37	0.48	0.14
Control Delay	72.0	11.9	25.7	1.2	25.2	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.0	11.9	25.7	1.2	25.2	4.9
LOS	E	B	C	A	C	A
Approach Delay	31.6			10.6	22.8	
Approach LOS	C			B	C	
Queue Length 50th (m)	50.6	0.0	7.2	5.8	66.8	0.1
Queue Length 95th (m)	#89.9	32.6	m#60.5	6.1	86.6	10.3
Internal Link Dist (m)	260.9			418.0	58.4	
Turn Bay Length (m)			85.0			50.0
Base Capacity (vph)	271	619	698	2528	1545	718
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	0.81	0.73	0.85	0.37	0.48	0.14

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 98 (82%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 18.6

Intersection LOS: B

Intersection Capacity Utilization 85.9%

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 & McArthur



PM Projected
2: St. Laurent & Donald

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	77	167	246	160	284	117	1018	99	267	974	33
Lane Group Flow (vph)	81	242	259	168	299	123	1072	104	281	1025	35
Turn Type	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4	3	8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	4	4	3	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	30.3	30.3	11.3	30.3	30.3	11.3	30.1	30.1	11.3	30.1	30.1
Total Split (s)	34.0	34.0	16.0	50.0	50.0	20.0	50.0	50.0	20.0	50.0	50.0
Total Split (%)	28.3%	28.3%	13.3%	41.7%	41.7%	16.7%	41.7%	41.7%	16.7%	41.7%	41.7%
Yellow Time (s)	3.3	3.3	3.7	3.3	3.3	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.0	3.0	2.6	3.0	3.0	2.6	2.4	2.4	2.6	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3	6.3	6.3	6.3	6.1	6.1	6.3	6.1	6.1
Lead/Lag	Lag	Lag	Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	14.5	14.5	30.5	30.5	30.5	55.3	45.8	45.8	76.9	61.1	61.1
Actuated g/C Ratio	0.12	0.12	0.25	0.25	0.25	0.46	0.38	0.38	0.64	0.51	0.51
v/c Ratio	0.58	0.56	1.03	0.20	0.51	0.40	0.83	0.16	0.66	0.59	0.04
Control Delay	65.7	45.4	103.4	31.4	8.0	9.8	28.9	1.7	23.7	19.1	0.5
Queue Delay	0.0	0.0	23.5	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.7	45.4	126.8	31.4	8.2	9.8	28.9	1.7	23.7	19.1	0.5
LOS	E	D	F	C	A	A	C	A	C	B	A
Approach Delay		50.5		55.9			24.9			19.6	
Approach LOS		D		E			C			B	
Queue Length 50th (m)	18.5	23.7	-60.6	17.7	6.4	7.1	107.8	0.7	15.7	103.6	0.0
Queue Length 95th (m)	32.8	34.5	#104.5	21.6	22.0	9.5	160.0	3.0	m#82.1	135.5	m0.2
Internal Link Dist (m)		320.4		90.8			332.0			418.0	
Turn Bay Length (m)	40.0				46.0	90.0			120.0		40.0
Base Capacity (vph)	265	782	251	1234	718	368	1295	660	423	1727	826
Starvation Cap Reductn	0	0	16	0	64	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	0.31	0.31	1.10	0.14	0.46	0.33	0.83	0.16	0.66	0.59	0.04

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 32 (27%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 31.3

Intersection LOS: C

Intersection Capacity Utilization 88.9%

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.




















Splits and Phases: 2: St. Laurent & Donald

				
20 s	50 s	16 s	34 s	
				
20 s	50 s	50 s		

Description

Synchro 7 - Report









PM Projected
3: Site/Shopping Centre & Donald

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	261	443	150	60	329	133	56	69	29	240
Lane Group Flow (vph)	275	466	158	63	394	140	133	0	104	253
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases		2			6		8		4	
Permitted Phases	2		2	6		8		4		4
Detector Phase	2	2	2	6	6	8	8	4	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	10.0
Minimum Split (s)	38.3	38.3	38.3	38.3	38.3	30.3	30.3	30.3	30.3	30.3
Total Split (s)	80.0	80.0	80.0	80.0	80.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	66.7%	66.7%	66.7%	66.7%	66.7%	33.3%	33.3%	33.3%	33.3%	33.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3	6.3	6.3	6.3	6.3		6.3	6.3
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	88.1	88.1	88.1	88.1	88.1	19.3	19.3		19.3	19.3
Actuated g/C Ratio	0.73	0.73	0.73	0.73	0.73	0.16	0.16		0.16	0.16
v/c Ratio	0.41	0.36	0.15	0.11	0.16	0.73	0.45		0.59	0.57
Control Delay	7.2	5.7	0.6	6.3	5.3	67.8	30.9		58.9	10.1
Queue Delay	0.4	0.7	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	7.5	6.4	0.6	6.3	5.3	67.8	30.9		58.9	10.1
LOS	A	A	A	A	A	E	C		E	B
Approach Delay		5.7			5.4		49.8		24.3	
Approach LOS		A			A		D		C	
Queue Length 50th (m)	16.3	26.4	0.0	3.7	12.0	31.7	17.1		23.0	0.0
Queue Length 95th (m)	29.8	43.2	m2.5	10.3	21.8	49.8	33.4		38.3	20.7
Internal Link Dist (m)		90.8			407.4		54.5		52.0	
Turn Bay Length (m)				27.0		20.0				
Base Capacity (vph)	664	1310	1065	596	2433	338	474		309	592
Starvation Cap Reductn	105	504	0	0	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	18	0	0		0	1
Storage Cap Reductn	0	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.49	0.58	0.15	0.11	0.16	0.41	0.28		0.34	0.43
Intersection Summary										
Cycle Length: 120										
Actuated Cycle Length: 120										
Offset: 80 (67%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green										
Natural Cycle: 70										
Control Type: Actuated-Coordinated										
Maximum v/c Ratio: 0.73										
Intersection Signal Delay: 15.1					Intersection LOS: B					
Intersection Capacity Utilization 94.2%					ICU Level of Service F					
Analysis Period (min) 15										
m Volume for 95th percentile queue is metered by upstream signal.										





Splits and Phases: 3: Site/Shopping Centre & Donald

























PM Projected
4: St. Laurent & Cyrville

					
Lane Group	WBR	NBT	SBL	SBT	ø4
Lane Configurations					
Volume (vph)	361	1491	315	1097	
Lane Group Flow (vph)	380	1626	332	1155	
Turn Type	Over	NA	Prot	NA	
Protected Phases	8	2	8	6	4
Permitted Phases					
Detector Phase	8	2	8	6	
Switch Phase					
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	31.8	25.8	31.8	25.8	16.5
Total Split (s)	68.0	37.0	68.0	37.0	15.0
Total Split (%)	56.7%	30.8%	56.7%	30.8%	13%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.1	2.1	2.1	2.1	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.8	5.8	5.8	5.8	
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	C-Max	None	C-Max	None
Act Effect Green (s)	30.7	77.7	30.7	77.7	
Actuated g/C Ratio	0.26	0.65	0.26	0.65	
v/c Ratio	0.67	0.52	0.77	0.37	
Control Delay	30.8	2.0	36.7	20.3	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	30.8	2.0	36.7	20.3	
LOS	C	A	D	C	
Approach Delay		2.0		23.9	
Approach LOS		A		C	
Queue Length 50th (m)	54.7	5.6	77.5	58.4	
Queue Length 95th (m)	83.5	m35.7	m53.8	m100.9	
Internal Link Dist (m)		166.6		332.0	
Turn Bay Length (m)			130.0		
Base Capacity (vph)	912	3112	878	3154	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.42	0.52	0.38	0.37	
Intersection Summary					
Cycle Length: 120					
Actuated Cycle Length: 120					
Offset: 13 (11%), Referenced to phase 2:NBT and 6:SBT, Start of Green					
Natural Cycle: 80					
Control Type: Actuated-Coordinated					
Maximum v/c Ratio: 0.77					
Intersection Signal Delay: 14.5				Intersection LOS: B	
Intersection Capacity Utilization 65.1%				ICU Level of Service C	
Analysis Period (min) 15					
m Volume for 95th percentile queue is metered by upstream signal.					

Splits and Phases: 4: St. Laurent & Cyrville

		
ø2 (R)	ø4	ø8
37 s	15 s	68 s
		
ø6 (R)		
37 s		

PM Projected
5: St. Laurent & Conventry/Ogilvie

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	292	559	209	590	562	99	277	1201	57	638	137
Lane Group Flow (vph)	307	588	220	621	592	104	292	1604	60	672	144
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)	11.2	34.3	34.3	11.2	34.3	34.3	11.4	33.4	11.4	33.4	33.4
Total Split (s)	26.0	35.0	35.0	26.0	35.0	35.0	24.0	44.0	15.0	35.0	35.0
Total Split (%)	21.7%	29.2%	29.2%	21.7%	29.2%	29.2%	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)	2.5	2.6	2.6	2.5	2.6	2.6	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.3	6.3	6.2	6.3	6.3	6.4	6.4	6.4	6.4	6.4
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)	22.6	26.3	26.3	22.2	25.9	25.9	17.6	40.7	8.0	28.6	28.6
Actuated g/C Ratio	0.19	0.22	0.22	0.18	0.22	0.22	0.15	0.34	0.07	0.24	0.24
v/c Ratio	0.50	0.79	0.44	1.02	0.81	0.22	1.18	0.98	0.54	0.58	0.30
Control Delay	47.7	52.5	8.6	85.2	45.7	1.1	158.4	56.5	94.0	28.0	6.5
Queue Delay	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.7	53.6	8.6	85.2	45.7	1.1	158.4	56.5	94.0	28.0	6.5
LOS	D	D	A	F	D	A	F	E	F	C	A
Approach Delay		43.1			60.8			72.2		29.0	
Approach LOS		D			E			E		C	
Queue Length 50th (m)	34.3	67.7	1.5	~87.7	47.6	0.0	~82.2	~148.1	10.9	55.4	11.9
Queue Length 95th (m)	49.2	87.4	21.0	#124.8	64.8	0.0	#135.6	#178.3	29.6	40.0	14.4
Internal Link Dist (m)		157.6			126.0			62.8		166.6	
Turn Bay Length (m)	105.0		60.0	80.0			50.0		75.0		55.0
Base Capacity (vph)	618	810	524	607	810	510	248	1637	121	1160	480
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	74	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	0.50	0.80	0.42	1.02	0.73	0.20	1.18	0.98	0.50	0.58	0.30

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 1 (1%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.18

Intersection Signal Delay: 55.8

Intersection LOS: E

Intersection Capacity Utilization 93.9%

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.

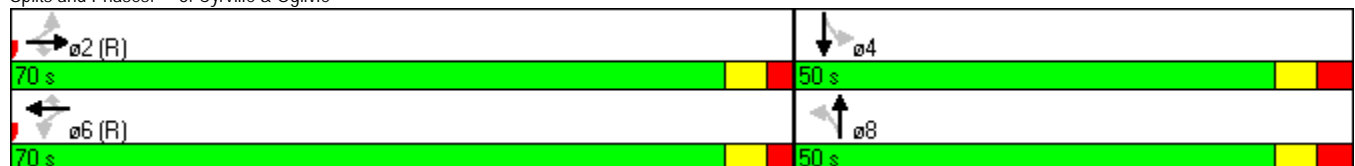
Splits and Phases: 5: St. Laurent & Conventry/Ogilvie

					
15 s	44 s		35 s		26 s
					
24 s	35 s		35 s		26 s











PM Projected
6: Cyrville & Ogilvie

										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Volume (vph)	4	964	173	63	729	133	117	236	142	213
Lane Group Flow (vph)	0	1019	182	66	767	140	123	282	149	337
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		2			6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	2	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	10.0
Minimum Split (s)	27.2	27.2	27.2	27.2	27.2	27.2	38.1	38.1	38.1	38.1
Total Split (s)	70.0	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%	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	3.7
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	3.4	3.4	3.4	3.4
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.2	6.2	6.2	6.2	6.2	7.1	7.1	7.1	7.1
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
Act Effect Green (s)		63.8	63.8	63.8	63.8	63.8	42.9	42.9	42.9	42.9
Actuated g/C Ratio		0.53	0.53	0.53	0.53	0.53	0.36	0.36	0.36	0.36
v/c Ratio		0.59	0.21	0.35	0.43	0.16	0.47	0.45	0.48	0.55
Control Delay		18.2	1.6	22.6	17.9	2.7	36.8	31.7	43.5	40.0
Queue Delay		9.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		27.5	1.6	22.6	17.9	2.7	36.8	31.7	43.5	40.0
LOS		C	A	C	B	A	D	C	D	D
Approach Delay		23.5			16.1			33.2		41.1
Approach LOS		C			B			C		D
Queue Length 50th (m)		123.5	0.6	8.6	55.3	0.0	22.2	49.4	35.1	75.7
Queue Length 95th (m)		m122.3	m4.5	20.3	69.8	9.2	41.4	74.1	56.0	104.3
Internal Link Dist (m)		126.0			312.1			56.0		216.6
Turn Bay Length (m)				60.0		60.0	30.0		75.0	
Base Capacity (vph)		1717	852	191	1802	853	264	629	310	615
Starvation Cap Reductn		667	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		0.97	0.21	0.35	0.43	0.16	0.47	0.45	0.48	0.55
Intersection Summary										
Cycle Length: 120										
Actuated Cycle Length: 120										
Offset: 36 (30%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green										
Natural Cycle: 70										
Control Type: Actuated-Coordinated										
Maximum v/c Ratio: 0.59										
Intersection Signal Delay: 25.2										
Intersection Capacity Utilization 105.9%										
Analysis Period (min) 15										
m Volume for 95th percentile queue is metered by upstream signal.										

Splits and Phases: 6: Cyrville & Ogilvie



PM Projected
7: Cummings & Donald




					
Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Volume (vph)	129	232	235	246	172
Lane Group Flow (vph)	136	244	247	259	275
Turn Type	NA	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)	20.7	20.7	32.1	32.1	32.1
Total Split (s)	25.0	25.0	25.0	25.0	25.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.4	3.4	3.8	3.8	3.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	7.1	7.1	7.1
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	None	Max	Max	Max
Act Effct Green (s)	10.8	10.8	27.5	27.5	27.5
Actuated g/C Ratio	0.21	0.21	0.53	0.53	0.53
v/c Ratio	0.39	0.48	0.45	0.28	0.30
Control Delay	20.3	6.4	11.4	8.2	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	20.3	6.4	11.4	8.2	6.8
LOS	C	A	B	A	A
Approach Delay	11.4			9.8	6.8
Approach LOS	B			A	A
Queue Length 50th (m)	10.2	0.0	12.2	11.4	9.4
Queue Length 95th (m)	21.9	13.1	30.4	25.0	22.6
Internal Link Dist (m)	407.4			123.9	126.8
Turn Bay Length (m)			55.0		
Base Capacity (vph)	598	693	553	939	916
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	0.23	0.35	0.45	0.28	0.30

Intersection Summary

Cycle Length: 50
 Actuated Cycle Length: 52.3
 Natural Cycle: 55
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.48
 Intersection Signal Delay: 9.6
 Intersection Capacity Utilization 60.3%
 Analysis Period (min) 15

Intersection LOS: A
 ICU Level of Service B

Splits and Phases: 7: Cummings & Donald

	
25 s	25 s
	
25 s	