

2280 City Park Drive Phase 2 Development

Transportation Impact Assessment Report



Prepared for:

RIO  **CAN**

Prepared by:

PARSONS

2280 City Park Drive Phase 2 Residential Development

TIA Report

prepared for:

RIO CAN

Yonge Eglinton Centre
2300 Yonge Street, Suite 500
P.O. Box 2386
Toronto, ON M4P 1E4

prepared by:

PARSONS

1223 Michael Street
Suite 100
Ottawa, ON K1J 7T2

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476851 01000

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TIA Plan Reports

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

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

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

CERTIFICATION

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

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

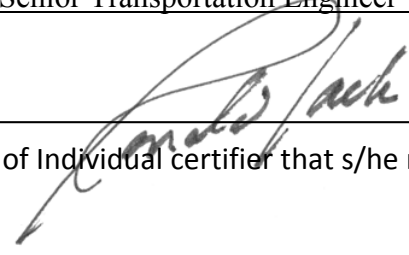
City Of Ottawa
Infrastructure Services and Community
Sustainability
Planning and Growth Management
110 Laurier Avenue West, 4th fl.
Ottawa, ON K1P 1J1
Tel. : 613-580-2424
Fax: 613-560-6006

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

Dated at Ottawa this 9th day of November, 2018.
(City)

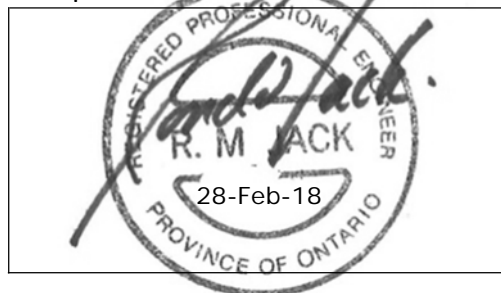
Name: Ronald Jack
(Please Print)

Professional Title: Senior Transportation Engineer


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

Office Contact Information (Please Print)
Address: 1223 Michael Street
City / Postal Code: Ottawa K1J 7T2
Telephone / Extension: 613 – 738 - 4160
E-Mail Address: Ronald.Jack@Parsons.com

Stamp



TIA STRATEGY REPORT

1. PROPOSED DEVELOPMENT

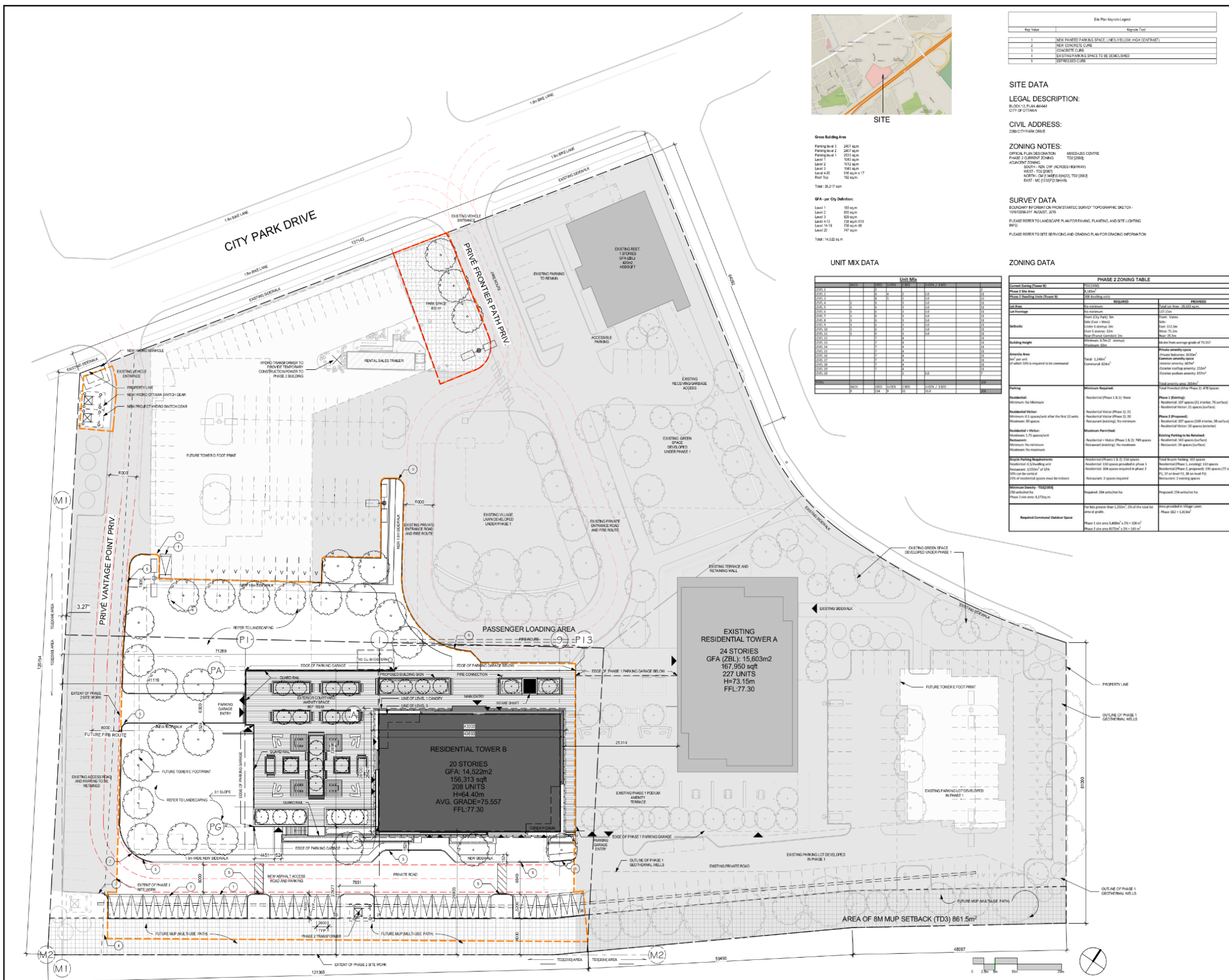
This study has been prepared in support of a Site Plan Application for RioCan's proposed Phase 2 residential redevelopment of 2280 City Park Drive, within the Gloucester Silver City Centre lands. The proposed redevelopment will consist of a single 20 storey residential tower containing 208 units. The site previously accommodated 7,247 m² (78,000 ft²) of commercial retail space and a 465 m² (5,000 ft²) restaurant. All commercial space has been demolished, the restaurant remains and the Phase 1, 227 unit apartment building has recently been built.

The subject site, in its local context depicted in Figure 1, is located adjacent to the south of City Park Drive and directly adjacent to the Blair LRT Station. Access to the site is provided via two existing connections to City Park Drive. The first is an all-way STOP intersection that is aligned with the Silver City access to the north. The second is the three-legged west access that is STOP controlled on the minor approach. The access locations for the Figure 2 Site Plan will generally remain unchanged from the existing access configuration. For the purposes of this study it has been assumed that the subject development will be built and occupied in 2020/21.

As can be seen from review of the TIA Screening Form, the Trip Generator and Location Triggers are met, but the Safety Trigger is not. The TIA Screening Form and responses to City comments can be found in Appendix A.

Figure 1: Local Context





2. EXISTING CONDITIONS

2.1. STUDY AREA

The subject site is bound by City Park Drive to the north, the LRT corridor to the south, the Blair LRT Station to the east and a vacant lot to the west. As previously mentioned, access to/from the subject site is currently provided via two full-movement connections to City Park Drive. With regard to the existing conditions at study area intersections the following intersections, were considered. With regard to projected conditions, given the very low volume of site-generated traffic (only 40 to 45 veh/h two-way total) combined with the primary routes for accessing/egressing the site, only the first three signalized intersections listed below will be assessed.

- City Park/Ogilvie/Bathgate
- City Park/Ogilvie/ CSIS
- Blair/Shopping Centre/OR-174 WB Off Ramp
- Ogilvie/Silver City/CSIS
- Aviation/Ogilvie
- Blair/Ogilvie
- Blair/OR-174 EB On-Off Ramp

2.2. AREA ROAD NETWORK

Ogilvie Road is an east-west arterial roadway that extends from St. Laurent Boulevard in the west (where it continues as Coventry Road) to approximately 40 m north of Quincy Avenue in the east. Within the study area it has a four-lane cross-section with auxiliary turn lanes provided at major intersections. Its posted speed limit is 60 km/h. It is located approximately 400 m from the Phase 2 site.

City Park Drive is a crescent-shaped east-west Major Collector roadway with a two-lane cross-section that intersects Ogilvie Road at both its terminuses. Within the study area, the unposted speed limit is understood to be 50 km/h and on-street parking is permitted along both sides of the roadway for most of its length.

Blair Road is a north-south arterial roadway that extends from Innes Road in the south to approximately 80 m north of Massey Lane in the north. Within the study area, Blair Road has a six lane cross-section, south of Ogilvie Road, and a three lane cross-section north of Ogilvie Road. Its posted speed limit is 70 km/h south of Ogilvie Road and 50 km/h north of Ogilvie Road. It is located approximately 550 m from the Phase 2 site.

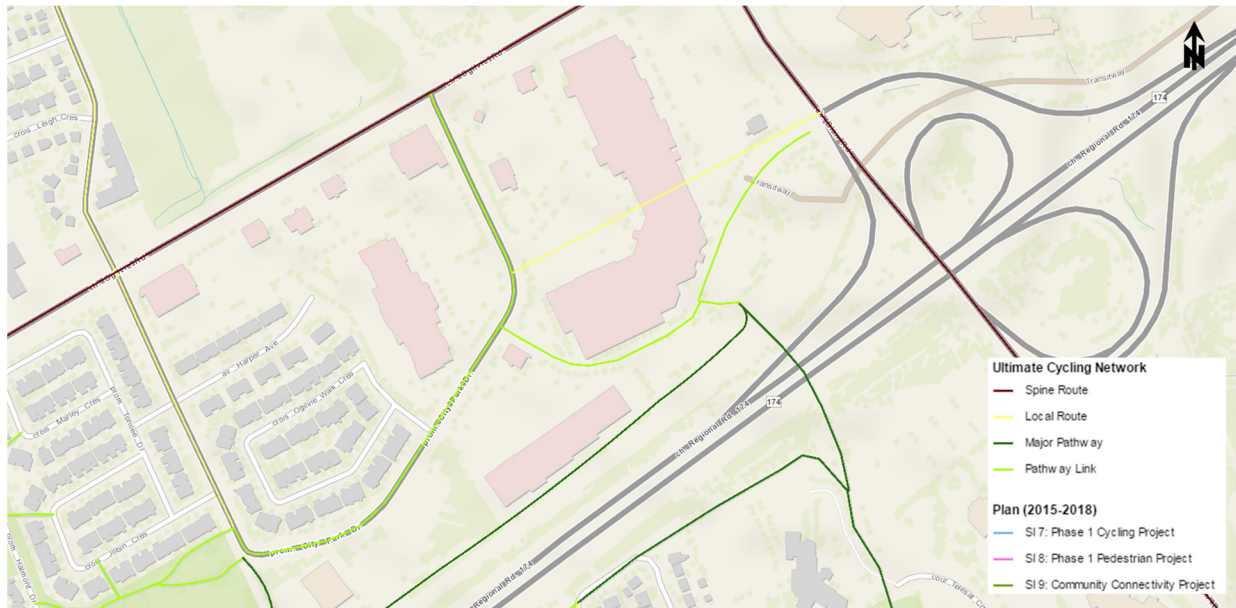
Aviation Parkway is a north-south federally owned roadway, which extends from the Aviation Museum in the north to HWY 417 in the south. Within the study area, Aviation Parkway has a four-lane cross section with auxiliary turn lanes provided as major intersection. The posted speed limit is noted as 60 km/h. It is located approximately 1.5 km from the Phase 2 site.

OR-174 is an east-west City Freeway with a four-lane cross-section. It extends from Highway 417 in the west and Canaan Road in the east, where it continues as County Road 17. Within the study area, the posted speed limit is 100 km/h.

2.3. AREA PEDESTRIAN AND BICYCLE NETWORKS

With respect to area pedestrian connectivity, sidewalks exist along both sides of most study area roadways. The private Service Road connecting City Park Drive and Blair Road has a sidewalk along the south side of the roadway only. This is an important pedestrian connection as it provides direct access between the subject site and the existing Blair LRT Station. With regard to cycling, the 2013 City's Transportation Master Plan (TMP) identifies Ogilvie Road and Blair Road as Spine Routes with dedicated bike lanes along both sides of Ogilvie Road and Blair Road (north of Ogilvie Road). In addition, an existing major pathway along the west side of Aviation Parkway provides connections to other cycling facilities north of the study area. Within the vicinity of the subject site, a Community Connectivity Project is identified between the site's southern frontage and the future LRT corridor, which is planned to be constructed by 2018. Figure 3 illustrates the planned and existing cycling facilities.

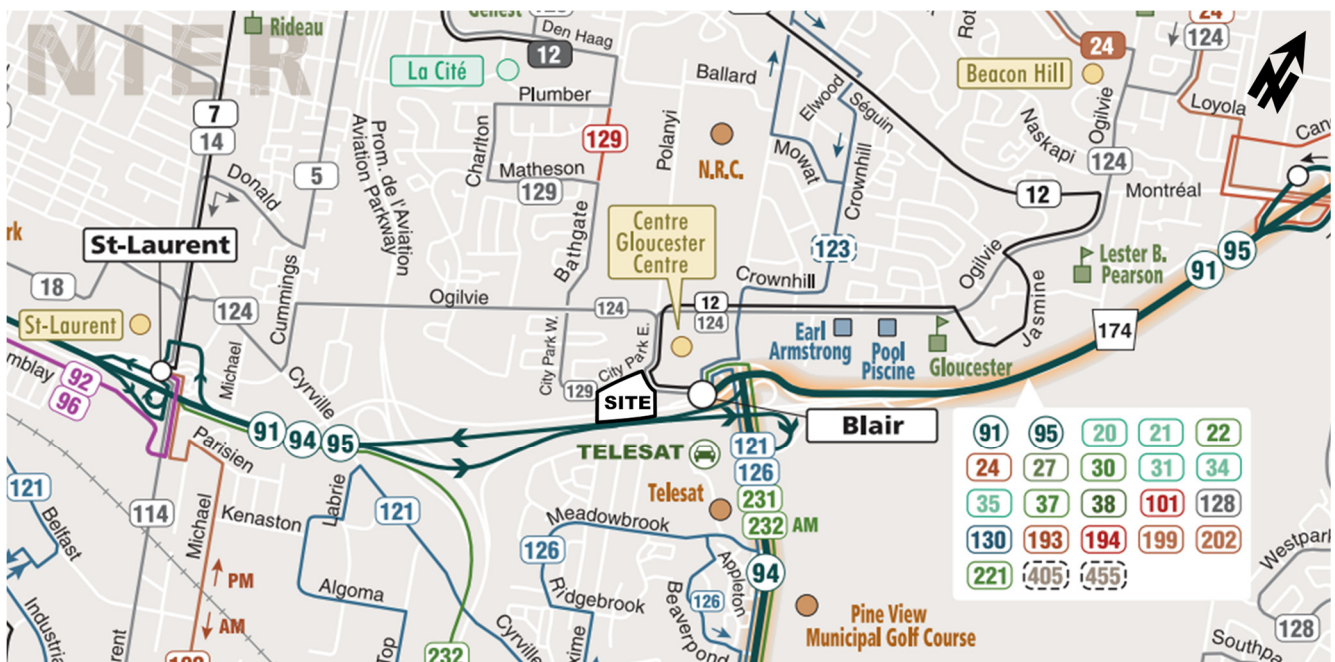
Figure 3: Cycling Network



2.4. TRANSIT NETWORK

OC Transpo's Blair Rapid Transit (BRT) Station is located within walking distance (200 to 300 m) from the subject site. This station to be operational in November 2018, and will be the terminus of the City's future Phase 1 Confederation Line (LRT). Additionally, local transit service (Route #129) is provided along City Park Drive with a bus stop located at the site's main driveway connection. The existing transit network and service in the vicinity of the Study Area is shown in Figure 4.

Figure 4: Area Transit Network



2.5. EXISTING INTERSECTION OPERATION

To establish the baseline intersection operations for the study area intersections, an operational analysis of the existing traffic conditions has been undertaken. The most recent turning movement counts were obtained from the City of Ottawa. The available counts were undertaken between 2013 and 2015. To reflect 2016 conditions the turning movement counts were adjusted using a 1.0% annual background growth rate. Figure 5 shows the resultant traffic volumes at the Study Area intersections. Appendix A contains detailed traffic data sheets, including turning movement counts and signal timing plans for the study area intersections.

To assess the peak hour traffic conditions a level of service analysis has been undertaken using Trafficware Synchro 10.0, which implements the methods of the 2000 Highway Capacity Manual. The key parameters used in the analysis include:

- A saturation flow rate of 1800 (as per the City of Ottawa TIA Guidelines)
- Existing lane arrangements
- Existing signal timing (provided by the City of Ottawa)
- Heavy vehicle equivalent factor of 1.70 (as per the City of Ottawa TIA guidelines)
- Default values for all other inputs (as defined by Synchro 10.0)

The results of the operational analysis are summarized in Table 1. The existing signal timing information is included in Appendix B. Synchro analysis outputs are provided in Appendix C.

Figure 5: Existing Peak Hour Traffic Volumes

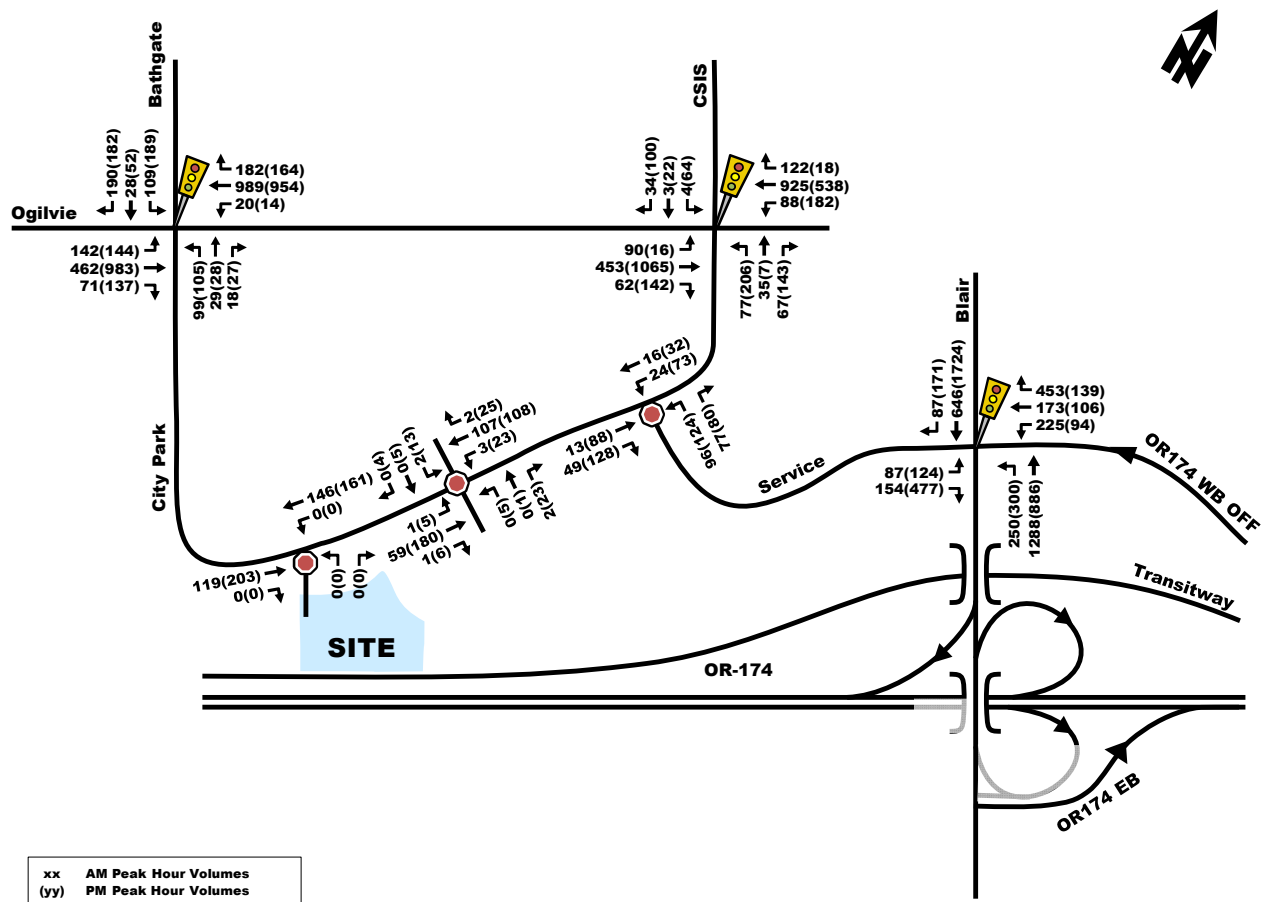


Table 1: Intersection Operational Analysis - 2016 Existing Traffic Conditions

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
City Park/Bathgate/Ogilvie (S)	A(B)	0.60(0.61)	WBT(SBL)	14.8(14.9)	A(A)	0.57(0.54)
City Park/CSIS/Ogilvie (S)	A(C)	0.42(0.78)	WBT(NBL)	10.2(16.8)	A(B)	0.40(0.64)
Blair/OR-174 OFF (S)	D(C)	0.85(0.78)	WBR(EBR)	25.9(25.8)	D(B)	0.81(0.70)
City Park/Service Road (U)	A(B)	9.8(12.5)	NBT(NBT)	6.8(6.0)	A(A)	-
City Park/Silver City/Site (U)	A(A)	7.6(8.5)	WBT(EBT)	7.5(8.3)	A(A)	-
City Park/W Site Access (U)	A(A)	0.0(0.0)	EBT(EBT)	0.0(0.0)	A(A)	-
Notes: <ul style="list-style-type: none"> • Analysis of signalized intersections assumes a PHF of 0.95 and a saturation flow rate of 1800 veh/h/lane. • (U) - Unsignalized Intersection • (S) - Signalized Intersection 						

As shown in Table 1, the key study area intersections 'as a whole' are currently operating acceptably, at a LoS 'D' or better during the morning and afternoon peak hours. With regard to 'critical movements' at study area intersections, they are operating acceptably, at an LoS 'D' or better during peak hours with regard to City of Ottawa operating standards.

2.6. COLLISION ANALYSIS

Collision history for the five-year period of 2013 through to and including 2017 was obtained from the City of Ottawa for the following intersections: Ogilvie Road/City Park Drive/Bathgate Drive, Ogilvie Road/City Park Drive, Blair Road/OR Regional Road (RR) 174S/Ramp 61/Shopping Centre; Additionally, mid-block data for Ogilvie Road between City Park Drive/Bathgate Drive and City Park Drive east intersections was obtained.

A total of 183 collisions were recorded at or near the study intersections. Most collisions (69%) involved only property damage, indicating low impact speeds, and the remaining 31% involved personal injuries. No recorded fatalities were within the study area. The primary causes of collisions cited by police include: rear ends (55% or 100 collisions), turning movement (19% or 35 collisions), angle (13% or 24 collisions), sideswipe (7% or 12 collisions), and other (2% or 3 collisions)

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

- 1.59 collisions/MEV at the Blair Road and RR 174 N/OR174 Ramp 61/Shopping Centre intersection.
- 1.11 collisions/MEV at the Ogilvie Road and Bathgate/City Park intersection.
- 1.24 collisions/MEV at the Ogilvie Road and CSIS/City Park intersection.

A total of 8 non-fatal incidents involving pedestrians occurred within the five-year period. Five(5) of these incidents occur at Ogilvie Road and CSIS/City Park intersection and 3 at Ogilvie Road and Bathgate/City Park intersection.

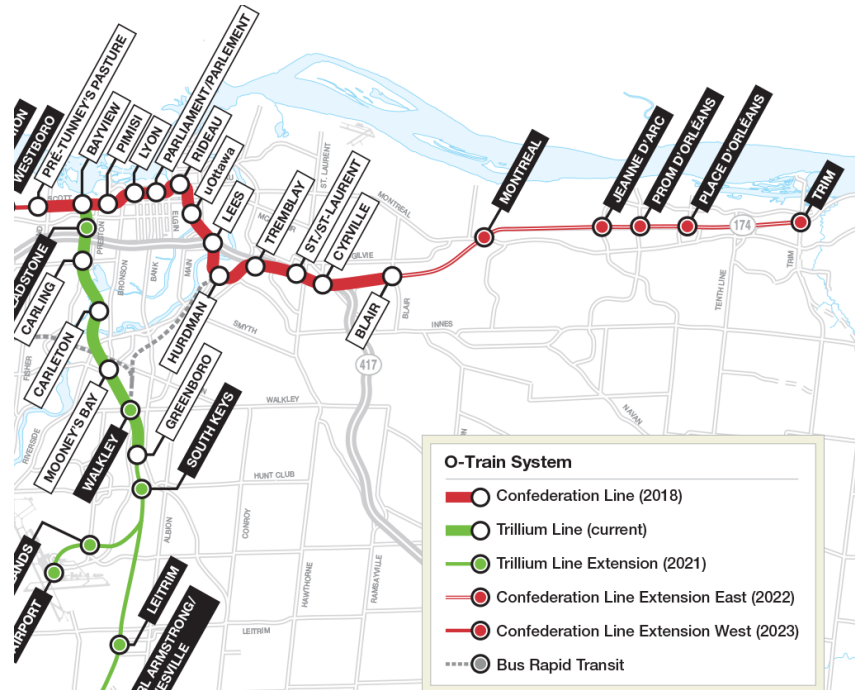
The source of the collision data is provided by the City of Ottawa and related analysis is provided within Appendix D.

3. PLANNED CONDITIONS

3.1. PLANNED STUDY AREA TRANSPORTATION NETWORK CHANGES

As mentioned in Section 2.4 of this report, Phase 1 Confederation Line is will be completed by November 2018. Phase 1 Confederation Line will extend from Tunney's Pasture eastbound through the downtown to Blair Station. Phase 2 Confederation Extension East will continue from Blair Station east through to Trim Station. Phase 2 Confederation Line anticipated year of completion is 2022. Planned LRT construction segments and projected completion times are shown in Figure 6 below.

Figure 6: Planned LRT Phase 2



3.2. OTHER AREA DEVELOPMENT

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

2012 Ogilvie Road

Trinity has acquired the Shoppers City East site location located off Ogilvie Road East of Blair Road. The site is being redeveloped, replacing approximately 150,000 ft² of retail and some office space with approximately 200,000 ft² of retail space. Phase 1 consisting of approximately 40,000 ft² of retail space has been completed and Phase 2 consisting of approximately 160,000 ft² is currently awaiting approval.

4. STUDY AREA

4.1. TRANSIT

As mentioned previously in Section 2.4, the transit options available include: A bus stop on City Park Drive, a BRT station and a future LRT station all within a 400m walking distance.

4.2. NETWORK CONCEPT

East-West Screenline, SL-16 is located along the east side of Highway 174 Blair and the screenline for north-south travel is SL-54. The closest point of crossing these screenlines are over 2.0km away; Therefore, as these screenlines are not in the immediate vicinity of the proposed site, they do not provide any intrinsic value to the area capacity and the impact of the development is anticipated to be minimal. As such, no screenline analysis will be considered.

4.3. INTERSECTION DESIGN

The proposed Phase 2 residential development will access the adjacent road network through two existing intersections off City Park Drive. Site-generated traffic will primarily use the two City Park Drive intersections with Ogilvie Road and the internal shopping centre road that connects to Blair Road at a signalized intersection with the OR 174 westbound off-ramp.

5. TIME PERIODS

Given the land use, the weekday morning and afternoon peak hours are considered the critical time periods for operational analysis for this residential development.

6. HORIZON YEAR

For the purposes of the operational analysis it is assumed that the Phase 2 development will be completed by the 2021, with the horizon year being 2026.

7. EXEMPTIONS REVIEW

The following Table 2 contains the recommended TIA Guideline exemptions.

Table 2: Recommended TIA Exemptions Summary

Module	Element	Exemption Consideration
4.2 Parking	4.2.2 Spillover Parking-	The subject development is proposing to provide a total of 207 residential parking spaces for residents, 20 visitor parking spaces and 190 bike parking spaces (interior). The parking is noted to meet the City's residential parking requirements for the zone As such, parking is not expected to spill out of the site.
4.6 Neighbourhood Traffic Management	4.6.1 Adjacent Neighbourhoods	Development relies on local street for access. The peak hour traffic generated by the development will be approximately 50 vehicles. Although total traffic on local road might reach close to 160 vehicles on the peak hour, a change in the function of the road is not expected. Therefore, NTM measures are not anticipated to be required.
4.8 Network Concept	-	The proposed development is not expected to generate more than 200 person-trips during peak hour in excess of the equivalent volume permitted by established zoning

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

Table 3: Additional Recommended Exemptions Summary

Module	Element	Exemption Consideration
4.3 Boundary Street Design	All Elements	City Park Drive is the only boundary street and it is currently a divided 2-lane local roadway with sidewalks and cycle lanes on both sides of the road. Limited scope/opportunity for improvements to this corridor.

8. DEVELOPMENT – GENERATED TRAFFIC

8.1. SITE TRIP GENERATION

The appropriate trip generation rates are summarized in Table 4.

Table 4: 2009 TRANS and ITE Trip Generation Rates

Land Use	Data Source	Trip Rates	
		AM Peak	PM Peak
High-Rise Apartments	TRANS	$T = 0.24(x)$	$T = 0.27(x)$
Notes: T = Average Vehicle Trip Ends X = Residential units			

8.1.1. TRANS RESIDENTIAL TRIPS

The standard trip generation rates for the proposed development were obtained from the City's 2009 TRANS Vehicle Trip Generation for the residential units. Table 5 summarizes the resultant vehicle trips.

Table 5: Projected Vehicle Trip Generation – TRANS

Land Use	Source	Units	AM Peak (veh/h)			PM Peak (veh/h)		
			In	Out	Total	In	Out	Total
High-rise apartments	ITE 222	208 ft ²	12	38	50	34	22	56
Total Vehicle Trips			12	38	50	34	22	56

The TRANS person trip rates and initial estimate of peak hour vehicle trips were generated and are summarized in Table 6.

Table 6: TRANS Person Trip Generation – Residential Use

Travel Mode	AM Mode Share	AM Peak (persons/h)			PM Mode Share	PM Peak (persons/h)		
		In	Out	Total		In	Out	Total
Auto Driver	37%	12	38	50	40%	34	22	56
Auto Passenger	8%	3	8	11	9%	9	4	13
Transit	41%	13	42	55	37%	32	20	52
Non-motorized	14%	4	15	19	14%	12	8	20
Total People Trips	100%	32	103	135	100%	87	54	140
Total 'New' Auto Trips		12	38	50		34	22	56

8.1.2. ADJUSTED RESIDENTIAL TRIPS

As this site is adjacent to a large shopping centre, BRT Station and the new Confederation LRT station, the auto mode share for vehicle trip rate used in TRANS is high and should be adjusted to reflect the proximity to the transit facilities offered. For this reason, the mode shares used in this study have been modified and are summarized in Table 7.

Table 7: Adjusted Mode Share Percentages

Travel Mode	Mode Share	
	AM	PM
Auto Driver	30%	30%
Auto Passenger	5%	5%
Transit	55%	55%
Non-Motorized	10%	10%

The resulting person trips generated by focusing more on the transit mode share is summarized in Table 8.

Table 8: Adjusted TRANS Person Trip Generation – Residential Use

Travel Mode	AM Mode Share	AM Peak (persons/h)			PM Mode Share	PM Peak (persons/h)		
		In	Out	Total		In	Out	Total
Auto Driver	37%	10	31	41	40%	26	17	43
Auto Passenger	8%	2	5	7	9%	5	2	7
Transit	41%	18	57	75	37%	48	29	77
Non-motorized	14%	3	11	14	14%	9	5	14
Total People Trips	100%	33	104	137	100%	88	53	143
Total 'New' Auto Trips		10	31	41		26	17	43

In review of the values of the modal split in Table 7, the projected peak hour vehicle trips from the proposed 208 apartment units are in the 40-45 veh/h two-way total. The projected transit trips, making use of the adjacent LRT station in the 75 to 80-person range in the peak hours.

8.1.3. MODE SHARES

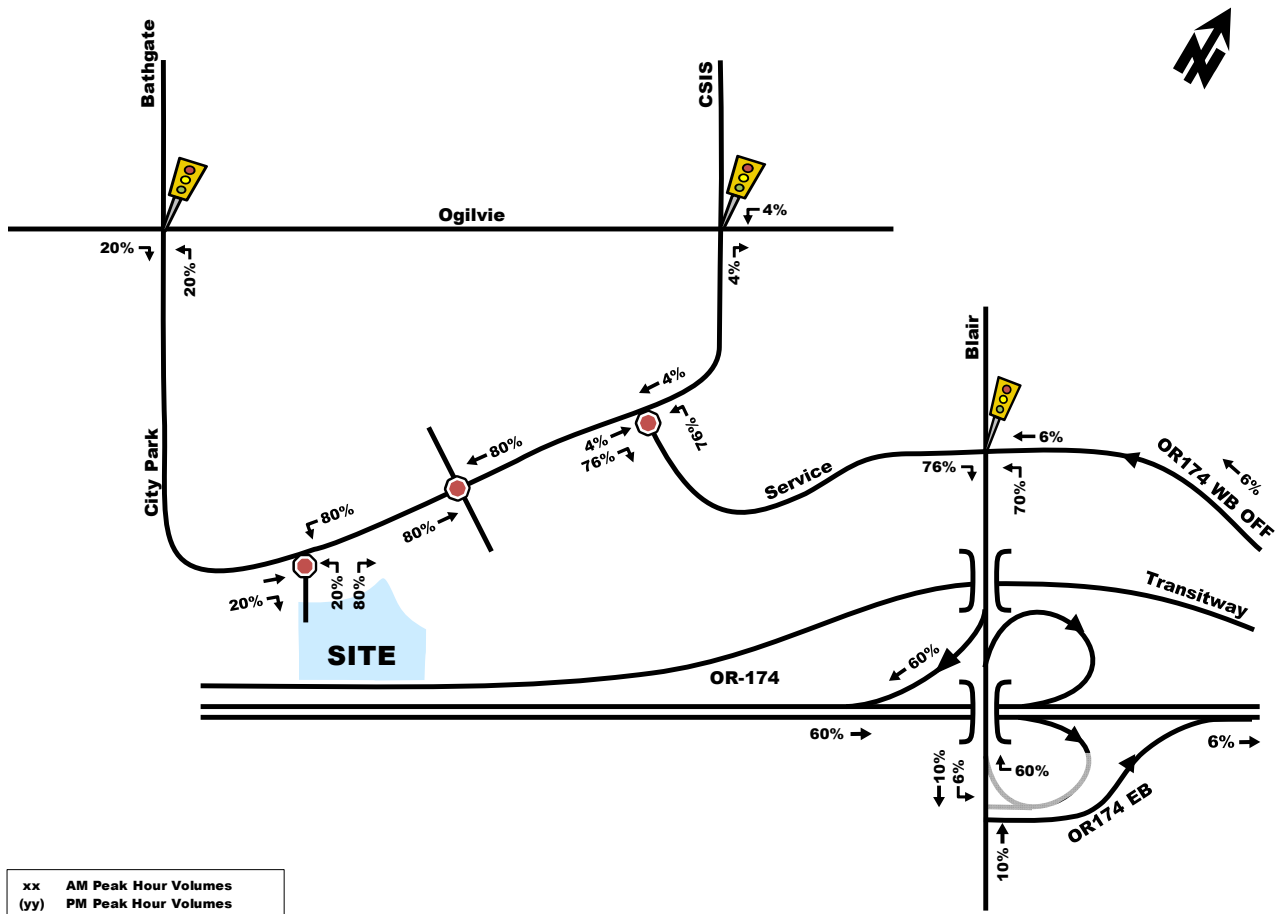
See Section 8.1.2 for information.

8.2. VEHICLE TRAFFIC DISTRIBUTION AND ASSIGNMENT

Traffic distribution 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 and is depicted in Figure 7.

- 65% to/from the west
- 5% to/from the north
- 20% to/from the south; and
- 10% to/from the east

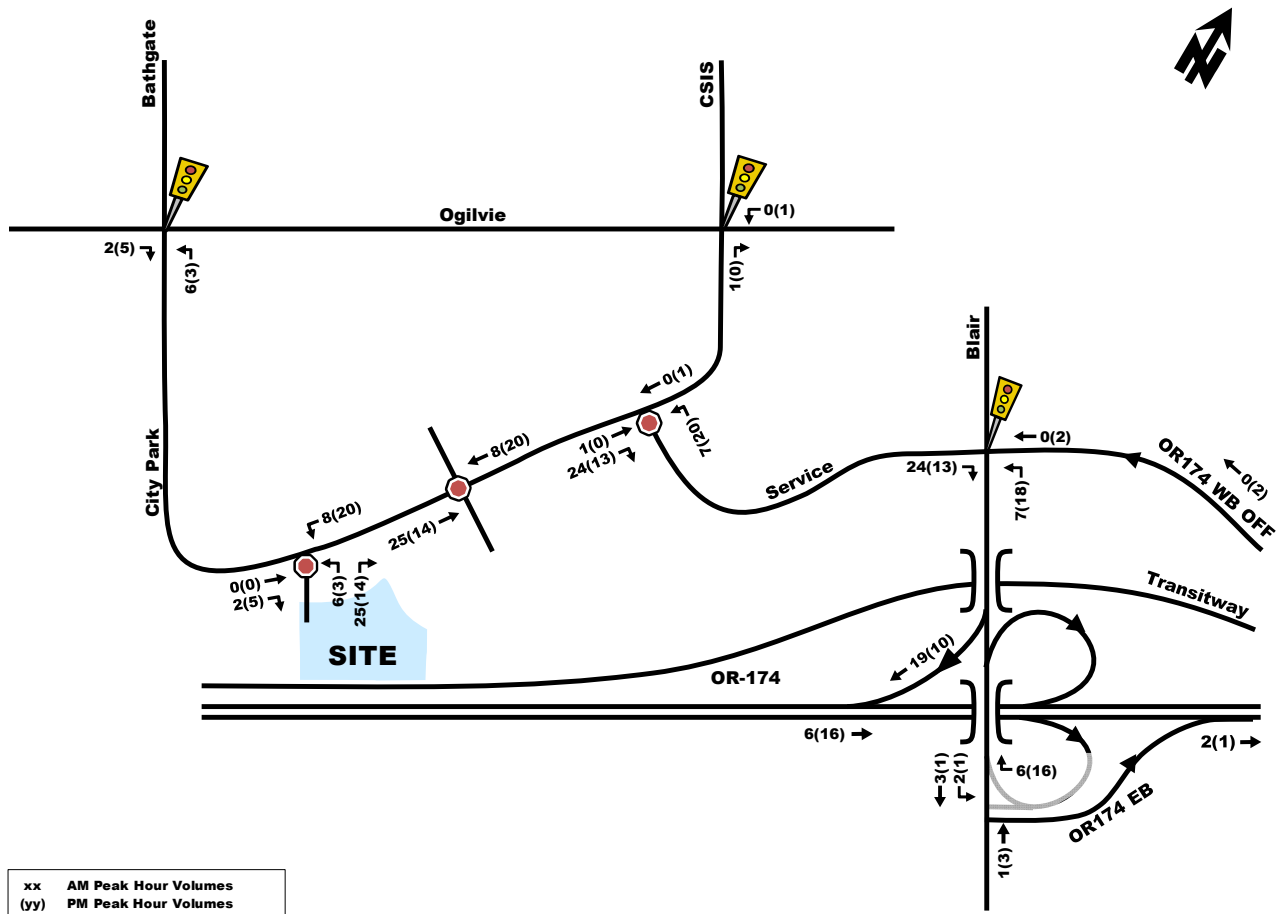
Figure 7: Phase 2 Site-Generated Traffic Distribution Assumptions



8.3. NET SITE-GENERATED VEHICLE TRIPS

Based on the foregoing assumptions on Phase 2 vehicle trip distribution depicted in Figure 7, the assignment of the associated peak hour vehicle trips to the study area is depicted in Figure 8.

Figure 8: Phase 2 New Site-Generated Peak Hour Traffic Assignment



9. BACKGROUND TRAFFIC NETWORK

9.1. TRANSPORTATION NETWORK CHANGES

Several notable transportation network changes are proposed within the study area as per the 2013 TMP - 2031 Affordable Network, they are listed as follows:

Blair Road network changes

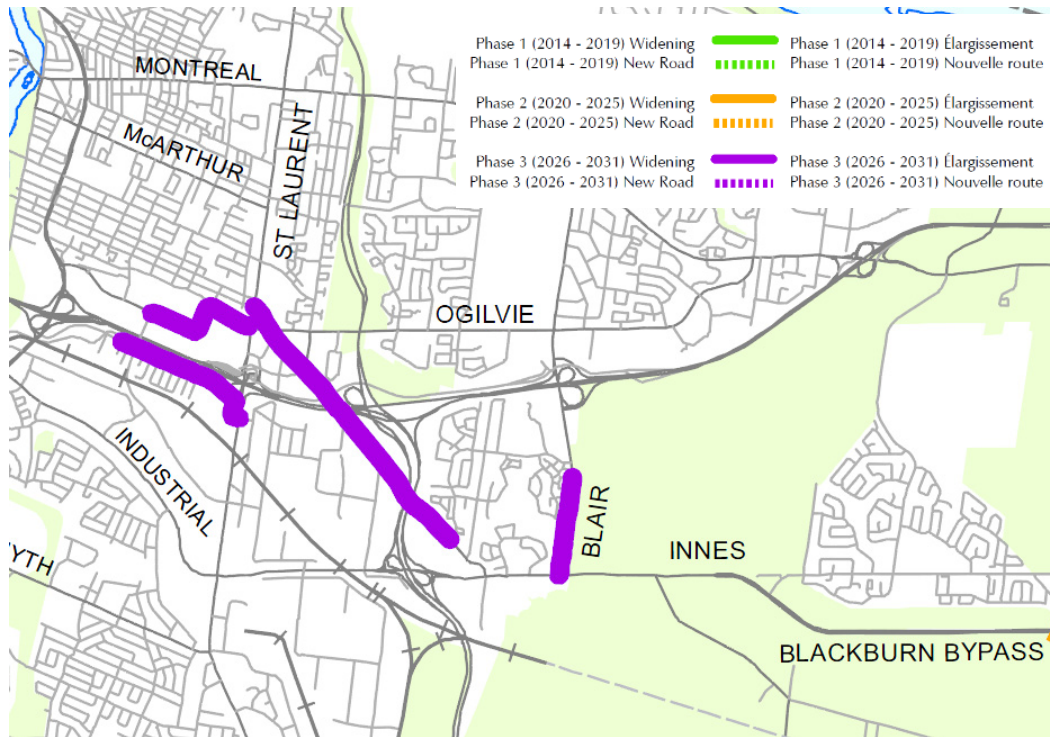
- Widen from two to four lanes between Meadowbrook Road and Innes Road;
- Exclusive bus lanes and transit signal priority between Blair Station and Montreal Road. Bus lanes to be provided through a combination of road widening (north of Ogilvie Road) and conversion of existing traffic lanes (south of Ogilvie Road);
- Transit signal priority and queue jump lanes between Innes Road and Blair Station; and
- Affordable: Eastern extension of LRT service following Ottawa Road 174 between Blair Station and Place d'Orléans Station.

Ogilvie Road network changes

- Transit signal priority between Blair Road and St. Laurent Boulevard.

The widening from two to four lanes proposed on Blair Road between Meadowbrook Road and Innes Road is displayed in Figure 9 as per the TMP's 2031 Affordable Network.

Figure 9: Road Network-2031 Affordable Network



9.2. BACKGROUND TRAFFIC GROWTH

The background traffic growth rate for Blair Road in the immediate study area was calculated based on historical traffic count data (years 2008 and 2013) provided by the City of Ottawa at the Blair/Shopping Centre/174 WB Offramp intersection, as depicted in Table 9. Detailed background traffic growth analysis is included as Appendix E.

Table 9: Blair/Service Road/174 WB offramp Historical Background Growth (2008 – 2013)

Time Period	Percent Annual Change				
	North Leg	South Leg	East Leg	West Leg	Overall
8 hrs	-6.53%	-7.17%	-4.08%	-5.61%	-6.40%
AM Peak	-3.18%	-6.41%	-2.29%	-6.51%	-4.59%
PM Peak	-6.67%	-6.39%	3.98%	-5.45%	-5.67%

As shown in Table 9, the intersection has experienced approximately -5% to -6% overall annual growth within recent years (calculated as a weighted average). As these negative growth rates are unlikely to continue, a 0% per annum traffic growth factor has been assumed along Blair Road, for the horizon years 2021, and 2026

The background traffic growth through the immediate study area along Ogilvie Road (summarized in Table 10) was calculated based on historical traffic count data (years 2006, 2009 and 2013) provided by the City of Ottawa at the Ogilvie/Bathgate/City Park intersection. Detailed background traffic growth analysis is included as Appendix E.

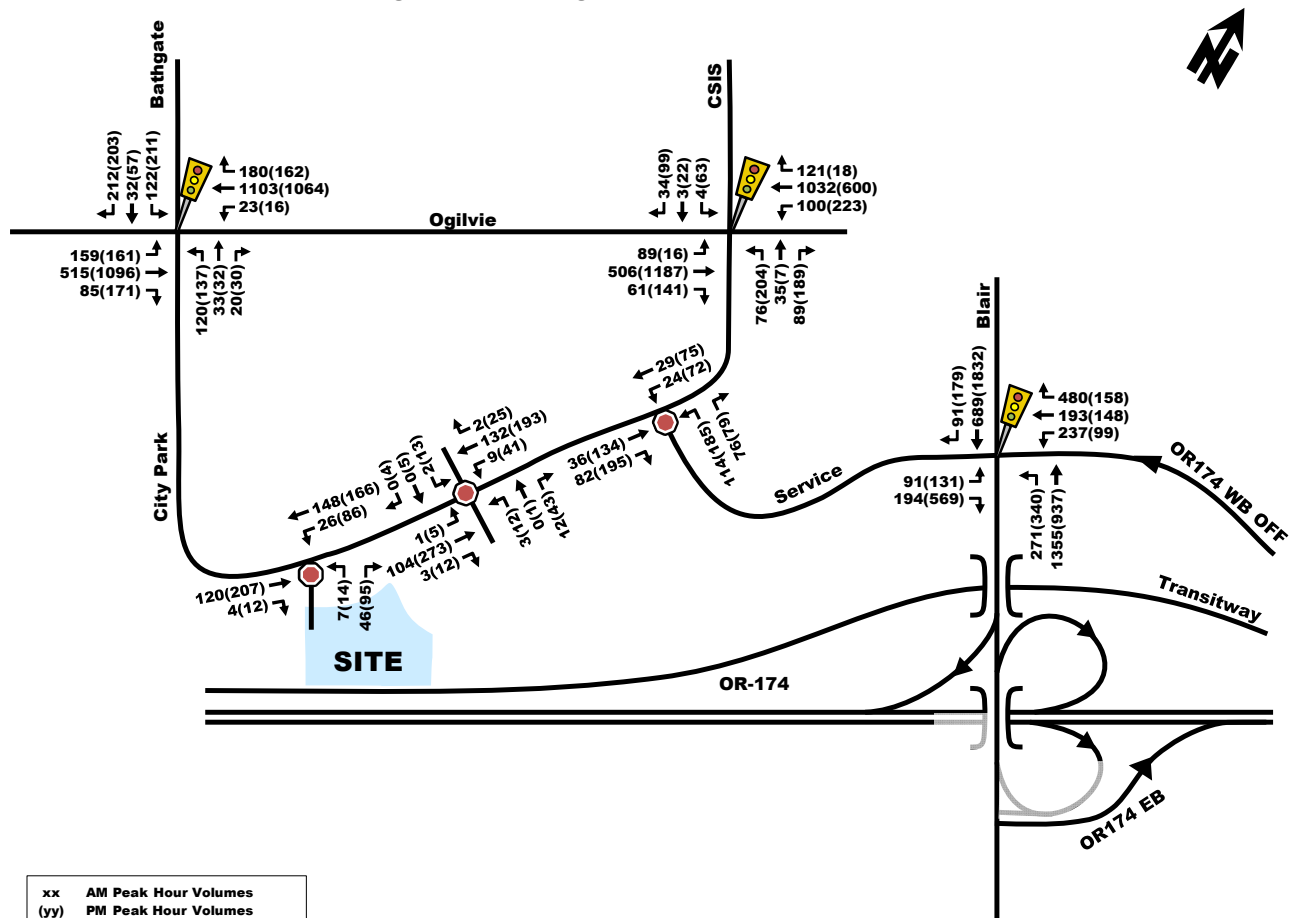
Table 10: Ogilvie/Bathgate/City Park Historical Background Growth (2006 – 2013)

Time Period	Percent Annual Change				
	North Leg	South Leg	East Leg	West Leg	Overall
8 hrs	4.21%	2.29%	5.42%	5.87%	5.27%
AM Peak	6.99%	2.02%	10.91%	4.82%	7.25%
PM Peak	-1.26%	0.25%	0.58%	0.89%	0.48%

As shown in Table 10, the intersection has experienced approximately 1% to 7% overall annual growth within recent years (calculated as a weighted average). Given that these are these growth rates are unlikely to continue, a 2% per annum traffic growth factor has been assumed along Ogilvie Road, for the horizon years 2021, and 2026

The resulting future background peak hour traffic for the horizon years 2021, 2026 are depicted as Figure 10, and Figure 11 respectively.

Figure 10: Future Background 2021 Peak Hour Traffic Volumes



The following Table 11 summarizes the performance of key study area intersections for the 2021 background conditions. The study area intersections ‘as a whole’ are currently operating acceptably, at a LoS ‘D’ or better during the morning and afternoon peak hours. With regard to ‘critical movements’ at study area intersections, they are operating acceptably, at an LoS ‘D’ or better during peak hours with regard to City of Ottawa operating standards. The detailed 2021 future background SYNCHRO (V10) analysis reports are included in Appendix F.

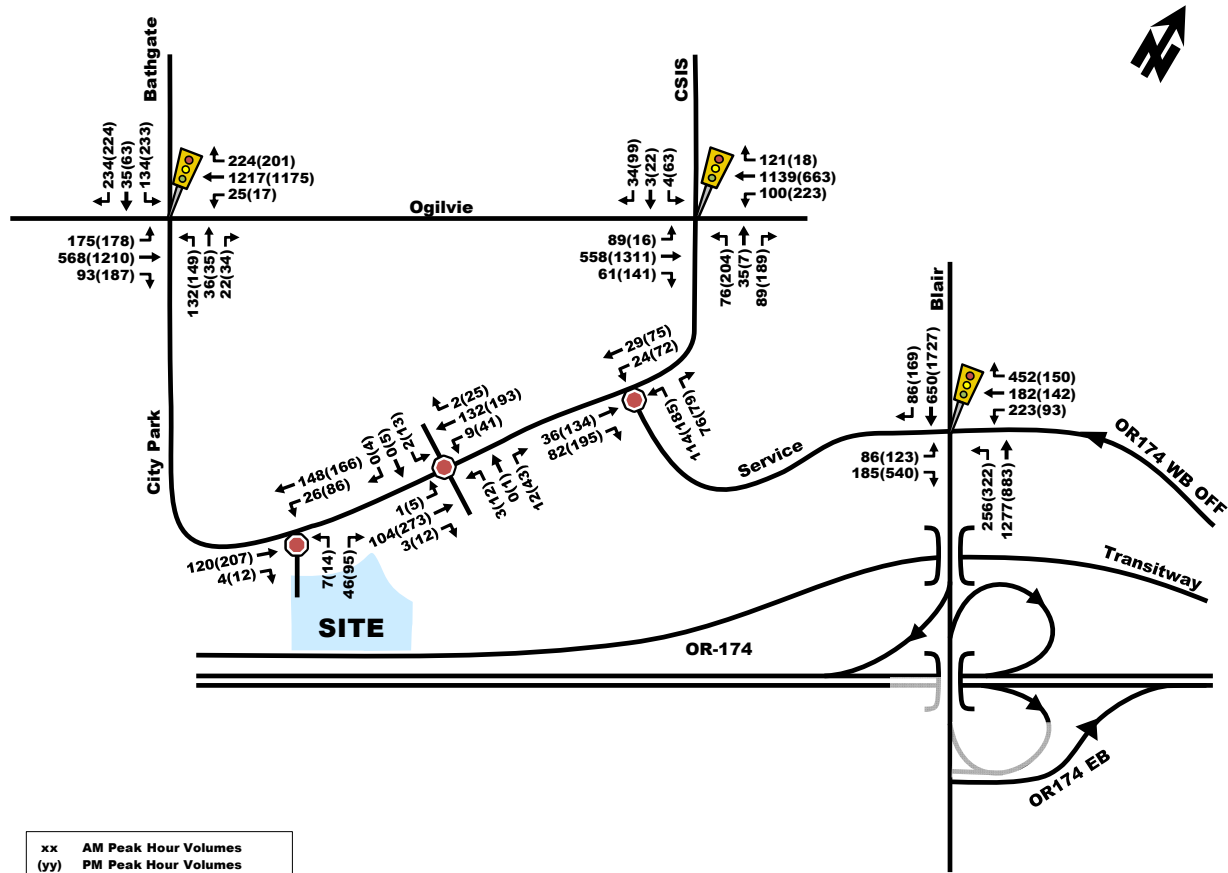
Table 11: Future Background 2021 Performance at Study Area Intersections

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
City Park/Bathgate/Ogilvie (S)	C(C)	0.73(0.75)	NBL(NBL)	17.6(18.1)	B(B)	0.66(0.63)
City Park/CSIS/Ogilvie (S)	A(C)	0.47(0.79)	WBT(WBL)	10.4(19.8)	A(C)	0.45(0.74)
Blair/OR-174 OFF (S)	D(D)	0.89(0.85)	WBR(EBR)	27.8(29.7)	D(C)	0.85(0.78)
City Park/Service Road (U)	B(C)	10.3(17.0)	NBT(NBT)	5.9(6.9)	A(A)	-
City Park/Silver City/Site (U)	A(B)	7.9(10.0)	WBT(EBT)	7.8(9.7)	A(A)	-
City Park/W Site Access (U)	A(B)	9.4(10.8)	NBT(NBT)	2.0(3.4)	A(A)	-

Notes:

- Analysis of signalized intersections assumes a PHF of 0.95 and a saturation flow rate of 1800 veh/h/lane.
- (U) - Unsignalized Intersection
- (S) - Signalized Intersection

Figure 11: Future Background 2026 Peak Hour Traffic Volumes



The following Table 12 summarizes the performance of key study area intersections for the 2026 background conditions. The study area intersections 'as a whole' are anticipated acceptably, at a LoS 'D' or better during the morning and afternoon peak hours. With regard to 'critical movements' at study area intersections, they are operating acceptably, at an LoS 'D' or better during peak hours with regard to City of Ottawa operating standards. The detailed 2026 future background SYNCHRO (V10) analysis reports are included in Appendix F

Table 12: Future Background 2026 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
City Park/Bathgate/Ogilvie (S)	D(D)	0.83(0.82)	NBL(NBL)	21.1(21.8)	C(C)	0.75(0.73)
City Park/CSIS/Ogilvie (S)	A(D)	0.51(0.85)	WBT(EBT)	11.0(20.9)	A(C)	0.49(0.80)
Blair/OR-174 OFF (S)	D(D)	0.84(0.83)	WBR(EBR)	25.7(28.0)	D(C)	0.81(0.73)
City Park/Service Road (U)	B(C)	10.3(17.0)	NBT(NBT)	5.9(6.9)	A(A)	-
City Park/Silver City/Site (U)	A(B)	7.9(10.0)	WBT(EBT)	7.8(9.7)	A(A)	-
City Park/W Site Access (U)	A(B)	9.4(10.8)	NBT(NBT)	2.0(3.4)	A(A)	-
Notes: <ul style="list-style-type: none"> • Analysis of signalized intersections assumes a PHF of 0.95 and a saturation flow rate of 1800 veh/h/lane. • (U) - Unsignalized Intersection • (S) - Signalized Intersection 						

9.3. OTHER AREA DEVELOPMENT

The City of Ottawa's Development Applications webtool has been used to determine if there are proposed developments within the area of influence of the proposed development. These developments have been discussed in greater detail in Section 3.2. If the second phase of redevelopment of Shoppers City East is a Costco, then its traffic generation will impact Blair Road operations. A related TIS has addressed its impacts and requirements. If it is not a Costco, then the traffic impacts along Blair Road will be less.

10. FUTURE TRAFFIC OPERATIONS

10.1. FUTURE 2021 PEAK HOUR

Figure 12, depicts the sum of Phase 2 site-generated traffic and 2021 background traffic. The following Table 13 is a summary of the relevant study area intersection performance.

Figure 12: Projected 2021 Peak Hour Traffic Volumes

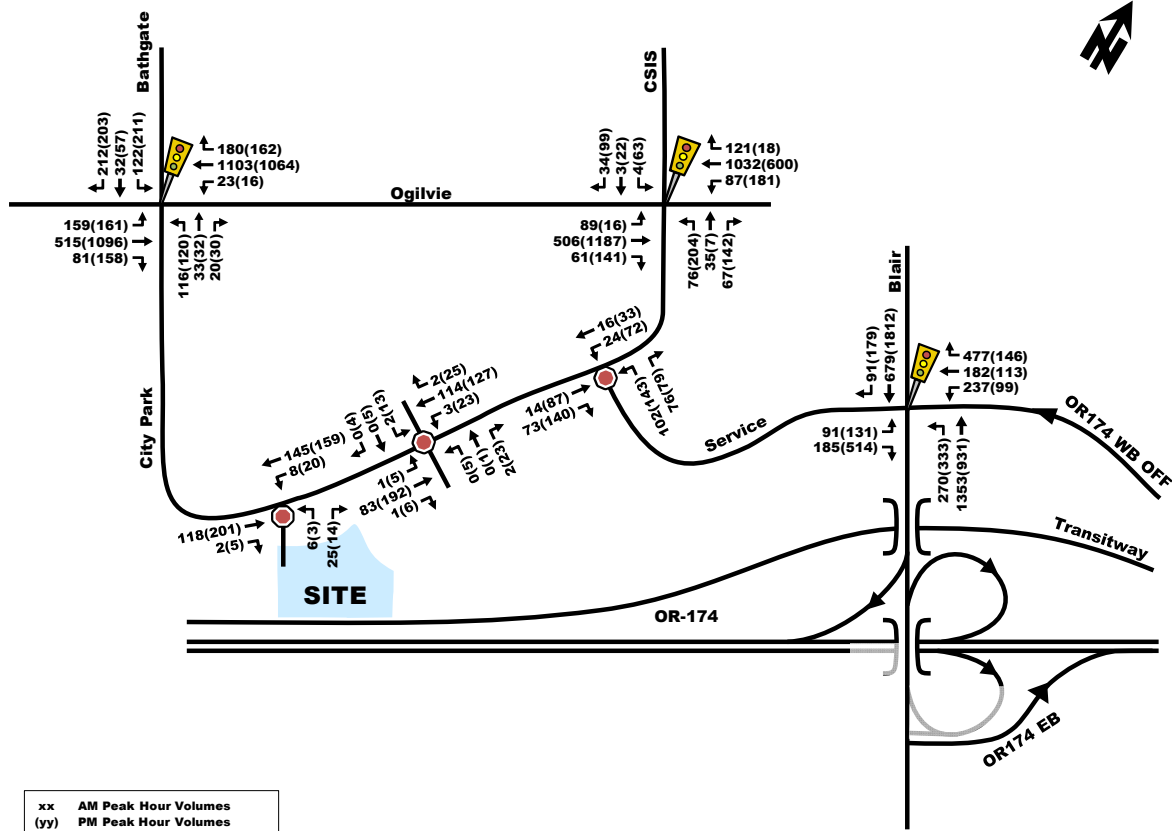


Table 13: Projected 2021 Performance at Study Area Intersections

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
City Park/Bathgate/Ogilvie (S)	C(C)	0.75(0.77)	NBL(NBL)	18.0(18.2)	B(B)	0.66(0.63)
City Park/CSIS/Ogilvie (S)	A(C)	0.47(0.79)	WBT(WBL)	10.4(19.8)	A(C)	0.45(0.74)
Blair/OR-174 OFF (S)	D(D)	0.89(0.87)	WBR(EBR)	27.8(30.2)	D(C)	0.85(0.79)
City Park/Service Road (U)	B(D)	10.5(18.4)	NBT(NBT)	5.7(7.6)	A(A)	-
City Park/Silver City/Site (U)	A(B)	8.0(10.3)	WBT(EBT)	7.9(10.0)	A(B)	-
City Park/W Site Access (U)	A(B)	9.7(11.2)	NBT(NBT)	2.8(3.8)	A(A)	-
Notes: <ul style="list-style-type: none"> Analysis of signalized intersections assumes a PHF of 0.95 and a saturation flow rate of 1800 veh/h/lane. (U) - Unsignalized Intersection (S) - Signalized Intersection 						

As shown in Table 13, the study area intersections 'as a whole' are projected to operate acceptably, at a LoS 'D' or better during the morning and afternoon peak hours. With regard to 'critical movements' at study area intersections, they are operating acceptably, at an LoS 'D' or better during peak hours with regard to City of Ottawa operating standards. These values are very similar to existing conditions due to the low volumes of Phase 2 site-generated traffic. The detailed projected 2021 SYNCHRO (V10) analysis reports are included in Appendix G

10.2. FUTURE 2026 PEAK HOUR

Figure 13, depicts the sum of Phase 2 site-generated traffic superimposed on the horizon year 2026 background traffic. The following Table 14 is a summary of the relevant study area intersection performance.

Figure 13: Projected 2026 Peak Hour Traffic Volumes

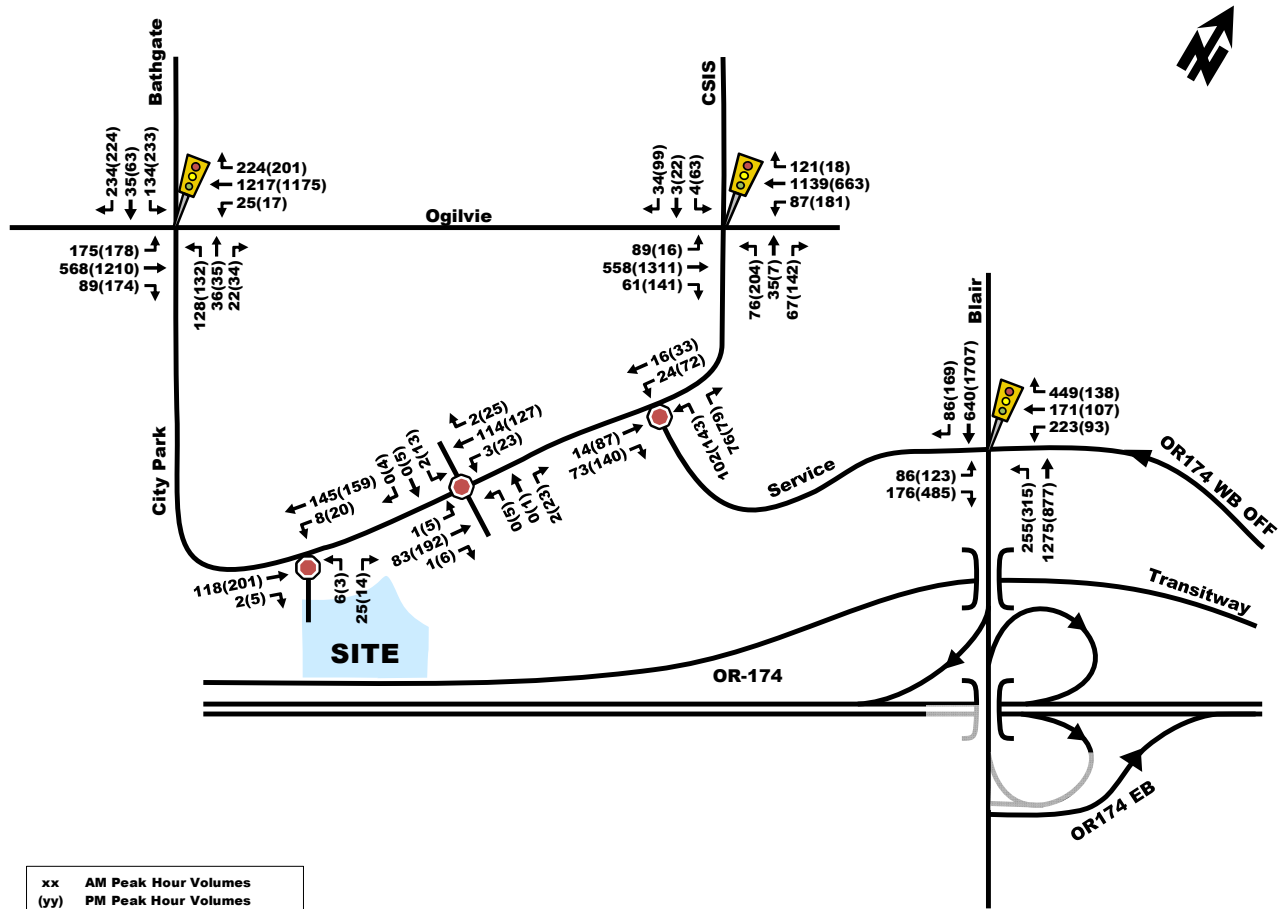


Table 14: Projected 2026 Performance at Study Area Intersections

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
City Park/Bathgate/Ogilvie (S)	D(D)	0.84(0.84)	NBL(NBL)	21.4(21.8)	C(C)	0.76(0.73)
City Park/CSIS/Ogilvie (S)	A(D)	0.51(0.85)	WBT(EBT)	11.0(20.9)	A(C)	0.49(0.80)
Blair/OR-174 OFF (S)	D(D)	0.84(0.84)	WBR(EBR)	25.7(28.5)	D(C)	0.81(0.74)
City Park/Service Road (U)	B(D)	10.5(18.4)	NBT(NBT)	5.7(7.6)	A(A)	-
City Park/Silver City/Site (U)	A(B)	8.0(10.3)	WBT(EBT)	7.9(10.0)	A(B)	-
City Park/W Site Access (U)	A(B)	9.7(11.2)	NBT(NBT)	2.8(3.8)	A(A)	-

Notes:

- Analysis of signalized intersections assumes a PHF of 0.95 and a saturation flow rate of 1800 veh/h/lane.
- (U) - Unsignalized Intersection
- (S) - Signalized Intersection

As shown in Table 14, the study area intersections ‘as a whole’ are projected to operate acceptably, at a LoS ‘D’ or better during the morning and afternoon peak hours. With regard to ‘critical movements’ at study area intersections, they are operating acceptably, at an LoS ‘D’ or better during peak hours with regard to City of Ottawa operating standards. The values are also very similar to existing conditions due to the low volumes of Phase 2 site-generated traffic. The detailed projected 2026 SYNCHRO (V10) analysis reports are included in Appendix G

11. DEVELOPMENT DESIGN

11.1. DESIGN FOR SUSTAINABLE MODES

As previously discussed, this site is located in a major transit-oriented area and is within 400m of the new Blair LRT station, a shopping centre and Blair BRT. The sites ultimate plan will have a Multi-Use pathway that will extend along the southern property limit connecting the site to the LRT station, in the interim pedestrians will use the sidewalk facilities and cyclists will use the local road network.

11.2. CIRCULATION AND ACCESS

The driveways to the site connect to City Park Drive and are being constructed as part of Phase 1. For this study it is assumed that the driveways are existing. The two driveways are stop-controlled intersections, with the west driveway being stop controlled on the minor road and the east driveway operates as a four-way stop control.

Within the site, 6.0m wide driveways are provided for access to the parking areas, the parking garage and for site circulation.

11.3. PARKING

11.3.1. PARKING SUPPLY

The proposed development provides a total of 207 parking spaces and 20 visitor parking spaces, which both meet the City’s By-Law requirements of a minimum of 0 spaces and 0.1 visitor spaces per unit respectively. The parking space dimensions are noted as 5.2m in length and 2.6m in width, which meet the By-Law requirements.

Phase 2 development proposes 190 additional bicycle parking spaces, exceeding the minimum City’s By-Law requirements of 0.5 spaces per unit, or 104 spaces.

11.3.2. SPILLOVER PARKING

Exempt, see Section 7.

11.4. BOUNDARY STREET DESIGN

City Park Drive is not identified in the TMP. City Park Drive currently has sidewalks on both sides of the road. It is anticipated that at the end of construction 1.8m cycle lanes will be painted, upgrading the sites frontage along City Park Drive from the existing, mixed/shared traffic conditions. The target and operational MMLoS for the boundary streets are described in Table 15 below. Elements required to reach each target are identified in Table 16. The MMLoS for the road segment analysis for City Park Drive can be found in Appendix H.

Table 15: MMLOS for Boundary Streets

OP Designation / Policy Area	Road Class	Pedestrian LOS	Bicycle LOS	Transit LOS	Truck LOS	Auto LOS
General Urban Area (Target)	Collector	B	B	D	B	N/A
Condition/Time	Roadway	Pedestrian LOS	Bicycle LOS	Transit LOS	Truck LOS	Auto LOS
Existing	City Park Drive	B	N/A (Mixed Traffic)	D	B	N/A
Full build-out	City Park Drive	B	B	D	B	N/A
Note:						

Table 16: Minimum Required Elements for MMLOS Analysis

Mode	Required Elements
Pedestrian	<p>PLOS “B” – segment evaluation</p> <ul style="list-style-type: none"> • Sidewalk width greater than 2 m • Boulevard width greater than 2 m • Operating speed between 30 – 50 km/h
Bicycle	<p>BLOS “C” – segment evaluation</p> <ul style="list-style-type: none"> • Bike lane not adjacent to parking: <ul style="list-style-type: none"> ○ 1 travel lanes in each direction without a separating median; ○ ≥1.8 m wide bike lane (includes marked buffer and paved gutter width); and ○ 40 km/h <50 km/h operating speed. • Note: A BLOS “A” is achieved if a physically separated bike lane is provided at an intersection
Truck	<p>TkLOS “D” – segment evaluation</p> <ul style="list-style-type: none"> • With two-lane cross section: curb lane width ≤ 3.3 m • More than two travel lanes: curb lane width ≤ 3.2 m
Auto	<ul style="list-style-type: none"> • N/A

11.5. ACCESS INTERSECTION DESIGN

Exempt, see Section 7.

11.6. INTERSECTION DESIGN

No modifications to existing accesses/intersections proposed.

11.7. TRANSPORTATION DEMAND MANAGEMENT

Exempt, Bicycle parking exceeds By-Law requirements, cyclists will use the local roadways (cycle lanes proposed for City Park Drive) to access adjacent facilities and the adjacent street has 2m wide sidewalk connections to the adjacent LRT station.

11.8. NEIGHBOURHOOD TRAFFIC MANAGEMENT

Exempt see Section 7.

11.9. TRANSIT

As previously noted, the proposed residential apartment development is projected to generate between approximately 75 to 80 two-way transit riders during peak hours. Given the number of new transit riders compared to the existing and planned study area transit service summarized in Section 2.4, there will be no adverse impacts on transit facility capacity.

11.10. NETWORK CONCEPT REVIEW

Exempt see Section 7.

11.11. INTERSECTION DESIGN

Exempt see Section 7.

12. CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations of the foregoing analysis are as follows:

Proposed Development:

- The proposed Phase 2 development will consist of 208 high-rise apartment units, 207 vehicle parking spaces and 190 bicycle parking spaces.
- The proposed Phase 2 development is projected to generate approximately 40 and 45 two-way vehicle trips per hour and 75 to 80 transit riders during the weekday morning and afternoon peak hours.
- Access to the Phase 2 site will be provided by two existing driveway connections to City Park Drive located south of the Silver City Theatre.
- Access to the boundary arterial roads will be via City Park's two signalized intersections with Ogilvie Road and via the shopping centre road that connects to Blair/OR 174 westbound off-ramp intersection.

Background Conditions:

- The signalized intersection of Blair Road and OR 174/RAMP 61/Shopping Centre, is projected to operate similarly to the background conditions with an “as a whole” peak period, LoS ‘D’ during the AM, and LoS ‘C’ during the PM for both 2021 and 2026 horizons. With regards to the critical movements, the intersection is anticipated to operate with a LoS ‘C’ or better for both 2021 and 2026 horizons. No improvements required at this intersection.
- The signalized intersection of Ogilvie Road and Bathgate Drive/City Park Drive, is projected to operate with an “as a whole” peak period, LoS ‘B’ during both AM and PM peaks for the 2021 horizon and LoS ‘C’ during both AM and PM peaks for 2026 horizon. With regards to the critical movements, the intersection is anticipated to operate with a LoS ‘C’ or better in the 2021 horizon and LoS ‘D’ or better in the 2026 horizon. No improvements required at this intersection.
- The signalized intersection of Ogilvie Road and CSIS/City Centre Drive, is projected to operate an “as a whole” peak period, LoS ‘A’ during the AM, and LoS ‘C’ during the PM for both 2021 and 2026 horizons. With regards to the critical movements, the intersection is anticipated to operate with a LoS ‘D’ or better for both 2021 and 2026 horizons. No improvements required at this intersection.
- The unsignalized intersection of City Centre Drive/Shopping Centre service Road, is projected to operate with an “as a whole” peak period, LoS ‘A’ during both AM and PM peaks for both 2021 and 2026 horizons. With regards to the critical movements, the intersection is anticipated to operate with a LoS ‘C’ or better for both 2021 and 2026 horizons. No improvements required at this intersection.
- The unsignalized intersection of City Centre Drive/Silver City/East Site Driveway, is projected to operate an “as a whole” peak period, LoS ‘A’ during both AM and PM peaks for both 2021 and 2026 horizons. With regards to the critical movements, the intersection is anticipated to operate with a LoS ‘B’ or better for both 2021 and 2026 horizons. No improvements required at this intersection.
- The unsignalized intersection of City Centre Drive/West Site Driveway, is projected to operate with an “as a whole” peak period, LoS ‘A’ during both AM and PM peaks for both 2021 and 2026 horizons. With regards to the critical movements, the intersection is anticipated to operate with a LoS ‘B’ or better for both 2021 and 2026 horizons. No improvements required at this intersection.

Projected Conditions:

- The signalized intersection of Blair Road and OR 174/RAMP 61/Shopping Centre, is projected to operate similarly to the background conditions with an “as a whole” peak period, LoS ‘D’ during the AM, and LoS ‘C’ during the PM for both 2021 and 2026 horizons. With regards to the critical movements, the intersection is anticipated to operate with a LoS ‘D’ or better. No improvements required at this intersection.
- The signalized intersection of Ogilvie Road and Bathgate Drive/City Park Drive, is projected to operate with an “as a whole” peak period, LoS ‘B’ during both AM and PM peaks for the 2021 horizon and LoS ‘C’ during both AM and PM peaks for 2026 horizon. With regards to the critical movements, the intersection is anticipated to operate with a LoS

'C' or better in the 2021 horizon and LoS 'D' or better in the 2026 horizon. No improvements required at this intersection.

- The signalized intersection of Ogilvie Road and CSIS/City Centre Drive, is projected to operate an "as a whole" peak period, LoS 'A' during the AM, and LoS 'C' during the PM for both 2021 and 2026 horizons. With regards to the critical movements, the intersection is anticipated to operate with a LoS 'C' or better for both 2021 and 2026 horizons. No improvements required at this intersection.
- The unsignalized intersection of City Centre Drive/Shopping Centre service Road, is projected to operate with an "as a whole" peak period, LoS 'A' during both AM and PM peaks for both 2021 and 2026 horizons. With regards to the critical movements, the intersection is anticipated to operate with a LoS 'C' or better for both 2021 and 2026 horizons. No improvements required at this intersection.
- The unsignalized intersection of City Centre Drive/Silver City/East Site Driveway, is projected to operate an "as a whole" peak period, LoS 'A' during both AM and PM peaks for both 2021 and 2026 horizons. With regards to the critical movements, the intersection is anticipated to operate with a LoS 'B' or better for both 2021 and 2026 horizons. No improvements required at this intersection.
- The unsignalized intersection of City Centre Drive/West Site Driveway, is projected to operate with an "as a whole" peak period, LoS 'A' during both AM and PM peaks for both 2021 and 2026 horizons. With regards to the critical movements, the intersection is anticipated to operate with a LoS 'B' or better for both 2021 and 2026 horizons. No improvements required at this intersection.

Site Plan

- As for the MMLoS on the boundary road (City Park Drive), level of service to be provided is as follows: Pedestrian - PLoS 'B', Bicycle - BLoS 'B', Transit - TLoS 'D' and Truck - TkLoS 'B'.
- With the proposed 6m wide driveways within the site, HSU sized vehicles or smaller are able to maneuver throughout the site's exterior lanes and driveways.

In summary, the proposed Phase 2 residential development is located adjacent to the LRT station and will have a very low peak hour vehicle trip generation. As such, its traffic impact on the study area intersections is minimal, if any, and no road or intersection modifications are required.

Based on foregoing, the proposed Site Plan is recommended to proceed from a transportation perspective.

Prepared By:



Matthew Mantle, P. Eng.
Transportation Engineer



Ronald Jack, P. Eng.
Senior Transportation Engineer
Ottawa Operations

Attachments

Appendix A

SCREENING FORM

City of Ottawa 2017 TIA Guidelines

Date

15-Aug-18

TIA Screening Form

Project

2280 City Park Drive: Phase 2

Project Number

476051-01000

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

Module 1.1 - Description of Proposed Development

Municipal Address	2280 City Park Drive
Description of location	Adjacent to Blair LRT Station with vehicle access to City Park
Land Use	Residential
Development Size	208 apartment units
Number of Accesses and Locations	Two driveway connections to City Park Drive
Development Phasing	Second phase of a two phase project
Buildout Year	2020/2021
Sketch Plan / Site Plan	See attached

Module 1.2 - Trip Generation Trigger

Land Use Type	Townhomes or Apartments
Development Size	208 Units
Trip Generation Trigger Met?	Yes

Module 1.3 - Location Triggers

Development Proposes a new driveway to a boundary street that is designated as part of the City's Transit Priority, Rapid Transit, or Spine Bicycle Networks (See Sheet 3)	No
Development is in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone. (See Sheet 3)	Yes
Location Trigger Met?	Yes

Module 1.4 - Safety Triggers

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

1. INTRODUCTION

The following transportation-related comments were received by the City (10 September 2018) in response to the City Park Drive, Phase 2 Transportation Impact Assessment Strategy Report submitted in August 2018. Responses to these city comments are provided herein.

2. CITY COMMENTS

2.1. TRAFFIC ENGINEERING

Comment 1: The lane configuration used at the intersection of Ogilvie Road and City Park Drive/CSIS is incorrect in all modeling and should be revised.

Response 1: *Noted. Lane configuration corrected at intersection for each scenario and report updated.*

Comment 2: The report is contradictory in regard to proposed number of parking stalls.

Response 2: *Noted. Report updated with appropriate parking numbers.*

Comment 3: Given the proposed 207 residential parking stalls along with an additional 20 visitor stalls vs 208 residential units, what is the existing transit modal split for City Park Drive and the Phase 1 residential tower? Will the transit modal split be achieved by providing this number of parking stalls?

Response 3: *Site Plan does not exceed maximum parking spaces permitted within 600m of Rapid transit station. Many people who live near transit station have passenger vehicles for recreational purposes and often will use the transit system to commute to and from work. It is our opinion that the modal share will be met in the future horizons.*

2.2. TRANSPORTATION ENGINEERING SERVICES/DEVELOPMENT REVIEW

Comment 1: Given that this development is within the Transit Oriented Development area, the ideal mode shares are 15% auto driver, 5% auto passenger, 65% transit and 15% other. Reconsider the number of residential parking spaces.

Response 1: *Site Plan does not exceed maximum parking spaces permitted within 600m of Rapid transit station. Many people who live near transit station have passenger vehicles for recreational purposes and often will use the transit system to commute to and from work. It is our opinion that the modal share will be met in the future horizons.*

Comment 2: Provide a completed TDM Checklist.

Response 2: *TDM Checklist provided in the final TIA Study.*

Comment 3 : In addition to the MUP along the southern border, both City Park Drive and the private road on the eastern property line have been identified for as a Phase 2 project in the City's Cycling Plan (P2-12). Clarify whether the report recommendations for bicycle facilities reaches the BLOS target of B. Appendix H does not provide data to determine the level of service for bikes. If the target is not met for this collector road, provide a recommended cross section.

Response 3: *Report updated, see section 11.4.*

Comment 4: Provide continuous sidewalks through the existing unsignalized accesses. Ensure that the curbs are depressed along the access. Apply the City's standard detailed drawings.

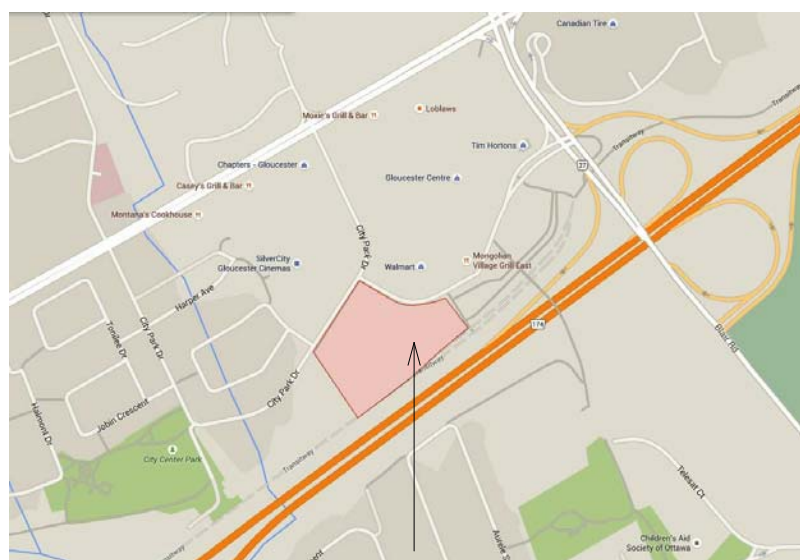
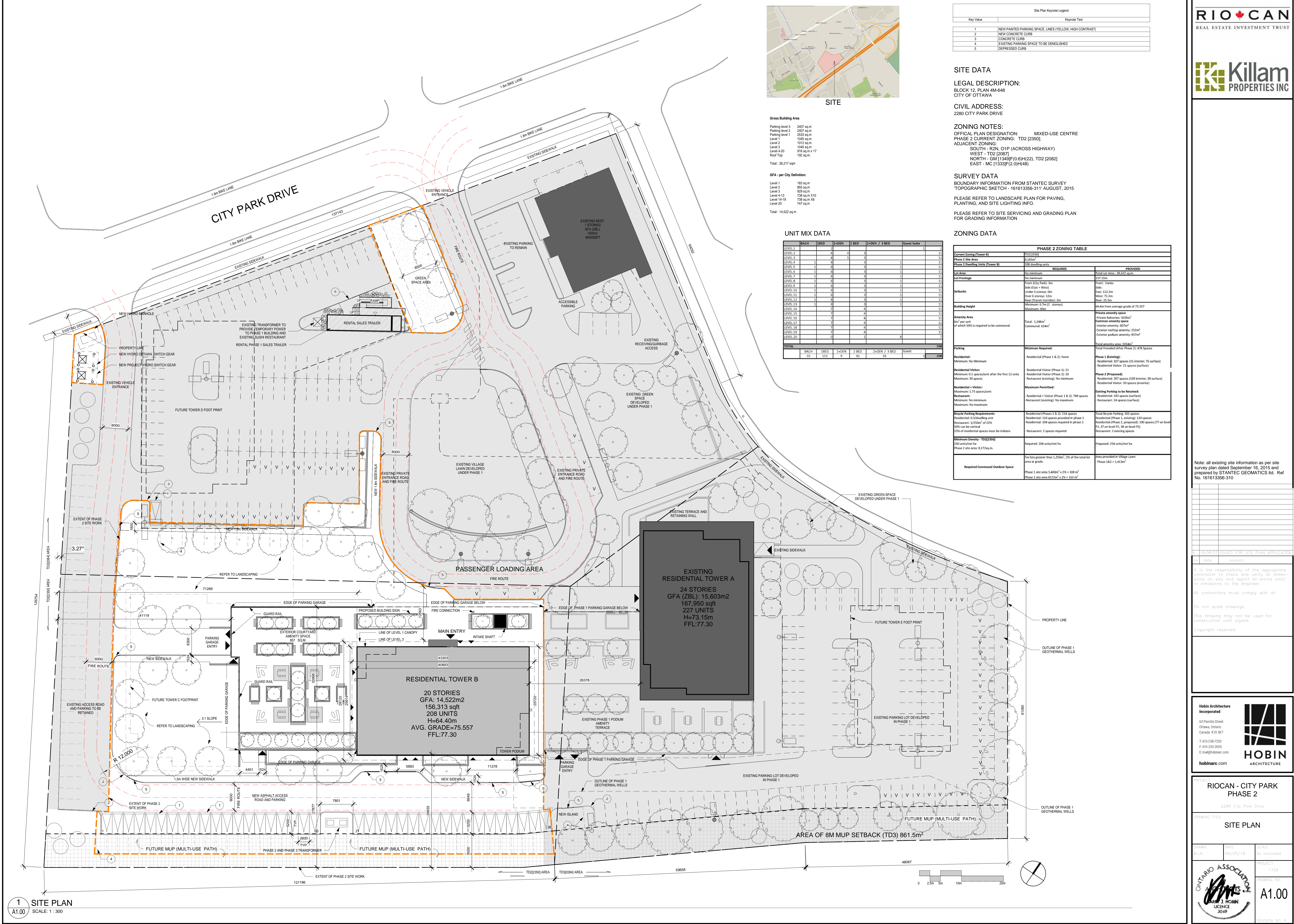
Response 4: *Noted. See attached plans.*

Comment 5: Confirm that the throat length at all accesses meets the TAC suggested minimum lengths for the proposed use. This was highlighted in the Phase 1 development circulation.

Response 5: *TAC Table 8.9.3 recommends minimum storage length of 25m of an access located off a collector roadway. The Site Accesses meet the minimum requirements.*

Comment 6: Provide the Certification form in the TIA report.

Response 6: *Provided with final report.*



SITE

Gross Building Area
Parking level 3 2407 sq.m
Parking level 2 2407 sq.m
Level 1 1045 sq.m
Level 2 1012 sq.m
Level 3 1045 sq.m
Level 4-20 916 sq.m x 17
Roof Top 192 sq.m
Total: 26,217 sqm

GFA - per City Definition:
Level 1 183 sq.m
Level 2 855 sq.m
Level 3 925 sq.m
Level 4-13 738 sq.m X10
Level 14-19 738 sq.m X6
Level 20 747 sq.m
Total: 14,522 sq.m

UNIT MIX DATA

	BACH	1 BED	1+DEN	2 BED	2+DEN / 3 BED	Guest Suite	
LEVEL 1	1	4	4	3		1	2
LEVEL 2	1	4	4	3		1	13
LEVEL 3	1	4	4	3		1	13
LEVEL 4	1	4	4	3		1	13
LEVEL 5	1	4	4	3		1	13
LEVEL 6	1	4	4	3		1	13
LEVEL 7	1	4	4	3		1	13
LEVEL 8	1	4	4	3		1	13
LEVEL 9	1	4	4	3		1	13
LEVEL 10	1	4	4	3		1	13
LEVEL 11	1	4	4	3		1	13
LEVEL 12	1	4	4	3		1	13
LEVEL 13	1	4	4	3		1	13
LEVEL 14	1	4	4	3		1	13
LEVEL 15	1	4	4	3		1	13
LEVEL 16	1	4	4	3		1	13
LEVEL 17	1	4	4	3		1	13
LEVEL 18	1	4	4	3		1	13
LEVEL 19	1	4	4	3		1	13
LEVEL 20	1	4	4	3		1	13
TOTAL	10	112	9	61	16	6	208

Site Plan Keynote Legend	
Key Value	Keynote Text
1	NEW PAINTED PARKING SPACE, LINES (YELLOW, HIGH CONTRAST)
2	NEW CONCRETE CURB
3	CONCRETE CURB
4	EXISTING PARKING SPACE TO BE DEMOLISHED
5	DEPRESSED CURB

SITE DATA

LEGAL DESCRIPTION:
BLOCK 12, PLAN 4M-648
CITY OF OTTAWA

CIVIL ADDRESS:
2280 CITY PARK DRIVE

ZONING NOTES:

PHASE 1 PLAN DESIGNATION: MIXED-USE CENTRE
PHASE 2 CURRENT ZONING: TD [2350];
ADJACENT ZONING:
SOUTH - R2N, O1P (ACROSS HIGHWAY)
WEST - TD [2087]
NORTH - GM [1349]F(0.6)H(22), TD2 [2082]
EAST - MC [1333]F(2.0)H(48)

SURVEY DATA

BOUNDARY INFORMATION FROM STANTEC SURVEY
TOPOGRAPHIC SKETCH - 161613356-311 AUGUST, 2015

PLEASE REFER TO LANDSCAPE PLAN FOR PAVING,
PLANTING, AND SITE LIGHTING INFO.

PLEASE REFER TO SITE SERVICING AND GRADING PLAN
FOR GRADING INFORMATION

ZONING DATA

PHASE 2 ZONING TABLE	
Current Zoning (Tower B)	TD2(2350)
Phase 2 Site Area	8,185m ²
Phase 2 Dwelling Units (Tower B)	208 dwelling units
Lot Area	REQUIRED: 137.55m ² PROVIDED: 137.55m ²
Lot Frontage	REQUIRED: 13.75m PROVIDED: 13.75m
Setbacks	Front (City Park): 3m Side (East - West): 11.22m Over 5 storeys: 3m Rear (Transit Corridor): 2m
Building Height	Minimum: 6.7m (2 storeys) Maximum: 60m
Amenity Area	Total: 1,248m ² Communal: 624m ²
Parking	Minimum Required: Residential (Phase 1 & 2): None Residential Visitor: Minimum: 0.2 spaces/unit after the first 12 units Maximum: 30 spaces Residential + Visitor: Maximum: 1.75 spaces/unit Restaurant: Minimum: No minimum Maximum: No maximum Bicycle Parking Requirements: Residential (Phase 1, existing): 110 spaces Residential (Phase 2, proposed): 190 spaces (77 on level P1, 17 on level P2, 38 on level P3) Restaurant: 2 existing spaces Minimum Density: TD2(2350) 250 units/net ha Phase 2 site area: 8,175sq.m
Required Communal Outdoor Space	For lots greater than 1,250m ² , 2% of the total lot area at grade. Phase 1 site area 5,400m ² x 2% = 108 m ² Phase 2 site area 8,172m ² x 2% = 163 m ²

Note: all existing site information as per site
survey plan dated September 16, 2015 and
prepared by STANTEC GEOMATICS Ltd. Ref
No. 161613356-310

16-08-2015 ISSUED FOR SITE PLAN APPLICATION

no. date revision

It is the responsibility of the appropriate
contractor to check and verify all dimen-
sions on site and report all errors and/or
omissions to the engineer.

All contractors must comply with all

Do not scale drawings.

This drawing may not be used for
construction until signed.
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Hobin Architecture
Incorporated

63 Pamela Street
Ottawa, Ontario
Canada K1S 3K7
T: 613-238-7200
F: 613-235-2005
E: mail@hobinarc.com
hobinarc.com



PROJECT: RIOCAN - CITY PARK
PHASE 2

2280 City Park Drive

DRAWING TITLE: SITE PLAN

DRAWN: R.L.K. DATE: 06/20/18 SCALE: As Indicated

PROJECT: 1750

DRAWING NO. A1.00

REVISION: No. A

ONTARIO ASSOCIATION
OF ARCHITECTS
LICENCE 3049

Appendix B

EXISTING SIGNAL TIMING

Traffic Signal Timing

City of Ottawa, Public Works Department

Traffic Operations Unit

Intersection:	Main: Ogilvie Road	Side: Bathgate Drive / City Park Drive
Controller:	MS-3200	TSD: 5219
Author:	Jake Berube	Date: 04-May-16

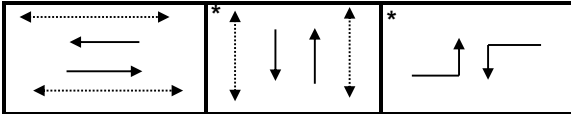
Existing Timing Plans†

	Plan						Ped Minimum Time		
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Saturday 5	AM Heavy 11	Walk	DW	A+R
Cycle	90	90	100	80	90	100			
Offset	27	5	19	X	5	29			
EB Thru	32	32	37	37	32	42	9	15	3.7 + 2.3
WB Thru	32	32	37	37	32	42	9	15	3.7 + 2.3
NB Thru	43	43	43	43	43	43	7	28	3.0 + 4.4
SB Thru	43	43	43	43	43	43	7	28	3.0 + 4.4
EB Left	15	15	20	-	15	15	-	-	3.7 + 1.0
WB Left	15	15	20	-	15	15	-	-	3.7 + 1.0

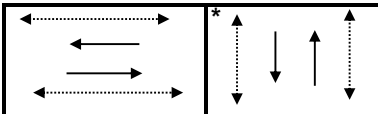
Notes: 1) The maximum green time for the EB and WB Lefts is 20s.

Phasing Sequence‡

Plan: 1, 2, 3, 5 & 11



Plan: 4



Schedule

Weekday		Saturday		Sunday	
Time	Plan	Time	Plan	Time	Plan
0:15	4	0:15	4	0:15	4
6:30	1	8:30	5	8:30	2
7:30	11	19:00	2	22:30	4
9:00	1	22:30	1		
9:30	2				
15:00	3				
18:30	12				
22:30	4				

Notes

†: Time for each direction includes amber and all red intervals

‡: Start of first phase should be used as reference point for offset

Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn

←.....→ Pedestrian signal

Cost is \$56.50 (\$50 + HST)

Traffic Signal Timing

City of Ottawa, Public Works Department

Traffic Operations Unit

Intersection:	Main: Ogilvie Road	Side: Blair Road
Controller:	MS-3200	TSD: 5300
Author:	Jake Berube	Date: 04-May-2016

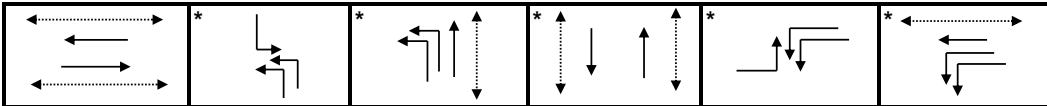
Existing Timing Plans†

	Plan					Ped Minimum Time		
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Weekend 5	Walk	DW	A+R
Cycle	140	130	130	95	120			
Offset	X	X	0	X	0			
EB Thru	37	37	35	35	35	7	21	3.7+2.7
WB Thru	48	52	49	35	51	7	21	3.7+2.7
NB Left (fp)	38	24	24	13	19	-	-	4.2+2.3
SB Left (fp)	15	19	24	13	14	-	-	4.2+2.3
NB Thru	60	42	37	33	39	7	20	4.2+2.3
SB Thru	37	37	37	33	34	7	20	4.2+2.3
EB Left (fp)	17	17	20	14	16	-	-	3.7+3.1
WB Left (fp)	28	32	34	14	32	-	-	3.7+3.1

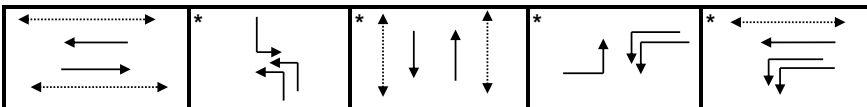
Notes: 1) The maximum green time for the EB left is 25s.

Phasing Sequence‡

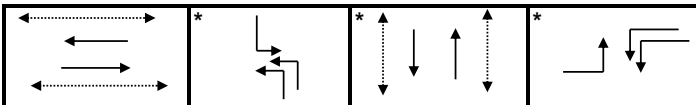
Plan: 1, 2 & 5



Plan: 3



Plan: 4



Schedule

Weekday

Time	Plan
0:15	4
6:30	1
9:30	2
15:00	3
18:30	2
22:30	4

Saturday

Time	Plan
0:15	4
7:00	5
22:00	4

Sunday

Time	Plan
0:15	4
7:00	5
21:00	4

Notes

†: Time for each direction includes amber and all red intervals

‡: Start of first phase should be used as reference point for offset

Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn

◀.....▶ Pedestrian signal

Cost is \$56.50 (\$50 + HST)

Traffic Signal Timing

City of Ottawa, Public Works Department

Traffic Operations Unit

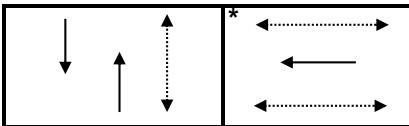
Intersection:	Main: Blair	Side: Hwy 174 EB On/Off Ramp
Controller:	ATC-3	TSD: 5452
Author:	Jake Berube	Date: 05-May-2015

Existing Timing Plans[†]

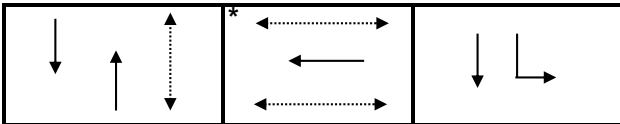
	Plan					Ped Minimum Time		
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Weekend 5	Walk	DW	A+R
Cycle	90	90	110	75	95			
Offset	X	X	32	X	88			
NB Thru	55	50	52	50	55	7	17	4.2+2.3
SB Thru	55	65	80	50	70	-	-	4.2+2.3
WB Thru	35	25	30	25	25	7	12	3.3+3.0
SB Left	-	15	28	-	15	-	-	4.2+1.8

Phasing Sequence[‡]

Plans: 1 & 4



Plans: 2, 3 & 5



- Notes:**
1. Plan 3 has a max recall of 25 seconds green for the SBLT movement
 2. Plans 2 and 5 have a minimum recall of 9 seconds green for the SBLT movement

Schedule

Weekday

Time	Plan
0:15	4
6:30	1
9:30	2
15:00	3
18:30	2
22:30	4

Saturday

Time	Plan
0:15	4
7:00	5
22:00	4

Sunday

Time	Plan
0:15	4
7:00	5
21:00	4

Notes

†: Time for each direction includes amber and all red intervals

‡: Start of first phase should be used as reference point for offset

Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn

◄.....► Pedestrian signal

Cost is \$56.50 (\$50 + HST)

Traffic Signal Timing

City of Ottawa, Public Works Department

Traffic Operations Unit

Intersection:	Main: Ogilvie Rd	Side: Aviation Pkwy
Controller:	ATC-3	TSD: 5557
Author:	Jake Berube	Date: May 3rd, 2016

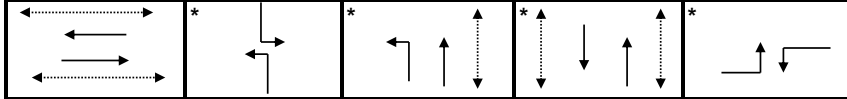
Existing Timing Plans†

	Plan					Ped Minimum Time				
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Weekend 1 5	AM Heavy 11	Evening 12	Walk	DW	A+R
Cycle	120	90	120	80	90	130	90			
Offset	72	9	50	X	9	105	9			
EB Thru	42	34	54	38	34	47	34	11	17	3.7+2.4
WB Thru	42	34	54	38	34	47	34	11	17	3.7+2.4
NB Left (fp)	33	16	19	12	16	33	16	-	-	3.7+2.2
SB Left (fp)	18	16	19	12	16	18	16	-	-	3.7+2.2
NB Thru	45	30	30	30	30	45	30	7	17	3.7+2.4
SB Thru	30	30	30	30	30	30	30	7	17	3.7+2.4
EB Left	15	10	17	-	10	20	10	-	-	3.7+1.0
WB Left	15	10	17	-	10	20	10	-	-	3.7+1.0

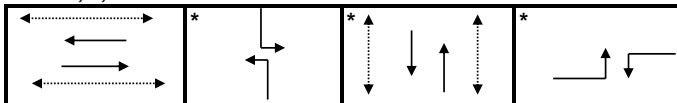
Notes:

Phasing Sequence‡

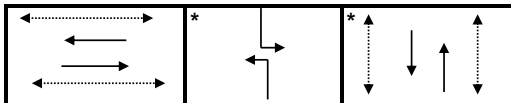
Plan: 1 and 11



Plan: 2, 3, 5 and 12



Plan: 4



Schedule

Weekday

Time	Plan
0:15	4
6:30	1
7:30	11
9:00	1
9:30	2
15:00	3
18:30	12
22:30	4

Saturday

Time	Plan
0:15	4
8:30	5
19:00	2
22:30	4

Sunday

Time	Plan
0:15	4
8:30	2
22:30	4

Notes

†: Time for each direction includes amber and all red intervals
‡: Start of first phase should be used as reference point for offset
Asterisk (*) Indicates actuated phase
(fp): Fully Protected Left Turn

◀.....▶ Pedestrian signal

Cost is \$56.50 (\$50 + HST)

Traffic Signal Timing

City of Ottawa, Public Works Department

Traffic Operations Unit

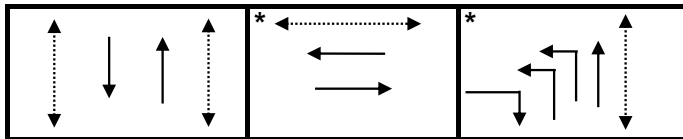
Intersection:	Main: Blair	Side: Hwy 174 WB Off Ramp
Controller:	MS-3200A	TSD: 5867
Author:	Jake Berube	Date: 05-May-2016

Existing Timing Plans[†]

	Plan					Ped Minimum Time		
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Weekend 5	Walk	DW	A+R
Cycle	100	95	130	85	95			
Offset	X	X	50	X	23			
NB Thru	59	59	94	49	58	7	17	4.2+1.9
SB Thru	32	34	63	34	31	7	17	4.2+1.9
EB Thru	41	36	36	36	37	-	-	3.3+3.5
WB Thru	41	36	36	36	37	7	23	3.3+3.5
NB Left (fp)	27	25	31	15	27	-	-	4.2+2.2

Phasing Sequence[‡]

Plan: All



Note: For Plan 4, the maximum green time allowed for the EB Thru is 10s.

Schedule

Weekday		Saturday		Sunday	
Time	Plan	Time	Plan	Time	Plan
0:15	4	0:15	4	0:15	4
6:30	1	7:00	5	7:00	5
9:30	2	22:00	4	21:00	4
15:00	3				
18:30	2				
22:30	4				

Notes

†: Time for each direction includes amber and all red intervals

‡: Start of first phase should be used as reference point for offset

Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn

◄.....► Pedestrian signal

Cost is \$56.50 (\$50 + HST)

Traffic Signal Timing

City of Ottawa, Public Works Department

Traffic Operations Unit

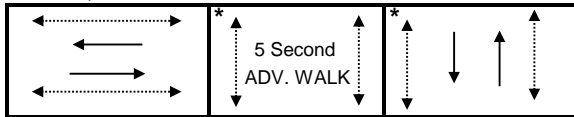
Intersection:	Main: Ogilvie Road	Side: City Park Drive	
Controller:	ATC-3	TSD: 5883	
Author:	Jake Berube	Date: 05-May-2016	

Existing Timing Plans†

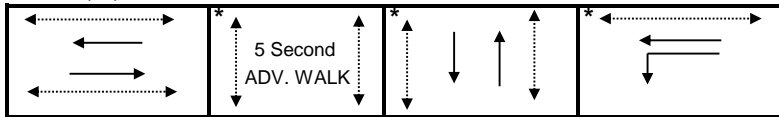
	Plan							Ped Minimum Time		
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Weekend 5	AM Heavy 11	Evening 12	Walk	DW	A+R
Cycle	90	90	100	75	90	100	90			
Offset	88	12	30	X	12	13	12			
EB Thru	51	36	46	36	36	61	36	7	22	3.7+2.4
WB Thru	51	51	61	36	41	61	51	7	22	3.7+2.4
NB Thru	39	39	39	39	39	39	39	7	25	3.3+3.2
SB Thru	39	39	39	39	39	39	39	7	25	3.3+3.2
WB Left	-	15	15	-	15	-	15	-	-	3.0+1.0

Phasing Sequence‡

Plan: 1, 4 & 11



Plan: 2, 3, 5 & 12



- Notes:**
- 1) If the pedestrian phases for North-South are not actuated, the NB and SB vehicle movements will come up immediately.
 - 2) The 5-second advanced walk time is included in the splits provided in the timing plan table for the NB and SB movements.
 - 3) The WB Left movement has a maximum green time of 15 seconds.

Schedule

Weekday		Saturday		Sunday	
Time	Plan	Time	Plan	Time	Plan
0:15	4	0:15	4	0:15	4
6:30	1	8:30	5	8:30	2
7:30	11	19:00	2	22:30	4
9:00	1	22:30	4		
9:30	2				
15:00	3				
18:30	12				
22:30	4				

Notes

- †: Time for each direction includes amber and all red intervals
‡: Start of first phase should be used as reference point for offset
Asterisk (*) Indicates actuated phase
(fp): Fully Protected Left Turn
◄.....► Pedestrian signal

Cost is \$56.50 (\$50 + HST)

Traffic Signal Timing

City of Ottawa, Public Works Department

Traffic Operations Unit

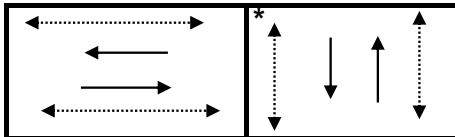
Intersection:	Main: Ogilvie Road	Side: Siver City Centre / 185m East of Bathgate
Controller:	MS-3200	TSD: 6427
Author:	Jake Berube	Date: 04-May-16

Existing Timing Plans[†]

	Plan					Ped Minimum Time				
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Saturday 5	AM Heavy 11	Evening 12	Walk	DW	A+R
Cycle	90	90	100	75	90	100	90			
Offset	12	88	8	X	88	12	88			
EB Thru	53	53	63	38	53	63	53	11	13	3.7 + 2.2
WB Thru	53	53	63	38	53	63	53	11	13	3.7 + 2.2
NB Thru	37	37	37	37	37	37	37	7	23	3.3 + 3.4
SB Thru	37	37	37	37	37	37	37	7	23	3.3 + 3.4

Phasing Sequence[‡]

Plan: All



Schedule

Weekday		Saturday		Sunday	
Time	Plan	Time	Plan	Time	Plan
0:15	4	0:15	4	0:15	4
6:30	1	8:30	5	8:30	2
7:30	11	19:00	2	22:30	4
9:00	1	22:30	4		
9:30	2				
15:00	3				
18:30	12				
22:30	4				

Notes

†: Time for each direction includes amber and all red intervals

‡: Start of first phase should be used as reference point for offset

Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn























←.....→ Pedestrian signal

Cost is \$56.50 (\$50 + HST)

Appendix C

SYNCHRO EXISTING TRAFFIC ANALYSIS

Existing - AM
2: City Park/Bathgate & Ogilvie

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Configurations											
Traffic Volume (vph)	142	462	71	20	989	182	99	29	109	28	
Future Volume (vph)	142	462	71	20	989	182	99	29	109	28	
Lane Group Flow (vph)	149	486	75	21	1041	192	104	50	115	229	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	
Protected Phases	5	2		1	6			8		4	
Permitted Phases	2		2	6		6	8		4		
Detector Phase	5	2	2	1	6	6	8	8	4	4	
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	11.0	30.0	30.0	11.0	30.0	30.0	42.4	42.4	42.4	42.4	
Total Split (s)	15.0	32.0	32.0	15.0	32.0	32.0	43.0	43.0	43.0	43.0	
Total Split (%)	16.7%	35.6%	35.6%	16.7%	35.6%	35.6%	47.8%	47.8%	47.8%	47.8%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	4.4	4.4	4.4	4.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.7	6.0	6.0	4.7	6.0	6.0	7.4	7.4	7.4	7.4	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	
Act Effct Green (s)	59.9	54.6	54.6	53.5	46.2	46.2	17.5	17.5	17.5	17.5	
Actuated g/C Ratio	0.67	0.61	0.61	0.59	0.51	0.51	0.19	0.19	0.19	0.19	
v/c Ratio	0.44	0.24	0.08	0.04	0.60	0.23	0.60	0.15	0.46	0.50	
Control Delay	11.8	11.8	2.1	6.4	16.1	1.6	45.2	18.4	35.7	9.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	11.8	11.8	2.1	6.4	16.1	1.6	45.2	18.4	35.7	9.4	
LOS	B	B	A	A	B	A	D	B	D	A	
Approach Delay		10.8			13.7			36.5		18.2	
Approach LOS		B			B			D		B	
Queue Length 50th (m)	7.0	13.5	0.0	0.6	43.3	0.0	17.4	4.7	18.6	4.4	
Queue Length 95th (m)	25.2	47.8	4.6	m2.3	#138.1	6.1	24.8	10.2	25.1	16.9	
Internal Link Dist (m)		805.4			169.5			132.3		125.7	
Turn Bay Length (m)	70.0		50.0	50.0		80.0	30.0		45.0		
Base Capacity (vph)	372	2057	928	637	1740	842	353	672	507	723	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.40	0.24	0.08	0.03	0.60	0.23	0.29	0.07	0.23	0.32	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 27 (30%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 14.9

Intersection LOS: B

Intersection Capacity Utilization 85.6%

ICU Level of Service E

Analysis Period (min) 15









Description: Signal Timing Plan: May 4th, 2016

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: City Park/Bathgate & Ogilvie

			
Ø1	Ø2 (R)		Ø4
15 s	32 s		43 s
			
Ø5	Ø6 (R)		Ø8
15 s	32 s		43 s

Existing - AM
4: City Park/CSIS & Ogilvie

															
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT				Ø3
Lane Configurations															
Traffic Volume (vph)	90	453	62	88	925	122	77	35	67	4	3				
Future Volume (vph)	90	453	62	88	925	122	77	35	67	4	3				
Lane Group Flow (vph)	95	477	65	93	974	128	0	118	71	4	39				
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	NA	Perm	NA				
Protected Phases		2			6			8						4	3
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				1.0
Minimum Split (s)	35.1	35.1	35.1	35.1	35.1	35.1	33.5	33.5		33.5	33.5				5.0
Total Split (s)	51.0	51.0	51.0	51.0	51.0	51.0	34.0	34.0		34.0	34.0				5.0
Total Split (%)	56.7%	56.7%	56.7%	56.7%	56.7%	56.7%	37.8%	37.8%		37.8%	37.8%				6%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3		3.3	3.3				2.0
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	2.4	3.2	3.2		3.2	3.2				0.0
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)	6.1	6.1	6.1	6.1	6.1	6.1		6.5		6.5	6.5				
Lead/Lag							Lag	Lag		Lag	Lag				Lead
Lead-Lag Optimize?							Yes	Yes		Yes	Yes				Yes
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None		None	None				None
Act Effct Green (s)	65.4	65.4	65.4	65.4	65.4	65.4		15.5	0.0	15.5	15.5				
Actuated g/C Ratio	0.73	0.73	0.73	0.73	0.73	0.73		0.17	0.00	0.17	0.17				
v/c Ratio	0.28	0.19	0.07	0.16	0.40	0.13		0.53	0.50	0.02	0.14				
Control Delay	15.6	9.3	7.3	8.5	8.1	2.3		41.1	12.3	26.2	11.2				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0				
Total Delay	15.6	9.3	7.3	8.5	8.1	2.3		41.1	12.3	26.2	11.2				
LOS	B	A	A	A	A	A		D	B	C	B				
Approach Delay		10.0			7.5			30.3			12.6				
Approach LOS		B			A			C			B				
Queue Length 50th (m)	3.9	9.7	0.0	4.5	30.5	0.0		19.3	0.0	0.6	0.4				
Queue Length 95th (m)	24.1	45.1	13.9	18.1	76.5	8.2		29.9	#0.7	2.8	7.3				
Internal Link Dist (m)		200.1			350.0			137.2			101.6				
Turn Bay Length (m)	45.0		130.0	100.0		65.0			50.0	30.0					
Base Capacity (vph)	340	2465	966	583	2465	983		396	141	359	451				
Starvation Cap Reductn	0	0	0	0	0	0		0	0	0	0				
Spillback Cap Reductn	0	0	0	0	0	0		0	0	0	0				
Storage Cap Reductn	0	0	0	0	0	0		0	0	0	0				
Reduced v/c Ratio	0.28	0.19	0.07	0.16	0.40	0.13		0.30	0.50	0.01	0.09				

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 88 (98%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.53

Intersection Signal Delay: 10.5

Intersection LOS: B

Intersection Capacity Utilization 72.7%






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: 4: City Park/CSIS & Ogilvie

 Ø2 (R)	 Ø3	 Ø4
51 s	5 s	34 s
 Ø6 (R)	 Ø7	 Ø8
51 s	5 s	34 s

Existing - AM
6: Blair & OR-174 OFF

									
Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	87	154	225	173	453	250	1288	646	87
Future Volume (vph)	87	154	225	173	453	250	1288	646	87
Lane Group Flow (vph)	92	162	237	182	477	263	1356	680	92
Turn Type	Perm	pm+ov	Perm	NA	Perm	Prot	NA	NA	Perm
Protected Phases		5		8		5	2	6	
Permitted Phases	4	4	8		8				6
Detector Phase	4	5	8	8	8	5	2	6	6
Switch Phase									
Minimum Initial (s)	10.0	5.0	10.0	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	36.8	11.4	36.8	36.8	36.8	11.4	30.1	30.1	30.1
Total Split (s)	41.0	27.0	41.0	41.0	41.0	27.0	59.0	32.0	32.0
Total Split (%)	41.0%	27.0%	41.0%	41.0%	41.0%	27.0%	59.0%	32.0%	32.0%
Yellow Time (s)	3.3	4.2	3.3	3.3	3.3	4.2	4.2	4.2	4.2
All-Red Time (s)	3.5	2.2	3.5	3.5	3.5	2.2	1.9	1.9	1.9
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)	6.8	6.4	6.8	6.8	6.8	6.4	6.1	6.1	6.1
Lead/Lag		Lead				Lead		Lag	Lag
Lead-Lag Optimize?		Yes				Yes		Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	Min	Min
Act Effct Green (s)	28.9	48.5	28.9	28.9	28.9	12.5	42.1	22.9	22.9
Actuated g/C Ratio	0.34	0.57	0.34	0.34	0.34	0.15	0.50	0.27	0.27
v/c Ratio	0.24	0.18	0.41	0.30	0.85	0.54	0.80	0.52	0.19
Control Delay	24.1	8.0	25.3	23.5	36.7	40.3	22.5	28.1	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.1	8.0	25.3	23.5	36.7	40.3	22.5	28.1	4.7
LOS	C	A	C	C	D	D	C	C	A
Approach Delay				31.0			25.4	25.3	
Approach LOS				C			C	C	
Queue Length 50th (m)	10.9	9.5	29.9	22.0	58.4	22.7	103.2	36.6	0.0
Queue Length 95th (m)	25.0	20.1	55.8	42.7	#124.7	36.0	130.0	50.8	8.1
Internal Link Dist (m)				105.9			166.4	212.5	
Turn Bay Length (m)			70.0		25.0	85.0			70.0
Base Capacity (vph)	473	1046	719	757	675	840	2226	1646	579
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	0.19	0.15	0.33	0.24	0.71	0.31	0.61	0.41	0.16

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 84.5

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 25.9

Intersection LOS: C

Intersection Capacity Utilization 89.5%

ICU Level of Service E


Analysis Period (min) 15

Description: Signal Timing Plan: May 5, 2016










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

Queue shown is maximum after two cycles.

















Splits and Phases: 6: Blair & OR-174 OFF

 Ø2	 Ø4
59 s	41 s
 Ø5	 Ø8
27 s	41 s
 Ø6	
32 s	










Existing - AM
7: Service & City Park

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	13	49	24	16	96	77
Future Volume (Veh/h)	13	49	24	16	96	77
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	14	52	25	17	101	81
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)				287		
pX, platoon unblocked						
vC, conflicting volume			66		107	40
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			66		107	40
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		88	92
cM capacity (veh/h)			1536		876	1031
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	66	42	182			
Volume Left	0	25	101			
Volume Right	52	0	81			
cSH	1700	1536	939			
Volume to Capacity	0.04	0.02	0.19			
Queue Length 95th (m)	0.0	0.4	5.4			
Control Delay (s)	0.0	4.4	9.8			
Lane LOS		A	A			
Approach Delay (s)	0.0	4.4	9.8			
Approach LOS			A			
Intersection Summary						
Average Delay			6.8			
Intersection Capacity Utilization			26.2%	ICU Level of Service		A
Analysis Period (min)			15			

Existing - AM
8: Site/SilverCity & City Park

























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	1	59	1	3	107	2	0	0	2	2	0	0
Future Volume (vph)	1	59	1	3	107	2	0	0	2	2	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	62	1	3	113	2	0	0	2	2	0	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	64	118	2	2								
Volume Left (vph)	1	3	0	2								
Volume Right (vph)	1	2	2	0								
Hadj (s)	0.03	0.03	-0.57	0.23								
Departure Headway (s)	4.0	4.0	3.7	4.5								
Degree Utilization, x	0.07	0.13	0.00	0.00								
Capacity (veh/h)	878	893	912	751								
Control Delay (s)	7.4	7.6	6.7	7.5								
Approach Delay (s)	7.4	7.6	6.7	7.5								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.5									
Level of Service			A									
Intersection Capacity Utilization			17.8%		ICU Level of Service					A		
Analysis Period (min)			15									

Existing - AM
9: Site & City Park

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	119	0	0	146	0	0
Future Volume (Veh/h)	119	0	0	146	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	125	0	0	154	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			125		279	125
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			125		279	125
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1462		711	926
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	125	154	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1462	1700			
Volume to Capacity	0.07	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			11.4%	ICU Level of Service		A
Analysis Period (min)			15			

Existing - PM

2: City Park/Bathgate & Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT		
Lane Configurations												
Traffic Volume (vph)	144	983	137	14	954	164	105	28	189	52		
Future Volume (vph)	144	983	137	14	954	164	105	28	189	52		
Lane Group Flow (vph)	152	1035	144	15	1004	173	111	57	199	247		
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA		
Protected Phases	5	2		1	6			8		4		
Permitted Phases	2		2	6		6	8		4			
Detector Phase	5	2	2	1	6	6	8	8	4	4		
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0		
Minimum Split (s)	11.0	29.0	29.0	11.0	29.0	29.0	42.4	42.4	42.4	42.4		
Total Split (s)	20.0	37.0	37.0	20.0	37.0	37.0	43.0	43.0	43.0	43.0		
Total Split (%)	20.0%	37.0%	37.0%	20.0%	37.0%	37.0%	43.0%	43.0%	43.0%	43.0%		
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0		
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	4.4	4.4	4.4	4.4		
Lost Time Adjust (s)	-0.7	-2.0	-2.0	-0.7	-2.0	-2.0	-3.4	-3.4	-3.4	-3.4		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None		
Act Effct Green (s)	66.3	61.9	61.9	58.9	52.3	52.3	25.7	25.7	25.7	25.7		
Actuated g/C Ratio	0.66	0.62	0.62	0.59	0.52	0.52	0.26	0.26	0.26	0.26		
v/c Ratio	0.43	0.49	0.15	0.04	0.57	0.21	0.58	0.13	0.61	0.46		
Control Delay	11.8	14.3	5.1	6.5	13.3	1.1	42.7	15.0	39.3	9.7		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	11.8	14.3	5.1	6.5	13.3	1.1	42.7	15.0	39.3	9.7		
LOS	B	B	A	A	B	A	D	B	D	A		
Approach Delay		13.1			11.5			33.3		22.9		
Approach LOS		B			B			C		C		
Queue Length 50th (m)	9.4	43.8	2.1	0.6	51.9	0.0	19.1	4.3	34.6	8.4		
Queue Length 95th (m)	24.7	109.5	15.3	m1.7	#94.0	0.6	30.8	11.3	46.9	22.9		
Internal Link Dist (m)		805.4			169.5			132.3		125.7		
Turn Bay Length (m)	70.0		50.0	50.0		80.0	30.0		45.0			
Base Capacity (vph)	435	2097	940	483	1772	843	291	655	497	722		
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.35	0.49	0.15	0.03	0.57	0.21	0.38	0.09	0.40	0.34		

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 19 (19%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 14.9

Intersection LOS: B

Intersection Capacity Utilization 77.3%

ICU Level of Service D

Analysis Period (min) 15

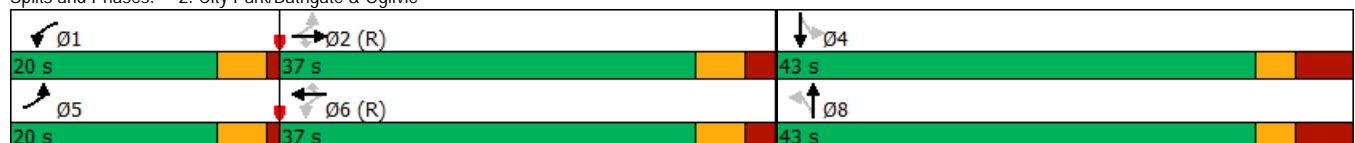
Description: Signal Timing Plan: May 4th 2016

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: City Park/Bathgate & Ogilvie



Existing - PM
4: City Park/CSIS & Ogilvie

															
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	Ø3			
Lane Configurations															
Traffic Volume (vph)	16	1065	142	182	538	18	206	7	143	64	22				
Future Volume (vph)	16	1065	142	182	538	18	206	7	143	64	22				
Lane Group Flow (vph)	17	1121	149	192	566	19	0	224	151	67	128				
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	NA	Perm	NA				
Protected Phases		2		1	6			8			4	3			
Permitted Phases	2		2	6		6	8			4					
Detector Phase	2	2	2	1	6	6	8	8		4	4				
Switch Phase															
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0		10.0	10.0	1.0			
Minimum Split (s)	29.1	29.1	29.1	10.9	29.1	29.1	27.5	27.5		27.5	27.5	5.0			
Total Split (s)	46.0	46.0	46.0	15.0	61.0	61.0	34.0	34.0		34.0	34.0	5.0			
Total Split (%)	46.0%	46.0%	46.0%	15.0%	61.0%	61.0%	34.0%	34.0%		34.0%	34.0%	5%			
Yellow Time (s)	3.7	3.7	3.7	3.0	3.7	3.7	3.3	3.3		3.3	3.3	2.0			
All-Red Time (s)	2.4	2.4	2.4	1.0	2.4	2.4	3.2	3.2		3.2	3.2	0.0			
Lost Time Adjust (s)	-2.1	-2.1	-2.1	0.0	-2.1	-2.1		-2.5		-2.5	-2.5				
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0				
Lead/Lag	Lag	Lag	Lag	Lead			Lag	Lag		Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes		Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	None			
Act Effct Green (s)	48.8	48.8	48.8	63.1	63.1	63.1		27.9	0.0	27.9	27.9				
Actuated g/C Ratio	0.49	0.49	0.49	0.63	0.63	0.63		0.28	0.00	0.28	0.28				
v/c Ratio	0.05	0.68	0.21	0.67	0.26	0.03		0.79	0.89	0.30	0.27				
Control Delay	9.5	17.6	2.9	24.5	9.4	0.1		54.0	52.2	30.9	8.9				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0				
Total Delay	9.5	17.6	2.9	24.5	9.4	0.1		54.0	52.2	30.9	8.9				
LOS	A	B	A	C	A	A		D	D	C	A				
Approach Delay		15.8			12.9			53.3			16.5				
Approach LOS		B			B			D			B				
Queue Length 50th (m)	2.1	99.2	6.0	14.7	24.2	0.0		38.9	0.0	9.9	3.2				
Queue Length 95th (m)	m2.2	55.2	4.3	#41.2	37.6	0.0		#74.2	#30.4	21.6	16.3				
Internal Link Dist (m)		200.1			350.0			137.2			101.6				
Turn Bay Length (m)	45.0		130.0	100.0		65.0			50.0	30.0					
Base Capacity (vph)	337	1655	718	303	2140	717		312	170	246	518				
Starvation Cap Reductn	0	0	0	0	0	0		0	0	0	0				
Spillback Cap Reductn	0	0	0	0	0	0		0	0	0	0				
Storage Cap Reductn	0	0	0	0	0	0		0	0	0	0				
Reduced v/c Ratio	0.05	0.68	0.21	0.63	0.26	0.03		0.72	0.89	0.27	0.25				

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 30 (30%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 20.3

Intersection LOS: C

Intersection Capacity Utilization 88.8%

ICU Level of Service E

Analysis Period (min) 15

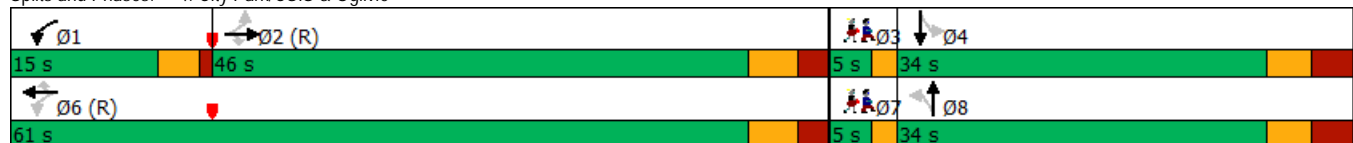
Description: Signal Timing Plan: May 5th 2016

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



















Queue shown is maximum after two cycles.

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

Splits and Phases: 4: City Park/CSIS & Ogilvie



Existing - PM
6: Blair & OR174 WB Off

									
Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	124	477	94	106	139	300	886	1724	171
Future Volume (vph)	124	477	94	106	139	300	886	1724	171
Lane Group Flow (vph)	131	502	99	112	146	316	933	1815	180
Turn Type	Perm	pm+ov	Perm	NA	Free	Prot	NA	NA	Free
Protected Phases		5		8		5	2	6	
Permitted Phases	4	4	8		Free				Free
Detector Phase	4	5	8	8		5	2	6	
Switch Phase									
Minimum Initial (s)	10.0	5.0	10.0	10.0		5.0	10.0	10.0	
Minimum Split (s)	36.8	11.4	36.8	36.8		11.4	30.1	30.1	
Total Split (s)	36.8	31.0	36.8	36.8		31.0	94.0	63.0	
Total Split (%)	28.1%	23.7%	28.1%	28.1%		23.7%	71.9%	48.2%	
Yellow Time (s)	3.3	4.2	3.3	3.3		4.2	4.2	4.2	
All-Red Time (s)	3.5	1.9	3.5	3.5		1.9	1.9	1.9	
Lost Time Adjust (s)	-2.8	-2.1	-2.8	-2.8		-2.1	-2.1	-2.1	
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	
Lead/Lag		Lead				Lead		Lag	
Lead-Lag Optimize?		Yes				Yes		Yes	
Recall Mode	None	None	None	None		None	C-Max	C-Max	
Act Effct Green (s)	23.9	54.0	23.9	23.9	130.8	26.1	98.9	68.8	130.8
Actuated g/C Ratio	0.18	0.41	0.18	0.18	1.00	0.20	0.76	0.53	1.00
v/c Ratio	0.71	0.78	0.32	0.34	0.10	0.48	0.36	0.71	0.12
Control Delay	69.8	39.9	47.3	47.7	0.1	48.8	6.5	26.8	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.8	39.9	47.3	47.7	0.1	48.8	6.5	26.8	0.2
LOS	E	D	D	D	A	D	A	C	A
Approach Delay				28.1			17.2	24.4	
Approach LOS				C			B	C	
Queue Length 50th (m)	32.0	104.0	22.4	25.4	0.0	37.1	37.2	128.2	0.0
Queue Length 95th (m)	50.6	131.1	36.0	39.6	0.0	51.4	60.9	167.6	0.0
Internal Link Dist (m)				105.9			129.2	212.5	
Turn Bay Length (m)			70.0		25.0	85.0			70.0
Base Capacity (vph)	253	657	425	447	1478	690	2563	2562	1498
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	0.52	0.76	0.23	0.25	0.10	0.46	0.36	0.71	0.12

Intersection Summary

Cycle Length: 130.8

Actuated Cycle Length: 130.8

Offset: 50 (38%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 25.8

Intersection LOS: C

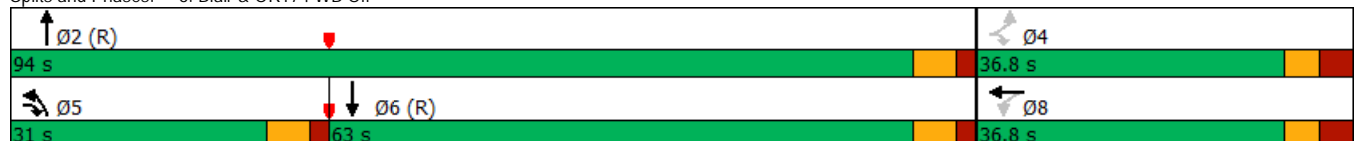
Intersection Capacity Utilization 84.7%

ICU Level of Service E










Analysis Period (min) 15

Description: Signal Timing Plan: May 5th, 2016

















Splits and Phases: 6: Blair & OR174 WB Off












Existing - PM
7: Transitway & City Park

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	88	128	73	32	124	80
Future Volume (Veh/h)	88	128	73	32	124	80
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	93	135	77	34	131	84
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	287					
pX, platoon unblocked						
vC, conflicting volume			228		348	160
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			228		348	160
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		79	91
cM capacity (veh/h)			1340		611	885
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	228	111	215			
Volume Left	0	77	131			
Volume Right	135	0	84			
cSH	1700	1340	695			
Volume to Capacity	0.13	0.06	0.31			
Queue Length 95th (m)	0.0	1.4	10.0			
Control Delay (s)	0.0	5.6	12.5			
Lane LOS		A	B			
Approach Delay (s)	0.0	5.6	12.5			
Approach LOS			B			
Intersection Summary						
Average Delay			6.0			
Intersection Capacity Utilization			41.6%	ICU Level of Service		A
Analysis Period (min)	15					

Existing - PM
8: City Park & SilverCity

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	5	180	6	23	108	25	5	1	23	13	5	4
Future Volume (vph)	5	180	6	23	108	25	5	1	23	13	5	4
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	5	189	6	24	114	26	5	1	24	14	5	4
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	200	164	30	23								
Volume Left (vph)	5	24	5	14								
Volume Right (vph)	6	26	24	4								
Hadj (s)	0.02	-0.03	-0.41	0.05								
Departure Headway (s)	4.2	4.2	4.3	4.8								
Degree Utilization, x	0.23	0.19	0.04	0.03								
Capacity (veh/h)	837	840	764	688								
Control Delay (s)	8.5	8.2	7.5	7.9								
Approach Delay (s)	8.5	8.2	7.5	7.9								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			8.3									
Level of Service			A									
Intersection Capacity Utilization			30.3%		ICU Level of Service					A		
Analysis Period (min)			15									

Existing - PM
9: City Park

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	203	0	0	161	0	0
Future Volume (Veh/h)	203	0	0	161	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	214	0	0	169	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			214		383	214
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			214		383	214
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1356		620	826
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	214	169	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1356	1700			
Volume to Capacity	0.13	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			14.6%	ICU Level of Service		A
Analysis Period (min)			15			

Appendix D

COLLISION DATA

Total Area

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total
P.D. only	75	23	11	14	0	2	0	2	127
Non-fatal injury	25	12	1	10	0	7	0	1	56
Non reportable	0	0	0	0	0	0	0	0	0
Total	100	35	12	24	0	9	0	3	183
	#1 or 55%	#2 or 19%	#4 or 7%	#3 or 13%	#7 or 0%	#5 or 5%	#7 or 0%	#6 or 2%	

69%
31%
0%
100%

BLAIR RD/REGIONAL RD 174 N/OR174 IC112 RAMP61

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2013-2017	100	34,443	1826	1.59

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total
P.D. only	46	13	7	5	0	1	0	1	73
Non-fatal injury	14	4	1	7	0	0	0	1	27
Non reportable	0	0	0	0	0	0	0	0	0
Total	60	17	8	12	0	1	0	2	100
	60%	17%	8%	12%	0%	1%	0%	2%	

73%
27%
0%
100%

OGILVIE RD/BATHGATE DR/CITYPARK DR W

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2013-2017	36	17,728	1826	1.11

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total
P.D. only	8	4	3	7	0	1	0	1	24
Non-fatal injury	3	3	0	3	0	3	0	0	12
Non reportable	0	0	0	0	0	0	0	0	0
Total	11	7	3	10	0	4	0	1	36
	31%	19%	8%	28%	0%	11%	0%	3%	

67%
33%
0%
100%

OGILVIE RD/CITY PARK DR E/CSIS HQ ACCESS

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2013-2017	40	17,728	1826	1.24

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total
P.D. only	19	6	0	2	0	0	0	0	27
Non-fatal injury	4	5	0	0	0	4	0	0	13
Non reportable	0	0	0	0	0	0	0	0	0
Total	23	11	0	2	0	4	0	0	40
	58%	28%	0%	5%	0%	10%	0%	0%	

68%
33%
0%
100%

OGILVIE RD, BATHGATE DR to CITY PARK DR

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2013-2017	7	n/a	365	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total
P.D. only	2	0	1	0	0	0	0	0	3
Non-fatal injury	4	0	0	0	0	0	0	0	4
Non reportable	0	0	0	0	0	0	0	0	0
Total	6	0	1	0	0	0	0	0	7
	86%	0%	14%	0%	0%	0%	0%	0%	

43%
57%
0%
100%



City Operations - Transportation Services

Collision Details Report - Public Version

From: January 1, 2013 **To:** December 31, 2017

Location: BLAIR RD @ OGILVIE RD

Traffic Control: Traffic signal

Total Collisions: 97

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2013-Jan-06, Sun,09:19	Snow	Sideswipe	P.D. only	Packed snow	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Pick-up truck	Other motor vehicle	
2013-Jan-06, Sun,11:09	Snow	Rear end	Non-fatal injury	Slush	West	Turning left	Pick-up truck	Other motor vehicle	
					West	Turning left	Pick-up truck	Other motor vehicle	
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2013-Jan-10, Thu,17:20	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Passenger van	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2013-Jan-15, Tue,11:54	Clear	Rear end	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	

2013-Jan-22, Tue,09:00	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2013-Jan-28, Mon,14:03	Snow	SMV other	Non-fatal injury	Wet	West	Turning left	Passenger van	Pedestrian	1
2013-Feb-05, Tue,20:32	Snow	Turning movement	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Turning left	Pick-up truck	Other motor vehicle	
2013-Feb-17, Sun,09:05	Clear	Rear end	P.D. only	Dry	North	Turning left	Passenger van	Other motor vehicle	
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2013-Feb-26, Tue,17:15	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2013-Mar-21, Thu,08:00	Clear	Rear end	P.D. only	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle	
					North	Turning left	Passenger van	Other motor vehicle	
2013-May-23, Thu,17:29	Clear	Rear end	P.D. only	Dry	North	Going ahead	Passenger van	Other motor vehicle	
					North	Stopped	Passenger van	Other motor vehicle	
					North	Stopped	Pick-up truck	Other motor vehicle	

2013-Jun-01, Sat,10:12	Clear	Rear end	P.D. only	Dry	North	Turning right	Pick-up truck	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
2013-Jun-06, Thu,12:15	Rain	Rear end	P.D. only	Wet	North	Slowing or stopping	Pick-up truck	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2013-Jun-27, Thu,18:00	Clear	Rear end	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2013-Jun-28, Fri,09:09	Rain	Rear end	Non-fatal injury	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2013-Jun-28, Fri,17:15	Rain	Rear end	P.D. only	Wet	West	Going ahead	Pick-up truck	Other motor vehicle
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2013-Jul-24, Wed,17:58	Clear	Turning movement	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle
2013-Jul-25, Thu,12:35	Clear	Rear end	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle

2013-Sep-06, Fri,17:04	Clear	Rear end	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2013-Sep-09, Mon,10:05	Clear	Rear end	Non-fatal injury	Dry	North	Turning right	Pick-up truck	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
2013-Oct-03, Thu,13:00	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle
2013-Nov-04, Mon,14:25	Clear	Rear end	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Turning right	Pick-up truck	Other motor vehicle
2013-Dec-04, Wed,15:45	Clear	Rear end	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Turning right	Pick-up truck	Other motor vehicle
2013-Dec-09, Mon,02:55	Snow	Turning movement	Non-fatal injury	Wet	North	Turning left	Police vehicle	Other motor vehicle
					North	Going ahead	Police vehicle	Other motor vehicle
2013-Dec-14, Sat,21:24	Snow	Angle	P.D. only	Loose snow	East	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle

2013-Dec-16, Mon,11:43	Clear	Rear end	Non-fatal injury	Wet	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2013-Dec-18, Wed,08:35	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2013-Dec-23, Mon,10:49	Clear	Sideswipe	P.D. only	Wet	West	Overtaking	Automobile, station wagon	Other motor vehicle
					West	Turning left	Truck - tractor	Other motor vehicle
2014-Feb-26, Wed,17:00	Clear	Turning movement	P.D. only	Dry	West	Turning left	Passenger van	Other motor vehicle
					West	Turning left	Pick-up truck	Other motor vehicle
2014-Mar-09, Sun,17:34	Clear	Rear end	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2014-Mar-26, Wed,15:53	Clear	Rear end	P.D. only	Dry	East	Turning right	Pick-up truck	Other motor vehicle
					East	Turning right	Pick-up truck	Other motor vehicle
2014-May-03, Sat,14:20	Rain	Sideswipe	P.D. only	Wet	North	Changing lanes	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle

2014-May-13, Tue,12:40	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Stopped	Passenger van	Other motor vehicle
2014-May-21, Wed,13:10	Clear	Rear end	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2014-Jun-17, Tue,14:39	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Stopped	Moped	Other motor vehicle
2014-Jul-25, Fri,21:02	Clear	Rear end	Non-fatal injury	Dry	East	Changing lanes	Pick-up truck	Cyclist
					East	Going ahead	Bicycle	Other motor vehicle
2014-Aug-02, Sat,18:12	Clear	SMV other	P.D. only	Dry	East	Turning left	Automobile, station wagon	Curb
2014-Sep-02, Tue,17:00	Rain	Rear end	P.D. only	Wet	North	Turning right	Pick-up truck	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
2014-Dec-13, Sat,18:35	Clear	Rear end	Non-fatal injury	Wet	West	Going ahead	Pick-up truck	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2015-Jan-06, Tue,18:29	Rain	Rear end	P.D. only	Slush	East	Turning right	Passenger van	Other motor vehicle

					East	Turning right	Automobile, station wagon	Other motor vehicle
2015-Jan-20, Tue,15:50	Clear	Rear end	Non-fatal injury	Dry	East	Turning right	Unknown	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2015-Jan-23, Fri,00:50	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2015-Jan-28, Wed,14:30	Clear	Rear end	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
2015-Feb-13, Fri,08:42	Clear	Rear end	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2015-Feb-22, Sun,14:44	Clear	Rear end	P.D. only	Ice	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2015-Feb-26, Thu,19:05	Clear	Rear end	P.D. only	Wet	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2015-Mar-20, Fri,14:22	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle

					South	Turning right	Pick-up truck	Other motor vehicle
2015-Apr-03, Fri,18:16	Clear	Angle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle
2015-Apr-06, Mon,20:19	Clear	Rear end	Non-fatal injury	Dry	East	Turning right	Pick-up truck	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2015-Apr-21, Tue,08:43	Clear	Rear end	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
2015-May-08, Fri,17:30	Clear	Sideswipe	P.D. only	Dry	East	Going ahead	Unknown	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2015-May-13, Wed,13:41	Clear	Rear end	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle
2015-Jun-11, Thu,15:15	Clear	Rear end	P.D. only	Dry	East	Turning right	Pick-up truck	Other motor vehicle
					East	Turning right	Pick-up truck	Other motor vehicle
2015-Jun-11, Thu,16:09	Clear	Turning movement	Non-fatal injury	Dry	East	Turning right	Automobile, station wagon	Cyclist

					East	Going ahead	Bicycle	Other motor vehicle
2015-Jul-06, Mon,15:55	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Pick-up truck	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Aug-26, Wed,19:29	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Stopped	Pick-up truck	Other motor vehicle
2015-Sep-15, Tue,16:41	Clear	Rear end	Non-fatal injury	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Turning right	Pick-up truck	Other motor vehicle
2015-Sep-23, Wed,08:30	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Unknown	Unknown	Other motor vehicle
2015-Sep-25, Fri,09:32	Clear	Rear end	P.D. only	Dry	West	Going ahead	Delivery van	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2015-Oct-08, Thu,15:40	Clear	Sideswipe	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					North	Turning left	Truck and trailer	Other motor vehicle
2015-Oct-23, Fri,13:55	Clear	Rear end	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle

					North	Turning right	Automobile, station wagon	Other motor vehicle
2015-Nov-05, Thu,16:31	Clear	Turning movement	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle
					South	Turning left	Automobile, station wagon	Other motor vehicle
2015-Nov-02, Mon,11:30	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Stopped	Pick-up truck	Other motor vehicle
2015-Nov-26, Thu,13:52	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2015-Dec-10, Thu,11:28	Clear	Rear end	Non-fatal injury	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2015-Dec-15, Tue,06:15	Rain	Turning movement	P.D. only	Wet	West	Going ahead	Passenger van	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle
2015-Dec-31, Thu,17:45	Clear	Rear end	Non-fatal injury	Wet	North	Slowing or stopping	Municipal transit bus	Other motor vehicle
					North	Stopped	Pick-up truck	Other motor vehicle
2016-Jan-12, Tue,18:26	Clear	Rear end	P.D. only	Wet	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle

					East	Stopped	Pick-up truck	Other motor vehicle
2016-Feb-07, Sun,13:34	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Stopped	Passenger van	Other motor vehicle
2016-Feb-12, Fri,17:15	Snow	Rear end	P.D. only	Loose snow	South	Unknown	Unknown	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle
2016-May-03, Tue,08:59	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2016-May-12, Thu,16:34	Clear	Sideswipe	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle
2016-Jun-09, Thu,06:35	Clear	SMV other	Non-fatal injury	Dry	South	Turning left	Motorcycle	Skidding/sliding
2016-Jul-22, Fri,14:29	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Stopped	Pick-up truck	Other motor vehicle
2016-Aug-02, Tue,21:37	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle

2016-Aug-12, Fri,16:16	Clear	Rear end	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Stopped	Pick-up truck	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2016-Sep-10, Sat,17:02	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle
					South	Turning right	Automobile, station wagon	Other motor vehicle
2016-Sep-19, Mon,07:32	Clear	Rear end	P.D. only	Dry	North	Going ahead	Unknown	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2016-Dec-14, Wed,14:25	Clear	Rear end	P.D. only	Slush	South	Turning right	Automobile, station wagon	Other motor vehicle
					South	Turning right	Automobile, station wagon	Other motor vehicle
2017-Jan-06, Fri,15:05	Clear	Sideswipe	P.D. only	Loose snow	South	Overtaking	Delivery van	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle
2017-Jan-19, Thu,17:36	Clear	Rear end	P.D. only	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle
					West	Turning left	Automobile, station wagon	Other motor vehicle
2017-Feb-02, Thu,17:08	Clear	Rear end	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle

2017-Apr-04, Tue,11:34	Rain	Sideswipe	P.D. only	Wet	West	Overtaking	Automobile, station wagon	Other motor vehicle
					West	Turning left	Pick-up truck	Other motor vehicle
2017-May-23, Tue,09:02	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
					East	Stopped	Municipal transit bus	Other motor vehicle
2017-Aug-17, Thu,21:39	Rain	Rear end	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2017-Sep-04, Mon,15:05	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Sep-06, Wed,11:09	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2017-Sep-17, Sun,11:30	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2017-Oct-04, Wed,13:16	Clear	Other	P.D. only	Dry	West	Reversing	Automobile, station wagon	Other motor vehicle

					East	Turning left	Automobile, station wagon	Other motor vehicle
2017-Oct-27, Fri,11:57	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2017-Oct-30, Mon,09:29	Rain	Rear end	P.D. only	Wet	North	Going ahead	Pick-up truck	Other motor vehicle
					North	Stopped	Tow truck	Other motor vehicle
2017-Nov-21, Tue,15:59	Clear	Sideswipe	P.D. only	Dry	West	Turning left	Passenger van	Other motor vehicle
					West	Turning left	Automobile, station wagon	Other motor vehicle
2017-Nov-29, Wed,08:56	Clear	Rear end	P.D. only	Wet	West	Turning right	Automobile, station wagon	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2017-Dec-05, Tue,20:15	Rain	Rear end	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2017-Dec-14, Thu,02:40	Clear	Sideswipe	P.D. only	Dry	South	Unknown	Unknown	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle

2017-Dec-23, Sat,14:16	Snow	Rear end	P.D. only	Loose snow	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle

2017-Dec-31, Sun,12:59	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle

Location: BLAIR RD @ OR174 IC112 RAMP26

Traffic Control: No control

Total Collisions: 4

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Aug-28, Thu,17:21	Clear	Rear end	Non-fatal injury	Dry	North	Turning right	Automobile, station wagon	Cyclist	
					North	Going ahead	Bicycle	Other motor vehicle	
2015-Nov-01, Sun,01:42	Rain	SMV other	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Ran off road	
2016-Nov-26, Sat,11:07	Clear	SMV other	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Steel guide rail	
2017-Aug-03, Thu,08:15	Clear	Rear end	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	

Location: BLAIR RD @ OR174 IC112 RAMP52

Traffic Control: No control

Total Collisions: 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
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2016-Dec-08, Thu,17:12	Snow	Rear end	Non-fatal injury	Loose snow	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle

Location: BLAIR RD @ REGIONAL RD 174 N/OR174 IC112 RAMP61

Traffic Control: Traffic signal

Total Collisions: 100

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2013-Jan-01, Tue,10:07	Clear	Rear end	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	
					West	Turning left	Pick-up truck	Other motor vehicle	
2013-Jan-23, Wed,08:20	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Pick-up truck	Other motor vehicle	
					North	Going ahead	Pick-up truck	Other motor vehicle	
2013-Jan-23, Wed,13:38	Clear	Angle	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Passenger van	Other motor vehicle	
2013-Jan-29, Tue,17:25	Rain	Rear end	P.D. only	Wet	North	Slowing or stopping	Pick-up truck	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2013-Feb-08, Fri,15:06	Snow	Angle	P.D. only	Loose snow	West	Turning right	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Municipal transit bus	Other motor vehicle	

2013-Feb-22, Fri,11:30	Clear	Other	P.D. only	Dry	North	Reversing	Pick-up truck	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2013-Mar-20, Wed,19:13	Clear	Rear end	P.D. only	Wet	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2013-Apr-11, Thu,14:21	Clear	Turning movement	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Turning left	Passenger van	Other motor vehicle
2013-May-06, Mon,07:43	Clear	Rear end	P.D. only	Dry	West	Turning right	Pick-up truck	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2013-May-13, Mon,16:10	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Pick-up truck	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2013-Jun-14, Fri,09:32	Clear	Angle	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2013-Jun-21, Fri,16:10	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle

2013-Jun-24, Mon,06:30	Clear	Turning movement	Non-fatal injury	Dry	East	Turning left	Pick-up truck	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2013-Jul-07, Sun,16:17	Rain	Sideswipe	P.D. only	Wet	North	Changing lanes	Passenger van	Other motor vehicle
					North	Changing lanes	Passenger van	Other motor vehicle
2013-Sep-25, Wed,07:05	Clear	Rear end	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2013-Sep-30, Mon,09:57	Clear	Rear end	Non-fatal injury	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2013-Oct-17, Thu,00:26	Clear	Rear end	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2013-Oct-17, Thu,07:30	Clear	Rear end	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle
					West	Turning right	Pick-up truck	Other motor vehicle
2013-Oct-21, Mon,15:29	Clear	Rear end	P.D. only	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle
					North	Turning left	Pick-up truck	Other motor vehicle

2013-Oct-28, Mon,08:00	Rain	Rear end	P.D. only	Wet	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2013-Oct-31, Thu,19:26	Rain	Rear end	Non-fatal injury	Wet	South	Slowing or stopping	Passenger van	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle
2013-Nov-21, Thu,14:49	Clear	Rear end	P.D. only	Dry	West	Turning right	Pick-up truck	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2013-Nov-26, Tue,21:56	Snow	Turning movement	P.D. only	Loose snow	East	Turning left	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2013-Nov-30, Sat,09:45	Clear	Rear end	P.D. only	Wet	West	Turning right	Automobile, station wagon	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2013-Dec-14, Sat,21:50	Snow	SMV other	P.D. only	Ice	West	Going ahead	Automobile, station wagon	Skidding/sliding
2013-Dec-18, Wed,19:21	Snow	Rear end	P.D. only	Loose snow	North	Turning left	Automobile, station wagon	Other motor vehicle
					North	Turning left	Pick-up truck	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle

2013-Dec-20, Fri,10:08	Snow	Turning movement	P.D. only	Slush	East	Turning left	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2013-Dec-20, Fri,15:44	Snow	Turning movement	P.D. only	Loose snow	East	Turning left	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
2014-Jan-20, Mon,08:30	Clear	Rear end	P.D. only	Wet	West	Turning right	Automobile, station wagon	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2014-Feb-14, Fri,12:47	Snow	Rear end	Non-fatal injury	Loose snow	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2014-Feb-25, Tue,10:04	Clear	Rear end	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2014-Jun-15, Sun,13:42	Clear	Rear end	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2014-Jul-02, Wed,10:11	Clear	Rear end	P.D. only	Dry	West	Turning right	Pick-up truck	Other motor vehicle
					West	Turning right	Passenger van	Other motor vehicle

2014-Aug-30, Sat,12:35	Clear	Angle	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Passenger van	Other motor vehicle
2014-Sep-10, Wed,14:52	Clear	Rear end	Non-fatal injury	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle
					West	Turning right	Pick-up truck	Other motor vehicle
2014-Sep-20, Sat,08:54	Clear	Angle	Non-fatal injury	Dry	North	Going ahead	Pick-up truck	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Oct-14, Tue,06:53	Clear	Rear end	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2014-Oct-15, Wed,19:09	Rain	Turning movement	P.D. only	Wet	East	Turning left	Pick-up truck	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Nov-14, Fri,13:08	Clear	Rear end	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2014-Dec-03, Wed,18:27	Snow	Rear end	P.D. only	Wet	West	Turning right	Automobile, station wagon	Other motor vehicle
					West	Turning right	Passenger van	Other motor vehicle

2014-Dec-18, Thu,08:30	Snow	Rear end	Non-fatal injury	Wet	West	Turning right	Automobile, station wagon	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2014-Dec-29, Mon,16:00	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Pick-up truck	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2015-Jan-05, Mon,16:46	Clear	Rear end	P.D. only	Ice	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Stopped	Pick-up truck	Other motor vehicle
2015-Jan-06, Tue,15:40	Clear	Rear end	P.D. only	Ice	North	Changing lanes	Automobile, station wagon	Other motor vehicle
					North	Stopped	Delivery van	Other motor vehicle
2015-Jan-19, Mon,14:56	Clear	Rear end	Non-fatal injury	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle
					West	Turning left	Police vehicle	Other motor vehicle
2015-Feb-09, Mon,08:05	Clear	Rear end	Non-fatal injury	Loose snow	West	Slowing or stopping	Pick-up truck	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2015-Feb-14, Sat,11:47	Drifting Snow	Rear end	P.D. only	Packed snow	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle

2015-Feb-14, Sat,21:06	Snow	Angle	P.D. only	Loose snow	East	Slowing or stopping	Automobile, station wagon	Skidding/sliding
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Feb-17, Tue,11:12	Clear	Sideswipe	Non-fatal injury	Wet	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Truck - dump	Other motor vehicle
2015-Feb-17, Tue,18:50	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2015-Feb-21, Sat,18:31	Snow	Rear end	P.D. only	Loose snow	West	Turning right	Pick-up truck	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2015-Mar-03, Tue,07:20	Clear	Rear end	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2015-Mar-18, Wed,08:35	Clear	Rear end	P.D. only	Dry	West	Turning right	Pick-up truck	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2015-Mar-20, Fri,14:14	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Pick-up truck	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle

2015-Mar-21, Sat,10:37	Rain	Angle	Non-fatal injury	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
2015-Apr-20, Mon,08:36	Rain	Angle	Non-fatal injury	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle
2015-Jun-23, Tue,19:46	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Jun-29, Mon,12:52	Rain	Rear end	P.D. only	Wet	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2015-Jul-08, Wed,20:25	Clear	Rear end	Non-fatal injury	Dry	South	Going ahead	Pick-up truck	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2015-Jul-15, Wed,12:15	Clear	Turning movement	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle
					West	Turning left	Automobile, station wagon	Other motor vehicle
2015-Sep-21, Mon,22:10	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle

2015-Sep-28, Mon,18:21	Rain	Rear end	P.D. only	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle
2015-Oct-13, Tue,09:49	Rain	Other	Non-fatal injury	Wet	West	Turning left	Pick-up truck	Curb
					North	Turning left	Municipal transit bus	Other motor vehicle
2015-Oct-19, Mon,18:59	Clear	Angle	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle
2015-Oct-23, Fri,15:41	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2015-Oct-26, Mon,09:15	Clear	Rear end	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2015-Nov-10, Tue,18:00	Clear	Turning movement	P.D. only	Dry	East	Turning right	Pick-up truck	Other motor vehicle
					West	Turning left	Automobile, station wagon	Other motor vehicle
2015-Nov-25, Wed,06:55	Fog, mist, smoke, dust	Rear end	Non-fatal injury	Dry	West	Turning right	Pick-up truck	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle

2015-Dec-15, Tue,13:20	Clear	Angle	Non-fatal injury	Dry	North	Going ahead	Passenger van	Other motor vehicle
					West	Turning left	Pick-up truck	Other motor vehicle
2016-Feb-09, Tue,15:48	Clear	Turning movement	Non-fatal injury	Dry	East	Turning left	Pick-up truck	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Apr-01, Fri,16:00	Clear	Rear end	Non-fatal injury	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2016-May-17, Tue,10:47	Clear	Rear end	P.D. only	Dry	East	Turning right	Pick-up truck	Other motor vehicle
					East	Turning right	Pick-up truck	Other motor vehicle
2016-Jun-29, Wed,08:52	Clear	Angle	Non-fatal injury	Dry	West	Going ahead	Passenger van	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Sep-10, Sat,23:18	Rain	Turning movement	P.D. only	Wet	South	Going ahead	Passenger van	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle
2016-Sep-19, Mon,19:42	Clear	Sideswipe	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Turning right	Pick-up truck	Other motor vehicle

2016-Sep-23, Fri,07:30	Rain	Rear end	P.D. only	Wet	West	Turning right	Automobile, station wagon	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2016-Oct-22, Sat,00:33	Rain	Rear end	Non-fatal injury	Wet	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2016-Nov-14, Mon,14:08	Clear	Rear end	P.D. only	Dry	West	Changing lanes	Pick-up truck	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2016-Nov-21, Mon,09:10	Snow	Rear end	P.D. only	Slush	West	Slowing or stopping	Pick-up truck	Other motor vehicle
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2017-Jan-06, Fri,14:40	Clear	Turning movement	P.D. only	Wet	East	Turning left	Passenger van	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Jan-19, Thu,14:56	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle
2017-Jan-21, Sat,18:24	Clear	Rear end	P.D. only	Wet	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle

2017-Feb-04, Sat,18:10	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Mar-18, Sat,10:00	Clear	Rear end	Non-fatal injury	Dry	South	Turning right	Pick-up truck	Other motor vehicle
					South	Turning right	Automobile, station wagon	Other motor vehicle
2017-Mar-18, Sat,21:47	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2017-Apr-03, Mon,07:46	Clear	Rear end	P.D. only	Dry	West	Unknown	Unknown	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2017-Apr-15, Sat,17:08	Rain	Turning movement	P.D. only	Wet	South	Going ahead	Pick-up truck	Other motor vehicle
					North	Turning left	Municipal transit bus	Other motor vehicle
2017-May-04, Thu,21:21	Rain	Turning movement	P.D. only	Wet	East	Turning left	Unknown	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
2017-May-14, Sun,11:00	Rain	Rear end	Non-fatal injury	Wet	South	Going ahead	Unknown	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle

2017-May-18, Thu,07:40	Clear	Rear end	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle
					West	Turning right	Pick-up truck	Other motor vehicle
2017-May-24, Wed,10:30	Clear	Turning movement	Non-fatal injury	Dry	South	Going ahead	Pick-up truck	Other motor vehicle
					North	Turning left	Passenger van	Other motor vehicle
2017-May-24, Wed,21:22	Clear	Angle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Jun-07, Wed,20:01	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Jun-14, Wed,13:58	Clear	Rear end	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2017-Jul-18, Tue,08:08	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2017-Aug-04, Fri,15:48	Clear	Rear end	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle
					North	Slowing or stopping	Pick-up truck	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle

2017-Aug-11, Fri,00:40	Clear	Turning movement	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Oct-04, Wed,12:26	Clear	Rear end	P.D. only	Dry	South	Going ahead	Passenger van	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2017-Oct-16, Mon,08:26	Clear	Rear end	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2017-Nov-07, Tue,07:45	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Slowing or stopping	Passenger van	Other motor vehicle

Location: BLAIR RD @ REGIONAL RD 174 S/OR174 IC112 RAMP15

Traffic Control: Traffic signal

Total Collisions: 70

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2013-Mar-13, Wed,15:30	Clear	Rear end	P.D. only	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle	
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2013-Mar-22, Fri,09:15	Clear	Rear end	P.D. only	Wet	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2013-Mar-22, Fri,09:29	Clear	Rear end	P.D. only	Wet	South	Going ahead	Tow truck	Other motor vehicle	

					South	Stopped	Automobile, station wagon	Other motor vehicle
2013-Apr-24, Wed,16:03	Rain	Rear end	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Turning left	Truck - closed	Other motor vehicle
2013-Jun-07, Fri,12:15	Rain	Rear end	P.D. only	Wet	South	Slowing or stopping	Automobile, station wagon	Skidding/sliding
					South	Stopped	Automobile, station wagon	Other motor vehicle
2013-Jun-11, Tue,19:24	Rain	Rear end	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2013-Jun-22, Sat,12:49	Rain	SMV other	P.D. only	Wet	South	Slowing or stopping	Automobile, station wagon	Skidding/sliding
2013-Jul-12, Fri,10:16	Clear	Rear end	Non-fatal injury	Dry	North	Going ahead	Delivery van	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2013-Jul-27, Sat,10:43	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Skidding/sliding
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2013-Jul-27, Sat,14:45	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle

2013-Aug-01, Thu,12:56	Rain	Rear end	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle
2013-Sep-12, Thu,17:23	Rain	Turning movement	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Turning left	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2013-Oct-26, Sat,13:49	Rain	Rear end	P.D. only	Wet	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Slowing or stopping	Passenger van	Other motor vehicle
2014-Jan-03, Fri,12:40	Clear	Rear end	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle
					West	Turning left	Automobile, station wagon	Other motor vehicle
2014-Feb-18, Tue,08:30	Snow	Rear end	P.D. only	Loose snow	North	Slowing or stopping	Pick-up truck	Skidding/sliding
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2014-Apr-29, Tue,21:15	Rain	Rear end	P.D. only	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle
					South	Turning left	Automobile, station wagon	Other motor vehicle
					South	Turning left	Pick-up truck	Other motor vehicle
2014-Jun-03, Tue,12:18	Rain	Rear end	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle

					South	Stopped	Automobile, station wagon	Other motor vehicle
2014-Jun-21, Sat,13:05	Clear	Turning movement	Non-fatal injury	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Pick-up truck	Other motor vehicle
2014-Jul-08, Tue,17:15	Rain	Rear end	P.D. only	Wet	South	Slowing or stopping	Pick-up truck	Other motor vehicle
					South	Slowing or stopping	Pick-up truck	Other motor vehicle
2014-Jul-31, Thu,12:21	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2014-Oct-04, Sat,14:57	Rain	Rear end	P.D. only	Wet	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Turning left	Automobile, station wagon	Other motor vehicle
2014-Oct-04, Sat,13:00	Rain	Rear end	P.D. only	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle
					South	Turning left	Pick-up truck	Other motor vehicle
2014-Oct-06, Mon,17:32	Clear	Turning movement	Non-fatal injury	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Jan-03, Sat,17:44	Snow	Turning movement	P.D. only	Slush	South	Turning left	Automobile, station wagon	Other motor vehicle

					North	Going ahead	Pick-up truck	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2015-Jan-31, Sat,05:40	Clear	Sideswipe	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle
					South	Turning left	Automobile, station wagon	Other motor vehicle
2015-Feb-12, Thu,18:18	Clear	Rear end	Non-fatal injury	Loose snow	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2015-Mar-31, Tue,14:14	Clear	Turning movement	Non-fatal injury	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Pick-up truck	Other motor vehicle
2015-Jun-05, Fri,16:49	Rain	Rear end	Non-fatal injury	Wet	South	Slowing or stopping	Passenger van	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle
2015-Jul-07, Tue,16:03	Clear	Rear end	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle
2015-Jul-11, Sat,11:47	Clear	Turning movement	P.D. only	Dry	North	Going ahead	Passenger van	Other motor vehicle
					South	Turning left	Automobile, station wagon	Other motor vehicle

2015-Sep-28, Mon,14:42	Rain	Rear end	Non-fatal injury	Wet	North	Turning right	Automobile, station wagon	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
2015-Sep-28, Mon,15:20	Rain	Rear end	P.D. only	Wet	South	Slowing or stopping	Pick-up truck	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2015-Oct-26, Mon,08:12	Clear	Rear end	P.D. only	Dry	West	Turning right	Pick-up truck	Other motor vehicle
					West	Turning right	Pick-up truck	Other motor vehicle
2015-Oct-28, Wed,21:07	Rain	Rear end	P.D. only	Wet	North	Turning right	Automobile, station wagon	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
2015-Oct-30, Fri,14:40	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Nov-13, Fri,12:06	Clear	Rear end	P.D. only	Wet	South	Slowing or stopping	Pick-up truck	Other motor vehicle
					South	Turning left	Automobile, station wagon	Other motor vehicle
2015-Dec-21, Mon,17:00	Freezing Rain	Turning movement	P.D. only	Ice	South	Turning left	Pick-up truck	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle

2016-Jan-15, Fri,18:30	Clear	Turning movement	P.D. only	Wet	South	Turning left	Pick-up truck	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Jan-17, Sun,11:32	Clear	Turning movement	Non-fatal injury	Wet	South	Turning left	Pick-up truck	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Feb-06, Sat,13:10	Clear	Sideswipe	P.D. only	Dry	West	Overtaking	Automobile, station wagon	Other motor vehicle
					West	Stopped	Passenger van	Other motor vehicle
2016-Feb-21, Sun,10:17	Clear	Turning movement	Non-fatal injury	Wet	North	Making "U" turn	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle
2016-Feb-27, Sat,21:55	Clear	Turning movement	P.D. only	Wet	South	Turning left	Pick-up truck	Other motor vehicle
					North	Going ahead	Pick-up truck	Other motor vehicle
2016-Aug-03, Wed,23:01	Clear	Turning movement	Non-fatal injury	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Motorcycle	Other motor vehicle
					South	Turning left	Automobile, station wagon	Other motor vehicle
2016-Sep-07, Wed,21:59	Rain	Rear end	P.D. only	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle
					South	Turning left	Automobile, station wagon	Other motor vehicle

2016-Nov-02, Wed,15:30	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2016-Nov-26, Sat,15:25	Clear	Turning movement	P.D. only	Dry	South	Turning left	Pick-up truck	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Nov-30, Wed,19:50	Rain	Turning movement	Non-fatal injury	Wet	South	Turning left	Pick-up truck	Other motor vehicle
					North	Going ahead	Passenger van	Skidding/sliding
					South	Stopped	Pick-up truck	Other motor vehicle
2017-Jan-09, Mon,13:30	Clear	Angle	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Jan-10, Tue,08:30	Snow	SMV other	P.D. only	Slush	East	Going ahead	Automobile, station wagon	Cable guide rail
2017-Feb-11, Sat,11:51	Clear	Other	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Debris falling off vehicle
					East	Going ahead	Automobile, station wagon	Other
2017-Feb-12, Sun,02:45	Snow	Rear end	P.D. only	Loose snow	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle

2017-Mar-02, Thu,16:09	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2017-Mar-08, Wed,15:18	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Pick-up truck	Other motor vehicle
					South	Turning left	Pick-up truck	Other motor vehicle
2017-Jun-07, Wed,09:00	Clear	Turning movement	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Turning left	Automobile, station wagon	Other motor vehicle
2017-Jun-29, Thu,12:08	Rain	Rear end	P.D. only	Wet	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Turning left	Automobile, station wagon	Other motor vehicle
2017-Aug-10, Thu,09:01	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Aug-18, Fri,17:56	Rain	Rear end	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2017-Sep-12, Tue,17:08	Clear	Sideswipe	P.D. only	Dry	East	Merging	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle

2017-Sep-29, Fri,22:20	Rain	Rear end	P.D. only	Wet	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2017-Oct-12, Thu,07:35	Clear	Rear end	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Pick-up truck	Other motor vehicle
2017-Nov-01, Wed,17:09	Rain	Turning movement	P.D. only	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Nov-02, Thu,13:43	Rain	Rear end	P.D. only	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle
					South	Turning left	Automobile, station wagon	Other motor vehicle
					South	Turning left	Automobile, station wagon	Other motor vehicle
2017-Dec-05, Tue,11:37	Rain	Rear end	P.D. only	Wet	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2017-Dec-11, Mon,12:23	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Truck - dump	Other motor vehicle
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2017-Dec-23, Sat,11:59	Snow	Turning movement	Non-fatal injury	Loose snow	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle

2017-Dec-27, Wed,13:15	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2017-Dec-28, Thu,07:00	Clear	SMV other	P.D. only	Ice	East	Merging	Automobile, station wagon	Snowbank/drift
2017-Dec-28, Thu,17:45	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Dec-29, Fri,16:16	Clear	Turning movement	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Turning left	Automobile, station wagon	Other motor vehicle
2017-Dec-29, Fri,18:14	Clear	Approaching	Non-fatal injury	Other	North	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle

Location: BLAIR RD btwn OGILVIE RD & OR174 IC112 RAMP36

Traffic Control: No control

Total Collisions: 9

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2013-Apr-05, Fri,16:46	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2013-Jul-19, Fri,16:30	Rain	Rear end	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle	

					North	Stopped	Automobile, station wagon	Other motor vehicle
2013-Jul-31, Wed,18:45	Clear	SMV other	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Curb
2013-Sep-26, Thu,16:08	Clear	Rear end	P.D. only	Dry	South	Merging	Automobile, station wagon	Other motor vehicle
					South	Merging	Pick-up truck	Other motor vehicle
2015-Jan-23, Fri,15:09	Clear	Rear end	P.D. only	Dry	South	Going ahead	Pick-up truck	Other motor vehicle
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2015-Oct-05, Mon,15:45	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Oct-27, Thu,21:54	Snow	Rear end	P.D. only	Slush	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2016-Nov-14, Mon,18:02	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Aug-10, Thu,20:00	Clear	Rear end	Non-fatal injury	Dry	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle

Location: BLAIR RD btwn OR174 IC112 RAMP26 & OR174 IC112 RAMP52

Traffic Control: No control

Total Collisions: 4

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2013-Mar-01, Fri,16:35	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Slowing or stopping	Pick-up truck	Other motor vehicle	
2013-May-24, Fri,13:38	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Pick-up truck	Other motor vehicle	
					North	Going ahead	Pick-up truck	Other motor vehicle	
2014-Jul-08, Tue,16:24	Rain	Rear end	P.D. only	Wet	South	Changing lanes	Pick-up truck	Other motor vehicle	
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2016-Oct-21, Fri,18:27	Rain	Rear end	Non-fatal injury	Wet	North	Changing lanes	Automobile, station wagon	Cyclist	
					North	Going ahead	Bicycle	Other motor vehicle	

Location: BLAIR RD btwn OR174 IC112 RAMP36 & OR174 IC112 RAMP26

Traffic Control: No control

Total Collisions: 3

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2013-Mar-12, Tue,16:06	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Passenger van	Other motor vehicle	
2013-Nov-01, Fri,18:15	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	

					North	Turning left	Municipal transit bus	Other motor vehicle
2016-Oct-31, Mon,14:50	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Pick-up truck	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle

Location: BLAIR RD btwn OR174 IC112 RAMP52 & OR174 IC112 RAMP53

Traffic Control: No control

Total Collisions: 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Oct-16, Fri,20:55	Rain	Rear end	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	

Location: OGILVIE RD @ 185 E OF BATHGATE DR/185 E OF CIT

Traffic Control: Traffic signal

Total Collisions: 4

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2013-Jan-08, Tue,00:00	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2015-Jan-10, Sat,14:33	Clear	Turning movement	P.D. only	Dry	West	Turning left	Pick-up truck	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Turning right	Pick-up truck	Other motor vehicle	
2015-Apr-02, Thu,20:29	Rain	Rear end	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle	

					East	Stopped	Automobile, station wagon	Other motor vehicle
2015-Oct-16, Fri,16:44	Clear	Sideswipe	Non-fatal injury	Dry	East	Going ahead	Truck - dump	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle

Location: OGILVIE RD @ 240 W OF BLAIR RD

Traffic Control: Traffic signal

Total Collisions: 4

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Jun-24, Tue,15:34	Rain	Rear end	Non-fatal injury	Wet	West	Going ahead	Tow truck	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Feb-12, Thu,08:30	Clear	Rear end	P.D. only	Slush	North	Slowing or stopping	Pick-up truck	Skidding/sliding	
					North	Stopped	Delivery van	Other motor vehicle	
2016-Jan-12, Tue,14:33	Snow	Rear end	P.D. only	Loose snow	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Oct-17, Mon,15:40	Clear	Rear end	Non-fatal injury	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	
					South	Turning right	Automobile, station wagon	Other motor vehicle	

Location: OGILVIE RD @ BATHGATE DR/CITYPARK DR W

Traffic Control: Traffic signal

Total Collisions: 36

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
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2013-May-29, Wed,13:24	Clear	Angle	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle	
					North	Turning left	Pick-up truck	Other motor vehicle	
2013-Jun-07, Fri,21:30	Rain	Angle	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2013-Aug-23, Fri,07:45	Clear	Angle	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Pick-up truck	Other motor vehicle	
2013-Oct-11, Fri,14:00	Clear	Rear end	Non-fatal injury	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2013-Dec-12, Thu,17:00	Clear	Rear end	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	
					East	Slowing or stopping	Pick-up truck	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2014-Feb-06, Thu,13:00	Clear	Rear end	P.D. only	Wet	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2014-Feb-26, Wed,16:41	Clear	SMV other	Non-fatal injury	Dry	North	Turning left	Pick-up truck	Pedestrian	1

2014-Mar-03, Mon,13:35	Clear	Angle	P.D. only	Dry	North	Turning left	Pick-up truck	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Mar-13, Thu,17:22	Clear	Rear end	P.D. only	Dry	East	Changing lanes	Pick-up truck	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2014-Sep-04, Thu,18:07	Clear	Angle	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Sep-08, Mon,17:33	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Pick-up truck	Other motor vehicle
2014-Sep-11, Thu,14:28	Clear	Turning movement	P.D. only	Dry	East	Making "U" turn	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Nov-21, Fri,19:54	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Slowing or stopping	Passenger van	Other motor vehicle
2014-Dec-02, Tue,18:04	Clear	Angle	P.D. only	Dry	South	Turning right	Unknown	Cyclist
					West	Going ahead	Bicycle	Other motor vehicle

2015-Apr-20, Mon,17:13	Clear	Turning movement	Non-fatal injury	Wet	West	Turning left	Passenger van	Other motor vehicle	
					East	Going ahead	Pick-up truck	Other motor vehicle	
2015-Nov-04, Wed,16:18	Clear	Turning movement	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2015-Nov-27, Fri,13:31	Rain	SMV other	Non-fatal injury	Wet	South	Turning left	Pick-up truck	Pedestrian	1
2016-Jan-05, Tue,08:46	Clear	Turning movement	P.D. only	Dry	East	Turning left	Pick-up truck	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Jan-05, Tue,08:40	Clear	Sideswipe	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Turning left	Municipal transit bus	Other motor vehicle	
2016-Jan-09, Sat,18:15	Clear	Other	P.D. only	Wet	East	Making "U" turn	Automobile, station wagon	Other motor vehicle	
					South	Turning right	Pick-up truck	Other motor vehicle	
2016-Mar-12, Sat,13:43	Clear	Turning movement	P.D. only	Dry	East	Making "U" turn	Pick-up truck	Other motor vehicle	
					West	Changing lanes	Automobile, station wagon	Other motor vehicle	
2016-Jun-01, Wed,10:10	Clear	Turning movement	Non-fatal injury	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	

					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Jun-11, Sat,15:14	Clear	Rear end	P.D. only	Dry	South	Stopped	Automobile, station wagon	Other motor vehicle	
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2016-Aug-13, Sat,10:27	Rain	Angle	Non-fatal injury	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Pick-up truck	Other motor vehicle	
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2016-Nov-06, Sun,15:45	Clear	SMV other	Non-fatal injury	Dry	West	Going ahead	Passenger van	Pedestrian	1
2017-Jan-09, Mon,18:30	Clear	Sideswipe	P.D. only	Slush	North	Changing lanes	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Jan-20, Fri,14:48	Freezing Rain	Rear end	Non-fatal injury	Wet	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					East	Slowing or stopping	Pick-up truck	Other motor vehicle	
2017-Feb-18, Sat,12:10	Clear	Angle	Non-fatal injury	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Mar-04, Sat,00:30	Snow	SMV other	P.D. only	Ice	West	Turning left	Automobile, station wagon	Skidding/sliding	

2017-Mar-12, Sun,14:00	Clear	Rear end	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2017-Apr-09, Sun,22:06	Clear	Turning movement	P.D. only	Dry	West	Going ahead	Unknown	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle
2017-Jun-20, Tue,08:06	Rain	Sideswipe	P.D. only	Wet	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Jul-21, Fri,16:02	Clear	Angle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Municipal transit bus	Other motor vehicle
2017-Oct-11, Wed,15:00	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2017-Nov-27, Mon,12:14	Clear	Angle	P.D. only	Ice	South	Turning right	Automobile, station wagon	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle
2017-Dec-29, Fri,10:41	Clear	Rear end	Non-fatal injury	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle

Location: OGILVIE RD @ CITY PARK DR E/CSIS HQ ACCESS

Traffic Control: Traffic signal

Total Collisions: 41

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2013-Jun-02, Sun,10:53	Clear	Turning movement	Non-fatal injury	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2013-Sep-22, Sun,15:49	Clear	SMV other	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Pedestrian	2
2014-Jan-14, Tue,11:57	Clear	Rear end	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Passenger van	Other motor vehicle	
2014-Jan-21, Tue,15:49	Clear	Rear end	Non-fatal injury	Dry	West	Slowing or stopping	Pick-up truck	Other motor vehicle	
					West	Unknown	Automobile, station wagon	Other motor vehicle	
2014-Jul-19, Sat,14:48	Clear	Turning movement	P.D. only	Dry	East	Turning left	Pick-up truck	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Dec-09, Tue,18:30	Clear	Rear end	P.D. only	Packed snow	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	

2014-Dec-10, Wed,17:24	Snow	Turning movement	P.D. only	Loose snow	West	Turning left	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Dec-10, Wed,16:40	Snow	Rear end	P.D. only	Loose snow	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2014-Dec-30, Tue,13:13	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Pick-up truck	Other motor vehicle	
2015-Jan-02, Fri,15:00	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2015-Jan-14, Wed,22:05	Strong wind	Rear end	P.D. only	Ice	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Jan-28, Wed,16:51	Clear	SMV other	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Pedestrian	1
2015-Feb-17, Tue,17:37	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Pick-up truck	Other motor vehicle	
2015-Feb-17, Tue,08:00	Snow	Rear end	P.D. only	Loose snow	West	Slowing or stopping	Passenger van	Other motor vehicle	

					West	Stopped	Delivery van	Other motor vehicle	
2015-Feb-27, Fri,07:40	Clear	Rear end	P.D. only	Ice	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Mar-02, Mon,13:42	Clear	Rear end	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	
					East	Turning left	Passenger van	Other motor vehicle	
2015-Apr-06, Mon,17:10	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Pick-up truck	Other motor vehicle	
2015-Apr-10, Fri,16:15	Clear	Rear end	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2015-Apr-14, Tue,16:15	Clear	SMV other	Fatal injury	Dry	North	Turning left	Pick-up truck	Pedestrian	1
2015-Apr-20, Mon,13:42	Rain	Rear end	P.D. only	Wet	Unknown	Going ahead	Pick-up truck	Other motor vehicle	
					Unknown	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2015-May-19, Tue,16:51	Clear	Turning movement	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Turning left	Automobile, station wagon	Other motor vehicle	

2015-Jul-03, Fri,18:16	Clear	Turning movement	Non-fatal injury	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Jul-25, Sat,18:20	Rain	Rear end	Non-fatal injury	Wet	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Pick-up truck	Other motor vehicle	
2015-Aug-11, Tue,18:57	Clear	Angle	P.D. only	Wet	North	Turning right	Automobile, station wagon	Cyclist	
					West	Unknown	Bicycle	Other motor vehicle	
2015-Sep-10, Thu,16:20	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Oct-26, Mon,13:13	Clear	SMV other	Non-fatal injury	Dry	West	Turning left	Automobile, station wagon	Pedestrian	1
2015-Nov-02, Mon,15:15	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Pick-up truck	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Dec-17, Thu,16:11	Rain	Rear end	P.D. only	Wet	East	Unknown	Unknown	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Pick-up truck	Other motor vehicle	

2016-Jan-29, Fri,12:48	Snow	Rear end	P.D. only	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle
					West	Turning left	Automobile, station wagon	Other motor vehicle
2016-Jun-02, Thu,18:47	Clear	Turning movement	Non-fatal injury	Dry	East	Making "U" turn	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Jun-03, Fri,14:10	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2016-Jun-21, Tue,05:38	Clear	Angle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Turning left	Pick-up truck	Other motor vehicle
2016-Sep-06, Tue,19:27	Clear	Turning movement	P.D. only	Dry	West	Making "U" turn	Pick-up truck	Other motor vehicle
					East	Going ahead	Pick-up truck	Other motor vehicle
2016-Sep-08, Thu,13:51	Rain	Turning movement	Non-fatal injury	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Oct-20, Thu,08:38	Fog, mist, smoke, dust	Turning movement	Non-fatal injury	Dry	West	Turning left	Pick-up truck	Other motor vehicle
					East	Going ahead	Pick-up truck	Other motor vehicle

2016-Dec-30, Fri,13:03	Clear	Rear end	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2017-Feb-17, Fri,18:51	Clear	Turning movement	P.D. only	Dry	West	Turning left	Pick-up truck	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2017-May-18, Thu,19:13	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2017-May-23, Tue,12:53	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Pick-up truck	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2017-Sep-03, Sun,17:40	Rain	SMV other	Non-fatal injury	Wet	East	Turning right	Automobile, station wagon	Curb
2017-Oct-13, Fri,11:42	Clear	Turning movement	P.D. only	Dry	South	Going ahead	Pick-up truck	Other motor vehicle
					South	Making "U" turn	Automobile, station wagon	Other motor vehicle

Location: OGILVIE RD btwn BATHGATE DR & CITY PARK DR (1)

Traffic Control: No control

Total Collisions: 4

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
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2015-Nov-09, Mon,16:20	Clear	Rear end	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2016-Jul-04, Mon,16:27	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Pick-up truck	Other motor vehicle
					East	Slowing or stopping	Pick-up truck	Other motor vehicle
2016-Aug-13, Sat,17:08	Snow	Rear end	Non-fatal injury	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Slowing or stopping	Pick-up truck	Other motor vehicle
2017-Feb-15, Wed,09:37	Snow	Rear end	Non-fatal injury	Packed snow	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Stopped	Municipal transit bus	Other motor vehicle

Location: OGILVIE RD btwn BATHGATE DR & CITY PARK DR (2)

Traffic Control: No control

Total Collisions: 3

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2013-Nov-29, Fri,17:00	Clear	Sideswipe	P.D. only	Ice	East	Changing lanes	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Municipal transit bus	Other motor vehicle	
2014-Oct-24, Fri,14:45	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	

					East	Slowing or stopping	Pick-up truck	Other motor vehicle
2016-Nov-01, Tue,11:14	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Slowing or stopping	Passenger van	Other motor vehicle
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle

Location: OGILVIE RD btwn CITY PARK DR & BLAIR RD (1)

Traffic Control: No control

Total Collisions: 6

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2013-Nov-12, Tue,18:16	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Slowing or stopping	Passenger van	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2014-Feb-28, Fri,08:05	Clear	Sideswipe	P.D. only	Wet	East	Changing lanes	Automobile, station wagon	Other motor vehicle	
					East	Changing lanes	Pick-up truck	Other motor vehicle	
2015-Jun-21, Sun,03:24	Clear	SMV other	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Curb	
2015-Nov-28, Sat,15:57	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2015-Dec-29, Tue,10:37	Rain	SMV other	P.D. only	Ice	West	Going ahead	Automobile, station wagon	Skidding/sliding	

2016-Sep-30, Fri,13:01	Clear	Angle	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle
					North	Turning right	Pick-up truck	Other motor vehicle

Location: OGILVIE RD btwn CITY PARK DR & BLAIR RD (2)

Traffic Control: No control

Total Collisions: 7

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2013-Jan-05, Sat,20:35	Clear	Sideswipe	P.D. only	Wet	East	Turning right	Automobile, station wagon	Other motor vehicle	
					East	Changing lanes	Automobile, station wagon	Other motor vehicle	
2014-Jan-07, Tue,17:20	Clear	Rear end	P.D. only	Ice	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2014-Nov-17, Mon,00:01	Snow	Rear end	P.D. only	Wet	East	Slowing or stopping	Passenger van	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Dec-13, Sun,17:16	Rain	Angle	P.D. only	Wet	North	Turning right	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Pick-up truck	Other motor vehicle	
2017-May-18, Thu,16:42	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Dec-01, Fri,19:44	Clear	Rear end	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	

					East	Stopped	Pick-up truck	Other motor vehicle
2017-Dec-08, Fri,10:43	Clear	SMV other	P.D. only	Dry	South	Reversing	Pick-up truck	Pole (utility, power)

Appendix E

























TRAFFIC GROWTH ANALYSIS

Time Period	Percent Annual Change - Blair at 174N OR/Shopping Centre				
	North Leg	South Leg	East Leg	West Leg	Overall
8 hrs	-6.53%	-7.17%	-4.08%	-5.61%	-6.40%
AM Peak	-3.18%	-6.41%	-2.29%	-6.51%	-4.59%
PM Peak	-6.67%	-6.39%	3.98%	-5.45%	-5.67%

Time Period	Percent Annual Change - Ogilvie at Bathgate/City Park				
	North Leg	South Leg	East Leg	West Leg	Overall
8 hrs	4.21%	2.29%	5.42%	5.87%	5.27%
AM Peak	6.99%	2.02%	10.91%	4.82%	7.25%
PM Peak	-1.26%	0.25%	0.58%	0.89%	0.48%

Appendix F

SYNCHRO 2021 AND 2026 BACKGROUND TRAFFIC ANALYSIS

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT		
Lane Configurations												
Traffic Volume (vph)	159	515	85	23	1103	180	120	33	122	32		
Future Volume (vph)	159	515	85	23	1103	180	120	33	122	32		
Lane Group Flow (vph)	167	542	89	24	1161	189	126	56	128	257		
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA		
Protected Phases	5	2		1	6			8		4		
Permitted Phases	2		2	6		6	8		4			
Detector Phase	5	2	2	1	6	6	8	8	4	4		
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0		
Minimum Split (s)	11.0	30.0	30.0	11.0	30.0	30.0	42.4	42.4	42.4	42.4		
Total Split (s)	15.0	32.0	32.0	15.0	32.0	32.0	43.0	43.0	43.0	43.0		
Total Split (%)	16.7%	35.6%	35.6%	16.7%	35.6%	35.6%	47.8%	47.8%	47.8%	47.8%		
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0		
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	4.4	4.4	4.4	4.4		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.7	6.0	6.0	4.7	6.0	6.0	7.4	7.4	7.4	7.4		
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None		
Act Effct Green (s)	58.5	53.0	53.0	51.7	44.3	44.3	19.0	19.0	19.0	19.0		
Actuated g/C Ratio	0.65	0.59	0.59	0.57	0.49	0.49	0.21	0.21	0.21	0.21		
v/c Ratio	0.57	0.27	0.10	0.05	0.70	0.23	0.73	0.15	0.48	0.52		
Control Delay	17.4	12.8	3.1	8.0	19.5	2.3	55.1	17.7	34.7	9.0		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	17.4	12.8	3.1	8.0	19.5	2.3	55.1	17.7	34.7	9.0		
LOS	B	B	A	A	B	A	E	B	C	A		
Approach Delay		12.6			17.0			43.6		17.6		
Approach LOS		B			B			D		B		
Queue Length 50th (m)	8.9	17.2	0.0	0.8	76.8	0.0	21.2	5.1	20.2	5.0		
Queue Length 95th (m)	31.4	53.8	6.9	m3.1	#162.9	9.7	31.0	11.0	27.6	18.4		
Internal Link Dist (m)		805.4			169.5			132.3		125.7		
Turn Bay Length (m)	70.0		50.0	50.0		80.0	30.0		45.0			
Base Capacity (vph)	322	1997	904	597	1667	812	322	674	504	738		
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.52	0.27	0.10	0.04	0.70	0.23	0.39	0.08	0.25	0.35		

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 27 (30%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 17.6

Intersection LOS: B

Intersection Capacity Utilization 91.1%

ICU Level of Service F

Analysis Period (min) 15

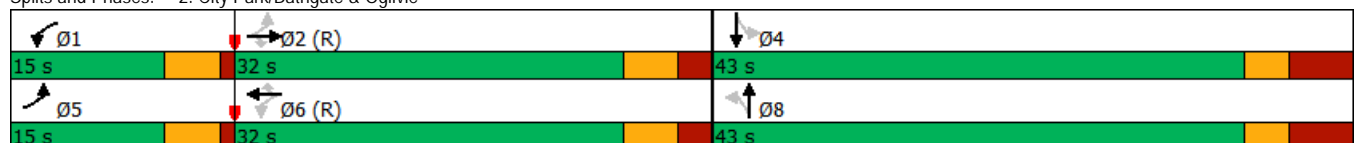
Description: Signal Timing Plan: May 4th, 2016


























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: City Park/Bathgate & Ogilvie



															
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	Ø3			
Lane Configurations															
Traffic Volume (vph)	89	506	61	100	1032	121	76	35	89	4	3				
Future Volume (vph)	89	506	61	100	1032	121	76	35	89	4	3				
Lane Group Flow (vph)	94	533	64	105	1086	127	0	117	94	4	39				
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA				
Protected Phases		2			6			8			4	3			
Permitted Phases	2		2	6		6	8		8	4					
Detector Phase	2	2	2	6	6	6	8	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	10.0	1.0			
Minimum Split (s)	35.1	35.1	35.1	35.1	35.1	35.1	33.5	33.5	33.5	33.5	33.5	5.0			
Total Split (s)	51.0	51.0	51.0	51.0	51.0	51.0	34.0	34.0	34.0	34.0	34.0	5.0			
Total Split (%)	56.7%	56.7%	56.7%	56.7%	56.7%	56.7%	37.8%	37.8%	37.8%	37.8%	37.8%	6%			
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	2.0			
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	2.4	3.2	3.2	3.2	3.2	3.2	0.0			
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0				
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1		6.5	6.5	6.5	6.5				
Lead/Lag							Lag	Lag	Lag	Lag	Lag	Lead			
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None			
Act Effct Green (s)	61.0	61.0	61.0	61.0	61.0	61.0		15.4	15.4	15.4	15.4				
Actuated g/C Ratio	0.68	0.68	0.68	0.68	0.68	0.68		0.17	0.17	0.17	0.17				
v/c Ratio	0.35	0.23	0.07	0.20	0.47	0.14		0.53	0.29	0.02	0.14				
Control Delay	18.8	9.7	7.3	9.0	9.2	2.3		41.1	8.3	26.5	11.2				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0				
Total Delay	18.8	9.7	7.3	9.0	9.2	2.3		41.1	8.3	26.5	11.2				
LOS	B	A	A	A	A	A		D	A	C	B				
Approach Delay		10.7			8.6			26.5			12.6				
Approach LOS		B			A			C			B				
Queue Length 50th (m)	4.0	10.8	0.0	5.2	35.5	0.0		19.2	0.0	0.6	0.4				
Queue Length 95th (m)	24.4	50.1	14.1	20.8	88.7	8.2		29.7	10.5	2.8	7.3				
Internal Link Dist (m)		200.1			350.0			137.2			101.6				
Turn Bay Length (m)	45.0		130.0	100.0		65.0				30.0					
Base Capacity (vph)	269	2296	905	518	2296	924		396	505	359	451				
Starvation Cap Reductn	0	0	0	0	0	0		0	0	0	0				
Spillback Cap Reductn	0	0	0	0	0	0		0	0	0	0				
Storage Cap Reductn	0	0	0	0	0	0		0	0	0	0				
Reduced v/c Ratio	0.35	0.23	0.07	0.20	0.47	0.14		0.30	0.19	0.01	0.09				

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 88 (98%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.53

Intersection Signal Delay: 11.0






Intersection LOS: B

Intersection Capacity Utilization 80.6%



















ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 4: City Park/CSIS & Ogilvie

	Ø2 (R)		Ø3		Ø4
51 s		5 s		34 s	
	Ø6 (R)		Ø7		Ø8
51 s		5 s		34 s	

FB2021 - AM
6: Blair & OR-174 OFF

									
Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	91	194	237	193	480	271	1355	689	91
Future Volume (vph)	91	194	237	193	480	271	1355	689	91
Lane Group Flow (vph)	96	204	249	203	505	285	1426	725	96
Turn Type	Perm	pm+ov	Perm	NA	Perm	Prot	NA	NA	Perm
Protected Phases		5		8		5	2	6	
Permitted Phases	4	4	8		8				6
Detector Phase	4	5	8	8	8	5	2	6	6
Switch Phase									
Minimum Initial (s)	10.0	5.0	10.0	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	36.8	11.4	36.8	36.8	36.8	11.4	30.1	30.1	30.1
Total Split (s)	41.0	27.0	41.0	41.0	41.0	27.0	59.0	32.0	32.0
Total Split (%)	41.0%	27.0%	41.0%	41.0%	41.0%	27.0%	59.0%	32.0%	32.0%
Yellow Time (s)	3.3	4.2	3.3	3.3	3.3	4.2	4.2	4.2	4.2
All-Red Time (s)	3.5	2.2	3.5	3.5	3.5	2.2	1.9	1.9	1.9
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)	6.8	6.4	6.8	6.8	6.8	6.4	6.1	6.1	6.1
Lead/Lag		Lead				Lead		Lag	Lag
Lead-Lag Optimize?		Yes				Yes		Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	Min	Min
Act Effct Green (s)	30.8	51.2	30.8	30.8	30.8	13.4	44.9	24.9	24.9
Actuated g/C Ratio	0.35	0.58	0.35	0.35	0.35	0.15	0.50	0.28	0.28
v/c Ratio	0.26	0.23	0.43	0.33	0.89	0.58	0.83	0.53	0.19
Control Delay	25.3	8.8	26.4	24.7	42.5	41.7	24.2	29.2	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.3	8.8	26.4	24.7	42.5	41.7	24.2	29.2	5.3
LOS	C	A	C	C	D	D	C	C	A
Approach Delay				34.5			27.1	26.4	
Approach LOS				C			C	C	
Queue Length 50th (m)	12.4	14.2	34.1	26.8	69.9	25.8	112.4	40.2	0.0
Queue Length 95th (m)	26.3	24.8	58.8	47.4	#137.1	38.0	141.6	55.8	9.2
Internal Link Dist (m)				105.9			166.4	212.5	
Turn Bay Length (m)			70.0		25.0	85.0			70.0
Base Capacity (vph)	425	1017	671	707	637	784	2077	1558	554
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.20	0.37	0.29	0.79	0.36	0.69	0.47	0.17

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 89

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 27.8

Intersection LOS: C

Intersection Capacity Utilization 93.5%

ICU Level of Service F

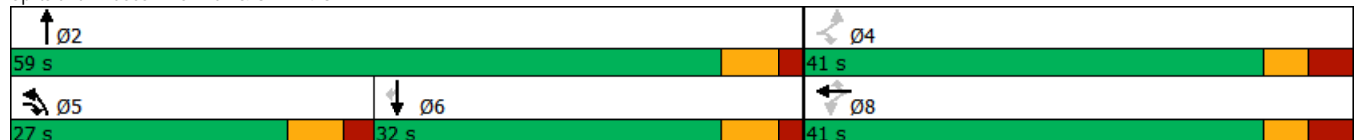
Analysis Period (min) 15










Description: Signal Timing Plan: May 5, 2016

















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

Queue shown is maximum after two cycles.










Splits and Phases: 6: Blair & OR-174 OFF



						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	36	82	24	29	114	76
Future Volume (Veh/h)	36	82	24	29	114	76
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	38	86	25	31	120	80
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)				287		
pX, platoon unblocked						
vC, conflicting volume			124		162	81
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			124		162	81
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		85	92
cM capacity (veh/h)			1463		815	979
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	124	56	200			
Volume Left	0	25	120			
Volume Right	86	0	80			
cSH	1700	1463	873			
Volume to Capacity	0.07	0.02	0.23			
Queue Length 95th (m)	0.0	0.4	6.7			
Control Delay (s)	0.0	3.4	10.3			
Lane LOS		A	B			
Approach Delay (s)	0.0	3.4	10.3			
Approach LOS			B			
Intersection Summary						
Average Delay			5.9			
Intersection Capacity Utilization			27.9%	ICU Level of Service		A
Analysis Period (min)			15			

























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	1	104	3	9	132	2	3	0	12	2	0	0
Future Volume (vph)	1	104	3	9	132	2	3	0	12	2	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	109	3	9	139	2	3	0	13	2	0	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	113	150	16	2								
Volume Left (vph)	1	9	3	2								
Volume Right (vph)	3	2	13	0								
Hadj (s)	0.02	0.04	-0.42	0.23								
Departure Headway (s)	4.1	4.1	4.0	4.7								
Degree Utilization, x	0.13	0.17	0.02	0.00								
Capacity (veh/h)	863	870	827	709								
Control Delay (s)	7.7	7.9	7.1	7.7								
Approach Delay (s)	7.7	7.9	7.1	7.7								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.8									
Level of Service			A									
Intersection Capacity Utilization			23.7%		ICU Level of Service				A			
Analysis Period (min)			15									

FB2021 - AM
9: Site & City Park

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	120	4	26	148	7	46
Future Volume (Veh/h)	120	4	26	148	7	46
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	126	4	27	156	7	48
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			130		338	128
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			130		338	128
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		99	95
cM capacity (veh/h)			1455		645	922
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	130	183	55			
Volume Left	0	27	7			
Volume Right	4	0	48			
cSH	1700	1455	874			
Volume to Capacity	0.08	0.02	0.06			
Queue Length 95th (m)	0.0	0.4	1.5			
Control Delay (s)	0.0	1.2	9.4			
Lane LOS		A	A			
Approach Delay (s)	0.0	1.2	9.4			
Approach LOS			A			
Intersection Summary						
Average Delay			2.0			
Intersection Capacity Utilization			30.1%	ICU Level of Service		A
Analysis Period (min)			15			

FB2021 - PM

2: City Park/Bathgate & Ogilvie

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT		
Lane Configurations												
Traffic Volume (vph)	161	1096	171	16	1064	162	137	32	211	57		
Future Volume (vph)	161	1096	171	16	1064	162	137	32	211	57		
Lane Group Flow (vph)	169	1154	180	17	1120	171	144	66	222	274		
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA		
Protected Phases	5	2		1	6			8		4		
Permitted Phases	2		2	6		6	8		4			
Detector Phase	5	2	2	1	6	6	8	8	4	4		
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0		
Minimum Split (s)	11.0	29.0	29.0	11.0	29.0	29.0	42.4	42.4	42.4	42.4		
Total Split (s)	20.0	37.0	37.0	20.0	37.0	37.0	43.0	43.0	43.0	43.0		
Total Split (%)	20.0%	37.0%	37.0%	20.0%	37.0%	37.0%	43.0%	43.0%	43.0%	43.0%		
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0		
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	4.4	4.4	4.4	4.4		
Lost Time Adjust (s)	0.7	-2.0	-2.0	0.7	-2.0	-2.0	-3.4	-3.4	-3.4	-3.4		
Total Lost Time (s)	5.4	4.0	4.0	5.4	4.0	4.0	4.0	4.0	4.0	4.0		
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None		
Act Effct Green (s)	63.2	60.2	60.2	53.7	49.8	49.8	27.3	27.3	27.3	27.3		
Actuated g/C Ratio	0.63	0.60	0.60	0.54	0.50	0.50	0.27	0.27	0.27	0.27		
v/c Ratio	0.60	0.57	0.20	0.07	0.66	0.21	0.75	0.14	0.64	0.48		
Control Delay	19.4	16.3	5.9	9.2	17.5	1.7	55.7	14.5	39.6	9.7		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	19.4	16.3	5.9	9.2	17.5	1.7	55.7	14.5	39.6	9.7		
LOS	B	B	A	A	B	A	E	B	D	A		
Approach Delay		15.4			15.3			42.7		23.1		
Approach LOS		B			B			D		C		
Queue Length 50th (m)	12.2	57.0	3.8	0.8	70.0	1.0	25.5	4.9	37.9	9.4		
Queue Length 95th (m)	31.3	128.1	19.9	m2.3	#151.5	2.3	41.8	12.4	52.9	25.3		
Internal Link Dist (m)		805.4			169.5			132.3		125.7		
Turn Bay Length (m)	70.0		50.0	50.0		80.0	30.0		45.0			
Base Capacity (vph)	360	2040	923	410	1689	810	273	658	492	732		
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.47	0.57	0.20	0.04	0.66	0.21	0.53	0.10	0.45	0.37		

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 19 (19%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 18.1

Intersection LOS: B

Intersection Capacity Utilization 83.9%

ICU Level of Service E

Analysis Period (min) 15













Description: Signal Timing Plan: May 4th 2016




























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: City Park/Bathgate & Ogilvie

					
Ø1	Ø2 (R)		Ø4		
20 s	37 s		43 s		
					
Ø5	Ø6 (R)		Ø8		
20 s	37 s		43 s		

															
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	Ø3			
Lane Configurations															
Traffic Volume (vph)	16	1187	141	223	600	18	204	7	189	63	22				
Future Volume (vph)	16	1187	141	223	600	18	204	7	189	63	22				
Lane Group Flow (vph)	17	1249	148	235	632	19	0	222	199	66	127				
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA				
Protected Phases		2		1	6			8			4	3			
Permitted Phases	2		2	6		6	8		8	4					
Detector Phase	2	2	2	1	6	6	8	8	8	4	4				
Switch Phase															
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	1.0			
Minimum Split (s)	29.1	29.1	29.1	10.9	29.1	29.1	27.5	27.5	27.5	27.5	27.5	5.0			
Total Split (s)	46.0	46.0	46.0	15.0	61.0	61.0	34.0	34.0	34.0	34.0	34.0	5.0			
Total Split (%)	46.0%	46.0%	46.0%	15.0%	61.0%	61.0%	34.0%	34.0%	34.0%	34.0%	34.0%	5%			
Yellow Time (s)	3.7	3.7	3.7	3.0	3.7	3.7	3.3	3.3	3.3	3.3	3.3	2.0			
All-Red Time (s)	2.4	2.4	2.4	1.0	2.4	2.4	3.2	3.2	3.2	3.2	3.2	0.0			
Lost Time Adjust (s)	-2.1	-2.1	-2.1	0.0	-2.1	-2.1		-2.5	0.0	-2.5	-2.5				
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	6.5	4.0	4.0				
Lead/Lag	Lag	Lag	Lag	Lead			Lag	Lag	Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None			
Act Effct Green (s)	46.8	46.8	46.8	63.2	63.2	63.2		27.8	25.3	27.8	27.8				
Actuated g/C Ratio	0.47	0.47	0.47	0.63	0.63	0.63		0.28	0.25	0.28	0.28				
v/c Ratio	0.06	0.79	0.21	0.82	0.29	0.03		0.79	0.41	0.30	0.27				
Control Delay	9.5	21.5	2.8	45.4	9.6	0.1		53.2	6.8	30.7	8.9				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0				
Total Delay	9.5	21.5	2.8	45.4	9.6	0.1		53.2	6.8	30.7	8.9				
LOS	A	C	A	D	A	A		D	A	C	A				
Approach Delay		19.4			18.9			31.2			16.4				
Approach LOS		B			B			C			B				
Queue Length 50th (m)	2.0	121.5	5.9	27.7	27.3	0.0		38.6	0.0	9.8	3.2				
Queue Length 95th (m)	m2.1	#102.8	6.3	#74.7	42.5	0.0		#72.9	16.0	21.2	16.1				
Internal Link Dist (m)		200.1			350.0			137.2			101.6				
Turn Bay Length (m)	45.0		130.0	100.0		65.0				30.0					
Base Capacity (vph)	306	1584	693	290	2143	718		314	522	248	519				
Starvation Cap Reductn	0	0	0	0	0	0		0	0	0	0				
Spillback Cap Reductn	0	0	0	0	0	0		0	0	0	0				
Storage Cap Reductn	0	0	0	0	0	0		0	0	0	0				
Reduced v/c Ratio	0.06	0.79	0.21	0.81	0.29	0.03		0.71	0.38	0.27	0.24				

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 30 (30%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 20.8

Intersection LOS: C

Intersection Capacity Utilization 94.7%

ICU Level of Service F

Analysis Period (min) 15

Description: Signal Timing Plan: May 5th 2016

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



















Queue shown is maximum after two cycles.

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

Splits and Phases: 4: City Park/CSIS & Ogilvie



FB2021 - PM
6: Blair & OR174 WB Off

									
Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	131	569	99	148	158	340	937	1832	179
Future Volume (vph)	131	569	99	148	158	340	937	1832	179
Lane Group Flow (vph)	138	599	104	156	166	358	986	1928	188
Turn Type	Perm	pm+ov	Perm	NA	Free	Prot	NA	NA	Free
Protected Phases		5		8		5	2	6	
Permitted Phases	4	4	8		Free				Free
Detector Phase	4	5	8	8		5	2	6	
Switch Phase									
Minimum Initial (s)	10.0	5.0	10.0	10.0		5.0	10.0	10.0	
Minimum Split (s)	36.8	11.4	36.8	36.8		11.4	30.1	30.1	
Total Split (s)	36.8	31.0	36.8	36.8		31.0	94.0	63.0	
Total Split (%)	28.1%	23.7%	28.1%	28.1%		23.7%	71.9%	48.2%	
Yellow Time (s)	3.3	4.2	3.3	3.3		4.2	4.2	4.2	
All-Red Time (s)	3.5	1.9	3.5	3.5		1.9	1.9	1.9	
Lost Time Adjust (s)	-2.8	-2.1	-2.8	-2.8		-2.1	-2.1	-2.1	
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	
Lead/Lag		Lead				Lead		Lag	
Lead-Lag Optimize?		Yes				Yes		Yes	
Recall Mode	None	None	None	None		None	C-Max	C-Max	
Act Effct Green (s)	26.1	59.3	26.1	26.1	130.8	29.2	96.7	63.5	130.8
Actuated g/C Ratio	0.20	0.45	0.20	0.20	1.00	0.22	0.74	0.49	1.00
v/c Ratio	0.80	0.85	0.31	0.44	0.11	0.49	0.39	0.81	0.13
Control Delay	80.4	43.0	45.3	48.5	0.2	47.1	7.4	33.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	80.4	43.0	45.3	48.5	0.2	47.1	7.4	33.1	0.2
LOS	F	D	D	D	A	D	A	C	A
Approach Delay				28.9			18.0	30.2	
Approach LOS				C			B	C	
Queue Length 50th (m)	33.8	122.8	22.8	35.2	0.0	40.6	45.2	160.6	0.0
Queue Length 95th (m)	55.6	173.7	37.4	53.3	0.0	58.1	65.6	184.2	0.0
Internal Link Dist (m)				105.9			129.2	212.5	
Turn Bay Length (m)			70.0		25.0	85.0			70.0
Base Capacity (vph)	217	701	425	447	1478	732	2506	2366	1498
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	0.64	0.85	0.24	0.35	0.11	0.49	0.39	0.81	0.13

Intersection Summary

Cycle Length: 130.8

Actuated Cycle Length: 130.8

Offset: 50 (38%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 29.7

Intersection LOS: C

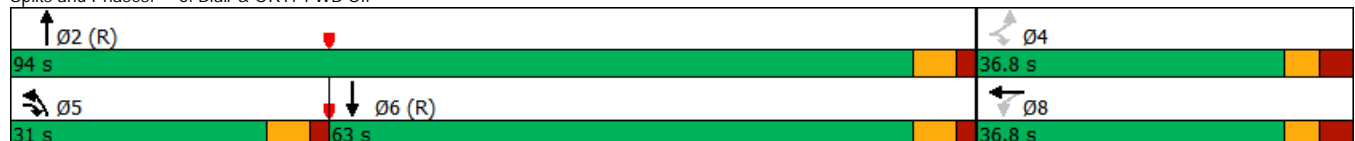
Intersection Capacity Utilization 92.9%










ICU Level of Service F

Analysis Period (min) 15

















Description: Signal Timing Plan: May 5th, 2016










Splits and Phases: 6: Blair & OR174 WB Off





























						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	134	195	72	75	185	79
Future Volume (Veh/h)	134	195	72	75	185	79
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	141	205	76	79	195	83
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)				287		
pX, platoon unblocked						
vC, conflicting volume			346		474	244
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			346		474	244
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		62	90
cM capacity (veh/h)			1213		514	795
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	346	155	278			
Volume Left	0	76	195			
Volume Right	205	0	83			
cSH	1700	1213	575			
Volume to Capacity	0.20	0.06	0.48			
Queue Length 95th (m)	0.0	1.5	19.9			
Control Delay (s)	0.0	4.3	17.0			
Lane LOS		A	C			
Approach Delay (s)	0.0	4.3	17.0			
Approach LOS			C			
Intersection Summary						
Average Delay			6.9			
Intersection Capacity Utilization			54.3%	ICU Level of Service		A
Analysis Period (min)			15			

FB2021 - PM
8: City Park & SilverCity

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	5	273	12	41	193	25	12	1	43	13	5	4
Future Volume (vph)	5	273	12	41	193	25	12	1	43	13	5	4
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	5	287	13	43	203	26	13	1	45	14	5	4
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	305	272	59	23								
Volume Left (vph)	5	43	13	14								
Volume Right (vph)	13	26	45	4								
Hadj (s)	0.01	0.01	-0.38	0.05								
Departure Headway (s)	4.4	4.5	4.8	5.3								
Degree Utilization, x	0.37	0.34	0.08	0.03								
Capacity (veh/h)	793	780	660	593								
Control Delay (s)	10.0	9.7	8.3	8.5								
Approach Delay (s)	10.0	9.7	8.3	8.5								
Approach LOS	B	A	A	A								
Intersection Summary												
Delay			9.7									
Level of Service			A									
Intersection Capacity Utilization			44.5%		ICU Level of Service				A			
Analysis Period (min)			15									

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	207	12	86	166	14	95
Future Volume (Veh/h)	207	12	86	166	14	95
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	218	13	91	175	15	100
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			231		582	224
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			231		582	224
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			93		97	88
cM capacity (veh/h)			1337		443	815
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	231	266	115			
Volume Left	0	91	15			
Volume Right	13	0	100			
cSH	1700	1337	735			
Volume to Capacity	0.14	0.07	0.16			
Queue Length 95th (m)	0.0	1.7	4.2			
Control Delay (s)	0.0	3.1	10.8			
Lane LOS		A	B			
Approach Delay (s)	0.0	3.1	10.8			
Approach LOS			B			
Intersection Summary						
Average Delay			3.4			
Intersection Capacity Utilization			43.5%	ICU Level of Service		A
Analysis Period (min)			15			

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT			
Lane Configurations													
Traffic Volume (vph)	175	568	93	25	1217	224	132	36	134	35			
Future Volume (vph)	175	568	93	25	1217	224	132	36	134	35			
Lane Group Flow (vph)	184	598	98	26	1281	236	139	61	141	283			
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA			
Protected Phases	5	2		1	6			8		4			
Permitted Phases	2		2	6		6	8		4				
Detector Phase	5	2	2	1	6	6	8	8	4	4			
Switch Phase													
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0			
Minimum Split (s)	11.0	30.0	30.0	11.0	30.0	30.0	42.4	42.4	42.4	42.4			
Total Split (s)	15.0	32.0	32.0	15.0	32.0	32.0	43.0	43.0	43.0	43.0			
Total Split (%)	16.7%	35.6%	35.6%	16.7%	35.6%	35.6%	47.8%	47.8%	47.8%	47.8%			
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0			
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	4.4	4.4	4.4	4.4			
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Total Lost Time (s)	4.7	6.0	6.0	4.7	6.0	6.0	7.4	7.4	7.4	7.4			
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes							
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None			
Act Effct Green (s)	57.5	51.8	51.8	50.0	42.5	42.5	20.1	20.1	20.1	20.1			
Actuated g/C Ratio	0.64	0.58	0.58	0.56	0.47	0.47	0.22	0.22	0.22	0.22			
v/c Ratio	0.70	0.31	0.11	0.05	0.80	0.29	0.83	0.16	0.50	0.53			
Control Delay	30.8	13.6	3.8	9.1	24.5	3.2	67.3	17.1	34.3	8.7			
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Total Delay	30.8	13.6	3.8	9.1	24.5	3.2	67.3	17.1	34.3	8.7			
LOS	C	B	A	A	C	A	E	B	C	A			
Approach Delay		16.1			21.0			52.0		17.2			
Approach LOS		B			C			D		B			
Queue Length 50th (m)	13.1	20.9	0.0	1.0	94.8	0.0	23.6	5.4	21.9	5.2			
Queue Length 95th (m)	#48.6	60.0	8.6	m3.5	#187.7	13.4	35.7	11.6	30.5	19.3			
Internal Link Dist (m)		805.4			169.5			132.3		125.7			
Turn Bay Length (m)	70.0		50.0	50.0		80.0	30.0		45.0				
Base Capacity (vph)	284	1952	886	561	1601	808	296	674	502	752			
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0			
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0			
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0			
Reduced v/c Ratio	0.65	0.31	0.11	0.05	0.80	0.29	0.47	0.09	0.28	0.38			

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 27 (30%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 21.1

Intersection LOS: C

Intersection Capacity Utilization 96.6%

ICU Level of Service F

Analysis Period (min) 15

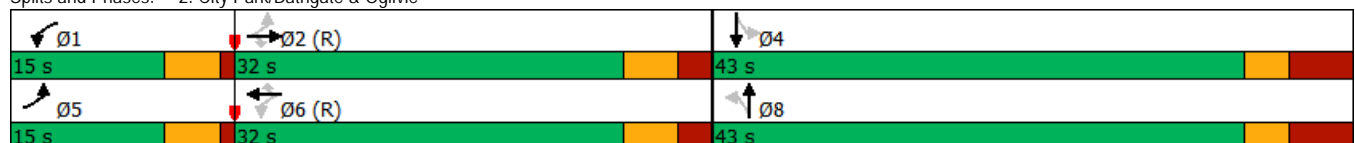
Description: Signal Timing Plan: May 4th, 2016


























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: City Park/Bathgate & Ogilvie



															
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT				
Lane Configurations															
Traffic Volume (vph)	89	558	61	100	1139	121	76	35	89	4	3				
Future Volume (vph)	89	558	61	100	1139	121	76	35	89	4	3				
Lane Group Flow (vph)	94	587	64	105	1199	127	0	117	94	4	39				
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	NA	Perm	NA				
Protected Phases		2			6			8			4				
Permitted Phases	2		2	6		6	8								
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				1.0
Minimum Split (s)	35.1	35.1	35.1	35.1	35.1	35.1	33.5	33.5		33.5	33.5				5.0
Total Split (s)	51.0	51.0	51.0	51.0	51.0	51.0	34.0	34.0		34.0	34.0				5.0
Total Split (%)	56.7%	56.7%	56.7%	56.7%	56.7%	56.7%	37.8%	37.8%		37.8%	37.8%				6%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3		3.3	3.3				2.0
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	2.4	3.2	3.2		3.2	3.2				0.0
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)	6.1	6.1	6.1	6.1	6.1	6.1		6.5		6.5	6.5				
Lead/Lag							Lag	Lag		Lag	Lag				Lead
Lead-Lag Optimize?							Yes	Yes		Yes	Yes				Yes
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None		None	None				None
Act Effct Green (s)	65.5	65.5	65.5	65.5	65.5	65.5		15.4	0.0	15.4	15.4				
Actuated g/C Ratio	0.73	0.73	0.73	0.73	0.73	0.73		0.17	0.00	0.17	0.17				
v/c Ratio	0.37	0.24	0.07	0.20	0.49	0.13		0.53	0.67	0.02	0.14				
Control Delay	21.8	10.2	8.1	9.0	9.1	2.3		41.1	26.3	26.5	11.2				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0				
Total Delay	21.8	10.2	8.1	9.0	9.1	2.3		41.1	26.3	26.5	11.2				
LOS	C	B	A	A	A	A		D	C	C	B				
Approach Delay		11.5			8.5			34.5			12.6				
Approach LOS		B			A			C			B				
Queue Length 50th (m)	4.1	12.2	0.0	5.2	41.3	0.0		19.2	0.0	0.6	0.4				
Queue Length 95th (m)	#33.6	54.7	14.5	21.1	102.6	8.2		29.7	#12.7	2.8	7.3				
Internal Link Dist (m)		200.1			350.0			137.2			101.6				
Turn Bay Length (m)	45.0		130.0	100.0		65.0				30.0					
Base Capacity (vph)	254	2467	967	531	2467	983		396	141	359	451				
Starvation Cap Reductn	0	0	0	0	0	0		0	0	0	0				
Spillback Cap Reductn	0	0	0	0	0	0		0	0	0	0				
Storage Cap Reductn	0	0	0	0	0	0		0	0	0	0				
Reduced v/c Ratio	0.37	0.24	0.07	0.20	0.49	0.13		0.30	0.67	0.01	0.09				

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 88 (98%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 11.8

Intersection LOS: B

Intersection Capacity Utilization 78.9%

ICU Level of Service D

Analysis Period (min) 15



















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

Queue shown is maximum after two cycles.

Splits and Phases: 4: City Park/CSIS & Ogilvie

 Ø2 (R)	 Ø3	 Ø4
51 s	5 s	34 s
 Ø6 (R)	 Ø7	 Ø8
51 s	5 s	34 s

FB2026 - AM
6: Blair & OR-174 OFF

									
Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	86	185	223	182	452	256	1277	650	86
Future Volume (vph)	86	185	223	182	452	256	1277	650	86
Lane Group Flow (vph)	91	195	235	192	476	269	1344	684	91
Turn Type	Perm	pm+ov	Perm	NA	Perm	Prot	NA	NA	Perm
Protected Phases		5		8		5	2	6	
Permitted Phases	4	4	8		8				6
Detector Phase	4	5	8	8	8	5	2	6	6
Switch Phase									
Minimum Initial (s)	10.0	5.0	10.0	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	36.8	11.4	36.8	36.8	36.8	11.4	30.1	30.1	30.1
Total Split (s)	41.0	27.0	41.0	41.0	41.0	27.0	59.0	32.0	32.0
Total Split (%)	41.0%	27.0%	41.0%	41.0%	41.0%	27.0%	59.0%	32.0%	32.0%
Yellow Time (s)	3.3	4.2	3.3	3.3	3.3	4.2	4.2	4.2	4.2
All-Red Time (s)	3.5	2.2	3.5	3.5	3.5	2.2	1.9	1.9	1.9
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)	6.8	6.4	6.8	6.8	6.8	6.4	6.1	6.1	6.1
Lead/Lag		Lead				Lead		Lag	Lag
Lead-Lag Optimize?		Yes				Yes		Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	Min	Min
Act Effct Green (s)	28.8	48.5	28.8	28.8	28.8	12.6	41.7	22.4	22.4
Actuated g/C Ratio	0.34	0.58	0.34	0.34	0.34	0.15	0.50	0.27	0.27
v/c Ratio	0.24	0.22	0.41	0.31	0.84	0.55	0.80	0.53	0.19
Control Delay	24.0	8.4	25.0	23.6	36.2	40.0	22.3	28.4	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.0	8.4	25.0	23.6	36.2	40.0	22.3	28.4	4.6
LOS	C	A	C	C	D	D	C	C	A
Approach Delay				30.6			25.3	25.6	
Approach LOS				C			C	C	
Queue Length 50th (m)	10.7	12.0	29.4	23.1	57.6	23.0	101.7	37.0	0.0
Queue Length 95th (m)	24.8	24.5	55.1	44.8	#123.9	36.7	128.0	51.3	8.0
Internal Link Dist (m)				105.9			166.4	212.5	
Turn Bay Length (m)			70.0		25.0	85.0			70.0
Base Capacity (vph)	472	1050	724	762	679	846	2241	1647	580
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.19	0.32	0.25	0.70	0.32	0.60	0.42	0.16

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 84

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 25.7

Intersection LOS: C

Intersection Capacity Utilization 89.1%

ICU Level of Service E


Analysis Period (min) 15










Description: Signal Timing Plan: May 5, 2016

















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

Queue shown is maximum after two cycles.










Splits and Phases: 6: Blair & OR-174 OFF





















	Ø2										Ø4
59 s										41 s	
	Ø5										Ø8
27 s										41 s	

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	36	82	24	29	114	76
Future Volume (Veh/h)	36	82	24	29	114	76
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	38	86	25	31	120	80
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	287					
pX, platoon unblocked						
vC, conflicting volume			124	162		81
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			124	162		81
tC, single (s)			4.1	6.4		6.2
tC, 2 stage (s)						
tF (s)			2.2	3.5		3.3
p0 queue free %			98	85		92
cM capacity (veh/h)			1463	815		979
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	124	56	200			
Volume Left	0	25	120			
Volume Right	86	0	80			
cSH	1700	1463	873			
Volume to Capacity	0.07	0.02	0.23			
Queue Length 95th (m)	0.0	0.4	6.7			
Control Delay (s)	0.0	3.4	10.3			
Lane LOS	A		B			
Approach Delay (s)	0.0	3.4	10.3			
Approach LOS	B					
Intersection Summary						
Average Delay	5.9					
Intersection Capacity Utilization	27.9%			ICU Level of Service	A	
Analysis Period (min)	15					

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	1	104	3	9	132	2	3	0	12	2	0	0
Future Volume (vph)	1	104	3	9	132	2	3	0	12	2	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	109	3	9	139	2	3	0	13	2	0	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	113	150	16	2								
Volume Left (vph)	1	9	3	2								
Volume Right (vph)	3	2	13	0								
Hadj (s)	0.02	0.04	-0.42	0.23								
Departure Headway (s)	4.1	4.1	4.0	4.7								
Degree Utilization, x	0.13	0.17	0.02	0.00								
Capacity (veh/h)	863	870	827	709								
Control Delay (s)	7.7	7.9	7.1	7.7								
Approach Delay (s)	7.7	7.9	7.1	7.7								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.8									
Level of Service			A									
Intersection Capacity Utilization			23.7%		ICU Level of Service				A			
Analysis Period (min)			15									

FB2026 - AM
9: Site & City Park

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	120	4	26	148	7	46
Future Volume (Veh/h)	120	4	26	148	7	46
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	126	4	27	156	7	48
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			130		338	128
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			130		338	128
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		99	95
cM capacity (veh/h)			1455		645	922
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	130	183	55			
Volume Left	0	27	7			
Volume Right	4	0	48			
cSH	1700	1455	874			
Volume to Capacity	0.08	0.02	0.06			
Queue Length 95th (m)	0.0	0.4	1.5			
Control Delay (s)	0.0	1.2	9.4			
Lane LOS		A	A			
Approach Delay (s)	0.0	1.2	9.4			
Approach LOS			A			
Intersection Summary						
Average Delay			2.0			
Intersection Capacity Utilization			30.1%	ICU Level of Service		A
Analysis Period (min)			15			

										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	178	1210	187	17	1175	201	149	35	233	63
Future Volume (vph)	178	1210	187	17	1175	201	149	35	233	63
Lane Group Flow (vph)	187	1274	197	18	1237	212	157	73	245	302
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		1	6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	5	2	2	1	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.0	29.0	29.0	11.0	29.0	29.0	42.4	42.4	42.4	42.4
Total Split (s)	20.0	37.0	37.0	20.0	37.0	37.0	43.0	43.0	43.0	43.0
Total Split (%)	20.0%	37.0%	37.0%	20.0%	37.0%	37.0%	43.0%	43.0%	43.0%	43.0%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	4.4	4.4	4.4	4.4
Lost Time Adjust (s)	0.7	-2.0	-2.0	0.7	-2.0	-2.0	-3.4	-3.4	-3.4	-3.4
Total Lost Time (s)	5.4	4.0	4.0	5.4	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	61.6	58.4	58.4	51.6	47.6	47.6	29.0	29.0	29.0	29.0
Actuated g/C Ratio	0.62	0.58	0.58	0.52	0.48	0.48	0.29	0.29	0.29	0.29
v/c Ratio	0.75	0.64	0.22	0.08	0.77	0.27	0.82	0.15	0.67	0.50
Control Delay	37.2	19.1	6.9	10.8	22.3	2.5	63.4	13.6	39.6	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.2	19.1	6.9	10.8	22.3	2.5	63.4	13.6	39.6	11.0
LOS	D	B	A	B	C	A	E	B	D	B
Approach Delay		19.7			19.3			47.6		23.8
Approach LOS		B			B			D		C
Queue Length 50th (m)	18.4	70.8	5.4	0.9	87.0	4.2	28.2	5.2	41.7	13.2
Queue Length 95th (m)	44.1	#162.8	23.7	m2.5	#180.5	4.7	47.7	13.0	58.4	30.9
Internal Link Dist (m)		805.4			169.5			132.3		125.7
Turn Bay Length (m)	70.0		50.0	50.0		80.0	30.0		45.0	
Base Capacity (vph)	320	1980	899	367	1614	798	257	660	489	733
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.64	0.22	0.05	0.77	0.27	0.61	0.11	0.50	0.41

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 19 (19%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 21.8

Intersection LOS: C

Intersection Capacity Utilization 89.7%

ICU Level of Service E

Analysis Period (min) 15


Description: Signal Timing Plan: May 4th 2016

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: City Park/Bathgate & Ogilvie

					
Ø1	Ø2 (R)		Ø4		
20 s	37 s		43 s		
					
Ø5	Ø6 (R)		Ø8		
20 s	37 s		43 s		

FB 2026 PM
4: City Park/CSIS & Ogilvie

															
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	Ø3			
Lane Configurations															
Traffic Volume (vph)	16	1311	141	223	663	18	204	7	189	63	22				
Future Volume (vph)	16	1311	141	223	663	18	204	7	189	63	22				
Lane Group Flow (vph)	17	1380	148	235	698	19	0	222	199	66	127				
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA				
Protected Phases		2		1	6			8			4	3			
Permitted Phases	2		2	6		6	8		8	4					
Detector Phase	2	2	2	1	6	6	8	8	8	4	4				
Switch Phase															
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	1.0			
Minimum Split (s)	29.1	29.1	29.1	10.9	29.1	29.1	27.5	27.5	27.5	27.5	27.5	5.0			
Total Split (s)	46.0	46.0	46.0	15.0	61.0	61.0	34.0	34.0	34.0	34.0	34.0	5.0			
Total Split (%)	46.0%	46.0%	46.0%	15.0%	61.0%	61.0%	34.0%	34.0%	34.0%	34.0%	34.0%	5%			
Yellow Time (s)	3.7	3.7	3.7	3.0	3.7	3.7	3.3	3.3	3.3	3.3	3.3	2.0			
All-Red Time (s)	2.4	2.4	2.4	1.0	2.4	2.4	3.2	3.2	3.2	3.2	3.2	0.0			
Lost Time Adjust (s)	-2.1	-2.1	-2.1	0.0	-2.1	-2.1		-2.5	0.0	-2.5	-2.5				
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	6.5	4.0	4.0				
Lead/Lag	Lag	Lag	Lag	Lead			Lag	Lag	Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None			
Act Effct Green (s)	46.8	46.8	46.8	63.2	63.2	63.2		27.8	25.3	27.8	27.8				
Actuated g/C Ratio	0.47	0.47	0.47	0.63	0.63	0.63		0.28	0.25	0.28	0.28				
v/c Ratio	0.06	0.87	0.21	0.82	0.33	0.03		0.79	0.41	0.30	0.27				
Control Delay	9.0	24.9	2.4	45.4	9.9	0.1		53.2	6.8	30.7	8.9				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0				
Total Delay	9.0	24.9	2.4	45.4	9.9	0.1		53.2	6.8	30.7	8.9				
LOS	A	C	A	D	A	A		D	A	C	A				
Approach Delay		22.5			18.5			31.2			16.4				
Approach LOS		C			B			C			B				
Queue Length 50th (m)	1.7	140.5	3.8	27.7	31.0	0.0		38.6	0.0	9.8	3.2				
Queue Length 95th (m)	m1.8	#179.4	m7.6	#74.7	47.6	0.0		#72.9	16.0	21.2	16.1				
Internal Link Dist (m)		200.1			350.0			137.2			101.6				
Turn Bay Length (m)	45.0		130.0	100.0		65.0				30.0					
Base Capacity (vph)	290	1584	693	290	2143	718		314	522	248	519				
Starvation Cap Reductn	0	0	0	0	0	0		0	0	0	0				
Spillback Cap Reductn	0	0	0	0	0	0		0	0	0	0				
Storage Cap Reductn	0	0	0	0	0	0		0	0	0	0				
Reduced v/c Ratio	0.06	0.87	0.21	0.81	0.33	0.03		0.71	0.38	0.27	0.24				

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 30 (30%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 22.1

Intersection LOS: C

Intersection Capacity Utilization 98.3%

ICU Level of Service F

Analysis Period (min) 15

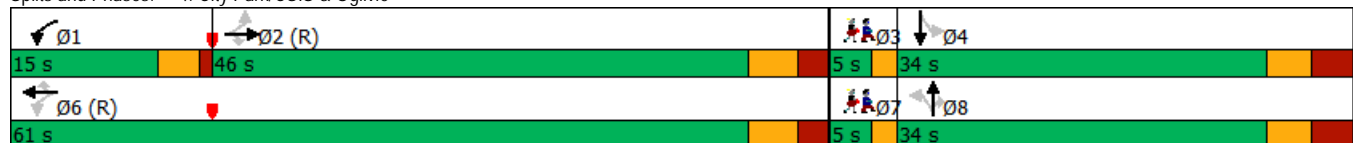
Description: Signal Timing Plan: May 5th 2016

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

Queue shown is maximum after two cycles.



















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

Splits and Phases: 4: City Park/CSIS & Ogilvie



Lane Group	Ø7
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	7
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	5.0
Total Split (s)	5.0
Total Split (%)	5%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

FB 2026 PM
6: Blair & OR174 WB Off

									
Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	123	540	93	142	150	322	883	1727	169
Future Volume (vph)	123	540	93	142	150	322	883	1727	169
Lane Group Flow (vph)	129	568	98	149	158	339	929	1818	178
Turn Type	Perm	pm+ov	Perm	NA	Free	Prot	NA	NA	Free
Protected Phases		5		8		5	2	6	
Permitted Phases	4	4	8		Free				Free
Detector Phase	4	5	8	8		5	2	6	
Switch Phase									
Minimum Initial (s)	10.0	5.0	10.0	10.0		5.0	10.0	10.0	
Minimum Split (s)	36.8	11.4	36.8	36.8		11.4	30.1	30.1	
Total Split (s)	36.8	31.0	36.8	36.8		31.0	94.0	63.0	
Total Split (%)	28.1%	23.7%	28.1%	28.1%		23.7%	71.9%	48.2%	
Yellow Time (s)	3.3	4.2	3.3	3.3		4.2	4.2	4.2	
All-Red Time (s)	3.5	1.9	3.5	3.5		1.9	1.9	1.9	
Lost Time Adjust (s)	-2.8	-2.1	-2.8	-2.8		-2.1	-2.1	-2.1	
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	
Lead/Lag		Lead				Lead		Lag	
Lead-Lag Optimize?		Yes				Yes		Yes	
Recall Mode	None	None	None	None		None	C-Max	C-Max	
Act Effct Green (s)	25.0	57.7	25.0	25.0	130.8	28.7	97.8	65.1	130.8
Actuated g/C Ratio	0.19	0.44	0.19	0.19	1.00	0.22	0.75	0.50	1.00
v/c Ratio	0.77	0.83	0.30	0.44	0.11	0.47	0.37	0.75	0.12
Control Delay	77.7	41.6	46.0	49.3	0.1	46.9	6.8	29.9	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.7	41.6	46.0	49.3	0.1	46.9	6.8	29.9	0.2
LOS	E	D	D	D	A	D	A	C	A
Approach Delay				29.3			17.5	27.3	
Approach LOS				C			B	C	
Queue Length 50th (m)	31.7	117.3	21.8	34.1	0.0	38.6	39.2	140.1	0.0
Queue Length 95th (m)	51.6	159.4	35.5	51.0	0.0	55.2	60.7	168.0	0.0
Internal Link Dist (m)				105.9			129.2	212.5	
Turn Bay Length (m)			70.0		25.0	85.0			70.0
Base Capacity (vph)	220	685	425	447	1478	724	2535	2423	1498
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.83	0.23	0.33	0.11	0.47	0.37	0.75	0.12

Intersection Summary

Cycle Length: 130.8

Actuated Cycle Length: 130.8

Offset: 50 (38%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 28.0

Intersection LOS: C

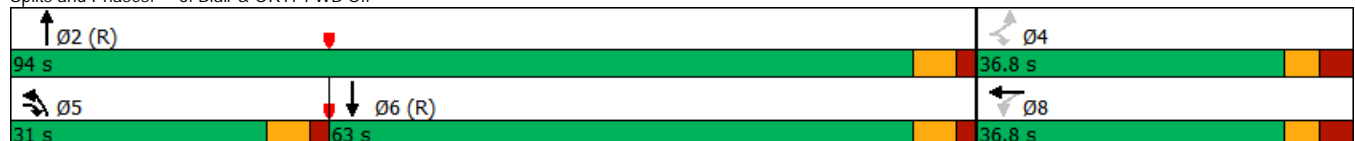
Intersection Capacity Utilization 88.8%

ICU Level of Service E

Analysis Period (min) 15

Description: Signal Timing Plan: May 5th, 2016



























Splits and Phases: 6: Blair & OR174 WB Off



Appendix G

SYNCHRO 2021 AND 2026 TOTAL TRAFFIC ANALYSIS

FT 2021 AM
2: City Park/Bathgate & Ogilvie

															
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT					
Lane Configurations															
Traffic Volume (vph)	159	515	87	23	1103	180	126	33	122	32					
Future Volume (vph)	159	515	87	23	1103	180	126	33	122	32					
Lane Group Flow (vph)	167	542	92	24	1161	189	133	56	128	257					
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA					
Protected Phases	5	2		1	6			8		4					
Permitted Phases	2		2	6		6	8		4						
Detector Phase	5	2	2	1	6	6	8	8	4	4					
Switch Phase															
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0					
Minimum Split (s)	11.0	30.0	30.0	11.0	30.0	30.0	42.4	42.4	42.4	42.4					
Total Split (s)	15.0	32.0	32.0	15.0	32.0	32.0	43.0	43.0	43.0	43.0					
Total Split (%)	16.7%	35.6%	35.6%	16.7%	35.6%	35.6%	47.8%	47.8%	47.8%	47.8%					
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0					
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	4.4	4.4	4.4	4.4					
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0					
Total Lost Time (s)	4.7	6.0	6.0	4.7	6.0	6.0	7.4	7.4	7.4	7.4					
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag									
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes									
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None					
Act Effct Green (s)	58.2	52.7	52.7	51.2	43.8	43.8	19.4	19.4	19.4	19.4					
Actuated g/C Ratio	0.65	0.59	0.59	0.57	0.49	0.49	0.22	0.22	0.22	0.22					
v/c Ratio	0.57	0.27	0.10	0.05	0.70	0.23	0.75	0.15	0.47	0.51					
Control Delay	17.8	13.0	3.3	8.1	20.4	2.4	56.2	17.5	34.0	8.9					
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0					
Total Delay	17.8	13.0	3.3	8.1	20.4	2.4	56.2	17.5	34.0	8.9					
LOS	B	B	A	A	C	A	E	B	C	A					
Approach Delay		12.9			17.7			44.7		17.2					
Approach LOS		B			B			D		B					
Queue Length 50th (m)	9.2	17.7	0.0	0.8	78.3	0.0	22.4	5.0	20.0	4.9					
Queue Length 95th (m)	31.6	53.8	7.6	m3.1	#162.9	9.7	32.6	11.0	27.6	18.4					
Internal Link Dist (m)		805.4			169.5			132.3		125.7					
Turn Bay Length (m)	70.0		50.0	50.0		80.0	30.0		45.0						
Base Capacity (vph)	320	1983	898	593	1651	807	326	674	504	738					
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0					
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0					
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0					
Reduced v/c Ratio	0.52	0.27	0.10	0.04	0.70	0.23	0.41	0.08	0.25	0.35					

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 27 (30%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 18.1

Intersection LOS: B

Intersection Capacity Utilization 91.1%

ICU Level of Service F

Analysis Period (min) 15

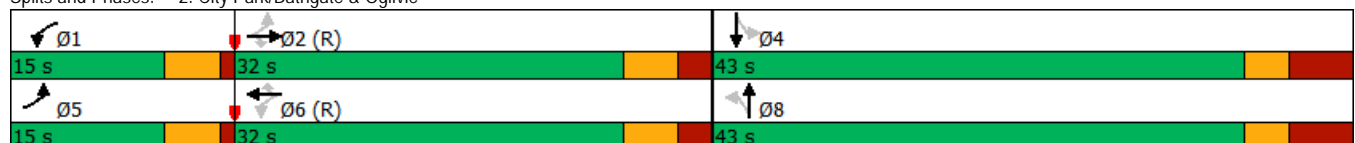
Description: Signal Timing Plan: May 4th, 2016

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: City Park/Bathgate & Ogilvie



FT 2021 AM
4: City Park/CSIS & Ogilvie

															
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	Ø3			
Lane Configurations															
Traffic Volume (vph)	89	506	61	100	1032	121	76	35	90	4	3				
Future Volume (vph)	89	506	61	100	1032	121	76	35	90	4	3				
Lane Group Flow (vph)	94	533	64	105	1086	127	0	117	95	4	39				
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	NA	Perm	NA				
Protected Phases		2			6			8			4				
Permitted Phases	2		2	6		6	8								
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	1.0			
Minimum Split (s)	35.1	35.1	35.1	35.1	35.1	35.1	33.5	33.5		33.5	33.5	5.0			
Total Split (s)	51.0	51.0	51.0	51.0	51.0	51.0	34.0	34.0		34.0	34.0	5.0			
Total Split (%)	56.7%	56.7%	56.7%	56.7%	56.7%	56.7%	37.8%	37.8%		37.8%	37.8%	6%			
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3		3.3	3.3	2.0			
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	2.4	3.2	3.2		3.2	3.2	0.0			
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)	6.1	6.1	6.1	6.1	6.1	6.1		6.5		6.5	6.5				
Lead/Lag							Lag	Lag		Lag	Lag	Lead			
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None		None	None	None			
Act Effect Green (s)	65.5	65.5	65.5	65.5	65.5	65.5		15.4	0.0	15.4	15.4				
Actuated g/C Ratio	0.73	0.73	0.73	0.73	0.73	0.73		0.17	0.00	0.17	0.17				
v/c Ratio	0.32	0.22	0.07	0.19	0.44	0.13		0.53	0.67	0.02	0.14				
Control Delay	18.0	9.4	7.3	8.8	8.6	2.3		41.1	27.0	26.5	11.2				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0				
Total Delay	18.0	9.4	7.3	8.8	8.6	2.3		41.1	27.0	26.5	11.2				
LOS	B	A	A	A	A	A		D	C	C	B				
Approach Delay		10.4			8.0			34.8			12.6				
Approach LOS		B			A			C			B				
Queue Length 50th (m)	4.0	10.9	0.0	5.2	35.5	0.0		19.2	0.0	0.6	0.4				
Queue Length 95th (m)	24.3	50.1	14.1	20.8	88.7	8.2		29.7	#12.7	2.8	7.3				
Internal Link Dist (m)		200.1			350.0			137.2			101.6				
Turn Bay Length (m)	45.0		130.0	100.0		65.0				30.0					
Base Capacity (vph)	295	2467	967	556	2467	983		396	141	359	451				
Starvation Cap Reductn	0	0	0	0	0	0		0	0	0	0				
Spillback Cap Reductn	0	0	0	0	0	0		0	0	0	0				
Storage Cap Reductn	0	0	0	0	0	0		0	0	0	0				
Reduced v/c Ratio	0.32	0.22	0.07	0.19	0.44	0.13		0.30	0.67	0.01	0.09				

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 88 (98%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 11.3

Intersection LOS: B

Intersection Capacity Utilization 75.8%




ICU Level of Service D

Analysis Period (min) 15

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



















Queue shown is maximum after two cycles.

Splits and Phases: 4: City Park/CSIS & Ogilvie

 Ø2 (R)	 Ø3	 Ø4
51 s	5 s	34 s
 Ø6 (R)	 Ø7	 Ø8
51 s	5 s	34 s

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

FT 2021 AM
6: Blair & OR-174 OFF

									
Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	91	218	237	193	480	278	1355	689	91
Future Volume (vph)	91	218	237	193	480	278	1355	689	91
Lane Group Flow (vph)	96	229	249	203	505	293	1426	725	96
Turn Type	Perm	pm+ov	Perm	NA	Perm	Prot	NA	NA	Perm
Protected Phases		5		8		5	2	6	
Permitted Phases	4	4	8		8				6
Detector Phase	4	5	8	8	8	5	2	6	6
Switch Phase									
Minimum Initial (s)	10.0	5.0	10.0	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	36.8	11.4	36.8	36.8	36.8	11.4	30.1	30.1	30.1
Total Split (s)	41.0	27.0	41.0	41.0	41.0	27.0	59.0	32.0	32.0
Total Split (%)	41.0%	27.0%	41.0%	41.0%	41.0%	27.0%	59.0%	32.0%	32.0%
Yellow Time (s)	3.3	4.2	3.3	3.3	3.3	4.2	4.2	4.2	4.2
All-Red Time (s)	3.5	2.2	3.5	3.5	3.5	2.2	1.9	1.9	1.9
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)	6.8	6.4	6.8	6.8	6.8	6.4	6.1	6.1	6.1
Lead/Lag		Lead				Lead		Lag	Lag
Lead-Lag Optimize?		Yes				Yes		Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	Min	Min
Act Effct Green (s)	30.8	51.4	30.8	30.8	30.8	13.6	44.9	24.7	24.7
Actuated g/C Ratio	0.35	0.58	0.35	0.35	0.35	0.15	0.50	0.28	0.28
v/c Ratio	0.26	0.26	0.43	0.33	0.89	0.58	0.83	0.54	0.19
Control Delay	25.3	9.1	26.4	24.7	42.5	41.6	24.2	29.5	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.3	9.1	26.4	24.7	42.5	41.6	24.2	29.5	5.3
LOS	C	A	C	C	D	D	C	C	A
Approach Delay				34.5			27.2	26.6	
Approach LOS				C			C	C	
Queue Length 50th (m)	12.4	16.5	34.1	26.8	69.9	26.5	112.4	40.3	0.0
Queue Length 95th (m)	26.3	27.9	58.8	47.4	#137.1	38.9	141.6	56.1	9.2
Internal Link Dist (m)				105.9			166.4	212.5	
Turn Bay Length (m)			70.0		25.0	85.0			70.0
Base Capacity (vph)	425	1017	671	707	637	784	2077	1550	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	0.23	0.23	0.37	0.29	0.79	0.37	0.69	0.47	0.17

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 89

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 27.8

Intersection LOS: C

Intersection Capacity Utilization 93.5%

ICU Level of Service F






Analysis Period (min) 15

Description: Signal Timing Plan: May 5, 2016







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

Queue shown is maximum after two cycles.










Splits and Phases: 6: Blair & OR-174 OFF

	Ø2										Ø4
59 s										41 s	
	Ø5										Ø6
27 s										32 s	
											Ø8
										41 s	

FT 2021 AM
7: Service & City Park









			
Lane Group	EBT	WBT	NBL
Lane Configurations			
Traffic Volume (vph)	37	29	121
Future Volume (vph)	37	29	121
Lane Group Flow (vph)	151	56	207
Sign Control	Free	Free	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 34.3%		ICU Level of Service A	
Analysis Period (min) 15			

FT 2021 AM
7: Service & City Park

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	37	106	24	29	121	76
Future Volume (Veh/h)	37	106	24	29	121	76
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	39	112	25	31	127	80
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)	287					
pX, platoon unblocked						
vC, conflicting volume			151	176		95
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			151	176		95
tC, single (s)			4.1	6.4		6.2
tC, 2 stage (s)						
tF (s)			2.2	3.5		3.3
p0 queue free %			98	84		92
cM capacity (veh/h)			1430	800		962
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	151	56	207			
Volume Left	0	25	127			
Volume Right	112	0	80			
cSH	1700	1430	855			
Volume to Capacity	0.09	0.02	0.24			
Queue Length 95th (m)	0.0	0.4	7.2			
Control Delay (s)	0.0	3.5	10.5			
Lane LOS	A		B			
Approach Delay (s)	0.0	3.5	10.5			
Approach LOS	B					
Intersection Summary						
Average Delay	5.7					
Intersection Capacity Utilization	34.3%			ICU Level of Service	A	
Analysis Period (min)	15					

FT 2021 AM

8: Site/SilverCity & City Park

				
Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	129	140	0	0
Future Volume (vph)	129	140	0	0
Lane Group Flow (vph)	140	158	16	2
Sign Control	Stop	Stop	Stop	Stop

Intersection Summary

Control Type: Unsignalized

















Intersection Capacity Utilization 24.3%

ICU Level of Service A







Analysis Period (min) 15

FT 2021 AM










8: Site/SilverCity & City Park

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	1	129	3	9	140	2	3	0	12	2	0	0
Future Volume (vph)	1	129	3	9	140	2	3	0	12	2	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	136	3	9	147	2	3	0	13	2	0	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	140	158	16	2								
Volume Left (vph)	1	9	3	2								
Volume Right (vph)	3	2	13	0								
Hadj (s)	0.02	0.04	-0.42	0.23								
Departure Headway (s)	4.1	4.1	4.1	4.8								
Degree Utilization, x	0.16	0.18	0.02	0.00								
Capacity (veh/h)	861	864	807	694								
Control Delay (s)	7.9	8.0	7.2	7.8								
Approach Delay (s)	7.9	8.0	7.2	7.8								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				7.9								
Level of Service				A								
Intersection Capacity Utilization				24.3%	ICU Level of Service				A			
Analysis Period (min)				15								




























FT 2021 AM
9: Site & City Park

			
Lane Group	EBT	WBT	NBL
Lane Configurations			
Traffic Volume (vph)	120	148	13
Future Volume (vph)	120	148	13
Lane Group Flow (vph)	132	192	89
Sign Control	Free	Free	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 32.6%		ICU Level of Service A	
Analysis Period (min) 15			

FT 2021 AM
9: Site & City Park

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	120	6	34	148	13	71
Future Volume (Veh/h)	120	6	34	148	13	71
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	126	6	36	156	14	75
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			132	357		129
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			132	357		129
tC, single (s)			4.1	6.4		6.2
tC, 2 stage (s)						
tF (s)			2.2	3.5		3.3
p0 queue free %			98	98		92
cM capacity (veh/h)			1453	625		921
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	132	192	89			
Volume Left	0	36	14			
Volume Right	6	0	75			
cSH	1700	1453	857			
Volume to Capacity	0.08	0.02	0.10			
Queue Length 95th (m)	0.0	0.6	2.6			
Control Delay (s)	0.0	1.6	9.7			
Lane LOS	A		A			
Approach Delay (s)	0.0	1.6	9.7			
Approach LOS	A					
Intersection Summary						
Average Delay	2.8					
Intersection Capacity Utilization	32.6%			ICU Level of Service	A	
Analysis Period (min)	15					

FT 2021 PM
2: City Park/Bathgate & Ogilvie

															
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT					
Lane Configurations															
Traffic Volume (vph)	161	1096	176	16	1064	162	140	32	211	57					
Future Volume (vph)	161	1096	176	16	1064	162	140	32	211	57					
Lane Group Flow (vph)	169	1154	185	17	1120	171	147	66	222	274					
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA					
Protected Phases	5	2		1	6			8		4					
Permitted Phases	2		2	6		6	8		4						
Detector Phase	5	2	2	1	6	6	8	8	4	4					
Switch Phase															
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0					
Minimum Split (s)	11.0	29.0	29.0	11.0	29.0	29.0	42.4	42.4	42.4	42.4					
Total Split (s)	20.0	37.0	37.0	20.0	37.0	37.0	43.0	43.0	43.0	43.0					
Total Split (%)	20.0%	37.0%	37.0%	20.0%	37.0%	37.0%	43.0%	43.0%	43.0%	43.0%					
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0					
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	4.4	4.4	4.4	4.4					
Lost Time Adjust (s)	0.7	-2.0	-2.0	0.7	-2.0	-2.0	-3.4	-3.4	-3.4	-3.4					
Total Lost Time (s)	5.4	4.0	4.0	5.4	4.0	4.0	4.0	4.0	4.0	4.0					
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag									
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes									
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None					
Act Effct Green (s)	63.2	60.2	60.2	53.7	49.8	49.8	27.3	27.3	27.3	27.3					
Actuated g/C Ratio	0.63	0.60	0.60	0.54	0.50	0.50	0.27	0.27	0.27	0.27					
v/c Ratio	0.60	0.57	0.20	0.07	0.66	0.21	0.77	0.14	0.64	0.48					
Control Delay	19.4	16.3	6.0	9.1	17.5	1.7	57.4	14.5	39.6	9.7					
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0					
Total Delay	19.4	16.3	6.0	9.1	17.5	1.7	57.4	14.5	39.6	9.7					
LOS	B	B	A	A	B	A	E	B	D	A					
Approach Delay		15.4			15.3			44.1		23.1					
Approach LOS		B			B			D		C					
Queue Length 50th (m)	12.2	57.0	3.9	0.8	69.9	1.0	26.2	4.9	37.9	9.4					
Queue Length 95th (m)	31.3	128.1	20.4	m2.3	#151.4	2.3	42.8	12.4	52.9	25.3					
Internal Link Dist (m)		805.4			169.5			132.3		125.7					
Turn Bay Length (m)	70.0		50.0	50.0		80.0	30.0		45.0						
Base Capacity (vph)	360	2040	924	410	1689	810	273	658	492	732					
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0					
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0					
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0					
Reduced v/c Ratio	0.47	0.57	0.20	0.04	0.66	0.21	0.54	0.10	0.45	0.37					

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 19 (19%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 18.2

Intersection LOS: B

Intersection Capacity Utilization 83.9%

ICU Level of Service E

Analysis Period (min) 15









Description: Signal Timing Plan: May 4th 2016

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: City Park/Bathgate & Ogilvie

			
Ø1	Ø2 (R)	Ø4	
20 s	37 s	43 s	
			
Ø5	Ø6 (R)	Ø8	
20 s	37 s	43 s	

FT 2021 PM
4: City Park/CSIS & Ogilvie

															
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT				Ø3
Lane Configurations															
Traffic Volume (vph)	16	1187	141	224	600	18	204	7	189	63	22				
Future Volume (vph)	16	1187	141	224	600	18	204	7	189	63	22				
Lane Group Flow (vph)	17	1249	148	236	632	19	0	222	199	66	127				
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	NA	Perm	NA				
Protected Phases		2		1	6			8			4				3
Permitted Phases	2		2	6		6	8								
Detector Phase	2	2	2	1	6	6	8	8			4	4			
Switch Phase															
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0		10.0	10.0				1.0
Minimum Split (s)	29.1	29.1	29.1	10.9	29.1	29.1	27.5	27.5		27.5	27.5				5.0
Total Split (s)	46.0	46.0	46.0	15.0	61.0	61.0	34.0	34.0		34.0	34.0				5.0
Total Split (%)	46.0%	46.0%	46.0%	15.0%	61.0%	61.0%	34.0%	34.0%		34.0%	34.0%				5%
Yellow Time (s)	3.7	3.7	3.7	3.0	3.7	3.7	3.3	3.3		3.3	3.3				2.0
All-Red Time (s)	2.4	2.4	2.4	1.0	2.4	2.4	3.2	3.2		3.2	3.2				0.0
Lost Time Adjust (s)	-2.1	-2.1	-2.1	0.0	-2.1	-2.1		-2.5		-2.5	-2.5				
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0				
Lead/Lag	Lag	Lag	Lag	Lead			Lag	Lag		Lag	Lag		Lead		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes		Yes	Yes		Yes		Yes
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None		None		None
Act Effct Green (s)	46.7	46.7	46.7	63.4	63.4	63.4		27.6	0.0	27.6	27.6				
Actuated g/C Ratio	0.47	0.47	0.47	0.63	0.63	0.63		0.28	0.00	0.28	0.28				
v/c Ratio	0.06	0.79	0.21	0.81	0.29	0.03		0.80	1.00	0.30	0.27				
Control Delay	9.5	21.6	2.8	44.0	9.5	0.1		54.2	73.0	31.0	9.0				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0				
Total Delay	9.5	21.6	2.8	44.0	9.5	0.1		54.2	73.0	31.0	9.0				
LOS	A	C	A	D	A	A		D	E	C	A				
Approach Delay		19.5			18.5			63.1			16.5				
Approach LOS		B			B			E			B				
Queue Length 50th (m)	2.0	121.5	5.9	27.8	27.3	0.0		38.6	0.0	9.8	3.2				
Queue Length 95th (m)	m2.1	#102.8	6.3	#75.6	42.5	0.0		#73.0	#42.6	21.2	16.1				
Internal Link Dist (m)		200.1			350.0			137.2			101.6				
Turn Bay Length (m)	45.0		130.0	100.0		65.0				30.0					
Base Capacity (vph)	306	1582	692	294	2149	720		312	199	245	516				
Starvation Cap Reductn	0	0	0	0	0	0		0	0	0	0				
Spillback Cap Reductn	0	0	0	0	0	0		0	0	0	0				
Storage Cap Reductn	0	0	0	0	0	0		0	0	0	0				
Reduced v/c Ratio	0.06	0.79	0.21	0.80	0.29	0.03		0.71	1.00	0.27	0.25				

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 30 (30%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.00

Intersection Signal Delay: 25.3

Intersection LOS: C

Intersection Capacity Utilization 94.8%

ICU Level of Service F

Analysis Period (min) 15

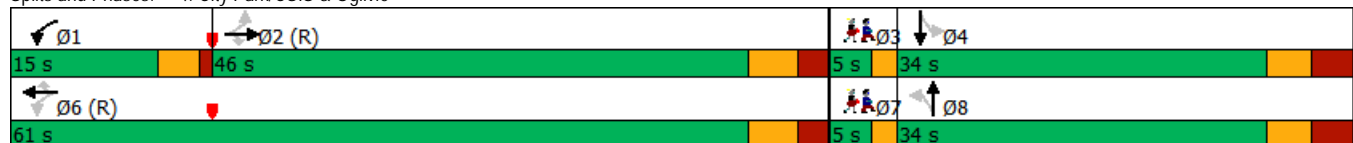
Description: Signal Timing Plan: May 5th 2016

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

Queue shown is maximum after two cycles.



















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

Splits and Phases: 4: City Park/CSIS & Ogilvie



Lane Group	Ø7
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	7
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	5.0
Total Split (s)	5.0
Total Split (%)	5%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effect Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

FT 2021 PM
6: Blair & OR174 WB Off

									
Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	131	582	99	150	158	358	937	1832	179
Future Volume (vph)	131	582	99	150	158	358	937	1832	179
Lane Group Flow (vph)	138	613	104	158	166	377	986	1928	188
Turn Type	Perm	pm+ov	Perm	NA	Free	Prot	NA	NA	Free
Protected Phases		5		8		5	2	6	
Permitted Phases	4	4	8		Free				Free
Detector Phase	4	5	8	8		5	2	6	
Switch Phase									
Minimum Initial (s)	10.0	5.0	10.0	10.0		5.0	10.0	10.0	
Minimum Split (s)	36.8	11.4	36.8	36.8		11.4	30.1	30.1	
Total Split (s)	36.8	31.0	36.8	36.8		31.0	94.0	63.0	
Total Split (%)	28.1%	23.7%	28.1%	28.1%		23.7%	71.9%	48.2%	
Yellow Time (s)	3.3	4.2	3.3	3.3		4.2	4.2	4.2	
All-Red Time (s)	3.5	1.9	3.5	3.5		1.9	1.9	1.9	
Lost Time Adjust (s)	-2.8	-2.1	-2.8	-2.8		-2.1	-2.1	-2.1	
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	
Lead/Lag		Lead				Lead		Lag	
Lead-Lag Optimize?		Yes				Yes		Yes	
Recall Mode	None	None	None	None		None	C-Max	C-Max	
Act Effct Green (s)	26.2	59.9	26.2	26.2	130.8	29.7	96.6	62.9	130.8
Actuated g/C Ratio	0.20	0.46	0.20	0.20	1.00	0.23	0.74	0.48	1.00
v/c Ratio	0.80	0.87	0.31	0.44	0.11	0.51	0.39	0.82	0.13
Control Delay	80.6	43.8	45.2	48.5	0.2	47.2	7.5	33.8	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	80.6	43.8	45.2	48.5	0.2	47.2	7.5	33.8	0.2
LOS	F	D	D	D	A	D	A	C	A
Approach Delay				29.0			18.5	30.8	
Approach LOS				C			B	C	
Queue Length 50th (m)	33.8	126.5	22.8	35.7	0.0	42.7	45.3	162.4	0.0
Queue Length 95th (m)	55.7	181.0	37.4	53.6	0.0	61.4	65.6	184.2	0.0
Internal Link Dist (m)				105.9			129.2	212.5	
Turn Bay Length (m)			70.0		25.0	85.0			70.0
Base Capacity (vph)	215	708	425	447	1478	746	2503	2342	1498
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	0.64	0.87	0.24	0.35	0.11	0.51	0.39	0.82	0.13

Intersection Summary

Cycle Length: 130.8

Actuated Cycle Length: 130.8

Offset: 50 (38%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 30.2

Intersection LOS: C

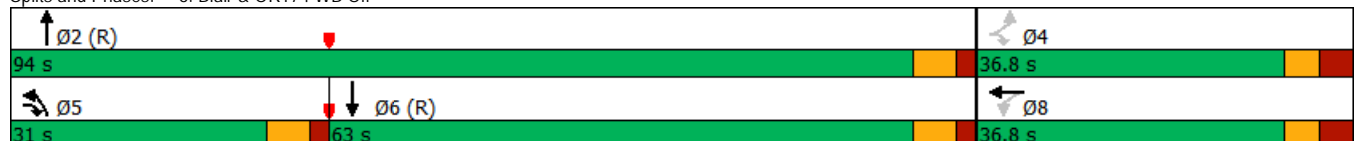
Intersection Capacity Utilization 93.7%

ICU Level of Service F







Analysis Period (min) 15

Description: Signal Timing Plan: May 5th, 2016










Splits and Phases: 6: Blair & OR174 WB Off



FT 2021 PM
7: Transitway & City Park

			
Lane Group	EBT	WBT	NBL
Lane Configurations			
Traffic Volume (vph)	134	76	205
Future Volume (vph)	134	76	205
Lane Group Flow (vph)	360	156	299
Sign Control	Free	Free	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 56.4%		ICU Level of Service B	
Analysis Period (min) 15			

















FT 2021 PM
7: Transitway & City Park

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	134	208	72	76	205	79
Future Volume (Veh/h)	134	208	72	76	205	79
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	141	219	76	80	216	83
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	287					
pX, platoon unblocked						
vC, conflicting volume			360		482	250
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			360		482	250
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		58	89
cM capacity (veh/h)			1199		508	788
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	360	156	299			
Volume Left	0	76	216			
Volume Right	219	0	83			
cSH	1700	1199	564			
Volume to Capacity	0.21	0.06	0.53			
Queue Length 95th (m)	0.0	1.5	23.5			
Control Delay (s)	0.0	4.3	18.4			
Lane LOS		A	C			
Approach Delay (s)	0.0	4.3	18.4			
Approach LOS			C			
Intersection Summary						
Average Delay			7.6			
Intersection Capacity Utilization			56.4%	ICU Level of Service		B
Analysis Period (min)	15					







FT 2021 PM
8: City Park & SilverCity

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Configurations	↔	↔	↔	↔
Traffic Volume (vph)	287	213	1	5
Future Volume (vph)	287	213	1	5
Lane Group Flow (vph)	320	293	59	23
Sign Control	Stop	Stop	Stop	Stop
Intersection Summary				
Control Type: Unsignalized				
Intersection Capacity Utilization 46.4%			ICU Level of Service A	
Analysis Period (min) 15				










FT 2021 PM
8: City Park & SilverCity

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	5	287	12	41	213	25	12	1	43	13	5	4
Future Volume (vph)	5	287	12	41	213	25	12	1	43	13	5	4
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	5	302	13	43	224	26	13	1	45	14	5	4
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	320	293	59	23								
Volume Left (vph)	5	43	13	14								
Volume Right (vph)	13	26	45	4								
Hadj (s)	0.01	0.01	-0.38	0.05								
Departure Headway (s)	4.5	4.5	4.9	5.4								
Degree Utilization, x	0.40	0.36	0.08	0.03								
Capacity (veh/h)	788	777	646	580								
Control Delay (s)	10.3	10.0	8.4	8.6								
Approach Delay (s)	10.3	10.0	8.4	8.6								
Approach LOS	B	B	A	A								
Intersection Summary												
Delay			10.0									
Level of Service			A									
Intersection Capacity Utilization			46.4%		ICU Level of Service				A			
Analysis Period (min)			15									





















FT 2021 PM
9: City Park

			
Lane Group	EBT	WBT	NBL
Lane Configurations			
Traffic Volume (vph)	207	166	17
Future Volume (vph)	207	166	17
Lane Group Flow (vph)	236	287	133
Sign Control	Free	Free	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 46.1%		ICU Level of Service A	
Analysis Period (min) 15			

FT 2021 PM
9: City Park

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	207	17	106	166	17	109
Future Volume (Veh/h)	207	17	106	166	17	109
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	218	18	112	175	18	115
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			236		626	227
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			236		626	227
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			92		96	86
cM capacity (veh/h)			1331		410	812
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	236	287	133			
Volume Left	0	112	18			
Volume Right	18	0	115			
cSH	1700	1331	717			
Volume to Capacity	0.14	0.08	0.19			
Queue Length 95th (m)	0.0	2.1	5.1			
Control Delay (s)	0.0	3.6	11.2			
Lane LOS		A	B			
Approach Delay (s)	0.0	3.6	11.2			
Approach LOS			B			
Intersection Summary						
Average Delay			3.8			
Intersection Capacity Utilization			46.1%	ICU Level of Service		A
Analysis Period (min)			15			

FT 2026 AM
2: City Park/Bathgate & Ogilvie

										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	175	568	95	25	1217	224	138	36	134	35
Future Volume (vph)	175	568	95	25	1217	224	138	36	134	35
Lane Group Flow (vph)	184	598	100	26	1281	236	145	61	141	283
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		1	6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	5	2	2	1	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.0	30.0	30.0	11.0	30.0	30.0	42.4	42.4	42.4	42.4
Total Split (s)	15.0	32.0	32.0	15.0	32.0	32.0	43.0	43.0	43.0	43.0
Total Split (%)	16.7%	35.6%	35.6%	16.7%	35.6%	35.6%	47.8%	47.8%	47.8%	47.8%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	4.4	4.4	4.4	4.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	6.0	6.0	4.7	6.0	6.0	7.4	7.4	7.4	7.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	57.2	51.5	51.5	49.6	42.1	42.1	20.5	20.5	20.5	20.5
Actuated g/C Ratio	0.64	0.57	0.57	0.55	0.47	0.47	0.23	0.23	0.23	0.23
v/c Ratio	0.71	0.31	0.11	0.05	0.81	0.29	0.84	0.15	0.49	0.53
Control Delay	31.5	13.9	3.9	9.2	25.0	3.3	68.4	16.9	33.7	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.5	13.9	3.9	9.2	25.0	3.3	68.4	16.9	33.7	8.6
LOS	C	B	A	A	C	A	E	B	C	A
Approach Delay		16.4			21.4			53.1		16.9
Approach LOS		B			C			D		B
Queue Length 50th (m)	13.7	21.3	0.0	1.0	96.0	0.0	24.6	5.3	21.8	5.2
Queue Length 95th (m)	#49.0	60.0	9.0	m3.5	#187.7	13.4	37.0	11.6	30.5	19.3
Internal Link Dist (m)		805.4			169.5			132.3		125.7
Turn Bay Length (m)	70.0		50.0	50.0		80.0	30.0		45.0	
Base Capacity (vph)	283	1938	881	558	1587	803	299	674	502	752
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.31	0.11	0.05	0.81	0.29	0.48	0.09	0.28	0.38

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 27 (30%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 21.5

Intersection LOS: C

Intersection Capacity Utilization 96.6%

ICU Level of Service F

Analysis Period (min) 15







Description: Signal Timing Plan: May 4th, 2016

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: City Park/Bathgate & Ogilvie

		
Ø1	Ø2 (R)	Ø4
15 s	32 s	43 s
		
Ø5	Ø6 (R)	Ø8
15 s	32 s	43 s


FT 2026 AM
4: City Park/CSIS & Ogilvie

															
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	Ø3			
Lane Configurations															
Traffic Volume (vph)	89	558	61	100	1139	121	76	35	90	4	3				
Future Volume (vph)	89	558	61	100	1139	121	76	35	90	4	3				
Lane Group Flow (vph)	94	587	64	105	1199	127	0	117	95	4	39				
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	NA	Perm	NA				
Protected Phases		2			6			8			4		4	3	
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	1.0			
Minimum Split (s)	35.1	35.1	35.1	35.1	35.1	35.1	33.5	33.5		33.5	33.5	5.0			
Total Split (s)	51.0	51.0	51.0	51.0	51.0	51.0	34.0	34.0		34.0	34.0	5.0			
Total Split (%)	56.7%	56.7%	56.7%	56.7%	56.7%	56.7%	37.8%	37.8%		37.8%	37.8%	6%			
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3		3.3	3.3	2.0			
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	2.4	3.2	3.2		3.2	3.2	0.0			
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)	6.1	6.1	6.1	6.1	6.1	6.1		6.5		6.5	6.5				
Lead/Lag							Lag	Lag		Lag	Lag	Lead			
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None		None	None	None			
Act Effct Green (s)	65.5	65.5	65.5	65.5	65.5	65.5		15.4	0.0	15.4	15.4				
Actuated g/C Ratio	0.73	0.73	0.73	0.73	0.73	0.73		0.17	0.00	0.17	0.17				
v/c Ratio	0.37	0.24	0.07	0.20	0.49	0.13		0.53	0.67	0.02	0.14				
Control Delay	22.1	10.5	8.4	9.0	9.1	2.3		41.1	27.0	26.5	11.2				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0				
Total Delay	22.1	10.5	8.4	9.0	9.1	2.3		41.1	27.0	26.5	11.2				
LOS	C	B	A	A	A	A		D	C	C	B				
Approach Delay		11.8			8.5			34.8			12.6				
Approach LOS		B			A			C			B				
Queue Length 50th (m)	4.1	12.2	0.0	5.2	41.3	0.0		19.2	0.0	0.6	0.4				
Queue Length 95th (m)	#33.6	54.7	14.5	21.1	102.6	8.2		29.7	#12.7	2.8	7.3				
Internal Link Dist (m)		200.1			350.0			137.2			101.6				
Turn Bay Length (m)	45.0		130.0	100.0		65.0				30.0					
Base Capacity (vph)	254	2467	967	531	2467	983		396	141	359	451				
Starvation Cap Reductn	0	0	0	0	0	0		0	0	0	0				
Spillback Cap Reductn	0	0	0	0	0	0		0	0	0	0				
Storage Cap Reductn	0	0	0	0	0	0		0	0	0	0				
Reduced v/c Ratio	0.37	0.24	0.07	0.20	0.49	0.13		0.30	0.67	0.01	0.09				

Intersection Summary



















Cycle Length: 90
Actuated Cycle Length: 90
Offset: 88 (98%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.67
Intersection Signal Delay: 11.9
Intersection Capacity Utilization 78.9%
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: City Park/CSIS & Ogilvie

 Ø2 (R)	 Ø3	 Ø4
51 s	5 s	34 s
 Ø6 (R)	 Ø7	 Ø8
51 s	5 s	34 s

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

FT 2026 AM
6: Blair & OR-174 OFF

									
Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	86	209	223	182	452	263	1277	650	86
Future Volume (vph)	86	209	223	182	452	263	1277	650	86
Lane Group Flow (vph)	91	220	235	192	476	277	1344	684	91
Turn Type	Perm	pm+ov	Perm	NA	Perm	Prot	NA	NA	Perm
Protected Phases		5		8		5	2	6	
Permitted Phases	4	4	8		8				6
Detector Phase	4	5	8	8	8	5	2	6	6
Switch Phase									
Minimum Initial (s)	10.0	5.0	10.0	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	36.8	11.4	36.8	36.8	36.8	11.4	30.1	30.1	30.1
Total Split (s)	41.0	27.0	41.0	41.0	41.0	27.0	59.0	32.0	32.0
Total Split (%)	41.0%	27.0%	41.0%	41.0%	41.0%	27.0%	59.0%	32.0%	32.0%
Yellow Time (s)	3.3	4.2	3.3	3.3	3.3	4.2	4.2	4.2	4.2
All-Red Time (s)	3.5	2.2	3.5	3.5	3.5	2.2	1.9	1.9	1.9
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)	6.8	6.4	6.8	6.8	6.8	6.4	6.1	6.1	6.1
Lead/Lag		Lead				Lead		Lag	Lag
Lead-Lag Optimize?		Yes				Yes		Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	Min	Min
Act Effct Green (s)	28.8	48.9	28.8	28.8	28.8	12.9	41.7	22.0	22.0
Actuated g/C Ratio	0.34	0.58	0.34	0.34	0.34	0.15	0.50	0.26	0.26
v/c Ratio	0.24	0.25	0.41	0.31	0.84	0.55	0.80	0.54	0.19
Control Delay	24.0	8.6	25.0	23.6	36.2	39.5	22.3	28.8	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.0	8.6	25.0	23.6	36.2	39.5	22.3	28.8	4.7
LOS	C	A	C	C	D	D	C	C	A
Approach Delay				30.6			25.2	26.0	
Approach LOS				C			C	C	
Queue Length 50th (m)	10.7	14.0	29.4	23.1	57.6	23.7	101.7	37.1	0.0
Queue Length 95th (m)	24.8	27.1	55.1	44.8	#123.9	37.2	128.0	52.3	8.1
Internal Link Dist (m)				105.9			166.4	212.5	
Turn Bay Length (m)			70.0		25.0	85.0			70.0
Base Capacity (vph)	472	1050	724	762	679	846	2241	1635	576
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	0.19	0.21	0.32	0.25	0.70	0.33	0.60	0.42	0.16

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 84

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 25.7

Intersection LOS: C

Intersection Capacity Utilization 89.1%

ICU Level of Service E




Analysis Period (min) 15

Description: Signal Timing Plan: May 5, 2016







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

Queue shown is maximum after two cycles.









Splits and Phases: 6: Blair & OR-174 OFF

	
59 s	41 s
	
27 s	41 s







FT 2026 AM
7: Service & City Park

			
Lane Group	EBT	WBT	NBL
Lane Configurations			
Traffic Volume (vph)	37	29	121
Future Volume (vph)	37	29	121
Lane Group Flow (vph)	151	56	207
Sign Control	Free	Free	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 34.3%		ICU Level of Service A	
Analysis Period (min) 15			





















FT 2026 AM
8: Site/SilverCity & City Park

				
Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	129	140	0	0
Future Volume (vph)	129	140	0	0
Lane Group Flow (vph)	140	158	16	2
Sign Control	Stop	Stop	Stop	Stop
Intersection Summary				
Control Type: Unsignalized				
Intersection Capacity Utilization 24.3%			ICU Level of Service A	
Analysis Period (min) 15				

FT 2026 AM
9: Site & City Park

			
Lane Group	EBT	WBT	NBL
Lane Configurations			
Traffic Volume (vph)	120	148	13
Future Volume (vph)	120	148	13
Lane Group Flow (vph)	132	192	89
Sign Control	Free	Free	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 32.6%		ICU Level of Service A	
Analysis Period (min) 15			

FT 2026 PM
2: City Park/Bathgate & Ogilvie

										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	178	1210	192	17	1175	201	152	35	233	63
Future Volume (vph)	178	1210	192	17	1175	201	152	35	233	63
Lane Group Flow (vph)	187	1274	202	18	1237	212	160	73	245	302
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		1	6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	5	2	2	1	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.0	29.0	29.0	11.0	29.0	29.0	42.4	42.4	42.4	42.4
Total Split (s)	20.0	37.0	37.0	20.0	37.0	37.0	43.0	43.0	43.0	43.0
Total Split (%)	20.0%	37.0%	37.0%	20.0%	37.0%	37.0%	43.0%	43.0%	43.0%	43.0%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	4.4	4.4	4.4	4.4
Lost Time Adjust (s)	0.7	-2.0	-2.0	0.7	-2.0	-2.0	-3.4	-3.4	-3.4	-3.4
Total Lost Time (s)	5.4	4.0	4.0	5.4	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	61.6	58.4	58.4	51.6	47.6	47.6	29.0	29.0	29.0	29.0
Actuated g/C Ratio	0.62	0.58	0.58	0.52	0.48	0.48	0.29	0.29	0.29	0.29
v/c Ratio	0.75	0.64	0.22	0.08	0.77	0.27	0.84	0.15	0.67	0.50
Control Delay	37.2	19.1	6.9	10.6	22.0	2.4	65.8	13.6	39.6	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.2	19.1	6.9	10.6	22.0	2.4	65.8	13.6	39.6	11.0
LOS	D	B	A	B	C	A	E	B	D	B
Approach Delay		19.6			19.0			49.4		23.8
Approach LOS		B			B			D		C
Queue Length 50th (m)	18.4	70.8	5.5	0.9	87.0	4.2	28.9	5.2	41.7	13.2
Queue Length 95th (m)	44.1	#162.8	24.1	m2.5	#180.4	4.7	48.9	13.0	58.4	30.9
Internal Link Dist (m)		805.4			169.5			132.3		125.7
Turn Bay Length (m)	70.0		50.0	50.0		80.0	30.0		45.0	
Base Capacity (vph)	320	1980	900	367	1614	798	257	660	489	733
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.64	0.22	0.05	0.77	0.27	0.62	0.11	0.50	0.41

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 19 (19%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 21.8

Intersection LOS: C

Intersection Capacity Utilization 89.9%

ICU Level of Service E

Analysis Period (min) 15

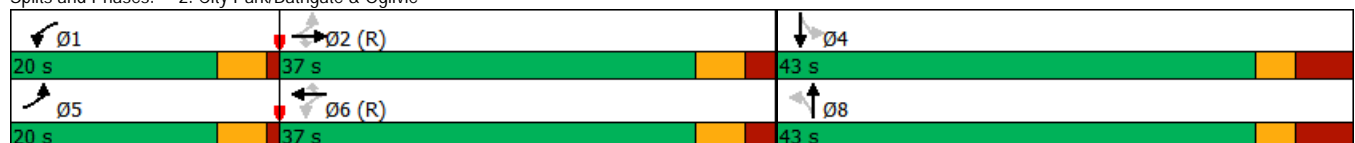
Description: Signal Timing Plan: May 4th 2016

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: City Park/Bathgate & Ogilvie



FT 2026 PM
4: City Park/CSIS & Ogilvie

															
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	Ø3			
Lane Configurations															
Traffic Volume (vph)	16	1311	141	224	663	18	204	7	189	63	22				
Future Volume (vph)	16	1311	141	224	663	18	204	7	189	63	22				
Lane Group Flow (vph)	17	1380	148	236	698	19	0	222	199	66	127				
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	NA	Perm	NA				
Protected Phases		2		1	6			8			4	3			
Permitted Phases	2		2	6		6	8			4					
Detector Phase	2	2	2	1	6	6	8	8		4	4				
Switch Phase															
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0		10.0	10.0	1.0			
Minimum Split (s)	29.1	29.1	29.1	10.9	29.1	29.1	27.5	27.5		27.5	27.5	5.0			
Total Split (s)	46.0	46.0	46.0	15.0	61.0	61.0	34.0	34.0		34.0	34.0	5.0			
Total Split (%)	46.0%	46.0%	46.0%	15.0%	61.0%	61.0%	34.0%	34.0%		34.0%	34.0%	5%			
Yellow Time (s)	3.7	3.7	3.7	3.0	3.7	3.7	3.3	3.3		3.3	3.3	2.0			
All-Red Time (s)	2.4	2.4	2.4	1.0	2.4	2.4	3.2	3.2		3.2	3.2	0.0			
Lost Time Adjust (s)	-2.1	-2.1	-2.1	0.0	-2.1	-2.1		-2.5		-2.5	-2.5				
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0				
Lead/Lag	Lag	Lag	Lag	Lead			Lag	Lag		Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes		Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	None			
Act Effct Green (s)	46.7	46.7	46.7	63.4	63.4	63.4		27.6	0.0	27.6	27.6				
Actuated g/C Ratio	0.47	0.47	0.47	0.63	0.63	0.63		0.28	0.00	0.28	0.28				
v/c Ratio	0.06	0.87	0.21	0.81	0.32	0.03		0.80	1.00	0.30	0.27				
Control Delay	9.0	25.0	2.4	44.0	9.8	0.1		54.2	73.0	31.0	9.0				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0				
Total Delay	9.0	25.0	2.4	44.0	9.8	0.1		54.2	73.0	31.0	9.0				
LOS	A	C	A	D	A	A		D	E	C	A				
Approach Delay		22.7			18.1			63.1			16.5				
Approach LOS		C			B			E			B				
Queue Length 50th (m)	1.7	140.5	3.8	27.8	31.0	0.0		38.6	0.0	9.8	3.2				
Queue Length 95th (m)	m1.8	#179.4	m7.6	#75.6	47.6	0.0		#73.0	#42.6	21.2	16.1				
Internal Link Dist (m)		200.1			350.0			137.2			101.6				
Turn Bay Length (m)	45.0		130.0	100.0		65.0				30.0					
Base Capacity (vph)	289	1582	692	294	2149	720		312	199	245	516				
Starvation Cap Reductn	0	0	0	0	0	0		0	0	0	0				
Spillback Cap Reductn	0	0	0	0	0	0		0	0	0	0				
Storage Cap Reductn	0	0	0	0	0	0		0	0	0	0				
Reduced v/c Ratio	0.06	0.87	0.21	0.80	0.32	0.03		0.71	1.00	0.27	0.25				

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 30 (30%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.00

Intersection Signal Delay: 26.3

Intersection LOS: C

Intersection Capacity Utilization 98.4%

ICU Level of Service F

Analysis Period (min) 15

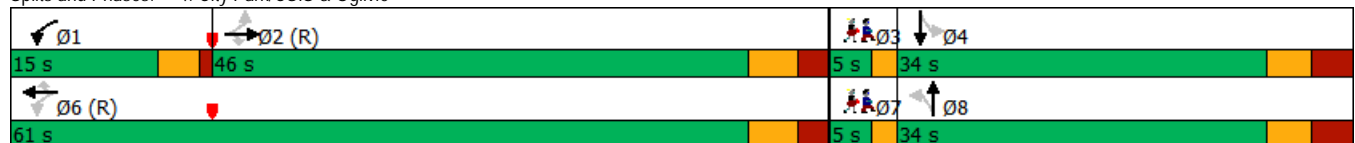
Description: Signal Timing Plan: May 5th 2016

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

Queue shown is maximum after two cycles.



















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

Splits and Phases: 4: City Park/CSIS & Ogilvie



Lane Group	Ø7
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	7
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	5.0
Total Split (s)	5.0
Total Split (%)	5%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

FT 2026 PM
6: Blair & OR174 WB Off

									
Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	123	553	93	144	150	340	883	1727	169
Future Volume (vph)	123	553	93	144	150	340	883	1727	169
Lane Group Flow (vph)	129	582	98	152	158	358	929	1818	178
Turn Type	Perm	pm+ov	Perm	NA	Free	Prot	NA	NA	Free
Protected Phases		5		8		5	2	6	
Permitted Phases	4	4	8		Free				Free
Detector Phase	4	5	8	8		5	2	6	
Switch Phase									
Minimum Initial (s)	10.0	5.0	10.0	10.0		5.0	10.0	10.0	
Minimum Split (s)	36.8	11.4	36.8	36.8		11.4	30.1	30.1	
Total Split (s)	36.8	31.0	36.8	36.8		31.0	94.0	63.0	
Total Split (%)	28.1%	23.7%	28.1%	28.1%		23.7%	71.9%	48.2%	
Yellow Time (s)	3.3	4.2	3.3	3.3		4.2	4.2	4.2	
All-Red Time (s)	3.5	1.9	3.5	3.5		1.9	1.9	1.9	
Lost Time Adjust (s)	-2.8	-2.1	-2.8	-2.8		-2.1	-2.1	-2.1	
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	
Lead/Lag		Lead				Lead		Lag	
Lead-Lag Optimize?		Yes				Yes		Yes	
Recall Mode	None	None	None	None		None	C-Max	C-Max	
Act Effct Green (s)	25.0	58.3	25.0	25.0	130.8	29.3	97.8	64.5	130.8
Actuated g/C Ratio	0.19	0.45	0.19	0.19	1.00	0.22	0.75	0.49	1.00
v/c Ratio	0.78	0.84	0.30	0.45	0.11	0.49	0.37	0.76	0.12
Control Delay	79.0	42.4	45.9	49.5	0.1	46.9	6.9	30.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	79.0	42.4	45.9	49.5	0.1	46.9	6.9	30.4	0.2
LOS	E	D	D	D	A	D	A	C	A
Approach Delay				29.5			18.0	27.7	
Approach LOS				C			B	C	
Queue Length 50th (m)	31.7	120.5	21.8	34.7	0.0	40.7	39.4	142.0	0.0
Queue Length 95th (m)	51.8	165.6	35.5	51.8	0.0	58.1	60.7	168.0	0.0
Internal Link Dist (m)				105.9			129.2	212.5	
Turn Bay Length (m)			70.0		25.0	85.0			70.0
Base Capacity (vph)	217	690	425	447	1478	735	2533	2402	1498
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.84	0.23	0.34	0.11	0.49	0.37	0.76	0.12

Intersection Summary

Cycle Length: 130.8

Actuated Cycle Length: 130.8

Offset: 50 (38%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 28.5

Intersection LOS: C

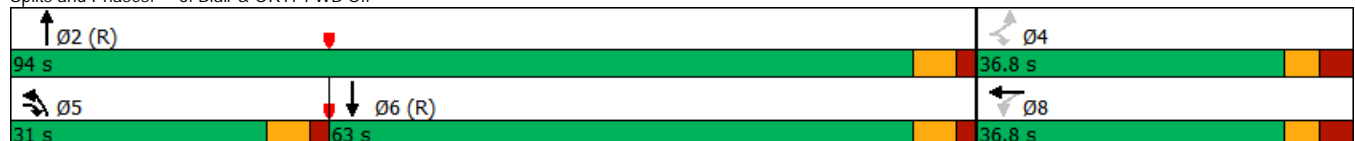
Intersection Capacity Utilization 89.7%

ICU Level of Service E







Analysis Period (min) 15

Description: Signal Timing Plan: May 5th, 2016










Splits and Phases: 6: Blair & OR174 WB Off











FT 2026 PM
7: Transitway & City Park

			
Lane Group	EBT	WBT	NBL
Lane Configurations			
Traffic Volume (vph)	134	76	205
Future Volume (vph)	134	76	205
Lane Group Flow (vph)	360	156	299
Sign Control	Free	Free	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 56.4%		ICU Level of Service B	
Analysis Period (min) 15			

















FT 2026 PM
7: Transitway & City Park

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	134	208	72	76	205	79
Future Volume (Veh/h)	134	208	72	76	205	79
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	141	219	76	80	216	83
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	287					
pX, platoon unblocked						
vC, conflicting volume			360	482		250
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			360	482		250
tC, single (s)			4.1	6.4		6.2
tC, 2 stage (s)						
tF (s)			2.2	3.5		3.3
p0 queue free %			94	58		89
cM capacity (veh/h)			1199	508		788
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	360	156	299			
Volume Left	0	76	216			
Volume Right	219	0	83			
cSH	1700	1199	564			
Volume to Capacity	0.21	0.06	0.53			
Queue Length 95th (m)	0.0	1.5	23.5			
Control Delay (s)	0.0	4.3	18.4			
Lane LOS			A C			
Approach Delay (s)	0.0	4.3	18.4			
Approach LOS			C			
Intersection Summary						
Average Delay			7.6			
Intersection Capacity Utilization			56.4%	ICU Level of Service		B
Analysis Period (min)			15			







FT 2026 PM
8: City Park & SilverCity

				
Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	287	213	1	5
Future Volume (vph)	287	213	1	5
Lane Group Flow (vph)	320	293	59	23
Sign Control	Stop	Stop	Stop	Stop
Intersection Summary				
Control Type: Unsignalized				
Intersection Capacity Utilization 46.4%			ICU Level of Service A	
Analysis Period (min) 15				










FT 2026 PM
8: City Park & SilverCity

																				
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
Lane Configurations																				
Sign Control		Stop			Stop			Stop			Stop									
Traffic Volume (vph)	5	287	12	41	213	25	12	1	43	13	5	4								
Future Volume (vph)	5	287	12	41	213	25	12	1	43	13	5	4								
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95								
Hourly flow rate (vph)	5	302	13	43	224	26	13	1	45	14	5	4								
Direction, Lane #	EB 1	WB 1	NB 1	SB 1																
Volume Total (vph)	320	293	59	23																
Volume Left (vph)	5	43	13	14																
Volume Right (vph)	13	26	45	4																
Hadj (s)	0.01	0.01	-0.38	0.05																
Departure Headway (s)	4.5	4.5	4.9	5.4																
Degree Utilization, x	0.40	0.36	0.08	0.03																
Capacity (veh/h)	788	777	646	580																
Control Delay (s)	10.3	10.0	8.4	8.6																
Approach Delay (s)	10.3	10.0	8.4	8.6																
Approach LOS	B	B	A	A																
Intersection Summary																				
Delay			10.0																	
Level of Service			A																	
Intersection Capacity Utilization			46.4%	ICU Level of Service					A											
Analysis Period (min)			15																	

FT 2026 PM
9: City Park

			
Lane Group	EBT	WBT	NBL
Lane Configurations			
Traffic Volume (vph)	207	166	17
Future Volume (vph)	207	166	17
Lane Group Flow (vph)	236	287	133
Sign Control	Free	Free	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 46.1%		ICU Level of Service A	
Analysis Period (min) 15			

FT 2026 PM
9: City Park

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	207	17	106	166	17	109
Future Volume (Veh/h)	207	17	106	166	17	109
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	218	18	112	175	18	115
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			236		626	227
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			236		626	227
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			92		96	86
cM capacity (veh/h)			1331		410	812
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	236	287	133			
Volume Left	0	112	18			
Volume Right	18	0	115			
cSH	1700	1331	717			
Volume to Capacity	0.14	0.08	0.19			
Queue Length 95th (m)	0.0	2.1	5.1			
Control Delay (s)	0.0	3.6	11.2			
Lane LOS		A	B			
Approach Delay (s)	0.0	3.6	11.2			
Approach LOS			B			
Intersection Summary						
Average Delay			3.8			
Intersection Capacity Utilization			46.1%	ICU Level of Service		A
Analysis Period (min)			15			

Appendix H

MMLOS ANALYSIS

Multi-Modal Level of Service - Segments Form

Consultant

Scenario

Comments

Parsons

Existing and Full Build-out

Project

Date

476851

Nov. 9, 2018

SEGMENTS		Street A	Existing Segment 1	Full build-out Segment 1							
Pedestrian	Sidewalk Width	B	≥ 2 m	≥ 2 m							
	Boulevard Width		> 2 m	> 2 m							
	Avg Daily Curb Lane Traffic Volume		> 3000	> 3000							
	Operating Speed		> 30 to 50 km/h	> 30 to 50 km/h							
	On-Street Parking		yes	no							
	Exposure to Traffic PLoS		B	B	-	-	-	-	-	-	-
	Effective Sidewalk Width		2.0 m	2.0 m							
	Pedestrian Volume		250 ped/hr	250 ped/hr							
Bicycle	Crowding PLoS	#N/A	B	B	-	-	-	-	-	-	-
	Level of Service		B	B	-	-	-	-	-	-	-
	Type of Cycling Facility		Mixed Traffic	Curbside Bike Lane							
	Number of Travel Lanes		2-3 lanes total	≤ 1 each direction							
	Operating Speed		>40 to 50 km/h	≤ 50 km/h							
	# of Lanes & Operating Speed LoS		#N/A	A	-	-	-	-	-	-	-
	Bike Lane (+ Parking Lane) Width			≥ 1.8 m							
	Bike Lane Width LoS		-	A	-	-	-	-	-	-	-
	Bike Lane Blockages			Rare							
	Blockage LoS		-	A	-	-	-	-	-	-	-
	Median Refuge Width (no median = < 1.8 m)		≥ 1.8 m refuge	< 1.8 m refuge							
	No. of Lanes at Unsignalized Crossing		≤ 3 lanes	≤ 3 lanes							
	Sidestreet Operating Speed		>40 to 50 km/h	>40 to 50 km/h							
	Unsignalized Crossing - Lowest LoS		A	B	-	-	-	-	-	-	-
Transit	Level of Service	D	#N/A	B	-	-	-	-	-	-	-
	Facility Type		Mixed Traffic	Mixed Traffic							
	Friction or Ratio Transit:Posted Speed		Vt/Vp ≥ 0.8	Vt/Vp ≥ 0.8							
Truck	Level of Service	B	D	D	-	-	-	-	-	-	-
	Truck Lane Width		> 3.7 m	> 3.7 m							
	Travel Lanes per Direction		1	1							

Appendix I

TDM CHECKLIST

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

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

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

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

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

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