3095 Albion Road

Ahlul-Bayt Center Ottawa

Transportation Impact Study

Prepared By:

NOVATECH
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario
K2M 1P6

February 2016

Novatech File: 113093
Ref: R-2015-176

NOVATECH
Engineers, Planners & Landscape Architects

February 23rd, 2016

City of Ottawa
Planning and Growth Management Branch
110 Laurier Ave. W., 4th Floor
Ottawa, ON K1P 1J1

Attention: **Mr. Wally Dubyk, C.E.T.**
Project Manager, Infrastructure Approvals

Dear Sir:

Reference: **3095 Albion Road – Ahlul-Bayt Center Ottawa (ABCO)**
Transportation Impact Study
Our File No.: 113093

This Transportation Impact Study has been prepared in support of a Site Plan Control (SPC) application for 3095 Albion Road.

The structure and format of this report follows the 2006 City of Ottawa Transportation Impact Assessment (TIA) Guidelines. A checklist of the documentation requirements as outlined in Appendix D of the TIA guidelines is attached with reference to corresponding report sections.

A PDF version of this report and copies of the electronic software files are provided on the enclosed disk. We trust that the Transportation Impact Study will be to your satisfaction; please call if you have any questions as you complete your review of the study.

Yours truly,

NOVATECH

J Luong

Jennifer Luong, P.Eng.
Transportation Engineer

Suite 200, 240 Michael Cowpland Drive, Ottawa ON K2M 1P6 Tel: 613.254.9643 Fax: 613.254.5867 www.novatech-eng.com

NOVATECH
Engineers, Planners & Landscape Architects

Documentation and Reporting Checklist

Report Context (Section 1.0)

Description of the development (include all of the following that are known at the time of the application):

- ☐ Municipal address;
- ☐ Location relative to major elements of the existing transportation system (e.g., the site is located in the southwest quadrant of the intersection of Main Street/ First Street, 600 metres from the Maple Street Rapid Transit Station);
- ☐ Existing land uses or permitted use provisions in the Official Plan, Zoning By-law, etc.;
- ☐ Proposed land uses and relevant planning regulations to be used in the analysis;
- ☐ Proposed development size (building size, number of residential units, etc.) and location on site;
- ☐ Estimated date of occupancy;
- ☐ Planned phasing of development;
- ☐ Proposed number of parking spaces (not relevant for Draft Plans of Subdivision); and
- ☐ Proposed access points and type of access (full turns, right-in/ right-out, turning restrictions, etc.
- ☐ Study area;
- ☐ Time periods and phasing; and
- ☐ Horizon years (include reference to phased development).

The TIS must include a key plan that shows the general location of the development in relation to the surrounding area. The TIS must also provide a draft site plan of a suitable scale that shows the general location of the development and the proposed access. If the proposed development/ redevelopment is to be constructed in phases, a description must be provided for each phase, identifying the proposed timing of implementation.

Existing Conditions (Section 2.0 and 4.0)

- ☐ Existing roads and ramps in the study area, including jurisdiction, classification, number of lanes, and posted speed limit;
- ☐ Existing intersections, indicating type of control, lane configurations, turning restrictions, and any other relevant data (e.g., extraordinary lane widths, grades, etc.);
- ☐ Existing access points to adjacent developments (both sides of all roads bordering the site);
- ☐ Existing transit system, including stations and stops;
- ☐ Existing on- and off-road bicycle facilities and pedestrian sidewalks and pathway networks;
- ☐ Existing system operations (V/C, LOS); and
- ☐ Major trip generators/ attractors within the Study Area should be indicated.

Suite 200, 240 Michael Cowpland Drive, Ottawa ON K2M 1P6 Tel: 613.254.9643 Fax: 613.254.5867 www.novatech-eng.com

The TIS report must include: a context plan of a suitable scale that shows the general location of the development, the proposed access locations and the existing conditions in the surrounding area; figures documenting the existing travel demands by mode; and a summary of collisions for the effected study area roads. A photographic inventory of the transportation network elements in the vicinity of the proposed access points would be beneficial to staff in their review of the Consultant's report.

Demand Forecasting (Section 3.0)

- ☐ General background growth;
- ☐ Other study area developments;
- ☐ Changes to the study area road network;
- ☐ Future background system operations (V/C, LOS, queue lengths):
  - include figures documenting future background travel demands by mode for each horizon year
- ☐ Trip generation rates;
- ☐ Trip distribution and assignment:
  - include figures documenting forecasted site trip generation and assignment by mode; and
  - include figures documenting total future travel demands by mode for each horizon year.

Impact Analysis (Sections 4.0 to 7.0)

- ☐ Total future system operations (V/C, LOS, queue lengths);
- ☐ Signal and auxiliary lane (device) warrants;
- ☐ Operational/ safety assessment (e.g., sight line assessment where grades are an issue);
- ☐ Storage analysis for closely spaced intersections;
- ☐ Pedestrian and bicycle network connections and continuity;
- ☐ On-site circulation and design;
- ☐ Potential for neighbourhood impacts; and
- ☐ TDM.

Suite 200, 240 Michael Cowpland Drive, Ottawa ON K2M 1P6 Tel: 613.254.9643 Fax: 613.254.5867 www.novatech-eng.com

EXECUTIVE SUMMARY

The Ahlul-Bayt Center Ottawa (ABCO) is proposed to be relocated from their existing facility in Vanier to 3095 Albion Road, south of Kitchener Avenue. The ABCO is a Lebanese Muslim Canadian registered charitable organization which offers the community ongoing social, cultural, educational, and religious services. The proposed development will consist of a 3-storey building with a private school, mosque, and community/recreational centre. The construction is anticipated to be complete in 2016.

The intersections to be evaluated in this report were confirmed with the City prior to the preparation of this report. The time periods for analysis include the weekday midday and PM peak hours to reflect the worst-case combination of background and site generated traffic. Analysis has been completed for the build-out scenario in 2016 and a five year horizon of 2021.

No background traffic growth was included based on a review of historic traffic data and the 2011 and 2031 TRANS model. The vehicle trips associated with each program or facility have been identified based on the staff experience at the existing ABCO facility in Vanier. The estimated vehicle trips have been compared to ITE rates (where available) to validate the assumptions. Total traffic volumes have been calculated by adding the proposed site traffic to the existing traffic.

Provisions for non-auto travel modes were assessed, including access to local pedestrian, bicycle and transit systems. The proposed on-site design was reviewed in terms of on-site parking activities. A shared access is proposed with 3091 Albion Road which was previously approved as part of a previous Site Plan application. Potential for community impacts and the conformance to Transportation Demand Management (TDM) principles were also evaluated. The main conclusions and recommendations of this report are as follows:

Traffic Analysis

- All traffic movements within the study area are currently operating at a LOS C or better during the AM and PM peak hours.
- No growth in background traffic is anticipated within the 2021 horizon timeframe and therefore the existing conditions are expected to reflect the background traffic condition.
- An additional 15 metres of storage length is recommended for the westbound left turn lane at the Bank Street/Kitchener Avenue intersection to accommodate the existing/background traffic.
- With the operation of the proposed development, all traffic movements within the study area are anticipated to continue to operate at a LOS C or better during the AM and PM peak periods.
- An additional 10 metres of storage length is recommended for the westbound left turn lane at the Bank Street/Kitchener Avenue intersection to accommodate the projected total traffic.

Suite 200, 240 Michael Cowpland Drive, Ottawa ON K2M 1P6 Tel: 613.254.9643 Fax: 613.254.5867 www.novatech-eng.com

- The need for additional westbound left turn storage is predominantly related to existing/background traffic. If the existing storage provisions were adequate the addition of site generated traffic would not justify the implementation of a road modification. It is recommended that the City monitor operating conditions at the Bank Street/Kitchener Avenue intersection and implement any required road modifications as funding becomes available.

- There are eight anticipated annual events which will generate up to 600 persons (or 200 vehicles). These events are often scheduled on weekends or off-peak time periods but may occasionally occur during the AM peak hour.

Site Design

- The proposed shared access with 3091 Albion Road has been approved through a previous site plan application and rights-of-way granted by the Committee of Adjustment.

- The City of Ottawa's *Zoning By-Law* (ZBL) requires a minimum of 282 parking spaces on-site. The proposed parking lot satisfies these requirements with a total of 285 spaces.

- A total of 13 bicycle parking spaces will be provided to meet the minimum requirements identified in the ZBL.

Community Impacts and Transportation Demand Management

- The traffic assessment considered all traffic to/from the subject site. Existing turn prohibitions along Kitchener Avenue will limit the use of this route for trips to/from the subject site. Enforcement or extensions to the existing turn restrictions may be required.

- The proposed development conforms to the City's TDM initiatives by encouraging carpooling amongst the members of the community.

Suite 200, 240 Michael Cowpland Drive, Ottawa ON K2M 1P6 Tel: 613.254.9643 Fax: 613.254.5867 www.novatech-eng.com

Table of Contents

Appendices

APPENDIX E SYNCHRO REPORTS

Tables

Figures

1.0 INTRODUCTION

The following Transportation Impact Study (TIS) has been prepared as requested by the City in support of a Site Plan Control (SPC) application for the Ahlul-Bayt Center Ottawa (ABCO) to be relocated from their existing site in Vanier to 3095 Albion Road. The ABCO is a Lebanese Muslim Canadian registered charitable organization which offers the community ongoing social, cultural, educational, and religious services. The ABCO will include a school, mosque, community centre and recreational facilities. The subject site is located south of Walkley Road and immediately north of the railway tracks, as shown in **Figure 1**.

Figure 1: Study Area and Site

The subject site is surrounded by the railway tracks to the south, industrial and commercial land uses to the north, and green space to the west.

The site is to be developed in a single phase with full build-out anticipated in 2017. The development will consist of a 3-storey building with a private school, mosque, and community/recreational centre. Vehicle access to the site is proposed through a full movement access along Albion Road which is proposed to be shared with the existing southern access for 3091 Albion Road. The proposed site plan is provided in **Appendix A**.

1.1 Analysis Parameters

The study area for this report includes Albion Road between the site access and Walkley Road as well as the signalized intersection of Bank Street and Kitchener Avenue.

As shown in **Figure 2**, the background traffic at the intersections of Albion Road / Walkley Road and Bank Street / Kitchener Avenue is highest in the PM peak period. The midday and AM peak hours are approximately 20% and 30% lower than the PM peak hour, respectively.

The selected time period for analysis is the weekday Midday and PM peak hours as they represent the 'worst case' combination of site generated traffic and adjacent street traffic.

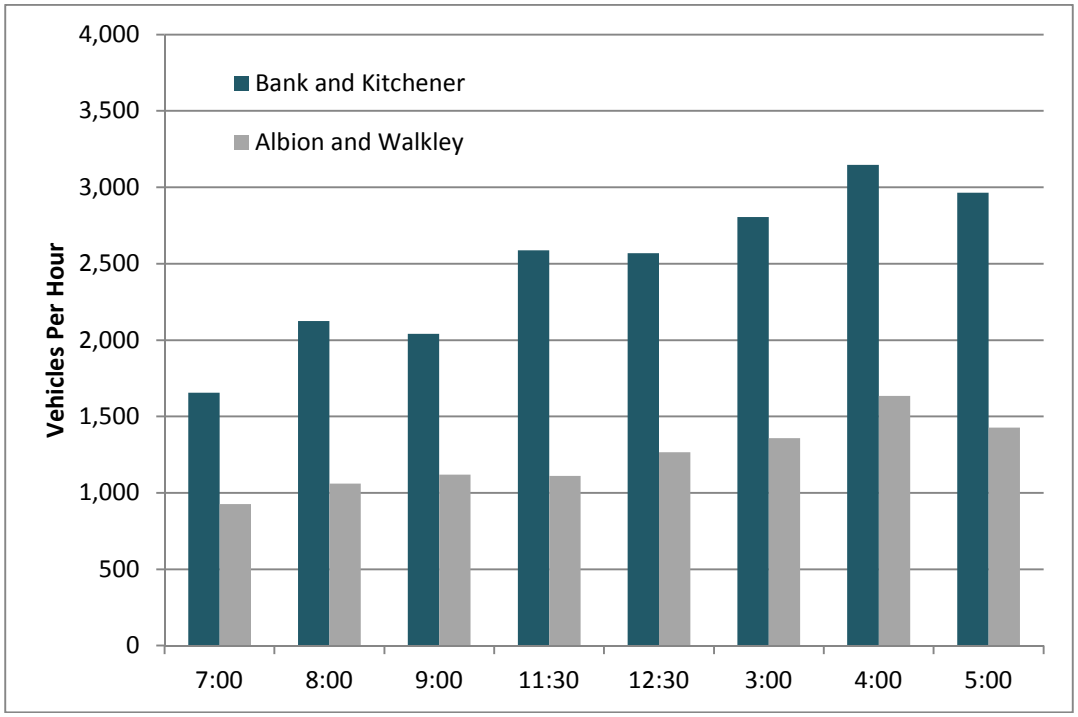


Figure 2: Daily Variation in Background Traffic by Time of Day

2.0 EXISTING CONDITIONS

2.1 Roadway Facilities

2.1.1 Albion Road

Albion Road is a collector road that runs on a north-south alignment with a two-lane undivided urban cross-section. Albion Road has a posted speed limit of 50km/h through the study area and is not designated as a truck route.

2.1.2 Walkley Road

Walkley Road is an arterial road that runs on an east-west alignment between Riverside Drive and Ramsayville Road. Walkley Road has a four lane divided urban cross-section with a

depressed median allowing left turns in/out of local businesses and driveways. Walkley Road has a posted speed limit of 50km/h through the study area and is a designated truck route.

2.2 Study Area Intersections

The lane configurations at each of the study area intersections can be summarized as follows:

Albion Road & Walkley Road

- This intersection is a four legged signalized intersection;
- The northbound and southbound approaches consist of a single left turn lane and a shared through-right lane;
- The eastbound approach consists of two through lanes, a left turn lane, and a channelized right turn lane;
- The westbound approach consists of a left turn lane, and two through lanes; of which the right-most through lane is shared by right turning traffic.

Albion Road & Heatherington Road

- This intersection is a three legged stop-controlled intersection;
- All legs have a single approach lane.

Bank Street & Kitchener Avenue

- This intersection is a four legged signalized intersection;
- The northbound approach consists of a left turn lane, two through lanes, and a third through lane which meets Bank Street 30m south of the intersection and ends 45m north of the intersection;
- The southbound approach consists of a left turn lane and two through lanes;
- The eastbound and westbound approaches consist of a left turn lane and a shared through-right lane.

2.3 Existing Pedestrian Facilities

Asphalt sidewalks are provided on both the east and west sides of Albion Road from Walkley Road to Kitchener Avenue. South of Kitchener Avenue, no dedicated facilities are provided for pedestrians. Walkley Road has concrete sidewalks on both the north and south sides of the road through the study area. A concrete sidewalk is provided along one side of Kitchener Avenue and both sides of Bank Street.

Pedestrian cross-walks are provided on all sides of the Walkley Road/Albion Road, Heatherington Road/Albion Road, and Bank Street/Kitchener Avenue intersections.

2.4 Existing Bicycle Facilities

The City of Ottawa Primary Urban Cycling Network in the *2013 Transportation Master Plan* (TMP) identifies Walkley Road as a spine route and Albion Road as a local route. The area is bounded by Walkley Road and Bank Street which currently have no dedicated cycling facilities and therefore limited comfortable cycling routes are available to reach the site. A series of local

roads through the surrounding community may provide comfortable cycling routes to the site for short-distance trips.

2.5 Existing Transit Facilities

There are currently no transit services provided within a 400m radius of the site (a 5 minute walk). There are two local routes which travel along Heatherington Road with stops located immediately east of Albion Road, approximately 550m from the site.

2.6 Existing Traffic Volumes

Weekday traffic counts were completed by the City of Ottawa at the following intersections:

- Walkley Road and Albion Road Tuesday, July 17, 2012
- Albion Road and Heatherington Road Friday, July 11, 2003
- Bank Street and Kitchener Avenue Thursday, July 16, 2015

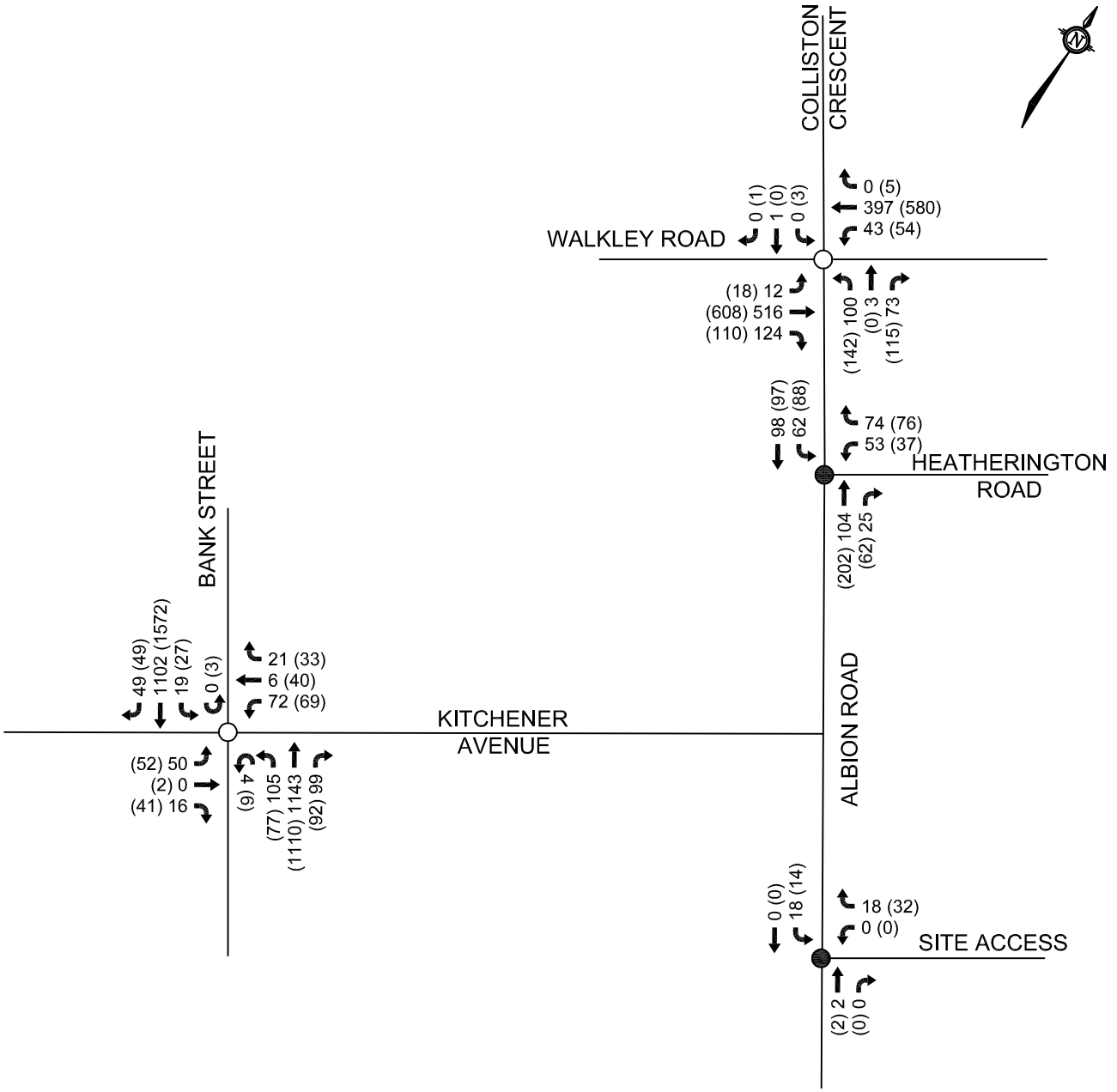
To confirm the traffic data at Albion Road / Heatherington Road remains relevant and to identify the scale of site traffic at 3091 Albion Road during peak hour, traffic counts were undertaken at both locations for a 30-minute period during the AM and PM peaks on Monday November 2, 2015 and Tuesday November 3, 2015. Traffic count summary sheets are provided in **Appendix C**. The 2015 observations were similar to the traffic data collected in 2003 with a variation of less than 20 vehicles over a 30-minute period. As a result, the 2003 traffic data has been used to reflect the existing condition. The midday peak hour at the existing site access has been estimated as 80% of the PM peak, consistent with the pattern for the background traffic in the study area as identified in Section 1.1. The existing peak hour traffic volumes are shown in **Figure 3**.

2.7 Collision Records

Historical collision data from the last three years (2011 to 2013) was obtained from the City's Public Works and Service Department for all study area intersections. Copies of the collision summary reports are included in **Appendix D**.

The data was evaluated to determine if there are any identifiable collision patterns. The Ottawa TIA Guidelines define a collision pattern as more than one collision at a roadway location that involves similar directions and impact types. Further analysis may be warranted for intersections with a pattern of six or more collisions for any one movement or a total of 33 or more collisions, over a three-year period.

The following table provides a summary of the number of collisions reported in the study area between January 1, 2011 and January 1, 2014. Ten of the collisions included injuries, of which one involved a cyclist and two involved pedestrians.



NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

AHLUL-BAYT CENTRE
3095 ALBION ROAD

EXISTING CONDITIONS

NOV 2015 113093 FIGURE 3

Table 1: Reported Collisions

Location	Number of Reported Collisions (Jan. 2011 to Jan. 2014)
Intersections	
Albion Road & Walkley Road	14
Albion Road & Kitchener Avenue	1
Albion Road & Heatherington Road	1
Bank Street & Kitchener Avenue	22
Mid-Block on Albion Road	
Walkley Road to Lilibet Crescent	1
Lilibet Crescent to Heatherington Road	2
Kitchener Road to End	1

A total of 14 collisions were recorded at the Albion Road / Walkley Road intersection over the last three years. Five (5) of the collisions were rear-end impacts, 4 were turning impacts, 4 were angle impacts, 1 involved a single vehicle. Six (6) of the fourteen collisions occurred in wet or snowy conditions where the collision may have been influenced by environmental factors. None of these collisions meet the City of Ottawa's criteria for further analysis with respect to patterns or total collisions.

A total of 22 collisions were recorded at the Bank Street / Kitchener Avenue intersection over the last three years. Thirteen (13) of the collisions were rear-end impacts, 5 were turning impacts, 2 were angle impacts, 1 involved a single vehicle, and 1 involved a sideswipe. Eight (8) of the 22 collisions occurred in wet or snowy conditions where the collision may have been influenced by environmental factors. The number of rear-end collisions on the northbound approach meets the City of Ottawa's criteria for further analysis.

With respect to the potential impacts of site generated traffic at the Bank Street / Kitchener Avenue intersection:

- Of the 13 rear-end collisions, none are attributed to the movements that motorists will use to enter/leave the proposed development. It is noteworthy that one rear-end collision in each of the northbound and southbound directions is attributable to lane-changing.
- The proposed site traffic represents an increase of 2 to 4% of the total intersection traffic during the midday and p.m. peak hours.
- The proposed site traffic represents an increase of approximately 25% of the existing northbound right turn traffic.

3.0 TRAVEL DEMAND FORECASTING

3.1 Planned Projects

The City of Ottawa's 2013 *Transportation Master Plan* (TMP) identified Walkley Road between the Transitway and Heron Road as a transit priority route but this project was not included within the 2031 affordable network. As Walkley Road currently has limited or no transit service through this area, it is not expected that this project will be re-visited within the planning horizon.
There are no planned projects exclusively for pedestrians or cyclists in the study area.

3.2 Historic Background Growth

Traffic counts at the intersection of Walkley Road and Albion Road were reviewed for 2003, 2004, 2006, and 2012. The traffic along both Walkley Road and Albion Road have decreased by approximately 15% to 20% in the last 6 to 9 year period. It should be noted that all counts occurred in the summer months at approximately the same time of year and therefore the decrease in volume is not attributable to seasonal variation. Similar observations were also identified for development applications in the surrounding area along Heron Road and Bank Street. Similar to these findings, a review of the anticipated growth along Walkley Road, Albion Road and Bank Street in the vicinity of the subject site, as shown in the TRANS model (2011 to 2031), identified no growth over the 20-year planning horizon. Based on this information, no background growth has been applied to the road network. As no growth is anticipated, the 2017 and 2022 background traffic volumes remain consistent with the existing condition.

3.3 Trip Generation

The ABCO is a Lebanese Muslim Canadian registered charitable organization which offers the community ongoing social, cultural, educational, and religious services. The ABCO is relocating from their existing site in Vanier to 3095 Albion Road. The proposed building includes a mix of several uses including a school, community centre, recreational facility, mosque, and banquet hall. The uses and programs for day-to-day operations have been reviewed independently from the banquet hall which will be used for occasional events, as described further in Section 3.3.4.

The approximate time periods associated with each program or facility are identified in **Table 2**. During the weekday time period, the school remains the major trip generator with occasional evening programming at the community centre. The exercise facilities and mosque will continue to generate trips throughout the day and evening time periods. On weekends, Saturday mornings reflect the worst-case scenario with overlapping heritage language school and Scouts programs in addition to the use of the mosque and exercise facilities.

The vehicle trips associated with each program or facility have been identified based on the existing staff experience at the facility in Vanier. The estimated vehicle trips have been compared to ITE rates (where available) to validate the assumptions. Given the limited access to transit and the city-wide catchment area, it has been assumed that few people will travel by

non-auto modes. Higher proportions of carpooling are anticipated and estimated vehicle occupancies are identified for each trip generator.

Table 2: Typical Facility Programs by Day and Time Period

Use / Program	Weekday				Saturday			
	AM	Midday	PM	Evening	AM	Noon	Mid-PM	Evening
School	✔	✔	✔					
Heritage Language School					✔	✔	✔	
Religious Education				✔				
Girls' Youth Group				✔				
Boys' Youth Group								✔
Scouts					✔	✔	✔	
Exercise Facility	✔	✔	✔	✔	✔	✔	✔	✔
Prayers	✔	✔	✔	✔	✔	✔	✔	✔

Note: Limited programming on Sundays and therefore trips considered negligible compared to weekdays and Saturday.

3.3.1 School

The elementary and middle school will include approximately 16 classrooms and serve approximately 170 students. The school will have 17 teachers and administrative staff and will be in session from Monday to Friday between 8:15AM and 3:15PM.

Based on the 2011 OD Data for work trips to the Alta Vista area, it has been assumed that 75% of the teachers drive to the site; amounting to 12 vehicles. Based on current operations at the ABCO school in the Vanier area, it is expected that most students will carpool to/from school with an average of 3 students per vehicle; amounting to approximately 57 vehicles. It has been conservatively assumed that all students and teachers arrive within a single one-hour period during the AM peak hour, as summarized in **Table 3**. During the PM peak hour, 65% of teachers and students are expected to depart during the peak hour while the remaining 35% remain on-site for after-school programs. By comparison, the ITE rates for a private school (LU534) identify approximately 30% more vehicle trips in both the morning and afternoon peak periods; likely reflective of lower carpooling rates amongst students.

Table 3: School Trips

	Teachers	Students
Persons	17	170
Non-Auto Modes (5%)	4	9
Vehicle Occupancy	1.1	3
Vehicles	12	54
Peak Hour Vehicle Trips (In/Out)		
-AM Peak Hour	12 / 0	54 / 54*
-PM Peak Hour	0 / 8	35 / 35*

Note: * All drivers assumed to drop-off/pick-up only. Some linked vehicle trips may exist which is not accounted for.

3.3.2 Recreation/Community Centre

The recreation and community centre will include sports facilities and community programs. The centre will employ 9 full-time or part-time staff and up to 30 occasional volunteers to lead youth programs and serve on the Executive and Trustee boards. A total of ten vehicle trips have been included to account for these staff and volunteers.

Exercise Facility

The exercise facility is proposed to be open from 7:00AM to 10:00PM but access will be limited to some facilities during school hours. The facility will include a swimming pool, gymnasium, and squash court. Peak use of the facility is expected to be approximately 50 persons and occur in the evening period from 7:00PM to 10:00PM. If on average users stay on-site for 1.5 hours, two-way vehicle trip rates are anticipated to be approximately 58vph, as shown in **Table 4**. By comparison, the ITE Trip Generation Manual Recreational Community Centre rates suggest two-way peak hour trips of up to 45vph; suggesting the estimate of 58vph is likely conservative.

Table 4: Exercise Facility Trips

	Users
Persons	50
Non-Auto Modes (5%)	3
Vehicle Occupancy	1.1
Vehicles	43
Average Length of Stay	1.5 hours
Peak Hour Vehicle Trips (In / Out)	
-Evening and Weekends	29 / 29
-Weekday (33% reduction assumed during school hours)	19 / 19

Religious Education

A religious education session will be hosted every Thursday evening at approximately 7:00PM and will serve 200 persons including both children and adults. It has been assumed that 95% will arrive by vehicle with an average of 3 students per vehicle, or 64 vehicles, as shown in **Table** 5. As some students are adults, it has been assumed that only 25% of drivers will be exclusively dropping-off/picking-up while the remainder of drivers will remain on site to either attend the education session or use on-site facilities.

Table 5: Religious Education Trips

	Leaders	Students
Persons	7	200
Non-Auto Modes (5%)	0	10
Vehicle Occupancy	1.1	3
Vehicles	6	64
Peak Hour Vehicle Trips (In/Out) 7:00PM Arrival	6 / 0	64 / 16

Youth Groups

The centre will host a girls' youth group for ages 9 to 16 years on Friday evenings beginning at approximately 7:00PM. A boys' youth group for ages 15 to 18 years will be hosted on Saturday evenings beginning at approximately 7:00PM. The youth groups will be run by a team of 8 to 10 councillors. Most youth will carpool to the site with an average of 3 youths per vehicle, as summarized in **Table 6**. Half of the vehicles are expected to remain on-site while drivers attend the youth group or use the recreational facility while the other half return at the end of each session to pick-up the youth.

Table 6: Youth Group Trips

	Girls' Youth Group		Boys' Youth Group	
	Councilor	Youth	Councilor	Youth
Persons	10	120	8	100
Non-Auto Modes (5%)	1	6	0	5
Vehicle Occupancy	1.1	3	1.1	3
Vehicles	8	38	7	32
Peak Hour Vehicle Trips (In/Out)	8 / 0	38 / 19	7 / 0	32 / 16

Scouts

A Scouts program will be hosted at the site on Saturday mornings from approximately 10:00AM to 12:00PM. The Scouts will include both boys and girls from ages 6 to 14 years and will be run by a team of 15 Scout Leaders. Consistent with the travel assumptions for the youth groups, it is expected that only 5% arrive by non-auto modes and on average 3 scouts arrive in each vehicle, as shown in **Table 7**. Half of the vehicle drivers are assumed to remain on-site to make use of the available facilities while the second half are assumed to return to pick-up Scouts at the end of the program.

Table 7: Scouts Trips

	Leaders	Scouts
Persons	15	150
Non-Auto Modes (5%)	1	8
Vehicle Occupancy	1.1	3
Vehicles	13	48
Peak Hour Vehicle Trips (In/Out)		
-Arrival (AM Peak)	13 / 0	48 / 24
-Departure (Midday)	0 / 13	24 / 48

Heritage Language Program

A Heritage Language Program will be hosted on Saturdays from approximately 10:00AM to 2:00PM. This program will include approximately 160 students and 15 teachers. Consistent with previous assumptions, students are expected to carpool with an average of 3 students per vehicle, as shown in **Table 8**. Half of the drivers are assumed to remain on-site to make use of the available facilities.

Table 8: Heritage Language Program Trips

	Teachers	Students
Persons	15	160
Non-Auto Modes (5%)	1	8
Vehicle Occupancy	1.1	3
Vehicles	13	51
Peak Hour Vehicle Trips (In/Out)		
-Arrival (AM Peak)	13 / 0	51 / 26
-Departure (Mid-Afternoon)	0 / 13	26 / 51

3.3.3 Mosque

Prayer services will occur approximately 5 times per day with the exact times shifting throughout the year. Peak attendance for weekly prayers will occur on Friday afternoon (approximately 1:00PM). Attendance at the mosque for prayers is not highly prioritized within the community and therefore attendance is expected to be less than what is observed at other mosques in Ottawa. At the existing site in Vanier, prayers are not held during the school day and therefore none of the community members currently attend Friday afternoon. It has been conservatively assumed that as many as 200 persons would be in attendance at midday on Friday (not including school children and staff already on-site).

In addition to the Friday afternoon service, typical weekday attendance at prayers has been estimated at approximately 70 persons (not including school children and staff). On weekends, typical attendance at prayers is expected to increase to approximately 90 persons to account for some school-aged children attending with their parents.

The time periods have been conservatively assumed to align with the peak travel demand for other on-site programs. The estimated people and vehicle trips are summarized in **Table 9**. It has been conservatively assumed that all persons attending prayers arrive and depart within a single hour as most prayer sessions are limited to approximately 30 minutes. By comparison, the ITE Trip Generation Manual land use for mosques (which is limited to a single observation) identifies 67% or 96% of trips occurring during the peak hour of generator as inbound trips; suggesting most remain on-site for more than a 1-hour period.

Table 9: Mosque – Vehicle Trips

	Typical Weekday	Friday Midday Peak Hour	Saturday
Persons	70	200	90
Non-Auto Modes (5%)	4	10	5
Vehicle Occupancy	1.65	1.65	2.1
Vehicles	40	115	40
Peak Hour Vehicle Trips (In/Out)	40 / 40	115 / 115	40 /40

The trip generation, as identified in **Table 3** through **Table 9** above, is summarized in **Table 10** and identifies typical peak hour trips of 203vph to 323vph for typical day-to-day scenarios.

There are approximately eight annual events which are identified separately (**Section 3.3.4**) for which a detailed traffic assessment has not been carried out. As previously identified in Section 1.1, the weekday midday (Friday) and PM peak hours were selected for further analysis to reflect the worst case combination of background and site generated traffic.

Table 10: Summary of Peak Hour Vehicle Trips (Inbound and Outbound)

WEEKDAYS				
Use or Program	**AM**	**Midday (Fri)**	**PM**	**Evening**
School	66 / 54	-	35 / 43	-
Recreational Centre Staff	10 / 0	5 /5	3 / 7	0 / 10
Religious Education (Thurs)	-	-	-	70 / 16
Girls' Youth Group (Fri)	-	-	-	46 / 19*
Exercise Facility	19 / 19	19 / 19	29 / 19	29 /29
Prayers	40 / 40	115 / 115	40 /40	40 /40
Sub-Total	**135 / 113**	**139 / 139**	**107 / 109**	**139 / 95***
	248	**278**	**216**	**234***
SATURDAY				
Use / Program	**AM**	**Noon**	**Mid-Afternoon**	**Evening**
Recreational Centre Staff	10 / 0	5 /5	3 / 7	0 / 10
Heritage Language School	64 / 26	-	26 / 64	-
Boys' Youth Group	-	-	-	39 / 16
Scouts	61 / 24	24 / 61	-	-
Exercise Facility	29 / 29	29 / 29	29 / 29	29 /29
Prayers	40 / 40	40 / 40	40 / 40	40 / 40
Sub-Total	**204 / 119**	**98 / 135**	**98 / 140**	**108 / 95**
	323	**233**	**238**	**203**

Note: * Weekday evening sub-total reflective of Thursday evening as the worst-case scenario.

3.3.4 Banquet Hall and Annual Events

Up to eight annual events are anticipated at the ABCO facility with attendance as high as 600 persons. Five (5) of the events are typically held on a Saturday evening while the remaining three (3) events may occur during the AM peak period. During these events, families typically travel together with an average of 3-4 persons per car. As a result, the peak direction traffic prior to or following an event is estimated at no more than 200 vehicles.

3.4 Trip Distribution

3.4.1 Vehicular Traffic

The origins of trips to the proposed mosque were based on a combination of information provided by the community with respect to household locations of their members and the population distribution across the National Capital Region as identified in the 2011 OD data. Approximately half of the members live in the south end of the City which includes the South Gloucester/Leitrim, Hunt Club and Alta Vista areas. The remaining 50% are spread out across Ottawa and therefore were assigned proportionately to the remaining districts by population (as

identified in the 2011 OD Data). With consideration to the estimated trip origins, the trip assignment has been derived with consideration given to several key factors, including:

- Existing traffic patterns;
- The location of the site access with respect to the adjacent roadway system; and
- The principles of logical trip routing.

Both Albion Road and Kitchener Avenue are designated collector roads which provide direct connections from the site to the arterial road network. The assignment of site-generated vehicular trips to the road network is summarized in **Table 11**.

Table 11: Vehicle Trip Distribution

Access	Direction	Proportion
Albion Road	Walkley Road - West	20%
	Walkley Road - East	35%
Kitchener Avenue	Bank Street – North	20%
	Bank Street - South	25%

The following turn restrictions currently exist along Kitchener Avenue limiting site access:

- Kitchener Avenue & Bank Street – No NBR 7:00-9:00AM Monday-Friday
- Kitchener Avenue & Bank Street – No WBL 3:30-5:30PM Monday-Friday
- Kitchener Avenue & Albion Road – No EBR 5:00PM – 5:00AM
- Kitchener Avenue & Albion Road – No NBL 5:00PM – 5:00AM

Turn restrictions also exist along Bank Street limiting northbound right turns during the AM peak period onto all local roads between Kitchener Avenue and Walkley Road.

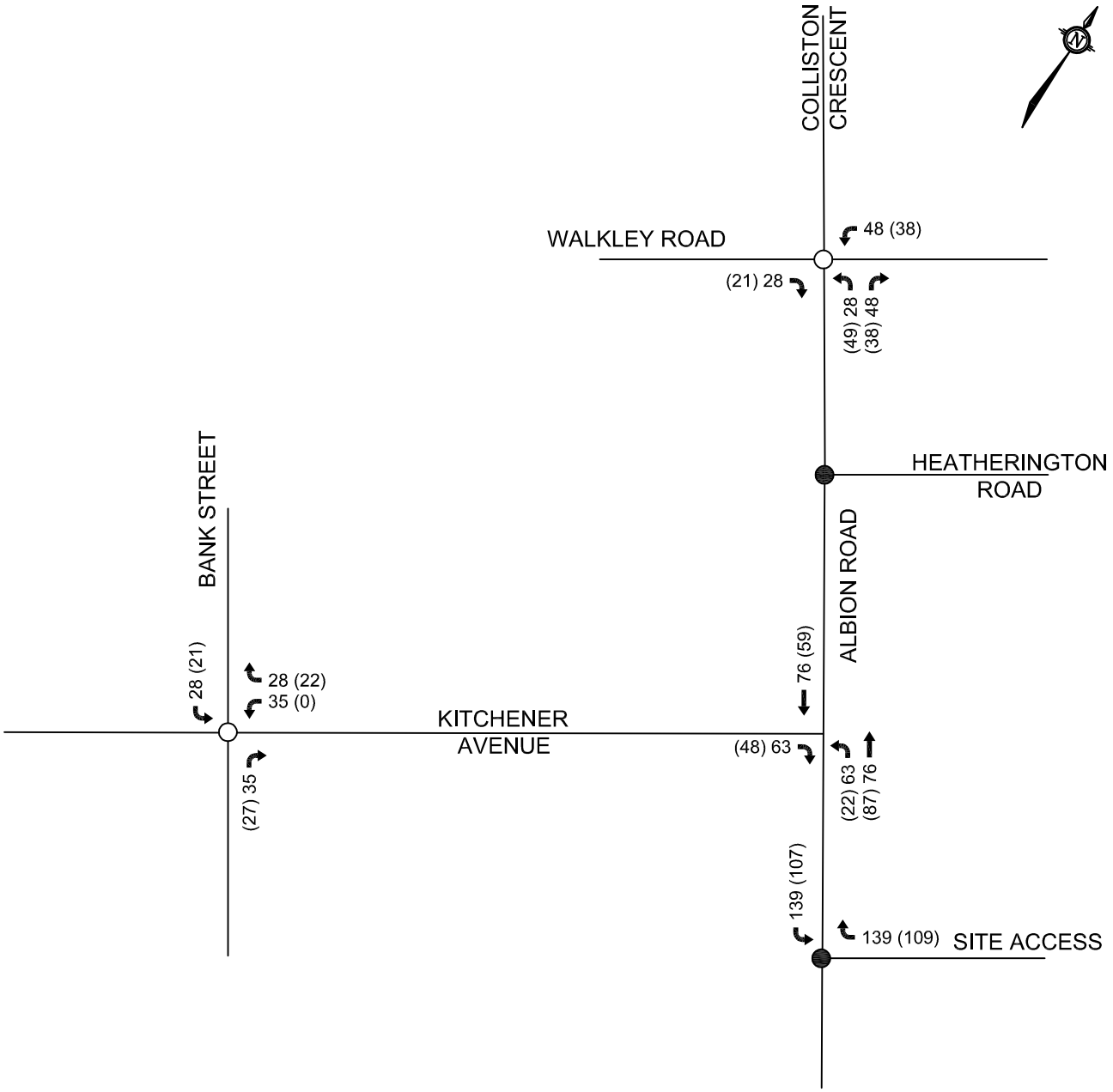
As a result of the turn prohibitions, outbound trips during the PM peak hour destined south on Bank Street have been re-routed to westbound on Walkley Road via Albion Road. The projected peak hour trips generated by the proposed development are shown in **Figure 4**. The projected total traffic volumes are shown in **Figure 5**.

4.0 INTERSECTION ANALYSIS

4.1 Existing and Background Traffic

Intersection capacity analysis was completed for the existing traffic condition during the weekday midday and PM peak hours. The analysis was based on the existing roadway and lane configurations within the study area, and traffic signal timing data obtained from the Public Works & Service Department. The signal timings are included in **Appendix C**. As traffic growth is not anticipated in the study area, the existing traffic is anticipated to reflect the background traffic up to the 2022 horizon year.

The results of the analysis are summarized in **Table 12** for the weekday midday and PM peak hours. Detailed reports are included in **Appendix E**.



LEGEND

- Unsignalized Intersection
- Signalized Intersection
- xx VPH — Midday Peak Hour
- (xx) VPH — PM Peak Hour

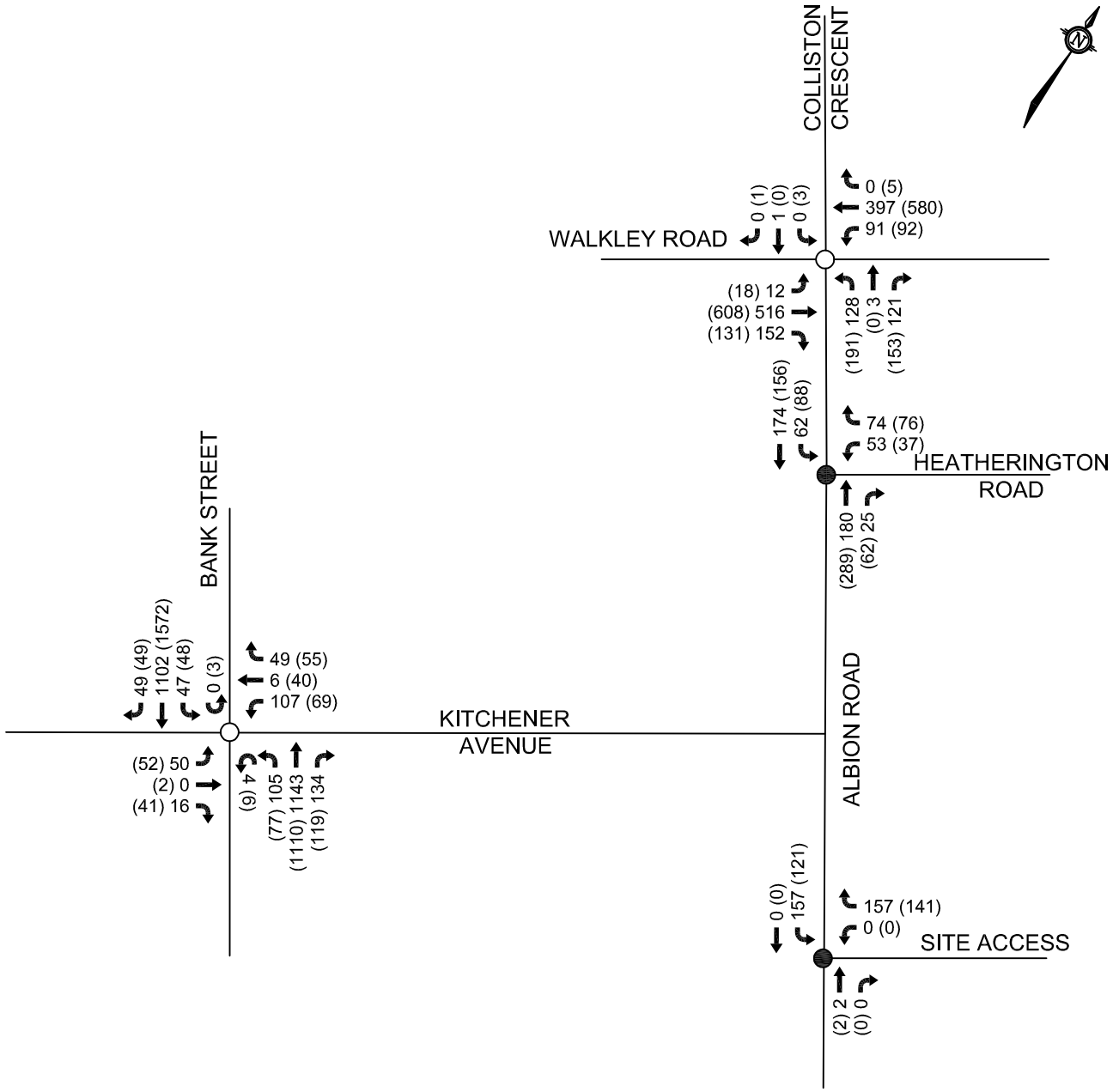
NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6

Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

AHLUL-BAYT CENTRE
3095 ALBION ROAD

SITE TRAFFIC

NOV 2015 113093 FIGURE 4



NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

AHLUL-BAYT CENTRE
3095 ALBION ROAD

TOTAL TRAFFIC

NOV 2015 113093 FIGURE 5

Table 12: Existing Peak Hour Intersection Operations

Intersection	Midday Peak			PM Peak		
	Max v/c or Delay	LOS	Movement	Max v/c or Delay	LOS	Movement
Albion Road & Walkley Road	0.55	A	NBL	0.61	B	NBL
Albion Road & Heatherington Road [1]	9.0s	A	SB	9.6s	A	NB
Albion Road & 3091 Albion Road South Access [1]	8.6s	A	WB	8.6s	A	WB
Bank Street & Kitchener Avenue	0.56	A	SBTR	0.70	B	SBTR

Note: 1 - Unsignalized Intersection

All movements are currently operating at a good LOS B or better during both peak hours. The analysis shows a westbound left turn queue of 30 metres at Bank Street & Kitchener Avenue during the midday peak, which exceeds the existing storage length of approximately 15 metres. An additional 15 metres of storage length is required to accommodate the existing/background traffic.

4.2 Total Traffic

Intersection capacity analysis was completed for the projected total traffic volumes, which are the sum total of the background traffic and traffic likely to be generated by the proposed development. The analysis was based on the existing intersection lane arrangements and signal timing plans. The results of the analysis are summarized in **Table 13** for the weekday midday and PM peak hours and the detailed reports are included in **Appendix E**.

Table 13: Total Traffic Intersection Operations

Intersection	Midday Peak			PM Peak		
	Max v/c or Delay	LOS	Movement	Max v/c or Delay	LOS	Movement
Walkley Road & Albion Road	0.62	B	NBL	0.71	C	NBL
Albion Road & Heatherington Road [1]	10.2s	B	SB	11.4s	B	NB
Albion Road & Site Access[1]	9.2 s	A	WB	9.1s	A	WB
Bank Street & Kitchener Avenue	0.64	B	WBL	0.70	B	SBTR

Note: 1 - Unsignalized Intersection

Under the total traffic scenario, all movements are expected to continue to operate at a good LOS C or better during both the midday and PM peak periods. The addition of site traffic is expected to extend the westbound left turn queue at Bank Street & Kitchener Avenue by approximately 10 metres. A storage length of approximately 40 metres is required to accommodate the projected total traffic, during typical day-to-day operations. There will be

occasions where annual events create peaks in traffic demand (8 annual events anticipated) exceeding the available left turn storage. However, these events typically occur on weekends or during off-peak time periods when background traffic is relatively minor.

It is noted that the need for additional westbound left turn storage is predominantly related to existing/background traffic. If the existing storage provisions were adequate the addition of site generated traffic would not justify the implementation of a road modification. It is recommended that the City monitor operating conditions at the Bank Street/Kitchener Avenue intersection and implement any required road modifications as funding becomes available.

5.0 PROVISIONS FOR NON-AUTO MODES

As previously identified in **Section 2.3**, existing sidewalks are provided along both sides of Walkley Road and Albion Road (north of Kitchener Avenue). South of Kitchener Avenue, traffic volumes and speeds are very low due to the proximity to the railway tracks where the roadway ends. Given the limited access to transit and the city-wide catchment area, it is anticipated that pedestrian trips accessing the site will be low. Consideration will likely be given to extending the sidewalk along Albion Road south of Kitchener Avenue when the City develops anticipated sports facilities southwest of the site.

As outlined in **Section 2.4**, the site is not well connected to the city-wide cycling network. There are no planned improvements to the cycling network in the area as part of the 2031 affordable network.

There are no transit stops within a 5 minute walk of the subject site. The closest local stop is located at the intersection of Heatherington Road/Albion Road and is served by local Routes 8 and 41. There are no anticipated improvements to the transit service in the area within the 2031 planning horizon.

6.0 ON-SITE DESIGN

6.1 Proposed Access

Access to the proposed development will be provided through the existing southern access to 3091 Albion Road. The existing all-movement access will be shared between both addresses and was previously approved through site plan approval for 3095 Albion Road.

6.2 Parking

The proposed development consists of a school, mosque, community/recreation centre and banquet hall. The subject site is located in Area C of Schedule 1 to the ZBL. Minimum vehicular parking space requirements for the development are shown in **Table 14**. The proposed parking lot satisfies these requirements with a total of 285 spaces.

Table 14 : Minimum Vehicle Parking Requirements

Land Use	Relevant Quantity	Minimum Parking Rate	Minimum Parking Spaces
Elementary/Middle School	16 classrooms	1.5 per classroom	24
Worship Area	990 m^2 GFA	10 per 100m^2 GFA	99
Community Centre	1395 m^2 GFA	4 per 100m^2 GFA	56
Assembly Space	1029 m^2 GFA	10 per 100m^2 GFA	103
TOTAL			**282**

The ZBL identifies a minimum requirement of 13 bicycle parking spaces to be provided for the proposed development, as identified in **Table 15**.

Table 15 : Minimum Bicycle Parking Requirements

Land Use	Relevant Quantity	Minimum Parking Rate	Minimum Parking Spaces
School	946m^2	1 per 100m^2 GFA	9
All Other Uses	5,914m^2	1 per 1,500 m^2 GFA	4
TOTAL			**13**

7.0 NEIGHBOURHOOD IMPACTS

The subject site is located adjacent to an industrial site and surrounded to the north and west by a residential community. The property access is located on Albion Road, a north-south collector roadway that serves approximately 400vph during the weekday peak hour. Residences typically back onto Albion Road with only infrequent driveways for high-rise residential buildings or commercial buildings with direct access onto Albion Road. Kitchener Avenue is a collector road that runs east-west from Albion Road to Bank Street immediately north of the subject site and serves approximately 250vph during the weekday peak hour. Kitchener Avenue is typically fronted by low-rise townhouses or single-detached residences with frequent driveways.

All site traffic is generally expected to continue directly along the collector road network to Bank Street and Walkley Road. However, existing prohibitions exist at certain times of day at Albion Road / Kitchener Avenue, Bank Street/Kitchener Avenue and at the intersection of Bank Street with each local road between Kitchener Avenue and Walkley Road. These turn restrictions will require site traffic to/from the mosque to take the less-direct route along Walkley Road to Albion Road. Should traffic concerns be raised by residents in the area, additional enforcement or extensions to the existing turn restrictions should be considered.

8.0 TRANSPORTATION DEMAND MANAGEMENT

The City of Ottawa has developed a comprehensive Transportation Demand Management (TDM) strategy as part of its efforts to reduce automobile dependency. TDM measures can reduce transportation infrastructure requirements by encouraging people to change their travel mode, timing or destination.

The proposed development conforms to the City's TDM initiatives by encouraging carpooling initiatives between students and community members. In addition, large events are typically scheduled outside of typical peak periods as this strategy reduces the demand upon the transportation infrastructure and aligns with community members' schedules.

9.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the foregoing analysis, the main conclusions and recommendations of this report are as follows:

Traffic Analysis

- All traffic movements within the study area are currently operating at a LOS C or better during the AM and PM peak hours.
- No growth in background traffic is anticipated within the 2022 horizon timeframe and therefore the existing conditions are expected to reflect the background traffic condition.
- An additional 15 metres of storage length is recommended for the westbound left turn lane at the Bank Street/Kitchener Avenue intersection to accommodate the existing/background traffic.
- With the operation of the proposed development, all traffic movements within the study area are anticipated to continue to operate at a LOS C or better during the AM and PM peak periods.
- An additional 10 metres of storage length is recommended for the westbound left turn lane at the Bank Street/Kitchener Avenue intersection to accommodate the projected total traffic.
- The need for additional westbound left turn storage is predominantly related to existing/background traffic. If the existing storage provisions were adequate the addition of site generated traffic would not justify the implementation of a road modification. It is recommended that the City monitor operating conditions at the Bank Street/Kitchener Avenue intersection and implement any required road modifications as funding becomes available.
- There are eight anticipated annual events which will generate up to 600 persons (or 200 vehicles). These events are often scheduled on weekends or off-peak time periods but may occasionally occur during the AM peak hour.

Site Design

- The proposed shared access with 3091 Albion Road has been approved through a previous site plan application and rights-of-way granted by the Committee of Adjustment.

- The City of Ottawa's *Zoning By-Law* (ZBL) requires a minimum of 282 parking spaces on-site. The proposed parking lot satisfies these requirements with a total of 285 spaces.

- A total of 13 bicycle parking spaces will be provided to meet the minimum requirements identified in the ZBL.

Community Impacts and Transportation Demand Management

- The traffic assessment considered all traffic to/from the subject site. Existing turn prohibitions along Kitchener Avenue will limit the use of this route for trips to/from the subject site. Enforcement or extensions to the existing turn restrictions may be required.

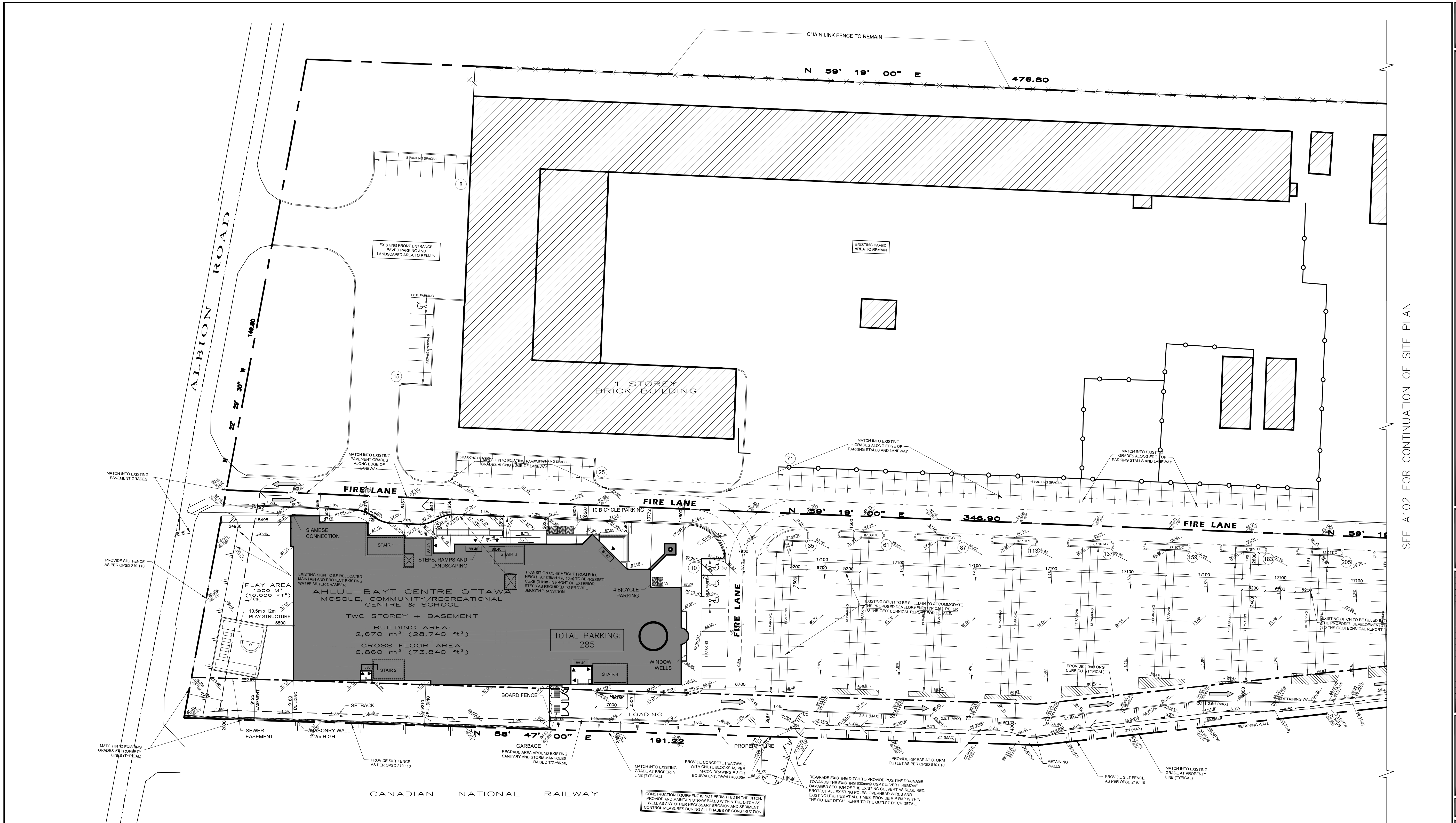
- The proposed development conforms to the City's TDM initiatives by encouraging carpooling amongst the members of the community.

NOVATECH

Jennifer Luong, P.Eng.
Transportation Engineer

APPENDIX A

SITE PLAN



1 / A101 SITE PLAN
SCALE 1:400

ZONING:

EXISTING ZONING =		
ZONING MECHANISM	REQUIRED	PROPOSED
MINIMUM LOT AREA	2000 sq.m	15,514 sq.m
MINIMUM LOT WIDTH	NO MIN.	51.82m
MAXIMUM LOT COVERAGE	65%	17%
FRONT YARD SETBACK (MIN):	7.5m	15.26m
REAR YARD SETBACK (MIN):	7.5m	242m
INTERIOR SIDE YARD SETBACK (MIN)	7.5m	4.89m
CORNER SIDE YARD SETBACK (MIN)	7.5m	9.16m
FLOOR SPACE INDEX (MAX):	2	0.44
BUILDING HEIGHT (MAX):	18m	10.3m
MIN. LANDSCAPE FOR PARKING		
ABUTTING A STREET	3m	N/A
NOT ABUTTING A STREET	3m	VARIES

FLOOR AREAS:

BASEMENT FOOTPRINT:
– 2,670 m² or [28,760 ft²]

GROUND FLOOR FOOTPRINT:
– 2,670 m² or [28,760 ft²]

SECOND FLOOR FOOTPRINT:
– 1,030 m² or [11,125 ft²]
– 490 m² or [10,045 ft²]

TOTAL GROSS FLOOR AREA (INCLUDING BASEMENT):
– 6,860 m² or [73,945 ft²]

TOTAL GROSS FLOOR AREA (NOT INCLUDING BASEMENT):
– 4,190 m² or [45,185 ft²]

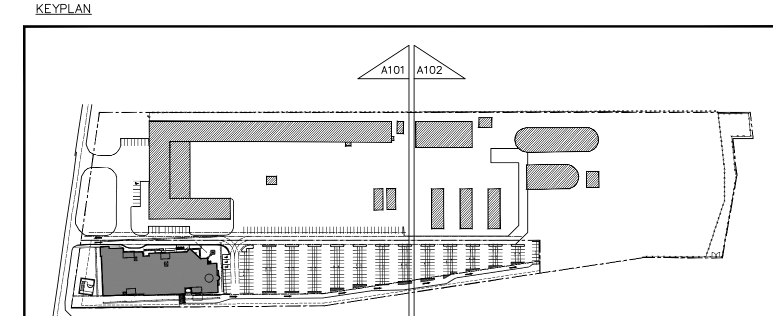
PARKING COUNTS:

–AUTOMOBILE
REQUIRED WORSHIP AREA PARKING = 99 SPACES
(10 PER 100m² FLOOR AREA)
(990/100x10 = 99)
REQUIRED COMMUNITY CENTER PARKING = 56 SPACES
(4 PER 100m² FLOOR AREA)
(1395/100x4 = 55.8)
REQUIRED ASSEMBLY SPACE PARKING = 103 SPACES
(10 PER 100m² FLOOR AREA)
(1029/100x10 = 102.9
REQUIRED CLASSROOM PARKING = 24 SPACES
(1.5 PER CLASSROOM)
(CLASSROOMS: 16x1.5= 24)
TOTAL REQUIRED PARKING = 282 SPACES
PROVIDED PARKING = 169 (2.6m x 5.2m) PARKING + 114 (2.4m x 5.2m) PARKING + 2 HANDICAPPED SPACES
TOTAL: 285

–BICYCLE
REQUIRED PARKING = 14 SPACES
1 SPOT PER 1,500sq.m TOTAL GFA (5) +
1 SPOT PER 100sq.m OF SCHOOL GFA (9)
(SCHOOL GFA = 946sq.m)

TOTAL PROVIDED PARKING = 14 SPACES

KEYPLAN



PRELIMINARY

No.	DATE:	REVISION:
20		
19		
18		
17		
16		
15		
14		
13		
12		
11		
10		
09		
08		
07	2016-01-26	SITE PLAN UPDATE
06	2016-01-14	POOL COORDINATION
05	2015-08-26	WASHROOM REVISION
04	2015-07-23	CLIENT REVISION
03	2015-06-10	CIVIL AND GRADING
02	2015-04-21	(BLOCK) STRUCTURE
01	2015-03-05	(STEEL) STRUCTURE

SJL LAWRENCE ARCHITECT INCORPORATED
18 Deakin Street
Suite 205
Ottawa, ON
K2E 8B7
T: (613) 739.7770
F: (613) 739.7703
sjl@sjlarchitect.com

DRAWN BY: D.L.	DESIGNED BY: S.J.L.
DATE: 2014-07-12	CHECKED BY: S.J.L.
SCALE: AS NOTED	PLOT DATE: 2016-01-26

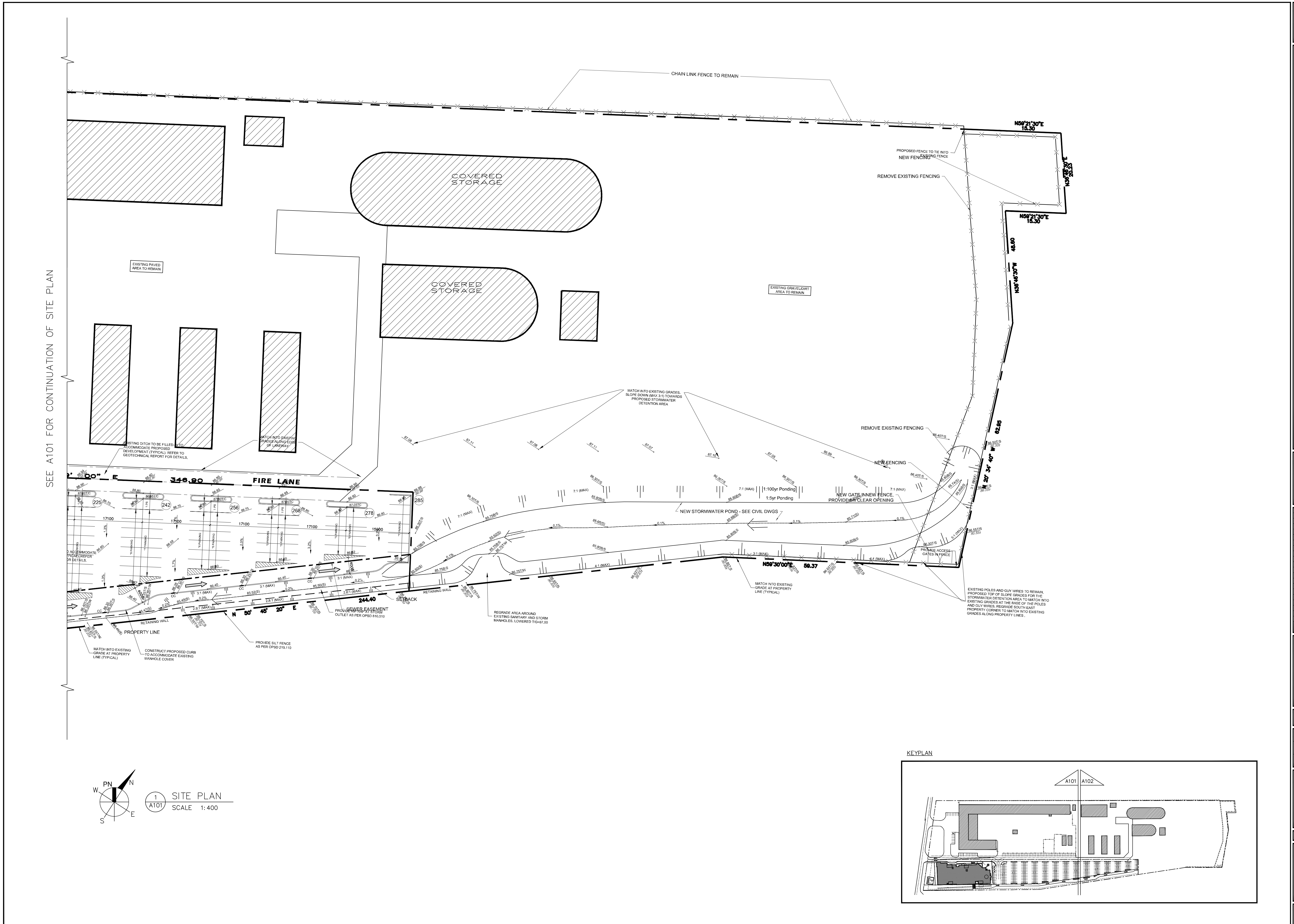
PROJECT:
ALBION MOSQUE
3095 ALBION ROAD,
OTTAWA, ON.

JOB NUMBER: SL-683-12

SITE PLAN

A 101

APPLICATION NUMBER:


SEE A101 FOR CONTINUATION OF SITE PLAN
CHAIN LINK FENCE TO REMAIN
COVERED STORAGE
COVERED STORAGE
EXISTING PAVED AREA TO REMAIN
EXISTING GRAVEL/DIRT AREA TO REMAIN
PROPOSED FENCE TO TIE INTO EXISTING FENCE
NEW FENCING
REMOVE EXISTING FENCING
N59°21'30"E 15.30
N36°46'30"W 48.60
N36°46'30"E 20.23
MATCH INTO EXISTING GRADES, SLOPE DOWN (MAX 3:1) TOWARDS PROPOSED STORMWATER DETENTION AREA
REMOVE EXISTING FENCING
NEW FENCING
N 20° 34' 40" W 62.95
NEW GATE IN NEW FENCE. PROVIDE 6M CLEAR OPENING
1:100yr Ponding
1:5yr Ponding
NEW STORMWATER POND - SEE CIVIL DWGS
FIRE LANE
346.90
N59°30'00"E 59.37
N 50° 45' 20" E
244.40
SEWER EASEMENT
SETBACK
RETAINING WALL
PROPERTY LINE
EXISTING DITCH TO BE FILLED TO ACCOMMODATE PROPOSED DEVELOPMENT (TYPICAL). REFER TO GEOTECHNICAL REPORT FOR DETAILS.
MATCH INTO EXISTING GRADES ALONG EDGE OF LANEWAY
PROVIDE ACCESS GATES IN FENCE
EXISTING POLES AND GUY WIRES TO REMAIN. PROPOSED TOP OF SLOPE GRADED FOR THE STORMWATER DETENTION AREA TO MATCH INTO EXISTING GRADES AT THE BASE OF THE POLES AND GUY WIRES. REGRADE SOUTH EAST PROPERTY CORNER TO MATCH INTO EXISTING GRADES ALONG PROPERTY LINES.
MATCH INTO EXISTING GRADE AT PROPERTY LINE (TYPICAL)
REGRADE AREA AROUND EXISTING SANITARY AND STORM MANHOLES, LOWERED T/G=87.00
PROVIDE SILT FENCE AS PER OPSD 219.110
MATCH INTO EXISTING GRADE AT PROPERTY LINE (TYPICAL)
CONSTRUCT PROPOSED CURB TO ACCOMMODATE EXISTING MANHOLE COVER
PN
W
N
S
E
1 A101 SITE PLAN SCALE 1:400
KEYPLAN
A101
A102

No.	DATE:	REVISION:
20		
19		
18		
17		
16		
15		
14		
13		
12		
11		
10		
09		
08		
07	2016-01-26	SITE PLAN UPDATE
06	2016-01-14	POOL COORDINATION
05	2015-08-26	WASHROOM REVISION
04	2015-07-23	CLIENT REVISION
03	2015-06-10	CIVIL AND GRADING
02	2015-04-21	(BLOCK) STRUCTURE
01	2015-03-05	(STEEL) STRUCTURE

PRELIMINARY

SJL LAWRENCE ARCHITECT INCORPORATED
18 Deakin Street
Suite 205
Ottawa, ON
K2E 8B7
T: (613) 739.7770
F: (613) 739.7703
sjl@sjlarchitect.com

DRAWN BY: D.L.	DESIGNED BY: S.J.L.
DATE: 2014-07-12	CHECKED BY: S.J.L.
SCALE: AS NOTED	PLOT DATE: 2016-01-26

PROJECT:
ALBION MOSQUE
3095 ALBION ROAD,
OTTAWA, ON.

JOB NUMBER: SL - 683 - 12

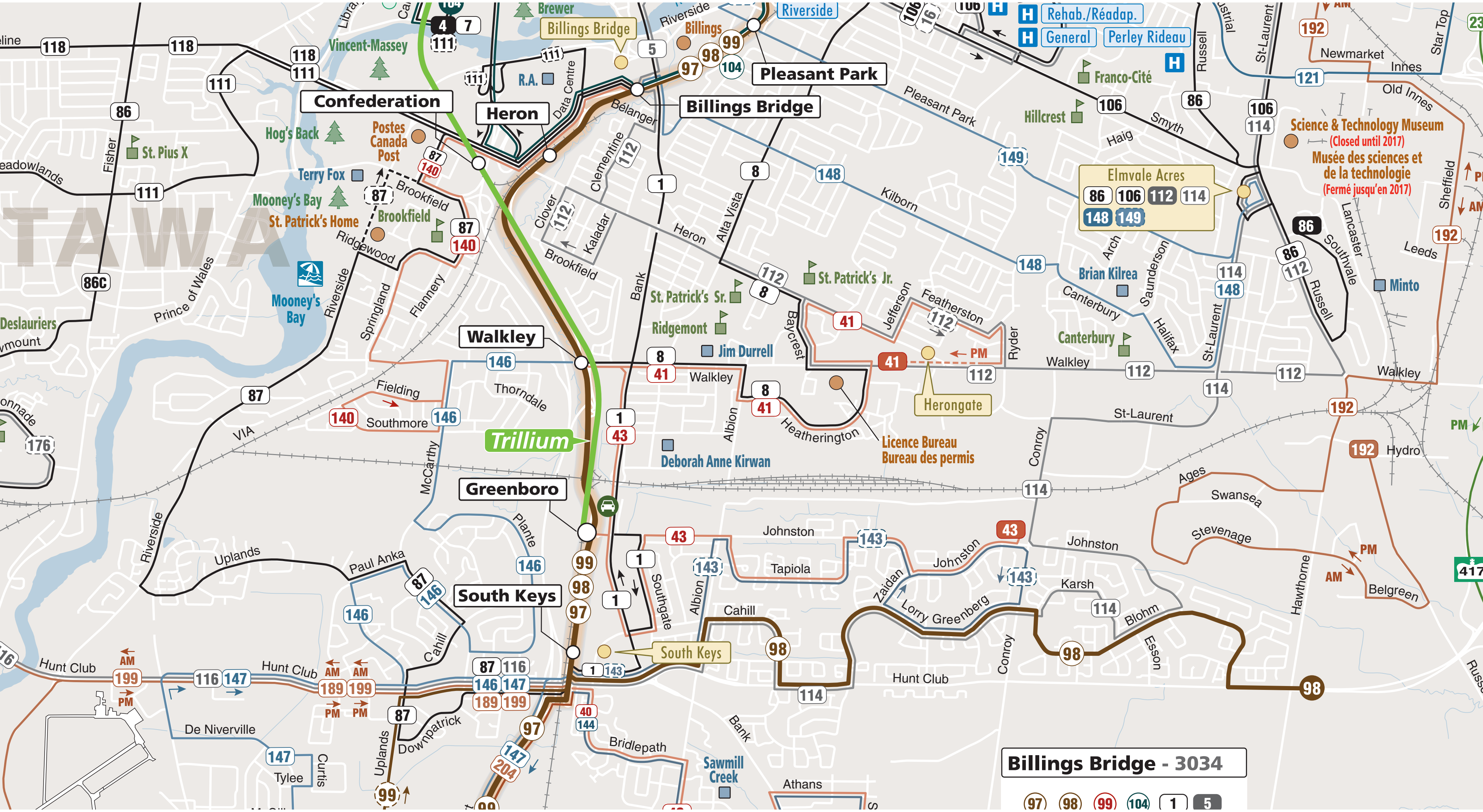
DRAWING TITLE: SITE PLAN

SHEET: A 102

APPLICATION NUMBER:

APPENDIX B

OC TRANSPO SYSTEM MAP



Billings Bridge - 3034
Confederation
Heron
Billings Bridge
Pleasant Park
Walkley
Trillium
Greenboro
South Keys
Riverside
Rehab./Réadap.
General
Perley Rideau
Franco-Cité
Hillcrest
Elmvale Acres
Science & Technology Museum
(Closed until 2017)
Musée des sciences et de la technologie
(Fermé jusqu'en 2017)
Minto
Brian Kilrea
Canterbury
St. Patrick's Jr.
St. Patrick's Sr.
Ridgemont
Jim Durrell
Herongate
Licence Bureau
Bureau des permis
Deborah Anne Kirwan
Vincent-Massey
Hog's Back
St. Pius X
Terry Fox
Mooney's Bay
St. Patrick's Home
Brookfield
Postes Canada Post
Brewer
R.A.
Deslauriers
Sawmill Creek
Hunt Club
Uplands
Paul Anka
De Niverville
Tylee
Downpatrick
Bridlepath
Athans
Johnston
Tapiola
Cahill
Lorry Greenberg
Karsh
Blohm
Conroy
Hawthorne
Belgreen
Stevenage
Swansea
Ages
Hydro
St-Laurent
Walkley
Kilborn
Smyth
Haig
Pleasant Park
Newmarket
Innes
Old Innes
Russell
Southvale
Lancaster
Sheffield
Leeds
Heatherington
Featherston
Jefferson
Ryder
Baycrest
Alta Vista
Bank
Clementine
Data Centre
Bélanger
Kaladar
Clover
Flannery
Springland
Ridgewood
Prince of Wales
Fisher
Riverside
Fielding
Southmore
Thorndale
McCarthy
Plante
Southgate
Albion
Zaidan
Esson
Saunderson
Halifax
Arch
AM
PM

APPENDIX C

TRAFFIC COUNTS AND SIGNAL TIMING PLANS

Public Works - Traffic Services

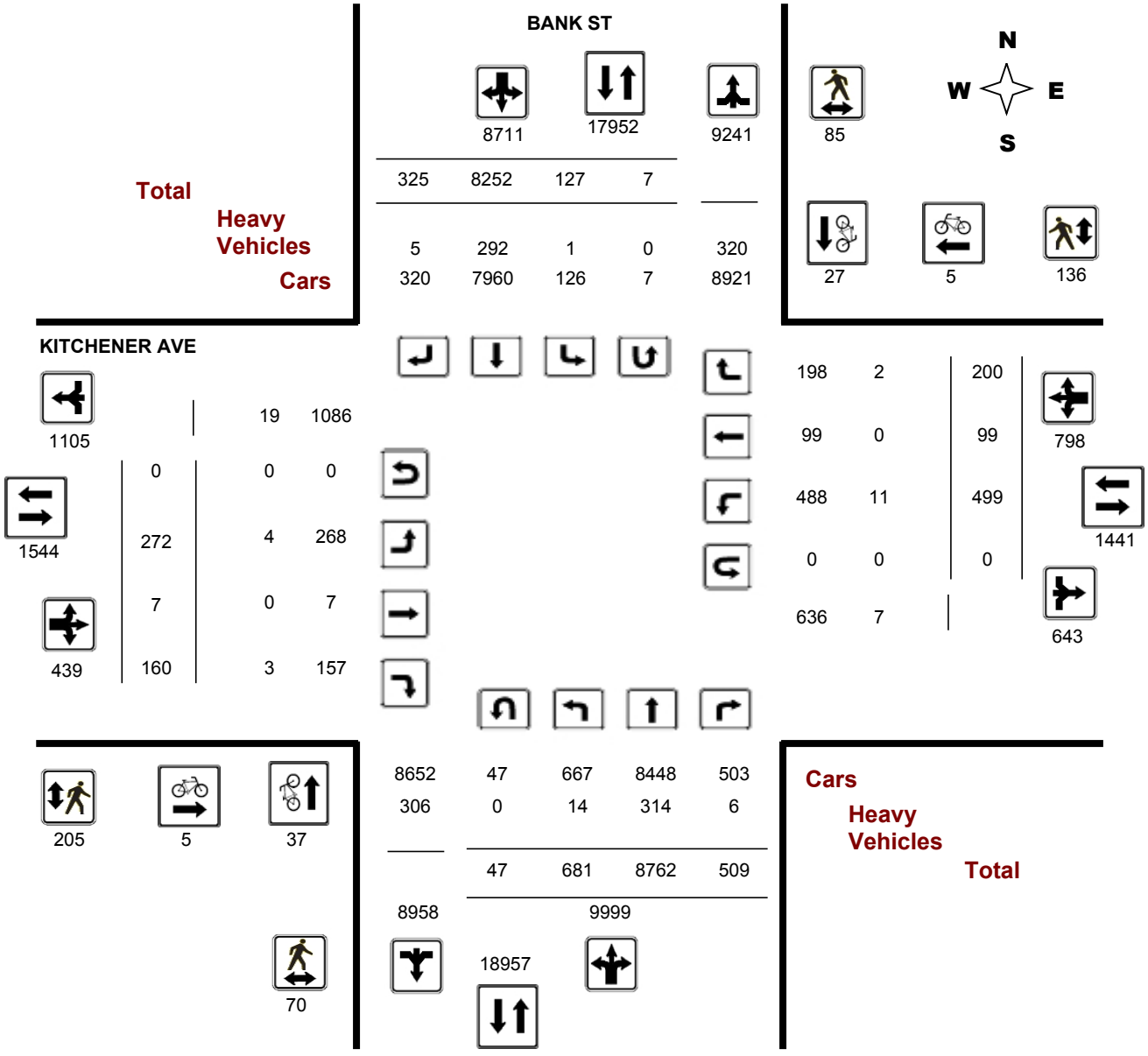
Turning Movement Count - Full Study Diagram

KITCHENER AVE @ BANK ST

Survey Date: Thursday, July 16, 2015

WO#: 34991

Device: Miovision



Comments

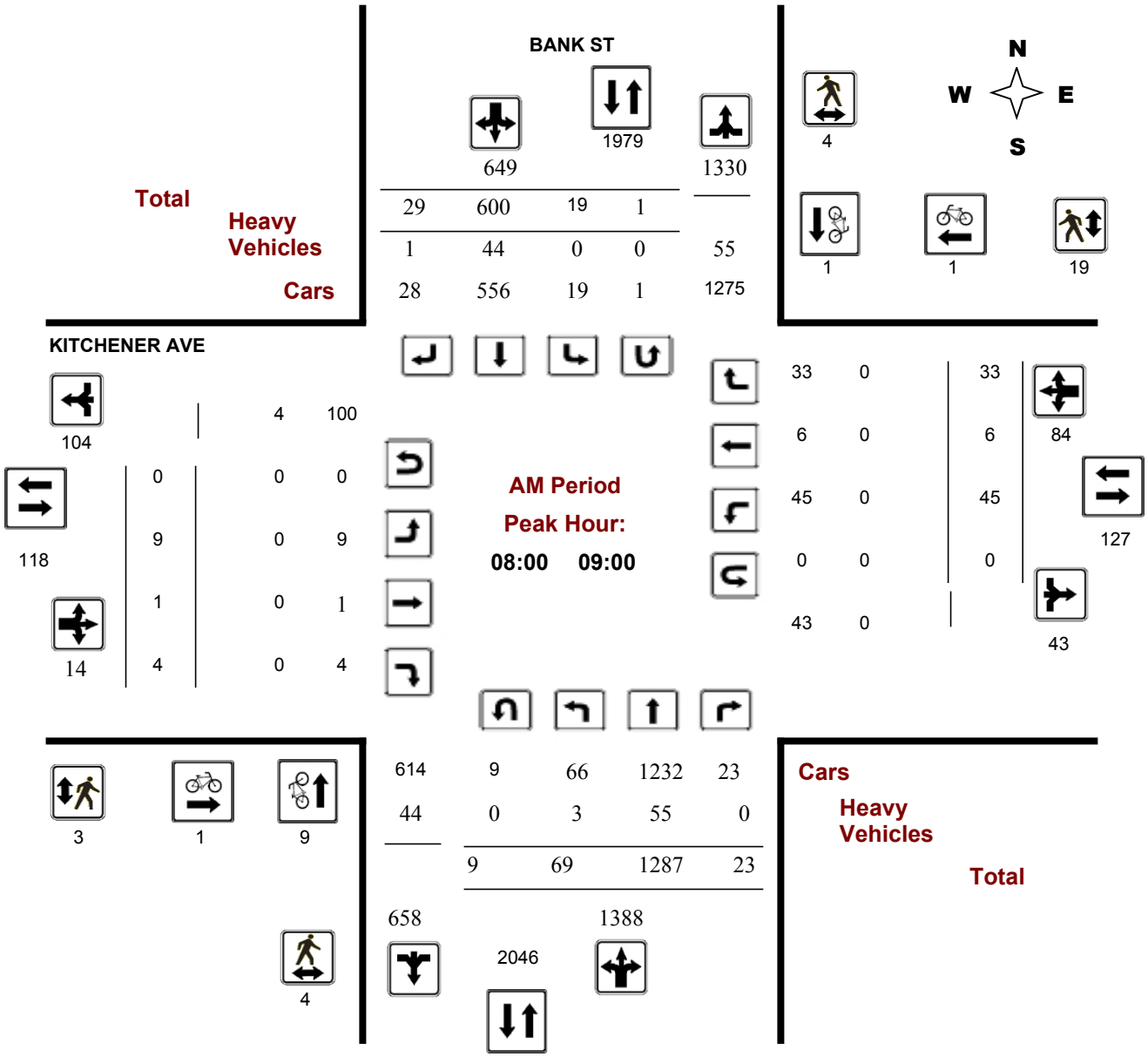
Public Works - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

KITCHENER AVE @ BANK ST

Survey Date: Thursday, July 16, 2015 **WO No:** 34991

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



Comments

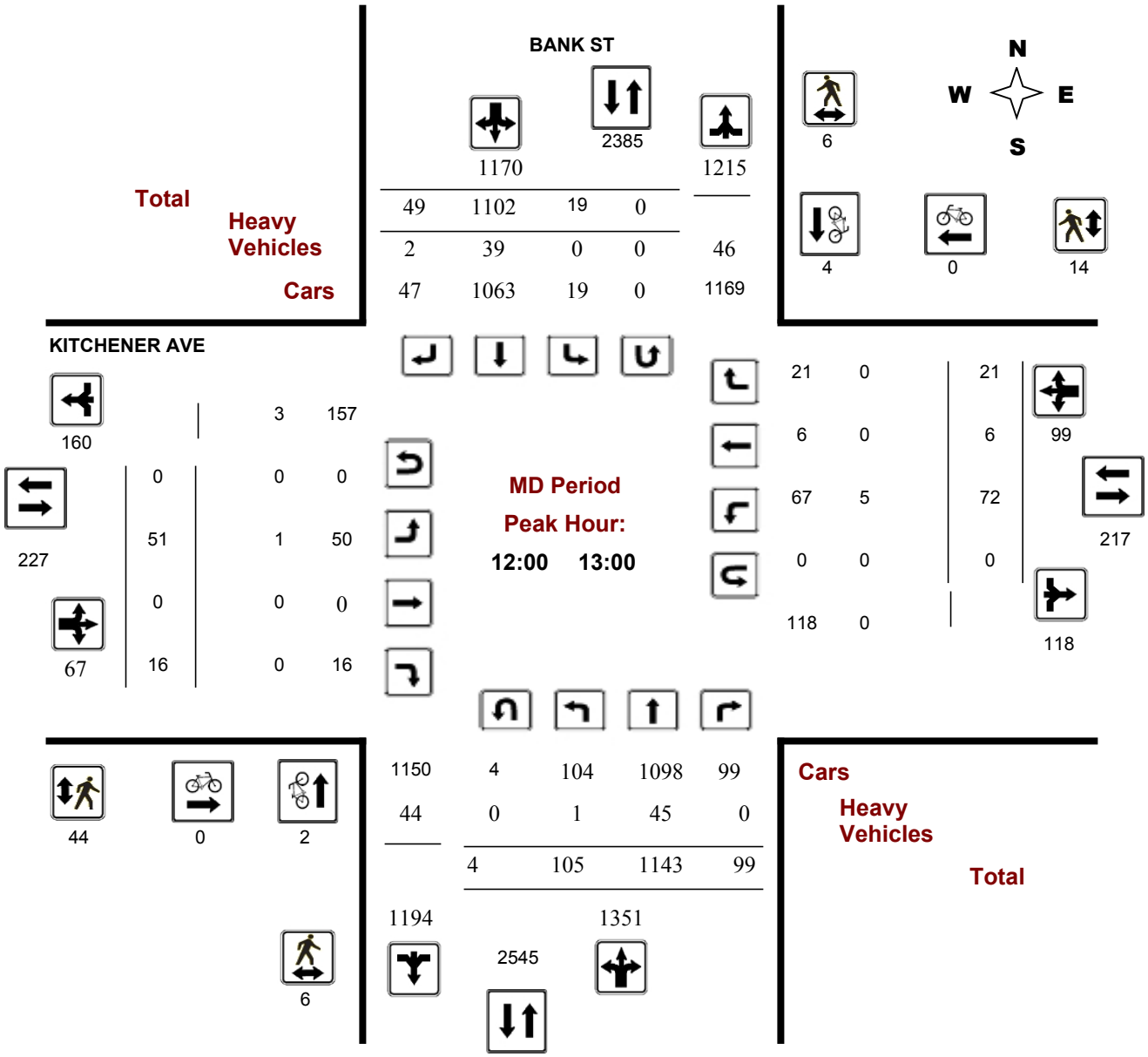
Public Works - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

KITCHENER AVE @ BANK ST

Survey Date: Thursday, July 16, 2015 **WO No:** 34991

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



Comments

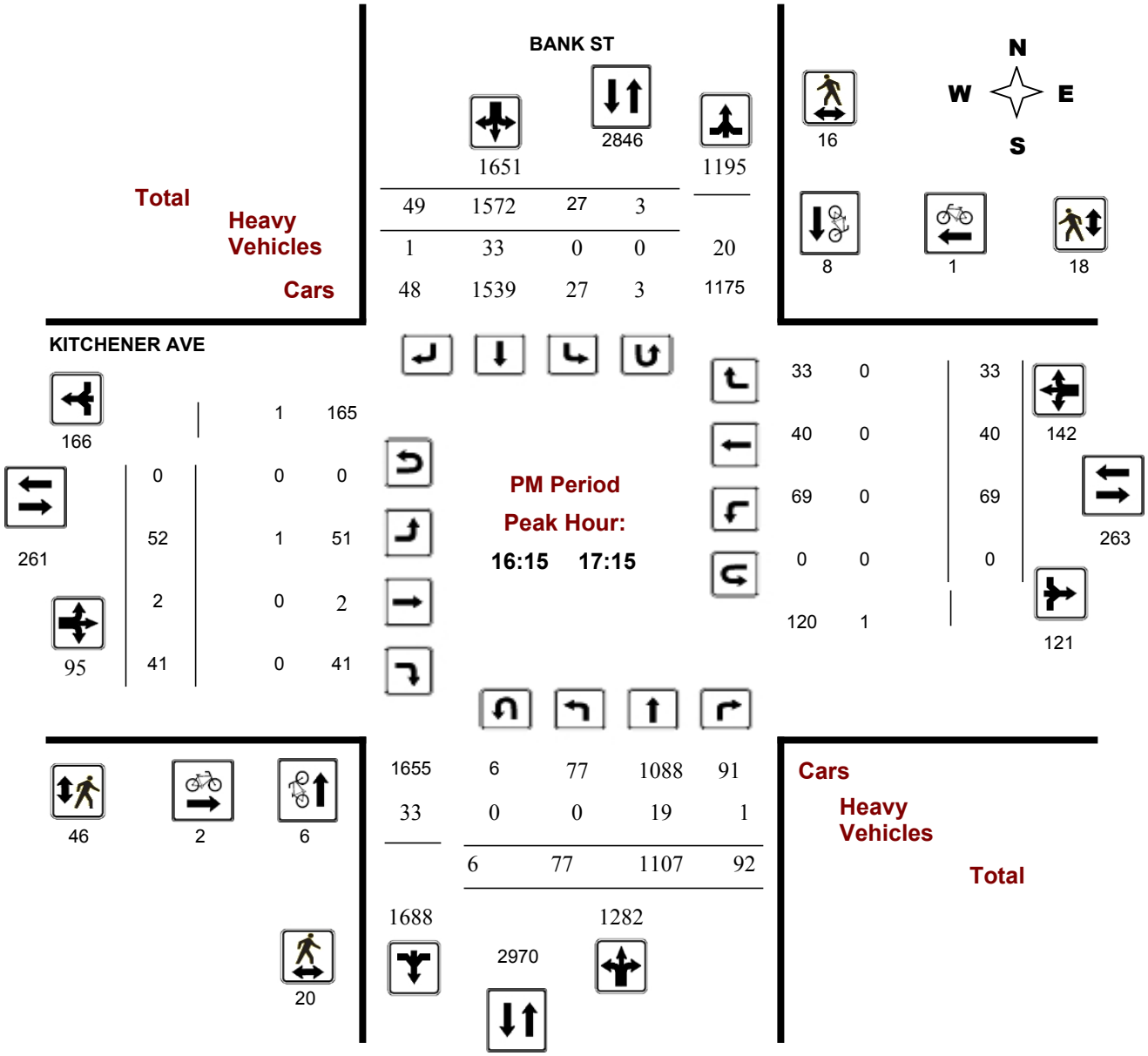
Public Works - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

KITCHENER AVE @ BANK ST

Survey Date: Thursday, July 16, 2015 **WO No:** 34991

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



Comments

Public Works - Traffic Services

Work Order
34991

Turning Movement Count - Full Study Summary Report

KITCHENER AVE @ BANK ST

Survey Date: Thursday, July 16, 2015

Total Observed U-Turns

Northbound: 47 Southbound: 7

Eastbound: 0 Westbound: 0

AADT Factor

.90

Full Study

	BANK ST									KITCHENER AVE									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	**NB TOT**	LT	ST	RT	**SB TOT**	**STR TOT**	LT	ST	RT	**EB TOT**	LT	ST	RT	**WB TOT**	**STR TOT**	**Grand Total**
07:00 08:00	61	1073	9	**1143**	16	399	37	**452**	**1595**	10	0	0	**10**	33	1	16	**50**	**60**	**1655**
08:00 09:00	69	1287	23	**1379**	19	600	29	**648**	**2027**	9	1	4	**14**	45	6	33	**84**	**98**	**2125**
09:00 10:00	77	1013	53	**1143**	7	770	32	**809**	**1952**	8	0	1	**9**	55	2	23	**80**	**89**	**2041**
11:30 12:30	105	1095	85	**1285**	23	1073	46	**1142**	**2427**	44	0	21	**65**	68	10	17	**95**	**160**	**2587**
12:30 13:30	97	1090	84	**1271**	10	1074	48	**1132**	**2403**	47	0	18	**65**	68	6	26	**100**	**165**	**2568**
15:00 16:00	98	1059	69	**1226**	5	1312	50	**1367**	**2593**	61	3	32	**96**	74	16	27	**117**	**213**	**2806**
16:00 17:00	83	1104	90	**1277**	27	1550	47	**1624**	**2901**	51	1	43	**95**	70	45	35	**150**	**245**	**3146**
17:00 18:00	91	1041	96	**1228**	20	1474	36	**1530**	**2758**	42	2	41	**85**	86	13	23	**122**	**207**	**2965**
Total	681	8762	509	**9952**	127	8252	325	**8704**	**18656**	272	7	160	**439**	499	99	200	**798**	**1237**	**19893**
Equ 12Hr	946	12179	707	**13832**	176	11470	451	**12097**	**25929**	378	9	222	**609**	693	137	278	**1108**	**1717**	**27646**

Note: These values are calculated by multiplying the totals by the appropriate expansion factor. **1.39**

Avg 12Hr	851	10961	636	**12448**	158	10323	405	**10887**	**23335**	340	8	199	**548**	623	123	250	**997**	**1545**	**24881**

Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor. **.90**

Avg 24Hr	1114	14358	833	**16306**	206	13523	530	**14261**	**30568**	445	10	260	**717**	816	161	327	**1306**	**2023**	**32594**

Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor. **1.31**

Comments:

Note: U-Turns are **not** included in Totals.

Public Works - Traffic Services

W.O. 34991

Turning Movement Count - 15 Minute Summary Report

KITCHENER AVE @ BANK ST

Survey Date: Thursday, July 16, 2015

Total Observed U-Turns

Northbound: 47 Southbound: 7

Eastbound: 0 Westbound: 0

		BANK ST									KITCHENER AVE									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	7	201	3	**212**	5	73	7	**85**	**297**	2	0	0	**2**	3	0	3	**6**	**8**	**305**
07:15	07:30	23	252	2	**277**	3	92	8	**103**	**380**	2	0	0	**2**	3	0	2	**5**	**7**	**387**
07:30	07:45	11	303	2	**317**	5	108	13	**126**	**443**	1	0	0	**1**	4	0	4	**8**	**9**	**452**
07:45	08:00	20	317	2	**339**	3	126	9	**138**	**477**	5	0	0	**5**	23	1	7	**31**	**36**	**513**
08:00	08:15	12	370	2	**385**	3	127	6	**136**	**521**	3	0	3	**6**	7	1	10	**18**	**24**	**545**
08:15	08:30	18	324	2	**348**	2	145	0	**148**	**496**	1	0	0	**1**	11	1	9	**21**	**22**	**518**
08:30	08:45	25	292	9	**328**	5	165	7	**177**	**505**	2	0	1	**3**	11	1	2	**14**	**17**	**522**
08:45	09:00	14	301	10	**327**	9	163	16	**188**	**515**	3	1	0	**4**	16	3	12	**31**	**35**	**550**
09:00	09:15	17	244	13	**274**	1	173	9	**183**	**457**	2	0	0	**2**	15	0	5	**20**	**22**	**479**
09:15	09:30	10	252	8	**273**	3	205	3	**211**	**484**	4	0	1	**5**	18	1	8	**27**	**32**	**516**
09:30	09:45	21	249	14	**285**	2	183	4	**189**	**474**	2	0	0	**2**	12	0	7	**19**	**21**	**495**
09:45	10:00	29	268	18	**317**	1	209	16	**226**	**543**	0	0	0	**0**	10	1	3	**14**	**14**	**557**
11:30	11:45	20	239	19	**279**	8	282	14	**304**	**583**	10	0	3	**13**	20	3	4	**27**	**40**	**623**
11:45	12:00	28	289	15	**332**	4	223	8	**235**	**567**	9	0	8	**17**	15	3	4	**22**	**39**	**606**
12:00	12:15	25	271	31	**329**	6	279	8	**293**	**622**	10	0	5	**15**	12	2	5	**19**	**34**	**656**
12:15	12:30	32	296	20	**349**	5	289	16	**310**	**659**	15	0	5	**20**	21	2	4	**27**	**47**	**706**
12:30	12:45	31	300	20	**351**	6	239	13	**258**	**609**	11	0	3	**14**	19	2	6	**27**	**41**	**650**
12:45	13:00	17	276	28	**322**	2	295	12	**309**	**631**	15	0	3	**18**	20	0	6	**26**	**44**	**675**
13:00	13:15	22	276	19	**317**	1	272	13	**287**	**604**	5	0	6	**11**	12	4	5	**21**	**32**	**636**
13:15	13:30	27	238	17	**283**	1	268	10	**279**	**562**	16	0	6	**22**	17	0	9	**26**	**48**	**610**
15:00	15:15	20	275	17	**313**	1	293	17	**311**	**624**	18	1	5	**24**	31	2	9	**42**	**66**	**690**
15:15	15:30	34	261	14	**310**	1	314	5	**320**	**630**	12	0	9	**21**	16	3	6	**25**	**46**	**676**
15:30	15:45	21	266	18	**311**	2	339	17	**358**	**669**	12	1	11	**24**	11	5	10	**26**	**50**	**719**
15:45	16:00	23	257	20	**300**	1	366	11	**378**	**678**	19	1	7	**27**	16	6	2	**24**	**51**	**729**
16:00	16:15	26	275	23	**325**	5	366	8	**380**	**705**	14	0	10	**24**	18	11	8	**37**	**61**	**766**
16:15	16:30	18	288	25	**331**	5	405	11	**421**	**752**	14	1	14	**29**	11	15	8	**34**	**63**	**815**
16:30	16:45	15	267	18	**301**	4	394	18	**418**	**719**	10	0	7	**17**	22	13	9	**44**	**61**	**780**
16:45	17:00	24	274	24	**324**	13	385	10	**408**	**732**	13	0	12	**25**	19	6	10	**35**	**60**	**792**
17:00	17:15	20	278	25	**326**	5	388	10	**404**	**730**	15	1	8	**24**	17	6	6	**29**	**53**	**783**
17:15	17:30	32	241	23	**301**	4	390	11	**405**	**706**	9	1	13	**23**	18	4	8	**30**	**53**	**759**
17:30	17:45	16	270	25	**312**	7	361	7	**375**	**687**	7	0	12	**19**	24	2	3	**29**	**48**	**735**
17:45	18:00	23	252	23	**301**	4	335	8	**348**	**649**	11	0	8	**19**	27	1	6	**34**	**53**	**702**
TOTAL:		681	8762	509	**9999**	127	8252	325	**8711**	**18710**	272	7	160	**439**	499	99	200	**798**	**1237**	**19947**

Note: U-Turns are included in Totals.

Comment:

Public Works - Traffic Services

Work Order
34991

Turning Movement Count - Pedestrian Volume Report

KITCHENER AVE @ BANK ST

Count Date: Thursday, July 16, 2015 **Start Time:** 07:00

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	0	2	**2**	3	3	**6**	**8**
07:15 07:30	1	0	**1**	2	3	**5**	**6**
07:30 07:45	0	2	**2**	1	5	**6**	**8**
07:45 08:00	1	0	**1**	8	1	**9**	**10**
07:00 08:00	2	4	**6**	14	12	**26**	**32**
08:00 08:15	1	1	**2**	1	7	**8**	**10**
08:15 08:30	3	2	**5**	0	4	**4**	**9**
08:30 08:45	0	0	**0**	2	8	**10**	**10**
08:45 09:00	0	1	**1**	0	0	**0**	**1**
08:00 09:00	4	4	**8**	3	19	**22**	**30**
09:00 09:15	2	1	**3**	1	3	**4**	**7**
09:15 09:30	0	2	**2**	2	7	**9**	**11**
09:30 09:45	3	3	**6**	4	2	**6**	**12**
09:45 10:00	1	0	**1**	3	3	**6**	**7**
09:00 10:00	6	6	**12**	10	15	**25**	**37**
11:30 11:45	5	1	**6**	6	3	**9**	**15**
11:45 12:00	3	1	**4**	8	2	**10**	**14**
12:00 12:15	1	0	**1**	20	2	**22**	**23**
12:15 12:30	2	0	**2**	13	7	**20**	**22**
11:30 12:30	11	2	**13**	47	14	**61**	**74**
12:30 12:45	2	3	**5**	6	2	**8**	**13**
12:45 13:00	1	3	**4**	5	3	**8**	**12**
13:00 13:15	0	0	**0**	1	6	**7**	**7**
13:15 13:30	1	2	**3**	7	3	**10**	**13**
12:30 13:30	4	8	**12**	19	14	**33**	**45**
15:00 15:15	5	2	**7**	5	5	**10**	**17**
15:15 15:30	2	3	**5**	7	4	**11**	**16**
15:30 15:45	0	5	**5**	5	6	**11**	**16**
15:45 16:00	9	13	**22**	12	10	**22**	**44**
15:00 16:00	16	23	**39**	29	25	**54**	**93**
16:00 16:15	3	5	**8**	17	7	**24**	**32**
16:15 16:30	6	3	**9**	15	4	**19**	**28**
16:30 16:45	6	6	**12**	15	5	**20**	**32**
16:45 17:00	7	2	**9**	10	4	**14**	**23**
16:00 17:00	22	16	**38**	57	20	**77**	**115**
17:00 17:15	1	5	**6**	6	5	**11**	**17**
17:15 17:30	0	11	**11**	7	5	**12**	**23**
17:30 17:45	3	2	**5**	8	3	**11**	**16**
17:45 18:00	1	4	**5**	5	4	**9**	**14**
17:00 18:00	5	22	**27**	26	17	**43**	**70**
Total	70	85	**155**	205	136	**341**	**496**

Comment:

Public Works - Traffic Services

W.O. 34991

Turning Movement Count - Heavy Vehicle Report

KITCHENER AVE @ BANK ST

Survey Date: Thursday, July 16, 2015

		BANK ST									KITCHENER AVE									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	**N TOT**	LT	ST	RT	**S TOT**	**STR TOT**	LT	ST	RT	**E TOT**	LT	ST	RT	**W TOT**	**STR TOT**	**Grand Total**
07:00	08:00	3	58	0	**61**	0	32	0	**32**	**93**	0	0	0	**0**	1	0	0	**1**	**1**	**94**
08:00	09:00	3	55	0	**58**	0	44	1	**45**	**103**	0	0	0	**0**	0	0	0	**0**	**0**	**103**
09:00	10:00	3	46	3	**52**	0	43	0	**43**	**95**	1	0	0	**1**	1	0	0	**1**	**2**	**97**
11:30	12:30	1	46	0	**47**	1	41	2	**44**	**91**	1	0	1	**2**	4	0	0	**4**	**6**	**97**
12:30	13:30	1	47	1	**49**	0	35	1	**36**	**85**	1	0	1	**2**	5	0	1	**6**	**8**	**93**
15:00	16:00	1	26	0	**27**	0	31	0	**31**	**58**	0	0	1	**1**	0	0	0	**0**	**1**	**59**
16:00	17:00	0	19	1	**20**	0	38	1	**39**	**59**	1	0	0	**1**	0	0	1	**1**	**2**	**61**
17:00	18:00	2	17	1	**20**	0	28	0	**28**	**48**	0	0	0	**0**	0	0	0	**0**	**0**	**48**
Total :		14	314	6	**334**	1	292	5	**298**	**632**	4	0	3	**7**	11	0	2	**13**	**20**	**652**

Heavy Vehicles are vehicles having one rear axle with four or more wheels, or having two or more rear axles. These vehicles include most O.C. Transpo, school and inter-city buses. Further, they ARE included in the Turning Movement Count Summary.

Public Works - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order
34991

KITCHENER AVE @ BANK ST

Count Date: Thursday, July 16, 2015 **Start Time:** 07:00

	BANK ST			KITCHENER AVE			
Time Period	Northbound	Southbound	**Street Total**	Eastbound	Westbound	**Street Total**	**Grand Total**
07:00 08:00	9	0	**9**	0	0	**0**	**9**
08:00 09:00	9	1	**10**	1	1	**2**	**12**
09:00 10:00	3	0	**3**	0	0	**0**	**3**
11:30 12:30	2	3	**5**	0	0	**0**	**5**
12:30 13:30	1	3	**4**	1	0	**1**	**5**
15:00 16:00	5	6	**11**	0	2	**2**	**13**
16:00 17:00	4	10	**14**	1	1	**2**	**16**
17:00 18:00	4	4	**8**	2	1	**3**	**11**
Total	37	27	**64**	5	5	**10**	**74**

Comment:

Note: These volumes consists of bicycles only (no mopeds or motorcycles) and ARE NOT included in the Turning Movement Count Summary.

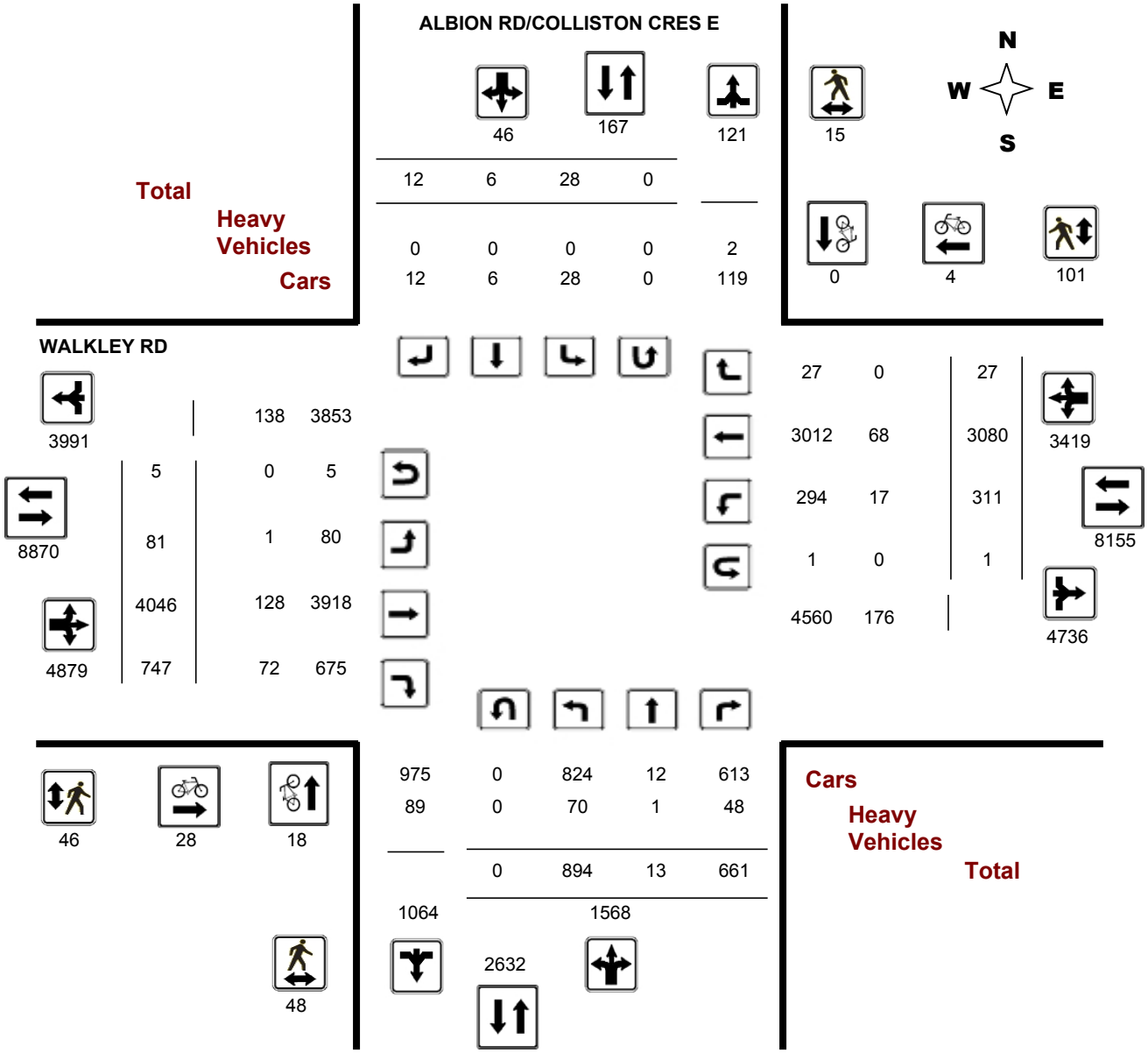
Public Works - Traffic Services

Turning Movement Count - Full Study Diagram

ALBION RD/COLLISTON CRES E @ WALKLEY RD

Survey Date: Tuesday, July 17, 2012 **WO#:** 30904

Device:



Comments

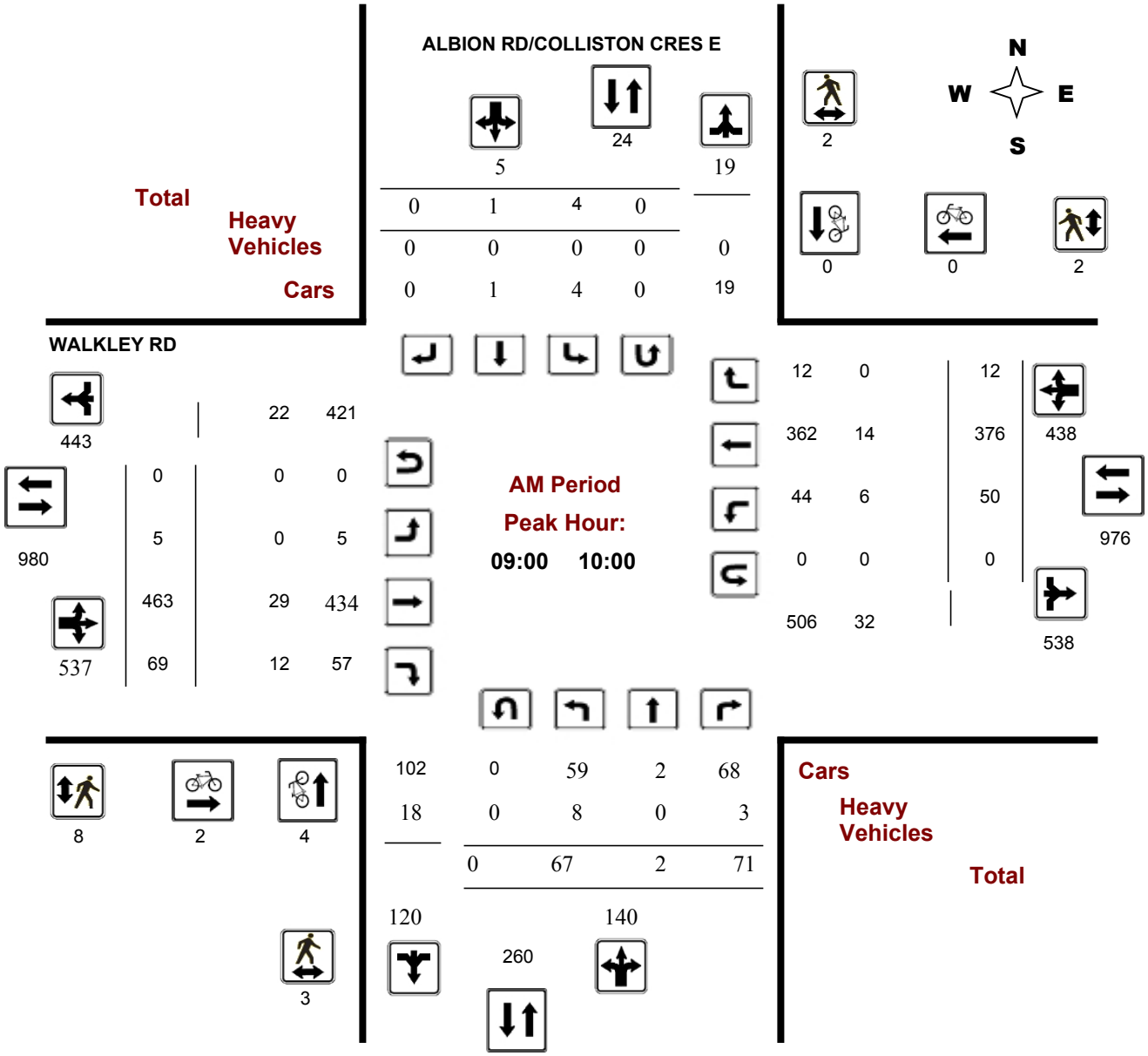
Public Works - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

ALBION RD/COLLISTON CRES E @ WALKLEY RD

Survey Date: Tuesday, July 17, 2012 **WO No:** 30904

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



Comments

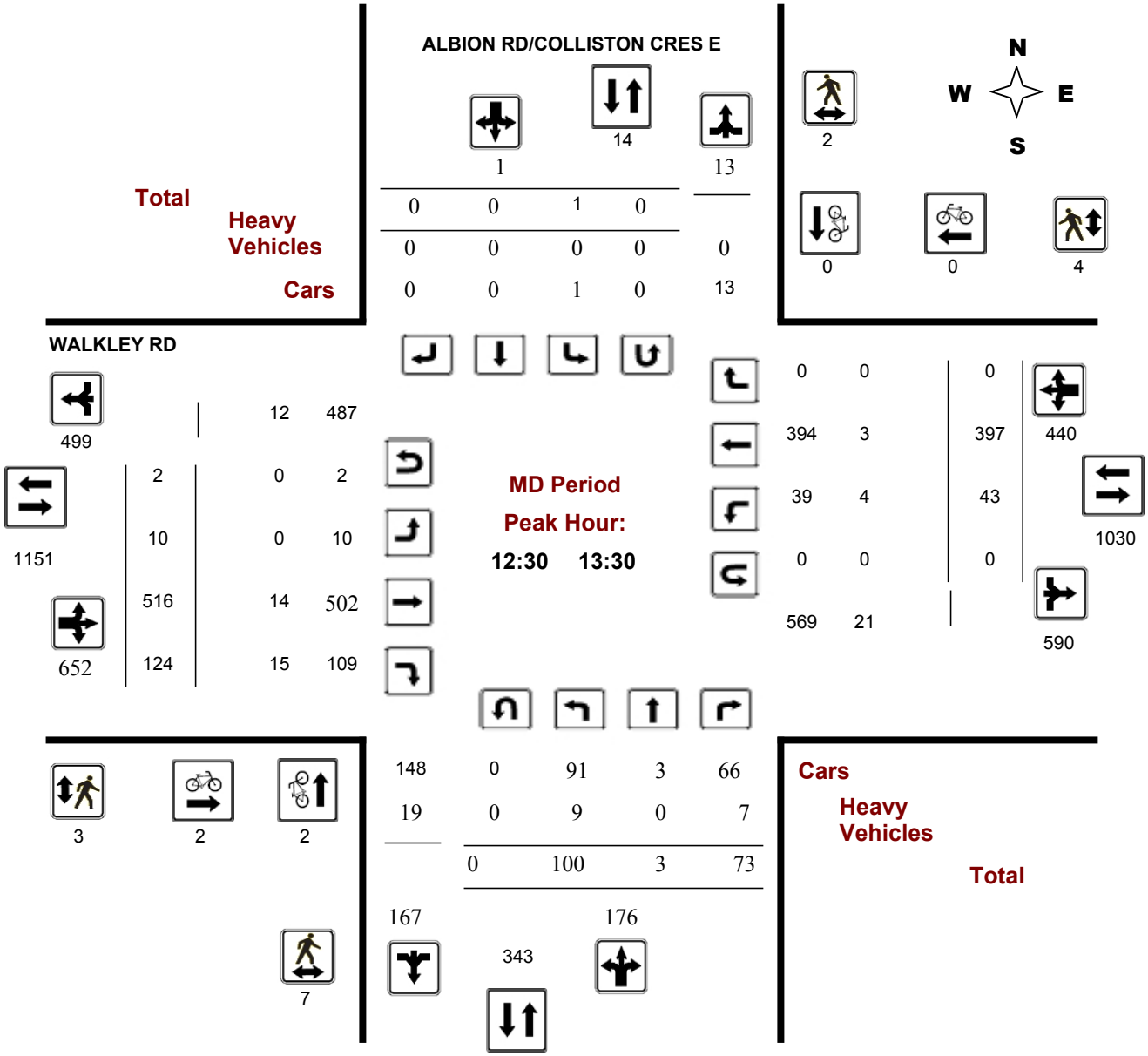
Public Works - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

ALBION RD/COLLISTON CRES E @ WALKLEY RD

Survey Date: Tuesday, July 17, 2012 **WO No:** 30904

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



Comments

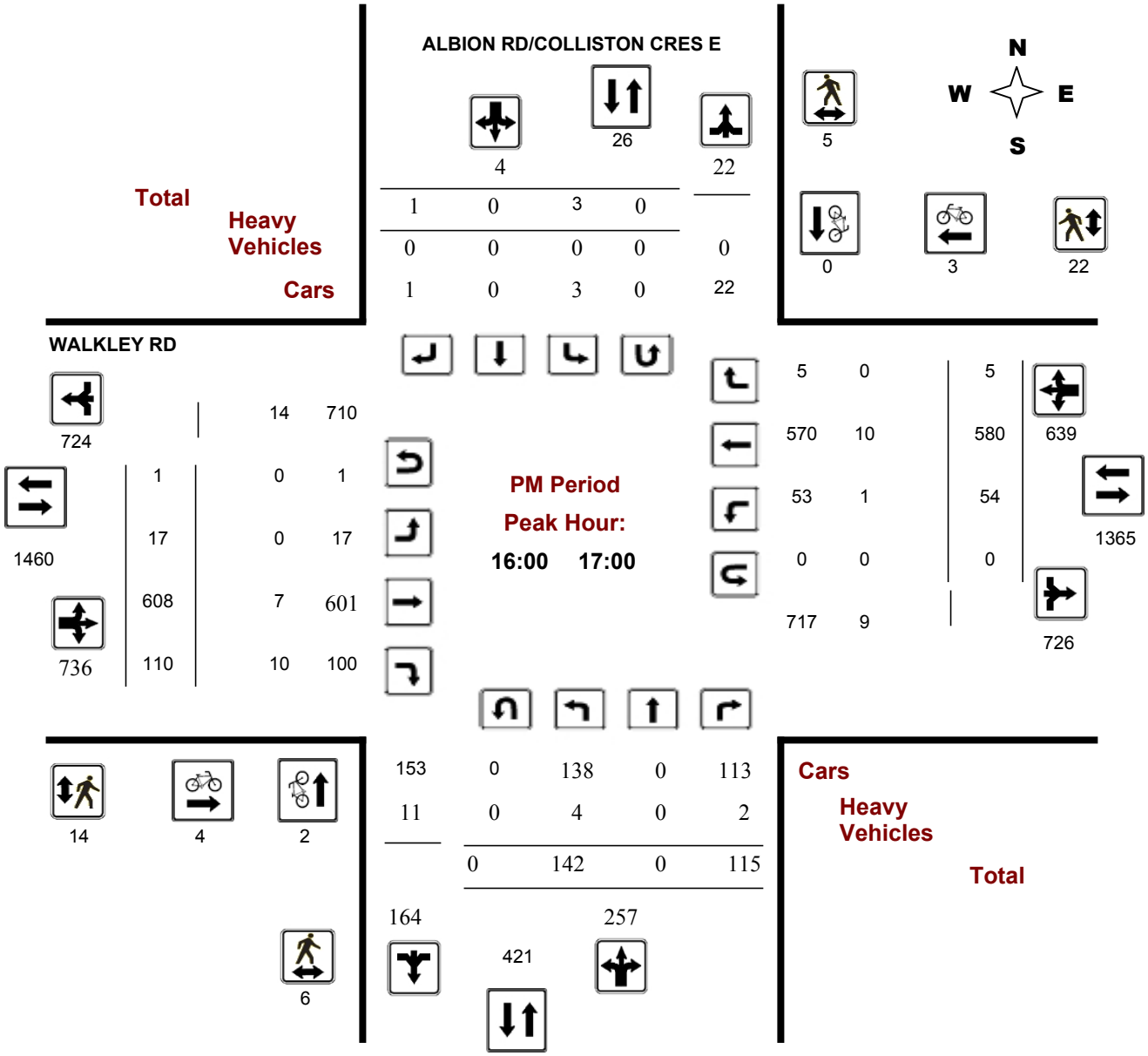
Public Works - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

ALBION RD/COLLISTON CRES E @ WALKLEY RD

Survey Date: Tuesday, July 17, 2012 **WO No:** 30904

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



Comments

Public Works - Traffic Services

Work Order
30904

Turning Movement Count - Full Study Summary Report

ALBION RD/COLLISTON CRES E @ WALKLEY RD

Survey Date: Tuesday, July 17, 2012

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 5 Westbound: 1

AADT Factor

.90

Full Study

	ALBION RD/COLLISTON CRES E									WALKLEY RD									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	**NB TOT**	LT	ST	RT	**SB TOT**	**STR TOT**	LT	ST	RT	**EB TOT**	LT	ST	RT	**WB TOT**	**STR TOT**	**Grand Total**
07:00 08:00	70	1	57	**128**	13	5	9	**27**	**155**	3	361	74	**438**	45	288	0	**333**	**771**	**926**
08:00 09:00	105	2	77	**184**	3	0	1	**4**	**188**	2	495	104	**601**	19	248	5	**272**	**873**	**1061**
09:00 10:00	67	2	71	**140**	4	1	0	**5**	**145**	5	463	69	**537**	50	376	12	**438**	**975**	**1120**
11:30 12:30	128	1	67	**196**	2	0	1	**3**	**199**	9	475	83	**567**	32	312	1	**345**	**912**	**1111**
12:30 13:30	100	3	73	**176**	1	0	0	**1**	**177**	10	516	124	**650**	43	397	0	**440**	**1090**	**1267**
15:00 16:00	136	3	108	**247**	1	0	0	**1**	**248**	20	524	90	**634**	35	438	4	**477**	**1111**	**1359**
16:00 17:00	142	0	115	**257**	3	0	1	**4**	**261**	17	608	110	**735**	54	580	5	**639**	**1374**	**1635**
17:00 18:00	146	1	93	**240**	1	0	0	**1**	**241**	15	604	93	**712**	33	441	0	**474**	**1186**	**1427**
Total	894	13	661	**1568**	28	6	12	**46**	**1614**	81	4046	747	**4874**	311	3080	27	**3418**	**8292**	**9906**
Equ 12Hr	1242	18	918	**2178**	38	8	16	**62**	**2240**	112	5623	1038	**6773**	432	4281	37	**4750**	**11523**	**13763**

Note: These values are calculated by multiplying the totals by the appropriate expansion factor. **1.39**

Avg 12Hr	1118	16	826	**1960**	34	7	14	**55**	**2017**	100	5060	934	**6095**	388	3852	33	**4275**	**10370**	**12386**

Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor. **.90**

Avg 24Hr	1464	20	1082	**2567**	44	9	18	**72**	**2642**	131	6628	1223	**7984**	508	5046	43	**5600**	**13584**	**16225**

Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor. **1.31**

Comments:

Note: U-Turns are **not** included in Totals.

Public Works - Traffic Services

W.O. 30904

Turning Movement Count - 15 Minute Summary Report

ALBION RD/COLLISTON CRES E @ WALKLEY RD

Survey Date: Tuesday, July 17, 2012

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 5 Westbound: 1

ALBION RD/COLLISTON CRES E — **WALKLEY RD**

		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	14	0	12	**26**	5	3	7	**15**	**41**	1	68	10	**79**	0	69	0	**69**	**148**	**189**
07:15	07:30	17	1	14	**32**	1	0	0	**1**	**33**	0	65	21	**86**	11	61	0	**72**	**158**	**191**
07:30	07:45	17	0	15	**32**	3	1	0	**4**	**36**	1	122	13	**136**	26	85	0	**111**	**247**	**283**
07:45	08:00	22	0	16	**38**	4	1	2	**7**	**45**	1	106	30	**137**	8	73	0	**81**	**218**	**263**
08:00	08:15	24	0	16	**40**	1	0	1	**2**	**42**	0	112	32	**144**	11	93	1	**105**	**249**	**291**
08:15	08:30	34	1	23	**58**	0	0	0	**0**	**58**	0	113	19	**132**	1	35	0	**36**	**168**	**226**
08:30	08:45	30	1	22	**53**	2	0	0	**2**	**55**	1	140	17	**158**	4	51	1	**56**	**214**	**269**
08:45	09:00	17	0	16	**33**	0	0	0	**0**	**33**	1	130	36	**167**	3	69	3	**75**	**242**	**275**
09:00	09:15	18	1	23	**42**	1	0	0	**1**	**43**	0	110	19	**129**	6	93	0	**99**	**228**	**271**
09:15	09:30	16	1	13	**30**	0	0	0	**0**	**30**	1	127	14	**142**	12	89	0	**101**	**243**	**273**
09:30	09:45	12	0	15	**27**	2	0	0	**2**	**29**	4	102	16	**122**	16	76	1	**93**	**215**	**244**
09:45	10:00	21	0	20	**41**	1	1	0	**2**	**43**	0	124	20	**144**	16	118	11	**145**	**289**	**332**
11:30	11:45	33	0	14	**47**	1	0	0	**1**	**48**	1	115	17	**133**	11	109	1	**121**	**254**	**302**
11:45	12:00	34	0	13	**47**	0	0	0	**0**	**47**	1	115	22	**138**	7	70	0	**77**	**215**	**262**
12:00	12:15	30	1	18	**49**	0	0	0	**0**	**49**	6	119	28	**153**	6	54	0	**60**	**213**	**262**
12:15	12:30	31	0	22	**53**	1	0	1	**2**	**55**	1	126	16	**143**	8	79	0	**87**	**230**	**285**
12:30	12:45	28	2	18	**48**	1	0	0	**1**	**49**	1	150	38	**189**	14	98	0	**112**	**301**	**350**
12:45	13:00	24	0	19	**43**	0	0	0	**0**	**43**	2	126	24	**153**	11	99	0	**110**	**263**	**306**
13:00	13:15	16	1	16	**33**	0	0	0	**0**	**33**	2	135	32	**170**	8	105	0	**113**	**283**	**316**
13:15	13:30	32	0	20	**52**	0	0	0	**0**	**52**	5	105	30	**140**	10	95	0	**105**	**245**	**297**
15:00	15:15	33	0	28	**61**	0	0	0	**0**	**61**	5	133	15	**153**	9	102	1	**112**	**265**	**326**
15:15	15:30	33	0	21	**54**	0	0	0	**0**	**54**	3	134	23	**160**	14	111	1	**126**	**286**	**340**
15:30	15:45	35	1	32	**68**	0	0	0	**0**	**68**	5	123	21	**150**	6	80	1	**88**	**238**	**306**
15:45	16:00	35	2	27	**64**	1	0	0	**1**	**65**	7	134	31	**172**	6	145	1	**152**	**324**	**389**
16:00	16:15	44	0	33	**77**	2	0	0	**2**	**79**	4	161	25	**190**	11	126	1	**138**	**328**	**407**
16:15	16:30	30	0	28	**58**	0	0	0	**0**	**58**	1	160	29	**191**	12	130	1	**143**	**334**	**392**
16:30	16:45	35	0	25	**60**	0	0	0	**0**	**60**	4	151	20	**175**	16	164	0	**180**	**355**	**415**
16:45	17:00	33	0	29	**62**	1	0	1	**2**	**64**	8	136	36	**180**	15	160	3	**178**	**358**	**422**
17:00	17:15	53	0	31	**84**	0	0	0	**0**	**84**	4	167	23	**194**	5	116	0	**121**	**315**	**399**
17:15	17:30	43	1	23	**67**	1	0	0	**1**	**68**	4	164	19	**187**	11	114	0	**125**	**312**	**380**
17:30	17:45	32	0	25	**57**	0	0	0	**0**	**57**	3	143	26	**172**	10	115	0	**125**	**297**	**354**
17:45	18:00	18	0	14	**32**	0	0	0	**0**	**32**	4	130	25	**160**	7	96	0	**103**	**263**	**295**
TOTAL:		894	13	661	**1568**	28	6	12	**46**	**1614**	81	4046	747	**4879**	311	3080	27	**3419**	**8298**	**9912**

Note: U-Turns are included in Totals.

Comment:

Public Works - Traffic Services

Work Order
30904

Turning Movement Count - Pedestrian Volume Report

ALBION RD/COLLISTON CRES E @ WALKLEY RD

Count Date: Tuesday, July 17, 2012 **Start Time:** 07:00

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	0	0	**0**	1	5	**6**	**6**
07:15 07:30	1	0	**1**	2	1	**3**	**4**
07:30 07:45	0	0	**0**	1	0	**1**	**1**
07:45 08:00	2	0	**2**	0	3	**3**	**5**
07:00 08:00	3	0	**3**	4	9	**13**	**16**
08:00 08:15	0	1	**1**	0	2	**2**	**3**
08:15 08:30	0	0	**0**	0	0	**0**	**0**
08:30 08:45	0	0	**0**	0	1	**1**	**1**
08:45 09:00	3	0	**3**	0	2	**2**	**5**
08:00 09:00	3	1	**4**	0	5	**5**	**9**
09:00 09:15	1	0	**1**	0	0	**0**	**1**
09:15 09:30	0	1	**1**	3	2	**5**	**6**
09:30 09:45	2	1	**3**	1	0	**1**	**4**
09:45 10:00	0	0	**0**	4	0	**4**	**4**
09:00 10:00	3	2	**5**	8	2	**10**	**15**
11:30 11:45	1	1	**2**	5	14	**19**	**21**
11:45 12:00	5	3	**8**	2	13	**15**	**23**
12:00 12:15	0	0	**0**	1	0	**1**	**1**
12:15 12:30	2	0	**2**	0	4	**4**	**6**
11:30 12:30	8	4	**12**	8	31	**39**	**51**
12:30 12:45	5	0	**5**	0	2	**2**	**7**
12:45 13:00	2	1	**3**	2	2	**4**	**7**
13:00 13:15	0	1	**1**	1	0	**1**	**2**
13:15 13:30	0	0	**0**	0	0	**0**	**0**
12:30 13:30	7	2	**9**	3	4	**7**	**16**
15:00 15:15	1	0	**1**	0	3	**3**	**4**
15:15 15:30	1	0	**1**	1	11	**12**	**13**
15:30 15:45	5	0	**5**	0	1	**1**	**6**
15:45 16:00	3	1	**4**	1	5	**6**	**10**
15:00 16:00	10	1	**11**	2	20	**22**	**33**
16:00 16:15	0	0	**0**	1	12	**13**	**13**
16:15 16:30	4	4	**8**	12	8	**20**	**28**
16:30 16:45	0	0	**0**	0	0	**0**	**0**
16:45 17:00	2	1	**3**	1	2	**3**	**6**
16:00 17:00	6	5	**11**	14	22	**36**	**47**
17:00 17:15	1	0	**1**	0	0	**0**	**1**
17:15 17:30	0	0	**0**	1	4	**5**	**5**
17:30 17:45	5	0	**5**	4	3	**7**	**12**
17:45 18:00	2	0	**2**	2	1	**3**	**5**
17:00 18:00	8	0	**8**	7	8	**15**	**23**
Total	48	15	**63**	46	101	**147**	**210**

Comment:

Public Works - Traffic Services

W.O. 30904

Turning Movement Count - Heavy Vehicle Report

ALBION RD/COLLISTON CRES E @ WALKLEY RD

Survey Date: Tuesday, July 17, 2012

Time Period		ALBION RD/COLLISTON CRES E									WALKLEY RD									
		Northbound				Southbound					Eastbound				Westbound					
		LT	ST	RT	**N TOT**	LT	ST	RT	**S TOT**	**STR TOT**	LT	ST	RT	**E TOT**	LT	ST	RT	**W TOT**	**STR TOT**	**Grand Total**
07:00	08:00	10	0	12	**22**	0	0	0	**0**	**22**	0	11	7	**18**	3	10	0	**13**	**31**	**53**
08:00	09:00	16	1	7	**24**	0	0	0	**0**	**24**	0	25	8	**33**	0	10	0	**10**	**43**	**67**
09:00	10:00	8	0	3	**11**	0	0	0	**0**	**11**	0	29	12	**41**	6	14	0	**20**	**61**	**72**
11:30	12:30	7	0	8	**15**	0	0	0	**0**	**15**	1	13	6	**20**	1	7	0	**8**	**28**	**43**
12:30	13:30	9	0	7	**16**	0	0	0	**0**	**16**	0	14	15	**29**	4	3	0	**7**	**36**	**52**
15:00	16:00	8	0	7	**15**	0	0	0	**0**	**15**	0	21	8	**29**	0	8	0	**8**	**37**	**52**
16:00	17:00	4	0	2	**6**	0	0	0	**0**	**6**	0	7	10	**17**	1	10	0	**11**	**28**	**34**
17:00	18:00	8	0	2	**10**	0	0	0	**0**	**10**	0	8	6	**14**	2	6	0	**8**	**22**	**32**
Total :		70	1	48	**119**	0	0	0	**0**	**119**	1	128	72	**201**	17	68	0	**85**	**286**	**405**

Heavy Vehicles are vehicles having one rear axle with four or more wheels, or having two or more rear axles. These vehicles include most O.C. Transpo, school and inter-city buses. Further, they ARE included in the Turning Movement Count Summary.

Public Works - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order
30904

ALBION RD/COLLISTON CRES E @ WALKLEY RD

Count Date: Tuesday, July 17, 2012 **Start Time:** 07:00

	ALBION RD/COLLISTON CRES E			WALKLEY RD			
Time Period	Northbound	Southbound	**Street Total**	Eastbound	Westbound	**Street Total**	**Grand Total**
07:00 08:00	0	0	**0**	3	0	**3**	**3**
08:00 09:00	4	0	**4**	4	0	**4**	**8**
09:00 10:00	4	0	**4**	2	0	**2**	**6**
11:30 12:30	0	0	**0**	1	0	**1**	**1**
12:30 13:30	2	0	**2**	2	0	**2**	**4**
15:00 16:00	3	0	**3**	3	0	**3**	**6**
16:00 17:00	2	0	**2**	4	3	**7**	**9**
17:00 18:00	3	0	**3**	9	1	**10**	**13**
Total	18	0	**18**	28	4	**32**	**50**

Comment:

Note: These volumes consists of bicycles only (no mopeds or motorcycles) and ARE NOT included in the Turning Movement Count Summary.

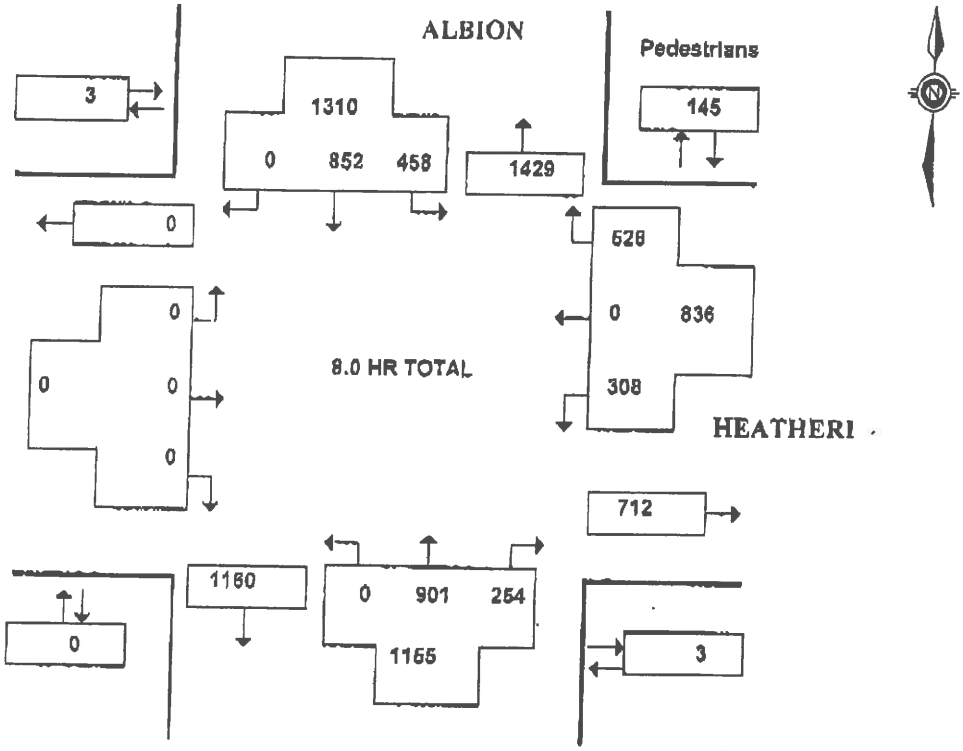
ALBION RD and HEATHERINGTON RD

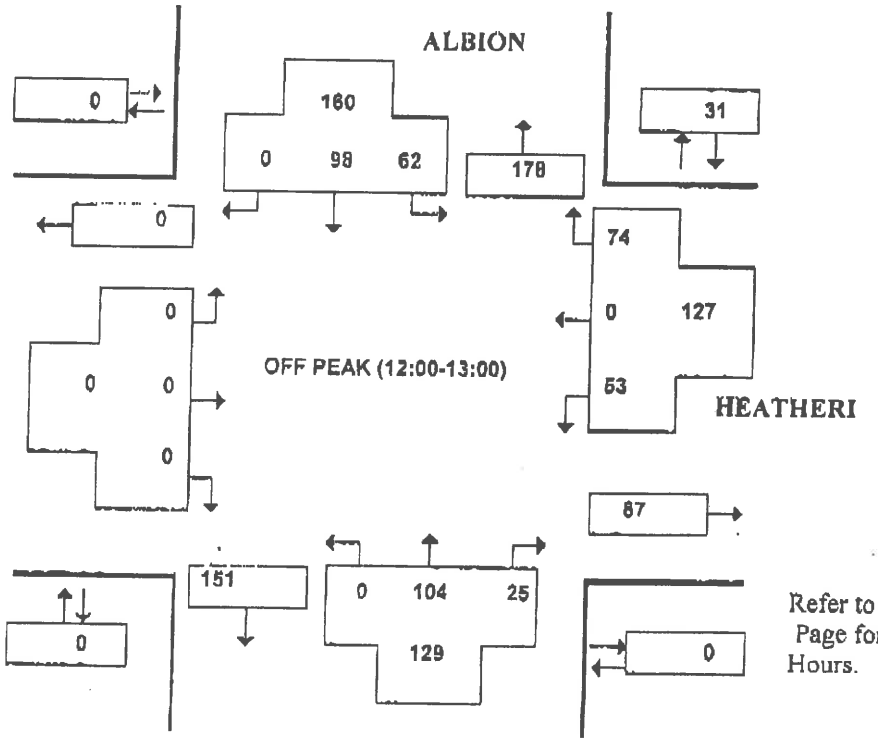
(ULRS Listing ALBION & HEATHERI)

Survey Date: Friday 11 July 2003
Conditions: WET
Start Time: 0700

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

AADT Factor
Friday in July is 0.9





Refer to Summary Page for Survey Hours.

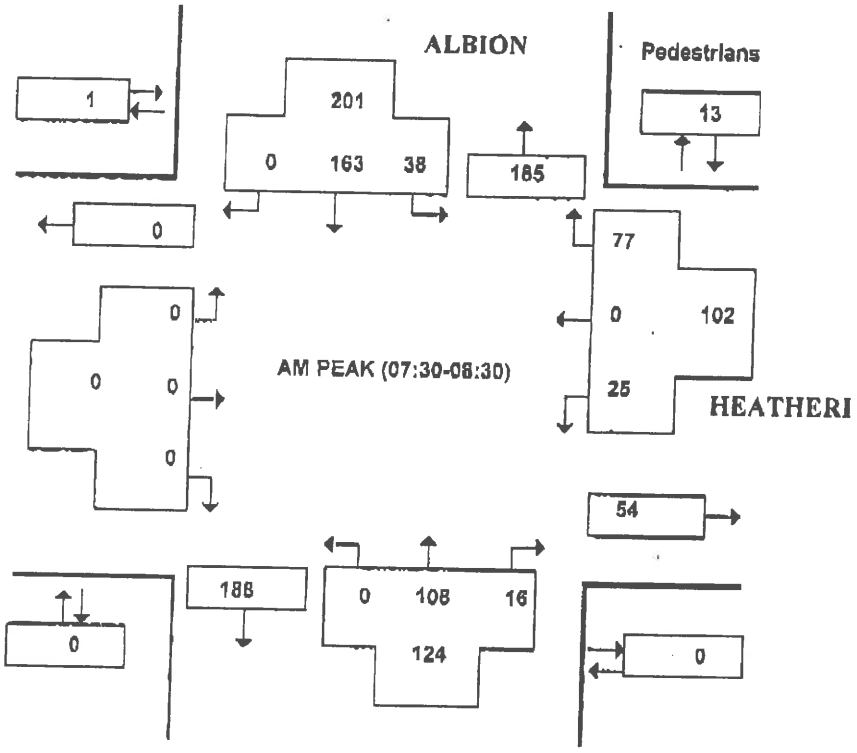
ALBION RD and HEATHERINGTON RD

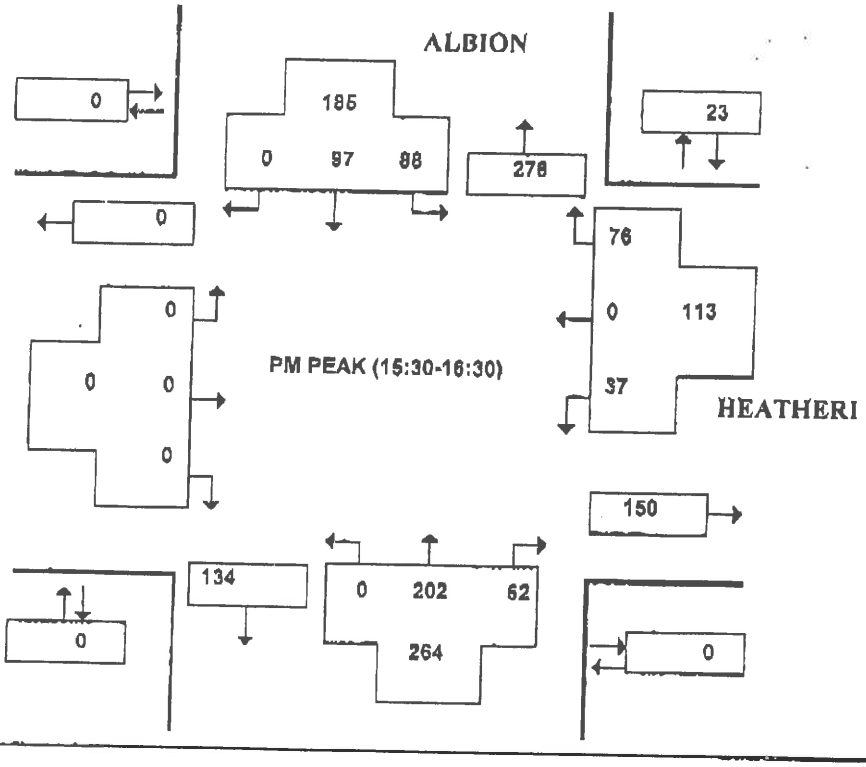
(ULRS Listing ALBION & HEATHERI)

Survey Date: Friday 11 July 2003
Conditions: WET
Start Time: 0700

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

AADT Factor
Friday in July is 0.9





Approved by : DT

Printed on : 09/04/2009

Count ID 16723

Vehicular Turning Movements - Summary

ALBION RD and HEATHERINGTON RD

(ULRS Listing ALBION & HEATHERI)

Survey Date: Friday 11 July 2003
Conditions: WET
Start Time: 0700

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

AADT Factor
Friday in July is 0.9

	ALBION									HEATHERI									
	Northbound			SUB	Southbound			SUB	STR	Eastbound			SUB	Westbound			SUB	STR	GRAND
Time Period	LT	ST	RT	TOT	LT	ST	RT	TOT	TOT	LT	ST	RT	TOT	LT	ST	RT	TOT	TOT	TOT
07:00-08:00	0	70	12	82	30	193	0	223	305	0	0	0	0	25	0	63	88	88	393
08:00-09:00	0	105	16	121	41	116	0	157	278	0	0	0	0	26	0	75	101	101	379
09:00-10:00	0	85	29	114	36	97	0	135	249	0	0	0	0	30	0	50	80	80	329
11:30-12:30	0	100	36	136	56	91	0	147	283	0	0	0	0	47	0	74	121	121	404
12:30-13:30	0	90	20	110	62	103	0	165	275	0	0	0	0	51	0	69	120	120	395
15:00-16:00	0	174	47	221	68	118	0	186	407	0	0	0	0	37	0	72	109	109	516
16:00-17:00	0	182	54	236	88	78	0	166	402	0	0	0	0	38	0	70	108	108	510
17:00-18:00	0	95	40	135	75	56	0	131	266	0	0	0	0	54	0	55	109	109	375
8.0 HR TOTAL	0	901	254	1155	458	852	0	1310	2465	0	0	0	0	308	0	528	836	836	3301
EQU. 12 HR TOTAL	0	1252	353	1605	636	1184	0	1820	3425	0	0	0	0	428	0	733	1161	1161	4586
AVG. 12 HR TOTAL	0	1126	317	1443	572	1065	0	1637	3080	0	0	0	0	385	0	659	1044	1044	4124
AVG. 24 HR TOTAL	0	1475	415	1890	749	1395	0	2144	4034	0	0	0	0	504	0	863	1367	1367	5401
AM TOTAL (0700-0900)	0	175	28	203	71	309	0	380	583	0	0	0	0	51	0	138	189	189	772
PM TOTAL (1530-1730)	0	327	108	435	170	163	0	333	768	0	0	0	0	79	0	133	212	212	980

Note: These values are calculated by multiplying the totals by the appropriate expansion factor.

Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.

Note: These volumes were calculated by multiplying the Average Daily 12 hr totals by 1.31.

Vehicular Turning Movements (15 Min. Volumes)

Count ID 16723

ALBION RD and HEATHERINGTON RD

(ULRS Listing ALBION & HEATHERI)

Survey Date: Friday 11 July 2003
Conditions: WET
Start Time: 07:00

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

AADT Factor
Friday in July is 0.9

	ALBION									HEATHERI									
	Northbound				Southbound					Eastbound				Westbound					
Time Period	LT	ST	RT	SUB TOT	LT	ST	RT	SUB TOT	STR TOT	LT	ST	RT	SUB TOT	LT	ST	RT	SUB TOT	STR TOT	GRAND TOT
07:00-07:15	0	9	5	14	8	41	0	49	63	0	0	0	0	4	0	14	18	18	81
07:15-07:30	0	15	3	18	3	46	0	49	67	0	0	0	0	8	0	15	23	23	90
07:30-07:45	0	28	3	31	12	56	0	68	99	0	0	0	0	8	0	15	23	23	122
07:45-08:00	0	18	1	19	7	50	0	57	76	0	0	0	0	5	0	19	24	24	100
08:00-08:15	0	30	7	37	8	30	0	38	75	0	0	0	0	4	0	15	19	19	94
08:15-08:30	0	32	5	37	11	27	0	38	75	0	0	0	0	8	0	28	36	36	111
08:30-08:45	0	24	0	24	13	29	0	42	66	0	0	0	0	8	0	22	30	30	96
08:45-09:00	0	19	4	23	9	30	0	39	62	0	0	0	0	6	0	10	16	16	78
09:00-09:15	0	19	7	26	8	26	0	34	60	0	0	0	0	11	0	16	27	27	87
09:15-09:30	0	19	7	26	10	20	0	30	56	0	0	0	0	7	0	12	19	19	75
09:30-09:45	0	25	7	32	11	26	0	37	69	0	0	0	0	5	0	10	15	15	84
09:45-10:00	0	22	8	30	9	25	0	34	64	0	0	0	0	7	0	12	19	19	83
11:30-11:45	0	27	8	35	15	30	0	45	80	0	0	0	0	8	0	21	29	29	109
11:45-12:00	0	20	12	32	12	26	0	38	70	0	0	0	0	14	0	18	32	32	102
12:00-12:15	0	29	10	39	13	16	0	29	68	0	0	0	0	13	0	23	36	36	104
12:15-12:30	0	24	6	30	16	19	0	35	65	0	0	0	0	12	0	12	24	24	89
12:30-12:45	0	28	5	33	17	26	0	43	76	0	0	0	0	13	0	20	33	33	109
12:45-13:00	0	23	4	27	16	37	0	53	80	0	0	0	0	15	0	19	34	34	114
13:00-13:15	0	14	7	21	15	20	0	35	56	0	0	0	0	15	0	18	33	33	89
13:15-13:30	0	25	4	29	14	20	0	34	63	0	0	0	0	8	0	12	20	20	83
15:00-15:15	0	38	8	46	13	30	0	43	89	0	0	0	0	7	0	18	25	25	114
15:15-15:30	0	42	6	48	12	38	0	50	98	0	0	0	0	13	0	15	28	28	126
15:30-15:45	0	55	17	72	26	23	0	49	121	0	0	0	0	10	0	17	27	27	148
15:45-16:00	0	39	16	55	17	27	0	44	99	0	0	0	0	7	0	22	29	29	128
16:00-16:15	0	63	10	73	26	28	0	54	127	0	0	0	0	7	0	19	26	26	153
16:15-16:30	0	45	19	64	19	19	0	38	102	0	0	0	0	13	0	18	31	31	133
16:30-16:45	0	43	11	54	24	9	0	33	87	0	0	0	0	13	0	13	26	26	113
16:45-17:00	0	31	14	45	19	22	0	41	86	0	0	0	0	5	0	20	25	25	111
17:00-17:15	0	33	8	41	22	24	0	46	87	0	0	0	0	13	0	12	25	25	112
17:15-17:30	0	18	13	31	17	11	0	28	59	0	0	0	0	11	0	12	23	23	82
17:30-17:45	0	26	9	35	17	9	0	26	61	0	0	0	0	14	0	19	33	33	94
17:45-18:00	0	18	10	28	19	12	0	31	59	0	0	0	0	16	0	12	28	28	87

Approved by: DT

Printed on : 09/04/2009

Ottawa — *Public Works and Services Department*

Count ID 16723

Pedestrian Volume Summary Sheet - Hourly Volumes

ALBION RD and HEATHERINGTON RD

(ULRS Listing ALBION & HEATHERI)

Survey Date: Friday 11 July 2003 **Conditions:** WET **Start Time:** 0700

Time Period	CROSSING ALBION N/B APPROACH	CROSSING ALBION S/B APPROACH	STREET TOTAL	CROSSING HEATHERI E/B APPROACH	CROSSING HEATHERI W/B APPROACH	STREET TOTAL	GRAND TOTAL
07:00-08:00	1	3	4	0	16	16	20
08:00-09:00	0	0	0	0	8	8	8
09:00-10:00	0	0	0	0	15	15	15
11:30-12:30	1	0	1	0	22	22	23
12:30-13:30	0	0	0	0	28	28	28
15:00-16:00	0	0	0	0	34	34	34
16:00-17:00	1	0	1	0	7	7	8
17:00-18:00	0	0	0	0	15	15	15
8.0 HR TOTAL	3	3	6	0	145	145	151

PEAK PERIOD SUMMARIES

AM PEAK PERIOD (7:00-9:00)							
07:00-07:15	1	1	2	0	2	2	4
07:15-07:30	0	1	1	0	6	6	7
07:30-07:45	0	0	0	0	3	3	3
07:45-08:00	0	1	1	0	5	5	6
08:00-08:15	0	0	0	0	4	4	4
08:15-08:30	0	0	0	0	1	1	1
08:30-08:45	0	0	0	0	0	0	0
08:45-09:00	0	0	0	0	3	3	3
TOTALS	1	3	4	0	24	24	28
OFF PEAK PERIOD (11:30-13:30)							
11:30-11:45	1	0	1	0	0	0	1
11:45-12:00	0	0	0	0	6	6	6
12:00-12:15	0	0	0	0	4	4	4
12:15-12:30	0	0	0	0	12	12	12
12:30-12:45	0	0	0	0	6	6	6
12:45-13:00	0	0	0	0	9	9	9
13:00-13:15	0	0	0	0	3	3	3
13:15-13:30	0	0	0	0	10	10	10
TOTALS	1	0	1	0	50	50	51
PM PEAK PERIOD (15:30-17:30)							
15:30-15:45	0	0	0	0	15	15	15
15:45-16:00	0	0	0	0	5	5	5
16:00-16:15	0	0	0	0	1	1	1
16:15-16:30	0	0	0	0	2	2	2
16:30-16:45	1	0	1	0	1	1	2
16:45-17:00	0	0	0	0	3	3	3
17:00-17:15	0	0	0	0	8	8	8
17:15-17:30	0	0	0	0	2	2	2
TOTALS	1	0	1	0	37	37	38

Approved by: DT

Printed on : 09/04/2009

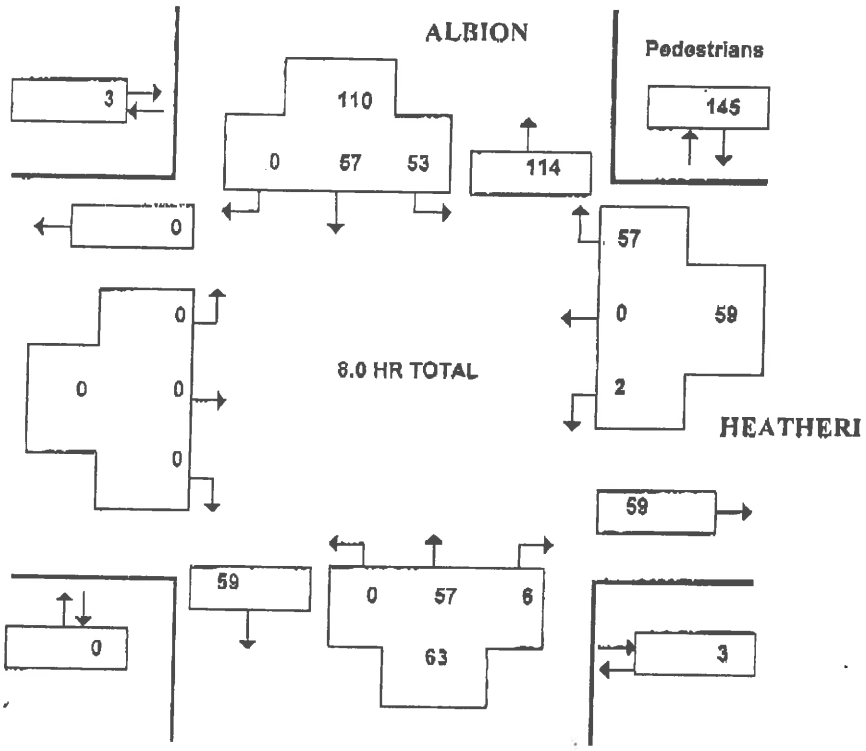
Heavy Vehicle Summary Sheet - Hourly Volumes

Count ID 16723

ALBION RD and HEATHERINGTON RD

(ULRS Listing ALBION & HEATHERI)

Survey Date : Friday 11 July 2003 | Conditions : WET | Start Time : 0700



	ALBION									HEATHERI									
	Northbound			SUB	Southbound			SUB	STR	Eastbound			SUB	Westbound			SUB	STR	GRAND
Time Period	LT	ST	RT	TOT	LT	ST	RT	TOT	TOT	LT	ST	RT	TOT	LT	ST	RT	TOT	TOT	TOT
07:00-08:00	0	6	0	6	5	12	0	17	23	0	0	0	0	0	0	8	8	8	31
08:00-09:00	0	16	0	16	5	9	0	14	30	0	0	0	0	0	0	10	10	10	40
09:00-10:00	0	12	0	12	6	11	0	17	29	0	0	0	0	0	0	6	6	6	35
11:30-12:30	0	8	2	10	7	8	0	15	25	0	0	0	0	0	0	7	7	7	32
12:30-13:30	0	5	1	6	7	8	0	15	21	0	0	0	0	1	0	7	8	8	29
15:00-16:00	0	4	2	6	7	7	0	14	20	0	0	0	0	0	0	7	7	7	27
16:00-17:00	0	4	1	5	8	1	0	9	14	0	0	0	0	0	0	5	5	5	19
17:00-18:00	0	2	0	2	8	1	0	9	11	0	0	0	0	1	0	7	8	8	19
8.0 HR TOTAL	0	57	6	63	53	57	0	110	173	0	0	0	0	2	0	57	59	59	232

Heavy Vehicles are vehicles having one rear axle with four or more wheels, or having two or more rear axles. These vehicles include most O.C. Transpo, school and inter-city buses. Further, they ARE included in the Turning Movement Count Summary.

Approved by: DT

Printed on: 09/04/2009

Count ID 16723

Bicycle Volume Summary Sheet - Hourly Volumes

ALBION RD and HEATHERINGTON RD

(ULRS Listing ALBION & HEATHERI)

Survey Date: Friday 11 July 2003 **Conditions:** WET **Start Time:** 0700

Time Period	NORTHBOUND APPROACH ON ALBION	SOUTHBOUND APPROACH ON ALBION	STREET TOTAL	EASTBOUND APPROACH ON HEATHERI	WESTBOUND APPROACH ON HEATHERI	STREET TOTAL	GRAND TOTAL
07:00-08:00	0	1	1	0	0	0	1
08:00-09:00	0	3	3	0	2	2	5
09:00-10:00	0	1	1	0	1	1	2
11:30-12:30	0	0	0	0	2	2	2
12:30-13:30	0	0	0	0	1	1	1
15:00-16:00	0	0	0	0	0	0	0
16:00-17:00	0	3	3	0	2	2	5
17:00-18:00	0	1	1	0	3	3	4
8.0 HR TOTAL	0	9	9	0	11	11	20

Note: These volumes consists of bicycles only (no mopeds or motorcycles) and ARE NOT included in the Turning Movement Count Summary.

Approved by: DT

Printed on: 09/04/2009

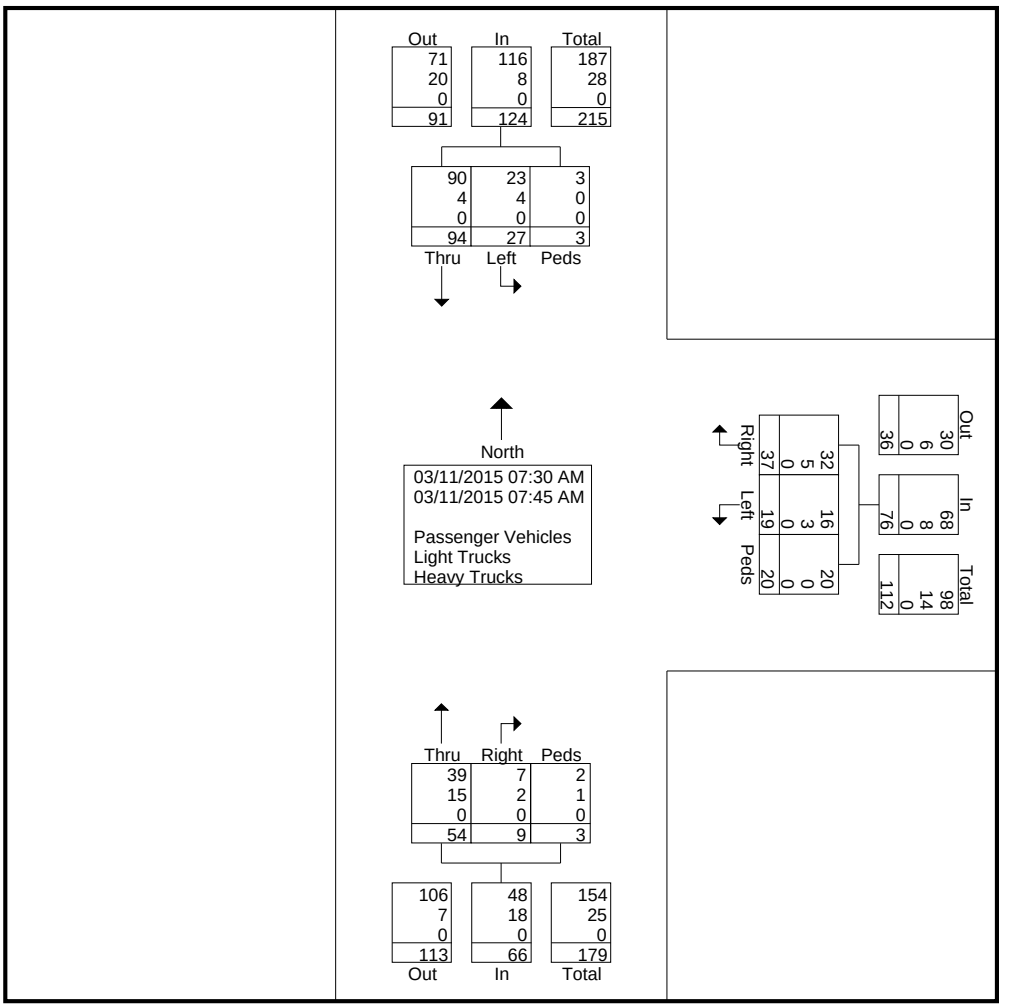
240 Michael Cowpland Drive, Suite 200
Kanata ON, K2M 1P6

Weather: Clear
Serial Number: T12-1614
Collected By: Meghan Whitehead
Notes:

File Name : 11309311
Site Code : 11309311
Start Date : 03/11/2015
Page No : 1

Groups Printed- Passenger Vehicles - Light Trucks - Heavy Trucks

	Southbound				Westbound				Northbound				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
07:30 AM	42	12	1	55	16	9	12	37	3	35	1	39	131
07:45 AM	52	15	2	69	21	10	8	39	6	19	2	27	135
Total	94	27	3	124	37	19	20	76	9	54	3	66	266
Grand Total	94	27	3	124	37	19	20	76	9	54	3	66	266
Apprch %	75.8	21.8	2.4		48.7	25	26.3		13.6	81.8	4.5		
Total %	35.3	10.2	1.1	46.6	13.9	7.1	7.5	28.6	3.4	20.3	1.1	24.8	
Passenger Vehicles	90	23	3	116	32	16	20	68	7	39	2	48	232
% Passenger Vehicles	95.7	85.2	100	93.5	86.5	84.2	100	89.5	77.8	72.2	66.7	72.7	87.2
Light Trucks	4	4	0	8	5	3	0	8	2	15	1	18	34
% Light Trucks	4.3	14.8	0	6.5	13.5	15.8	0	10.5	22.2	27.8	33.3	27.3	12.8
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0



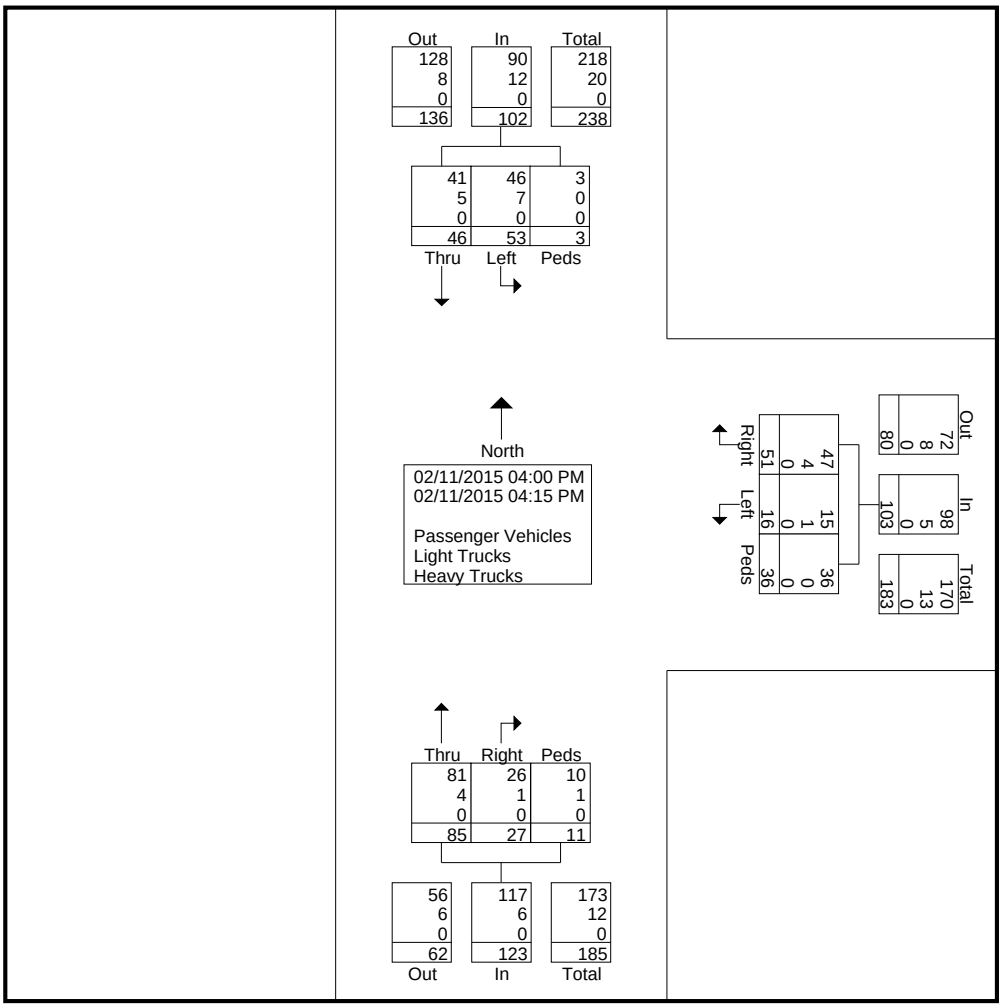
240 Michael Cowpland Drive, Suite 200
Kanata ON, K2M 1P6

Weather: Clear
Serial Number: T12-1614
Collected By: Meghan Whitehead
Notes:

File Name : 11309301
Site Code : 11309301
Start Date : 02/11/2015
Page No : 1

Groups Printed- Passenger Vehicles - Light Trucks - Heavy Trucks

	Southbound				Westbound				Northbound				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
04:00 PM	21	32	3	56	29	6	22	57	14	56	7	77	190
04:15 PM	25	21	0	46	22	10	14	46	13	29	4	46	138
Grand Total	46	53	3	102	51	16	36	103	27	85	11	123	328
Apprch %	45.1	52	2.9		49.5	15.5	35		22	69.1	8.9		
Total %	14	16.2	0.9	31.1	15.5	4.9	11	31.4	8.2	25.9	3.4	37.5	
Passenger Vehicles	41	46	3	90	47	15	36	98	26	81	10	117	305
% Passenger Vehicles	89.1	86.8	100	88.2	92.2	93.8	100	95.1	96.3	95.3	90.9	95.1	93
Light Trucks	5	7	0	12	4	1	0	5	1	4	1	6	23
% Light Trucks	10.9	13.2	0	11.8	7.8	6.2	0	4.9	3.7	4.7	9.1	4.9	7
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0



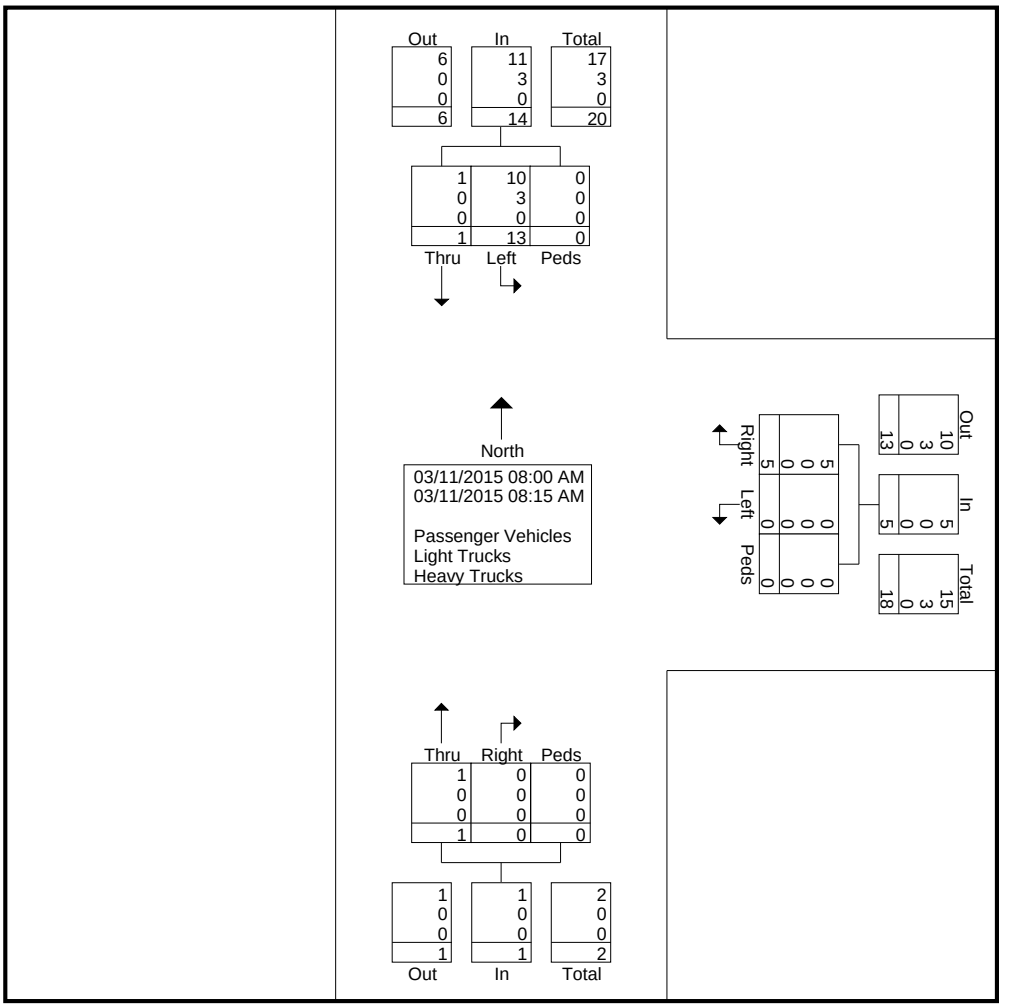
240 Michael Cowpland Drive, Suite 200
Kanata ON, K2M 1P6

Weather: Clear
Serial Number: T12-1614
Collected By: Meghan Whitehead
Notes:

File Name : 11309322
Site Code : 11309322
Start Date : 03/11/2015

Groups Printed- Passenger Vehicles - Light Trucks - Heavy Trucks

	Southbound				Westbound				Northbound				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
08:00 AM	0	10	0	10	5	0	0	5	0	0	0	0	15
08:15 AM	1	3	0	4	0	0	0	0	0	1	0	1	5
Grand Total	1	13	0	14	5	0	0	5	0	1	0	1	20
Apprch %	7.1	92.9	0		100	0	0		0	100	0		
Total %	5	65	0	70	25	0	0	25	0	5	0	5	
Passenger Vehicles	1	10	0	11	5	0	0	5	0	1	0	1	17
% Passenger Vehicles	100	76.9	0	78.6	100	0	0	100	0	100	0	100	85
Light Trucks	0	3	0	3	0	0	0	0	0	0	0	0	3
% Light Trucks	0	23.1	0	21.4	0	0	0	0	0	0	0	0	15
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0



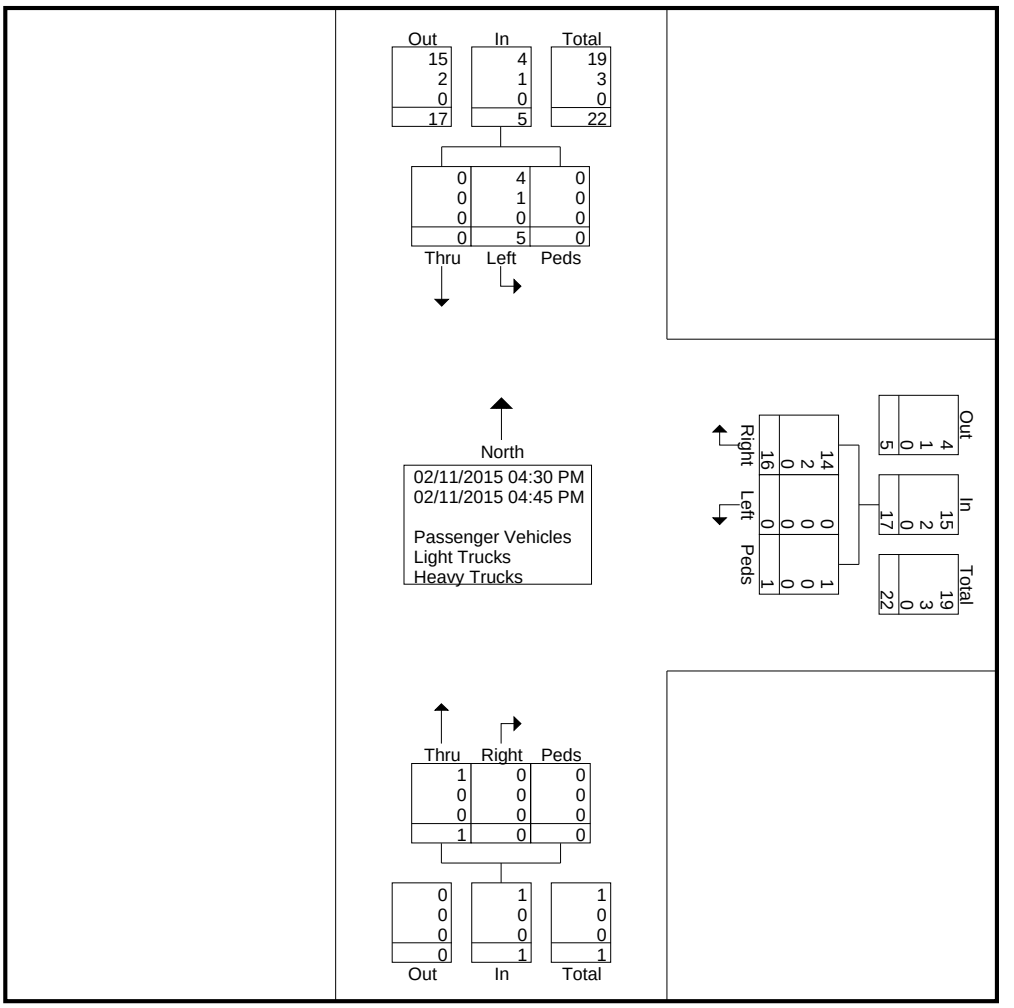
240 Michael Cowpland Drive, Suite 200
Kanata ON, K2M 1P6

Weather: Clear
Serial Number: T12-1614
Collected By: Meghan Whitehead
Notes:

File Name : 11309302
Site Code : 11309302
Start Date : 02/11/2015
Page No : 1

Groups Printed- Passenger Vehicles - Light Trucks - Heavy Trucks

	Southbound				Westbound				Northbound				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
04:30 PM	0	2	0	2	7	0	1	8	0	1	0	1	11
04:45 PM	0	3	0	3	9	0	0	9	0	0	0	0	12
Total	0	5	0	5	16	0	1	17	0	1	0	1	23
Grand Total	0	5	0	5	16	0	1	17	0	1	0	1	23
Apprch %	0	100	0		94.1	0	5.9		0	100	0		
Total %	0	21.7	0	21.7	69.6	0	4.3	73.9	0	4.3	0	4.3	
Passenger Vehicles	0	4	0	4	14	0	1	15	0	1	0	1	20
% Passenger Vehicles	0	80	0	80	87.5	0	100	88.2	0	100	0	100	87
Light Trucks	0	1	0	1	2	0	0	2	0	0	0	0	3
% Light Trucks	0	20	0	20	12.5	0	0	11.8	0	0	0	0	13
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0



Traffic Signal Timing

City of Ottawa, Public Works Department

Traffic Operations Unit

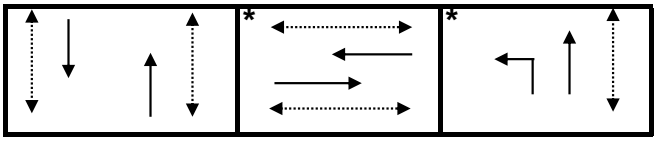
Intersection:	***Main:***	Bank	***Side:***	Kitchener	
Controller:	**MS-3200**			**TSD:**	5100
Author:	Chong Luo			**Date:**	31-Mar-14

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	120	110	130	100	110			
Offset	19	32	10	X	32			
NB Thru	86	76	96	66	76	14	13	3.7 + 2.3
SB Thru	71	61	79	41	61	14	13	3.7 + 2.3
EB Thru	34	34	34	34	34	7	21	3.3 + 3.0
WB Thru	34	34	34	34	34	7	21	3.3 + 3.0
NBLT	15	15	17	25	15	-	-	3.7 + 1.0

Phasing Sequence‡

Plans: All



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
8:00	5
21:00	4

Sunday

Time	Plan
0:15	4
8:30	2
11:00	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 & Services Department

Traffic Operations Unit

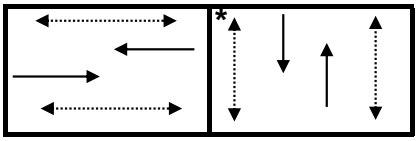
Intersection:	***Main:***	Walkley	***Side:***	Albion / Colliston	
Controller:	**MS 3200**			**TSD:**	5450
Author:	Basel Ansari			**Date:**	14-Sep-15

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	70	80	80	60	80			
Offset	14	52	26	56	52			
EB Thru	41	53	50	33	53	9	13	3.3+2.7
WB Thru	41	53	50	33	53	9	13	3.3+2.7
NB Thru	29	27	30	27	27	7	14	3.3+2.9
SB Thru	29	27	30	27	27	7	14	3.3+2.9

Phasing Sequence‡

Plan: All



Schedule

Weekday

Time	Plan
0:15	4
6:30	1
9:30	2
15:00	3
18:30	2
21:30	4

Saturday

Time	Plan
0:15	4
6:30	2
11:00	5
19:30	2
22:00	4

Sunday

Time	Plan
0:15	4
6:30	2
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

Asterix (*) Indicates actuated phase

(fp): Fully Protected Left Turn

◄·····► *Pedestrian signal*

Cost is $56.50 ($50 + HST)

APPENDIX D

COLLISION DATA

Collision Main Detail Summary

OnTRAC Reporting System

FROM: 2011-01-01 TO: 2014-01-01

ALBION RD, COLLISTON CRES to LILIBET CRES

Former Municipality: **Ottawa** Traffic Control: **No control** Number of Collisions: **1**

	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	No. PED
1	2012-06-25	Mo	15:55	Clear	Daylight	Rear end	P.D. only	V1 S	Dry	Slowing or	Automobile, station	Other motor vehicle	0
								V2 S	Dry	Slowing or	Automobile, station	Other motor vehicle	

ALBION RD, END to KITCHENER AVE

Former Municipality: **Ottawa** Traffic Control: **No control** Number of Collisions: **1**

	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	No. PED
2	2011-09-15	Thu	00:00	Clear	Dark	Single vehicle	P.D. only	V1 S	Loose sand or	Going ahead	Automobile, station	Ditch	0

ALBION RD & HEATHERINGTON RD

Former Municipality: **Ottawa** Traffic Control: **Stop sign** Number of Collisions: **1**

	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	No. PED
3	2013-11-26	Tue	20:10	Clear	Dark	Rear end	P.D. only	V1 N	Loose snow	Slowing or	Automobile, station	Other motor vehicle	0
								V2 N	Loose snow	Stopped	Automobile, station	Other motor vehicle	

ALBION RD, HEATHERINGTON RD to LILIBET CRES

Former Municipality: **Ottawa** Traffic Control: **No control** Number of Collisions: **2**

	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	No. PED
4	2012-04-15	Sun	23:37	Clear	Dark	Angle	P.D. only	V1 W	Dry	Reversing	Automobile, station	Other motor vehicle	0
								V2 N	Dry	Going ahead	Police vehicle	Other motor vehicle	
5	2013-01-08	Tue	14:25	Clear	Daylight	Angle	P.D. only	V1 W	Wet	Turning right	Automobile, station	Other motor vehicle	0
								V2 N	Wet	Going ahead	Automobile, station	Other motor vehicle	

ALBION RD & KITCHENER AVE

Former Municipality: **Ottawa** Traffic Control: **Stop sign** Number of Collisions: **1**

	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	No. PED
6	2012-05-16	We	11:32	Clear	Daylight	Angle	P.D. only	V1 E	Dry	Turning left	Passenger van	Other motor vehicle	0
								V2 N	Dry	Going ahead	Pick-up truck	Other motor vehicle	

(Note: Time of Day = "00:00" represents unknown collision time

ALBION RD & WALKLEY RD

Former Municipality: **Ottawa** Traffic Control: **Traffic signal** Number of Collisions: **14**

	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	No. PED
7	2011-06-26	Sun	15:15	Clear	Daylight	Angle	P.D. only	V1 N	Dry	Going ahead	Automobile, station	Other motor vehicle	0
								V2 E	Dry	Going ahead	Pick-up truck	Other motor vehicle	
8	2011-10-09	Sun	14:00	Clear	Daylight	Rear end	P.D. only	V1 E	Dry	Going ahead	Automobile, station	Other motor vehicle	0
								V2 E	Dry	Stopped	Automobile, station	Other motor vehicle	
9	2012-01-13	Fri	12:00	Snow	Daylight	Rear end	P.D. only	V1 N	Slush	Going ahead	Automobile, station	Other motor vehicle	0
								V2 N	Slush	Stopped	Automobile, station	Other motor vehicle	
10	2012-02-27	Mo	17:44	Snow	Dark	Rear end	P.D. only	V1 E	Loose snow	Turning right	Pick-up truck	Other motor vehicle	0
								V2 E	Loose snow	Turning right	Automobile, station	Other motor vehicle	
11	2012-04-07	Sat	20:41	Clear	Dark	Turning	P.D. only	V1 W	Dry	Turning left	Automobile, station	Other motor vehicle	0
								V2 E	Dry	Going ahead	Automobile, station	Other motor vehicle	
12	2012-04-07	Sat	18:58	Clear	Daylight	Rear end	P.D. only	V1 E	Dry	Slowing or	Automobile, station	Other motor vehicle	0
								V2 E	Dry	Slowing or	Pick-up truck	Other motor vehicle	
13	2012-05-11	Fri	17:44	Clear	Daylight	Angle	Non-fatal	V1 W	Dry	Going ahead	Bicycle	Other motor vehicle	0
								V2 N	Dry	Turning right	Pick-up truck	Cyclist	
14	2012-09-13	Thu	14:11	Clear	Daylight	Angle	P.D. only	V1 E	Dry	Going ahead	Automobile, station	Other motor vehicle	0
								V2 N	Dry	Turning left	Automobile, station	Other motor vehicle	
15	2013-01-06	Sun	13:31	Snow	Daylight	Rear end	P.D. only	V1 N	Slush	Slowing or	Automobile, station	Other motor vehicle	0
								V2 N	Slush	Stopped	Automobile, station	Other motor vehicle	
16	2013-02-27	We	16:00	Snow	Daylight	Angle	P.D. only	V1 W	Loose snow	Going ahead	Automobile, station	Other motor vehicle	0
								V2 S	Loose snow	Turning right	Automobile, station	Other motor vehicle	
17	2013-04-24	We	21:45	Rain	Dark	Turning	Non-fatal	V1 W	Wet	Turning left	Automobile, station	Other motor vehicle	0
								V2 E	Wet	Going ahead	Passenger van	Other motor vehicle	
18	2013-06-24	Mo	14:03	Clear	Daylight	Turning	P.D. only	V1 W	Dry	Turning left	Pick-up truck	Other motor vehicle	0
								V2 E	Dry	Going ahead	Automobile, station	Other motor vehicle	
19	2013-07-18	Thu	13:18	Clear	Daylight	Single vehicle	Non-fatal	V1 E	Dry	Turning right	Truck and trailer	Pedestrian	1

(Note: Time of Day = "00:00" represents unknown collision time

20		2013-08-30	Fri	21:26	Rain	Dark	Turning	P.D. only	V1	W	Wet	Turning left	Automobile, station	Other motor vehicle		0
									V2	E	Wet	Going ahead	Automobile, station	Other motor vehicle		

(Note: Time of Day = "00:00" represents unknown collision time

Collision Main Detail Summary

OnTRAC Reporting System

FROM: 2011-01-01 TO: 2014-01-01

BANK ST & KITCHENER AVE

Former Municipality: **Ottawa** Traffic Control: **Traffic signal** Number of Collisions: **22**

	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	No. PED
1	2011-01-18	Tue	19:19	Snow	Dark	Turning	P.D. only	V1 S	Packed snow	Going ahead	Passenger van	Other motor vehicle	0
								V2 N	Packed snow	Turning left	Automobile, station	Other motor vehicle	
2	2011-02-18	Fri	14:00	Clear	Daylight	Turning	Non-fatal	V1 N	Wet	Turning left	Automobile, station	Other motor vehicle	0
								V2 S	Wet	Going ahead	Automobile, station	Other motor vehicle	
3	2011-03-20	Sun	13:57	Clear	Daylight	Rear end	P.D. only	V1 N	Dry	Turning left	Pick-up truck	Other motor vehicle	0
								V2 N	Dry	Turning left	Automobile, station	Other motor vehicle	
4	2011-03-27	Sun	11:36	Clear	Daylight	Rear end	P.D. only	V1 N	Dry	Going ahead	Automobile, station	Other motor vehicle	0
								V2 N	Dry	Stopped	Automobile, station	Other motor vehicle	
5	2011-07-11	Mo	14:00	Clear	Daylight	Rear end	Non-fatal	V1 N	Dry	Slowing or	Automobile, station	Other motor vehicle	0
								V2 N	Dry	Stopped	Pick-up truck	Other motor vehicle	
6	2011-08-19	Fri	15:50	Clear	Daylight	Rear end	Non-fatal	V1 S	Dry	Going ahead	Truck - closed	Other motor vehicle	0
								V2 S	Dry	Stopped	Automobile, station	Other motor vehicle	
								V3 S	Dry	Stopped	Automobile, station	Other motor vehicle	
7	2012-05-02	We	15:54	Clear	Daylight	Rear end	Non-fatal	V1 S	Dry	Going ahead	Automobile, station	Other motor vehicle	0
								V2 S	Dry	Stopped	Municipal transit bus	Other motor vehicle	
								V3 S	Dry	Stopped	Automobile, station	Other motor vehicle	
8	2012-05-09	We	10:55	Clear	Daylight	Angle	P.D. only	V1 E	Dry	Turning right	Delivery van	Other motor vehicle	0
								V2 S	Dry	Going ahead	Automobile, station	Other motor vehicle	
9	2012-10-09	Tue	12:39	Clear	Daylight	Rear end	P.D. only	V1 S	Dry	Going ahead	Pick-up truck	Other motor vehicle	0
								V2 S	Dry	Slowing or	Automobile, station	Other motor vehicle	
								V3 S	Dry	Stopped	Automobile, station	Other motor vehicle	
								V4 S	Dry	Stopped	Passenger van	Other motor vehicle	
10	2012-10-10	We	16:27	Clear	Daylight	Rear end	P.D. only	V1 N	Dry	Slowing or	Passenger van	Other motor vehicle	0
								V2 N	Dry	Stopped	Automobile, station	Other motor vehicle	
11	2012-10-14	Sun	14:00	Rain	Daylight	Rear end	P.D. only	V1 N	Wet	Going ahead	Automobile, station	Other motor vehicle	0
								V2 N	Wet	Slowing or	Automobile, station	Other motor vehicle	

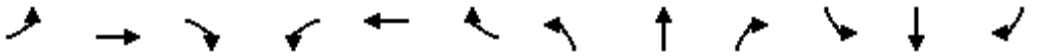
(Note: Time of Day = "00:00" represents unknown collision time

12	2012-12-27	Thu	17:15	Snow	Dark	Angle	P.D. only	V1	S	Packed snow	Slowing or	Automobile, station	Skidding/Sliding	0
								V2	E	Packed snow	Turning left	Automobile, station	Other motor vehicle	
13	2013-01-24	Thu	08:13	Clear	Daylight	Turning	Non-fatal	V1	N	Dry	Turning left	Automobile, station	Other motor vehicle	0
								V2	S	Dry	Going ahead	Automobile, station	Other motor vehicle	
14	2013-02-27	We	14:38	Snow	Daylight	Rear end	P.D. only	V1	S	Loose snow	Slowing or	Automobile, station	Other motor vehicle	0
								V2	S	Loose snow	Stopped	Municipal transit bus	Other motor vehicle	
15	2013-04-19	Fri	12:50	Clear	Daylight	Turning	Non-fatal	V1	N	Dry	Making U-Turn	Pick-up truck	Other motor vehicle	0
								V2	S	Dry	Going ahead	Automobile, station	Other motor vehicle	
16	2013-07-07	Sun	16:04	Rain	Daylight	Rear end	P.D. only	V1	N	Wet	Slowing or	Pick-up truck	Other motor vehicle	0
								V2	N	Wet	Slowing or	Pick-up truck	Other motor vehicle	
17	2013-08-08	Thu	16:31	Clear	Daylight	Rear end	P.D. only	V1	N	Dry	Slowing or	Automobile, station	Skidding/Sliding	0
								V2	N	Dry	Slowing or	Pick-up truck	Other motor vehicle	
18	2013-08-31	Sat	16:50	Clear	Daylight	Sideswipe	P.D. only	V1	N	Dry	Changing lanes	Automobile, station	Other motor vehicle	0
								V2	N	Dry	Turning left	Automobile, station	Other motor vehicle	
19	2013-10-09	We	14:48	Clear	Daylight	Single vehicle	Non-fatal	V1	E	Dry	Turning right	Automobile, station	Pedestrian	1
20	2013-11-07	Thu	01:15	Clear	Dark	Rear end	P.D. only	V1	S	Wet	Changing lanes	Passenger van	Other motor vehicle	0
								V2	S	Wet	Stopped	Automobile, station	Other motor vehicle	
21	2013-11-29	Fri	12:55	Clear	Daylight	Rear end	P.D. only	V1	N	Wet	Changing lanes	Pick-up truck	Other motor vehicle	0
								V2	N	Wet	Stopped	Pick-up truck	Other motor vehicle	
								V3	N	Wet	Stopped	Pick-up truck	Other motor vehicle	
22	2013-12-16	Mo	17:45	Clear	Dark	Turning	P.D. only	V1	N	Dry	Turning left	Automobile, station	Other motor vehicle	0
								V2	S	Dry	Going ahead	Automobile, station	Other motor vehicle	

(Note: Time of Day = "00:00" represents unknown collision time

APPENDIX E

SYNCHRO REPORTS

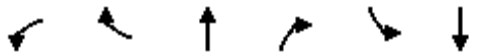


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	516	124	43	397	0	100	3	73	0	1	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0		30.0	50.0		0.0	40.0		0.0	15.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	30.0			60.0			40.0			15.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.96	0.99			1.00	0.97				
Frt			0.850					0.855				
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	1626	3252	1455	1595	3191	0	1551	1361	0	1780	1780	0
Flt Permitted	0.499			0.439			0.757					
Satd. Flow (perm)	852	3252	1398	733	3191	0	1232	1361	0	1780	1780	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136					80				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		269.2			286.2			229.1			124.0	
Travel Time (s)		19.4			20.6			16.5			8.9	
Confl. Peds. (#/hr)	2		10	7		6	3		11	4		5
Confl. Bikes (#/hr)			2						2			
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	4%	4%	6%	6%	6%	9%	9%	9%	0%	0%	0%
Adj. Flow (vph)	13	567	136	47	436	0	110	3	80	0	1	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	13	567	136	47	436	0	110	83	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	28.0	28.0	28.0	28.0	28.0		27.0	27.0		27.0	27.0	
Total Split (s)	53.0	53.0	53.0	53.0	53.0		27.0	27.0		27.0	27.0	
Total Split (%)	66.3%	66.3%	66.3%	66.3%	66.3%		33.8%	33.8%		33.8%	33.8%	
Maximum Green (s)	47.0	47.0	47.0	47.0	47.0		20.8	20.8		20.8	20.8	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7		2.9	2.9		2.9	2.9	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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)	6.0	6.0	6.0	6.0	6.0		6.2	6.2		6.2	6.2	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None		None	None	
Walk Time (s)	9.0	9.0	9.0	9.0	9.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	13.0		13.8	13.8		13.8	13.8	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)	59.2	59.2	59.2	59.2	59.2		13.1	13.1			13.1	
Actuated g/C Ratio	0.74	0.74	0.74	0.74	0.74		0.16	0.16			0.16	
v/c Ratio	0.02	0.24	0.13	0.09	0.18		0.55	0.29			0.00	
Control Delay	5.3	5.1	1.4	5.7	4.9		40.5	10.0			25.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay	5.3	5.1	1.4	5.7	4.9		40.5	10.0			25.0	
LOS	A	A	A	A	A		D	A			C	
Approach Delay		4.4			5.0			27.4			25.0	
Approach LOS		A			A			C			C	
Queue Length 50th (m)	0.6	14.9	0.0	2.1	11.0		16.5	0.4			0.1	
Queue Length 95th (m)	2.8	27.5	6.0	7.1	21.0		30.2	11.4			1.4	
Internal Link Dist (m)		245.2			262.2			205.1			100.0	
Turn Bay Length (m)	50.0		30.0	50.0			40.0					
Base Capacity (vph)	630	2405	1069	542	2360		320	413			462	
Starvation Cap Reductn	0	0	0	0	0		0	0			0	
Spillback Cap Reductn	0	0	0	0	0		0	0			0	
Storage Cap Reductn	0	0	0	0	0		0	0			0	
Reduced v/c Ratio	0.02	0.24	0.13	0.09	0.18		0.34	0.20			0.00	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 7.8		Intersection LOS: A	
Intersection Capacity Utilization 55.8%		ICU Level of Service B	
Analysis Period (min) 15			

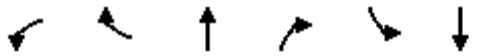
Splits and Phases: 10: Albion Road/Colliston Crescent & Walkley Road



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	53	74	104	25	62	98
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	58	81	114	27	68	108

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	140	142	176
Volume Left (vph)	58	0	68
Volume Right (vph)	81	27	0
Hadj (s)	-0.16	0.02	0.23
Departure Headway (s)	4.5	4.5	4.6
Degree Utilization, x	0.17	0.18	0.23
Capacity (veh/h)	747	772	745
Control Delay (s)	8.4	8.4	9.0
Approach Delay (s)	8.4	8.4	9.0
Approach LOS	A	A	A

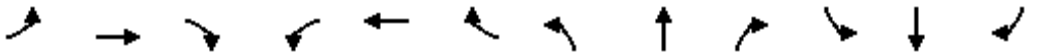
Intersection Summary			
Delay	8.6		
Level of Service	A		
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	18	2	0	18	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	20	2	0	20	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	42	2			2	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	42	2			2	
tC, single (s)	6.6	6.4			4.3	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.4	
p0 queue free %	100	98			99	
cM capacity (veh/h)	914	1032			1510	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	20	2	20
Volume Left	0	0	20
Volume Right	20	0	0
cSH	1032	1700	1510
Volume to Capacity	0.02	0.00	0.01
Queue Length 95th (m)	0.5	0.0	0.3
Control Delay (s)	8.6	0.0	7.4
Lane LOS	A		A
Approach Delay (s)	8.6	0.0	7.4
Approach LOS	A		

Intersection Summary			
Average Delay	7.6		
Intersection Capacity Utilization	17.7%	ICU Level of Service	A
Analysis Period (min)	15		

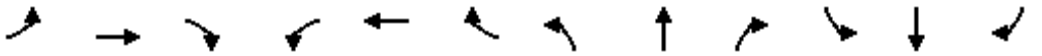


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	0	16	72	6	21	105	1143	99	19	1102	49
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	15.0		0.0	80.0		25.0	105.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	0.99	0.93		0.99	0.97				0.94	0.99	0.99	
Frt		0.850			0.882				0.850		0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1658	1380	0	1610	1454	0	1642	3283	1469	1626	3215	0
Flt Permitted	0.739			0.746			0.173			0.234		
Satd. Flow (perm)	1281	1380	0	1256	1454	0	299	3283	1379	398	3215	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		199			22				61		6	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		75.9			226.6			279.1			272.7	
Travel Time (s)		5.5			16.3			20.1			19.6	
Confl. Peds. (#/hr)	6		50	6		20	44		20	14		50
Confl. Bikes (#/hr)									2			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
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	3%	3%	3%	4%	4%	4%
Adj. Flow (vph)	53	0	17	76	6	22	111	1203	104	20	1160	52
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	17	0	76	28	0	111	1203	104	20	1212	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		5	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	5.0	5.0	10.0	10.0	
Minimum Split (s)	34.3	34.3		34.3	34.3		14.7	33.0	33.0	33.0	33.0	
Total Split (s)	34.3	34.3		34.3	34.3		14.7	75.7	75.7	61.0	61.0	
Total Split (%)	31.2%	31.2%		31.2%	31.2%		13.4%	68.8%	68.8%	55.5%	55.5%	
Maximum Green (s)	28.0	28.0		28.0	28.0		10.0	69.7	69.7	55.0	55.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7	3.7	3.7	3.7	
All-Red Time (s)	3.0	3.0		3.0	3.0		1.0	2.3	2.3	2.3	2.3	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3		4.7	6.0	6.0	6.0	6.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max	C-Max	C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			14.0	14.0	14.0	14.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0			13.0	13.0	13.0	13.0	
Pedestrian Calls (#/hr)	0	0		0	0			0	0	0	0	
Act Effct Green (s)	12.8	12.8		12.8	12.8		89.5	89.4	89.4	73.5	73.5	
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.81	0.81	0.81	0.67	0.67	
v/c Ratio	0.36	0.05		0.52	0.15		0.30	0.45	0.09	0.08	0.56	
Control Delay	50.6	0.3		58.0	21.5		5.2	4.9	1.9	9.6	12.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	50.6	0.3		58.0	21.5		5.2	4.9	1.9	9.6	12.2	
LOS	D	A		E	C		A	A	A	A	B	
Approach Delay		38.4			48.2			4.7			12.2	
Approach LOS		D			D			A			B	
Queue Length 50th (m)	11.3	0.0		16.5	1.2		4.5	40.7	1.8	1.6	74.6	
Queue Length 95th (m)	23.2	0.0		30.8	9.5		10.7	66.0	6.9	5.6	109.2	
Internal Link Dist (m)		51.9			202.6			255.1			248.7	
Turn Bay Length (m)	15.0			15.0			80.0		25.0	105.0		
Base Capacity (vph)	326	499		319	386		365	2668	1132	265	2150	
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	0.16	0.03		0.24	0.07		0.30	0.45	0.09	0.08	0.56	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 10.4		Intersection LOS: B	
Intersection Capacity Utilization 77.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 50: Bank Street & Retail Access/Kitchener Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	18	608	110	54	580	5	142	0	115	3	0	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0		30.0	50.0		0.0	40.0		0.0	15.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	30.0			60.0			40.0			15.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.94	1.00	1.00		0.98	0.96		0.98	0.97	
Frt			0.850		0.999			0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1658	3316	1483	1658	3310	0	1658	1417	0	1691	1463	0
Flt Permitted	0.424			0.414			0.757			0.681		
Satd. Flow (perm)	737	3316	1397	719	3310	0	1300	1417	0	1186	1463	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			113		2			224			232	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		269.2			286.2			229.1			124.0	
Travel Time (s)		19.4			20.6			16.5			8.9	
Confl. Peds. (#/hr)	5		20	6		27	14		28	22		19
Confl. Bikes (#/hr)			4			3			2			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	0%	0%	0%
Adj. Flow (vph)	19	627	113	56	598	5	146	0	119	3	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	19	627	113	56	603	0	146	119	0	3	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	28.0	28.0	28.0	28.0	28.0		27.2	27.2		27.2	27.2	
Total Split (s)	50.0	50.0	50.0	50.0	50.0		30.0	30.0		30.0	30.0	
Total Split (%)	62.5%	62.5%	62.5%	62.5%	62.5%		37.5%	37.5%		37.5%	37.5%	
Maximum Green (s)	44.0	44.0	44.0	44.0	44.0		23.8	23.8		23.8	23.8	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7		2.9	2.9		2.9	2.9	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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)	6.0	6.0	6.0	6.0	6.0		6.2	6.2		6.2	6.2	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None		None	None	
Walk Time (s)	9.0	9.0	9.0	9.0	9.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	13.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)	53.1	53.1	53.1	53.1	53.1		14.7	14.7		14.7	14.7	
Actuated g/C Ratio	0.66	0.66	0.66	0.66	0.66		0.18	0.18		0.18	0.18	
v/c Ratio	0.04	0.28	0.12	0.12	0.27		0.61	0.27		0.01	0.00	
Control Delay	6.3	6.5	1.8	6.9	6.4		40.6	1.5		23.7	0.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	6.3	6.5	1.8	6.9	6.4		40.6	1.5		23.7	0.0	
LOS	A	A	A	A	A		D	A		C	A	
Approach Delay		5.8			6.5			23.0			17.8	
Approach LOS		A			A			C			B	
Queue Length 50th (m)	0.9	18.5	0.0	2.8	17.6		21.8	0.0		0.4	0.0	
Queue Length 95th (m)	3.9	33.6	6.0	9.0	32.2		37.0	0.0		2.4	0.0	
Internal Link Dist (m)		245.2			262.2			205.1			100.0	
Turn Bay Length (m)	50.0		30.0	50.0			40.0			15.0		
Base Capacity (vph)	489	2202	965	477	2199		386	578		352	598	
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	0.04	0.28	0.12	0.12	0.27		0.38	0.21		0.01	0.00	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 26 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 8.8		Intersection LOS: A	
Intersection Capacity Utilization 58.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 10: Albion Road/Colliston Crescent & Walkley Road

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	37	76	202	62	88	97
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	40	82	217	67	95	104

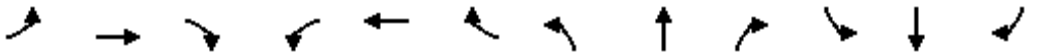
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	122	284	199
Volume Left (vph)	40	0	95
Volume Right (vph)	82	67	0
Hadj (s)	-0.27	-0.11	0.18
Departure Headway (s)	4.7	4.3	4.7
Degree Utilization, x	0.16	0.34	0.26
Capacity (veh/h)	694	803	734
Control Delay (s)	8.6	9.6	9.3
Approach Delay (s)	8.6	9.6	9.3
Approach LOS	A	A	A

Intersection Summary			
Delay	9.3		
Level of Service	A		
Intersection Capacity Utilization	47.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	32	2	0	14	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	34	2	0	15	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	32	2			2	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	32	2			2	
tC, single (s)	6.6	6.4			4.3	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.4	
p0 queue free %	100	97			99	
cM capacity (veh/h)	928	1032			1510	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	34	2	15
Volume Left	0	0	15
Volume Right	34	0	0
cSH	1032	1700	1510
Volume to Capacity	0.03	0.00	0.01
Queue Length 95th (m)	0.8	0.0	0.2
Control Delay (s)	8.6	0.0	7.4
Lane LOS	A		A
Approach Delay (s)	8.6	0.0	7.4
Approach LOS	A		

Intersection Summary			
Average Delay	7.9		
Intersection Capacity Utilization	17.5%	ICU Level of Service	A
Analysis Period (min)	15		

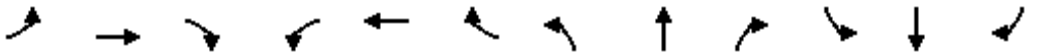


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	52	2	41	69	40	33	77	1107	92	27	1572	49
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	15.0		0.0	80.0		25.0	105.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	0.98	0.90		0.97	0.97				0.89	0.99	0.99	
Frt		0.857			0.932				0.850		0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1674	1360	0	1691	1614	0	1658	3316	1483	1658	3282	0
Flt Permitted	0.708			0.728			0.095			0.249		
Satd. Flow (perm)	1223	1360	0	1262	1614	0	166	3316	1316	431	3282	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		42			29				58		4	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		75.9			226.6			279.1			272.7	
Travel Time (s)		5.5			16.3			20.1			19.6	
Confl. Peds. (#/hr)	16		66	20		34	46		38	18		62
Confl. Bikes (#/hr)			2			1			6			8
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	54	2	42	71	41	34	79	1141	95	28	1621	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	44	0	71	75	0	79	1141	95	28	1672	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		5	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	34.3	34.3		34.3	34.3		9.7	33.0	33.0	33.0	33.0	
Total Split (s)	34.3	34.3		34.3	34.3		17.0	96.0	96.0	79.0	79.0	
Total Split (%)	26.3%	26.3%		26.3%	26.3%		13.0%	73.7%	73.7%	60.6%	60.6%	
Maximum Green (s)	28.0	28.0		28.0	28.0		12.3	90.0	90.0	73.0	73.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7	3.7	3.7	3.7	
All-Red Time (s)	3.0	3.0		3.0	3.0		1.0	2.3	2.3	2.3	2.3	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3		4.7	6.0	6.0	6.0	6.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max	C-Max	C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			14.0	14.0	14.0	14.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0			13.0	13.0	13.0	13.0	
Pedestrian Calls (#/hr)	0	0		0	0			0	0	0	0	
Act Effct Green (s)	13.3	13.3		13.3	13.3		106.0	104.7	104.7	94.5	94.5	
Actuated g/C Ratio	0.10	0.10		0.10	0.10		0.81	0.80	0.80	0.73	0.73	
v/c Ratio	0.44	0.25		0.55	0.39		0.36	0.43	0.09	0.09	0.70	
Control Delay	64.8	19.1		71.1	40.2		7.2	4.7	1.7	8.2	13.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	64.8	19.1		71.1	40.2		7.2	4.7	1.7	8.2	13.5	
LOS	E	B		E	D		A	A	A	A	B	
Approach Delay		44.3			55.2			4.6			13.5	
Approach LOS		D			E			A			B	
Queue Length 50th (m)	14.0	0.5		18.7	11.8		3.3	38.7	1.6	2.0	120.5	
Queue Length 95th (m)	27.3	12.0		34.1	26.8		8.0	61.3	6.2	7.2	195.0	
Internal Link Dist (m)		51.9			202.6			255.1			248.7	
Turn Bay Length (m)	15.0			15.0			80.0		25.0	105.0		
Base Capacity (vph)	262	325		271	369		275	2664	1068	312	2381	
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	0.21	0.14		0.26	0.20		0.29	0.43	0.09	0.09	0.70	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130.3			
Actuated Cycle Length: 130.3			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 12.7		Intersection LOS: B	
Intersection Capacity Utilization 88.1%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 50: Bank Street & Retail Access/Kitchener Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	516	152	91	397	0	128	3	121	0	1	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0		30.0	50.0		0.0	40.0		0.0	15.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	30.0			60.0			40.0			15.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.96	0.99			1.00	0.97				
Frt			0.850					0.853				
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	1626	3252	1455	1595	3191	0	1551	1357	0	1780	1780	0
Flt Permitted	0.499			0.439			0.757					
Satd. Flow (perm)	852	3252	1398	733	3191	0	1232	1357	0	1780	1780	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			167					133				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		269.2			286.2			229.1			124.0	
Travel Time (s)		19.4			20.6			16.5			8.9	
Confl. Peds. (#/hr)	2		10	7		6	3		11	4		5
Confl. Bikes (#/hr)			2						2			
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	4%	4%	6%	6%	6%	9%	9%	9%	0%	0%	0%
Adj. Flow (vph)	13	567	167	100	436	0	141	3	133	0	1	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	13	567	167	100	436	0	141	136	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	28.0	28.0	28.0	28.0	28.0		27.0	27.0		27.0	27.0	
Total Split (s)	53.0	53.0	53.0	53.0	53.0		27.0	27.0		27.0	27.0	
Total Split (%)	66.3%	66.3%	66.3%	66.3%	66.3%		33.8%	33.8%		33.8%	33.8%	
Maximum Green (s)	47.0	47.0	47.0	47.0	47.0		20.8	20.8		20.8	20.8	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7		2.9	2.9		2.9	2.9	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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)	6.0	6.0	6.0	6.0	6.0		6.2	6.2		6.2	6.2	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None		None	None	
Walk Time (s)	9.0	9.0	9.0	9.0	9.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	13.0		13.8	13.8		13.8	13.8	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)	53.0	53.0	53.0	53.0	53.0		14.8	14.8			14.8	
Actuated g/C Ratio	0.66	0.66	0.66	0.66	0.66		0.18	0.18			0.18	
v/c Ratio	0.02	0.26	0.17	0.21	0.21		0.62	0.38			0.00	
Control Delay	6.2	6.5	1.7	7.7	6.2		41.4	8.5			23.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay	6.2	6.5	1.7	7.7	6.2		41.4	8.5			23.0	
LOS	A	A	A	A	A		D	A			C	
Approach Delay		5.4			6.4			25.2			23.0	
Approach LOS		A			A			C			C	
Queue Length 50th (m)	0.6	16.5	0.0	5.3	12.2		21.1	0.4			0.1	
Queue Length 95th (m)	3.1	30.5	7.3	15.2	23.2		36.2	13.6			1.3	
Internal Link Dist (m)		245.2			262.2			205.1			100.0	
Turn Bay Length (m)	50.0		30.0	50.0			40.0					
Base Capacity (vph)	564	2156	983	486	2115		320	451			462	
Starvation Cap Reductn	0	0	0	0	0		0	0			0	
Spillback Cap Reductn	0	0	0	0	0		0	0			0	
Storage Cap Reductn	0	0	0	0	0		0	0			0	
Reduced v/c Ratio	0.02	0.26	0.17	0.21	0.21		0.44	0.30			0.00	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 9.3		Intersection LOS: A	
Intersection Capacity Utilization 57.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 10: Albion Road/Colliston Crescent & Walkley Road

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	53	74	180	25	62	174
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	58	81	198	27	68	191

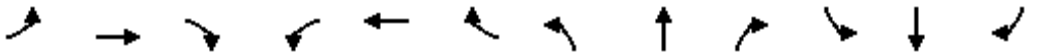
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	140	225	259
Volume Left (vph)	58	0	68
Volume Right (vph)	81	27	0
Hadj (s)	-0.16	0.06	0.21
Departure Headway (s)	4.9	4.6	4.7
Degree Utilization, x	0.19	0.29	0.34
Capacity (veh/h)	675	745	730
Control Delay (s)	9.0	9.5	10.2
Approach Delay (s)	9.0	9.5	10.2
Approach LOS	A	A	B

Intersection Summary			
Delay	9.7		
Level of Service	A		
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	157	2	0	157	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	173	2	0	173	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	347	2			2	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	347	2			2	
tC, single (s)	6.6	6.4			4.3	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.4	
p0 queue free %	100	83			89	
cM capacity (veh/h)	545	1032			1510	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	173	2	173
Volume Left	0	0	173
Volume Right	173	0	0
cSH	1032	1700	1510
Volume to Capacity	0.17	0.00	0.11
Queue Length 95th (m)	4.8	0.0	3.1
Control Delay (s)	9.2	0.0	7.7
Lane LOS	A		A
Approach Delay (s)	9.2	0.0	7.7
Approach LOS	A		

Intersection Summary			
Average Delay	8.4		
Intersection Capacity Utilization	32.8%	ICU Level of Service	A
Analysis Period (min)	15		

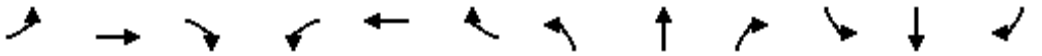


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	0	16	107	6	49	105	1143	134	47	1102	49
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	15.0		0.0	80.0		25.0	105.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	0.99	0.93		0.99	0.97				0.94	0.99	0.99	
Frt		0.850			0.866				0.850		0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1658	1380	0	1610	1422	0	1642	3283	1469	1626	3215	0
Flt Permitted	0.719			0.746			0.168			0.234		
Satd. Flow (perm)	1247	1380	0	1256	1422	0	290	3283	1379	398	3215	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		199			52				82		6	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		75.9			226.6			279.1			272.7	
Travel Time (s)		5.5			16.3			20.1			19.6	
Confl. Peds. (#/hr)	6		50	6		20	44		20	14		50
Confl. Bikes (#/hr)									2			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
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	3%	3%	3%	4%	4%	4%
Adj. Flow (vph)	53	0	17	113	6	52	111	1203	141	49	1160	52
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	17	0	113	58	0	111	1203	141	49	1212	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		5	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	34.3	34.3		34.3	34.3		14.0	33.0	33.0	33.0	33.0	
Total Split (s)	34.3	34.3		34.3	34.3		14.7	75.7	75.7	61.0	61.0	
Total Split (%)	31.2%	31.2%		31.2%	31.2%		13.4%	68.8%	68.8%	55.5%	55.5%	
Maximum Green (s)	28.0	28.0		28.0	28.0		10.0	69.7	69.7	55.0	55.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7	3.7	3.7	3.7	
All-Red Time (s)	3.0	3.0		3.0	3.0		1.0	2.3	2.3	2.3	2.3	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3		4.7	6.0	6.0	6.0	6.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max	C-Max	C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			14.0	14.0	14.0	14.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0			13.0	13.0	13.0	13.0	
Pedestrian Calls (#/hr)	0	0		0	0			0	0	0	0	
Act Effct Green (s)	15.5	15.5		15.5	15.5		83.5	82.2	82.2	70.0	70.0	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.76	0.75	0.75	0.64	0.64	
v/c Ratio	0.30	0.05		0.64	0.24		0.36	0.49	0.13	0.19	0.59	
Control Delay	45.1	0.2		60.2	14.9		7.3	6.9	2.5	12.7	14.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	45.1	0.2		60.2	14.9		7.3	6.9	2.5	12.7	14.1	
LOS	D	A		E	B		A	A	A	B	B	
Approach Delay		34.2			44.8			6.5			14.1	
Approach LOS		C			D			A			B	
Queue Length 50th (m)	10.9	0.0		24.5	1.2		5.3	47.8	3.0	4.2	75.7	
Queue Length 95th (m)	22.0	0.0		41.3	12.4		12.8	78.1	10.3	13.3	120.8	
Internal Link Dist (m)		51.9			202.6			255.1			248.7	
Turn Bay Length (m)	15.0			15.0			80.0		25.0	105.0		
Base Capacity (vph)	317	499		319	400		343	2453	1051	253	2046	
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	0.17	0.03		0.35	0.14		0.32	0.49	0.13	0.19	0.59	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 12.6		Intersection LOS: B	
Intersection Capacity Utilization 77.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 50: Bank Street & Retail Access/Kitchener Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	18	608	131	92	580	5	191	0	153	3	0	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0		30.0	50.0		0.0	40.0		0.0	15.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	30.0			60.0			40.0			15.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.94	1.00	1.00		0.98	0.96		0.98	0.97	
Frt			0.850		0.999			0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1658	3316	1483	1658	3310	0	1658	1417	0	1691	1463	0
Flt Permitted	0.422			0.409			0.757			0.657		
Satd. Flow (perm)	734	3316	1397	711	3310	0	1300	1417	0	1146	1463	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			135		2			224			232	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		269.2			286.2			229.1			124.0	
Travel Time (s)		19.4			20.6			16.5			8.9	
Confl. Peds. (#/hr)	5		20	6		27	14		28	22		19
Confl. Bikes (#/hr)			4			3			2			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	0%	0%	0%
Adj. Flow (vph)	19	627	135	95	598	5	197	0	158	3	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	19	627	135	95	603	0	197	158	0	3	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	28.0	28.0	28.0	28.0	28.0		27.2	27.2		27.2	27.2	
Total Split (s)	50.0	50.0	50.0	50.0	50.0		30.0	30.0		30.0	30.0	
Total Split (%)	62.5%	62.5%	62.5%	62.5%	62.5%		37.5%	37.5%		37.5%	37.5%	
Maximum Green (s)	44.0	44.0	44.0	44.0	44.0		23.8	23.8		23.8	23.8	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7		2.9	2.9		2.9	2.9	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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)	6.0	6.0	6.0	6.0	6.0		6.2	6.2		6.2	6.2	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None		None	None	
Walk Time (s)	9.0	9.0	9.0	9.0	9.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	13.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)	50.7	50.7	50.7	50.7	50.7		17.1	17.1		17.1	17.1	
Actuated g/C Ratio	0.63	0.63	0.63	0.63	0.63		0.21	0.21		0.21	0.21	
v/c Ratio	0.04	0.30	0.14	0.21	0.29		0.71	0.33		0.01	0.00	
Control Delay	7.7	7.9	2.0	9.3	7.8		42.3	2.9		21.3	0.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	7.7	7.9	2.0	9.3	7.8		42.3	2.9		21.3	0.0	
LOS	A	A	A	A	A		D	A		C	A	
Approach Delay		6.9			8.0			24.8			16.0	
Approach LOS		A			A			C			B	
Queue Length 50th (m)	1.0	21.2	0.0	5.7	20.2		29.3	0.0		0.4	0.0	
Queue Length 95th (m)	4.4	37.7	7.3	16.5	36.2		46.8	5.0		2.3	0.0	
Internal Link Dist (m)		245.2			262.2			205.1			100.0	
Turn Bay Length (m)	50.0		30.0	50.0			40.0			15.0		
Base Capacity (vph)	464	2099	934	450	2097		386	578		340	598	
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	0.04	0.30	0.14	0.21	0.29		0.51	0.27		0.01	0.00	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 26 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 10.8		Intersection LOS: B	
Intersection Capacity Utilization 59.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 10: Albion Road/Colliston Crescent & Walkley Road

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	37	76	289	62	88	156
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	40	82	311	67	95	168

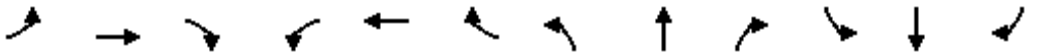
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	122	377	262
Volume Left (vph)	40	0	95
Volume Right (vph)	82	67	0
Hadj (s)	-0.27	-0.07	0.16
Departure Headway (s)	5.1	4.5	4.8
Degree Utilization, x	0.17	0.47	0.35
Capacity (veh/h)	633	781	718
Control Delay (s)	9.1	11.4	10.4
Approach Delay (s)	9.1	11.4	10.4
Approach LOS	A	B	B

Intersection Summary			
Delay	10.7		
Level of Service	B		
Intersection Capacity Utilization	55.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	141	2	0	121	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	152	2	0	130	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	262	2			2	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	262	2			2	
tC, single (s)	6.6	6.4			4.3	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.4	
p0 queue free %	100	85			91	
cM capacity (veh/h)	630	1032			1510	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	152	2	130
Volume Left	0	0	130
Volume Right	152	0	0
cSH	1032	1700	1510
Volume to Capacity	0.15	0.00	0.09
Queue Length 95th (m)	4.1	0.0	2.3
Control Delay (s)	9.1	0.0	7.6
Lane LOS	A		A
Approach Delay (s)	9.1	0.0	7.6
Approach LOS	A		

Intersection Summary			
Average Delay	8.3		
Intersection Capacity Utilization	29.6%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	52	2	41	69	40	55	77	1107	119	48	1572	49
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	15.0		0.0	80.0		25.0	105.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	0.98	0.90		0.97	0.97				0.89	0.99	0.99	
Frt		0.857			0.913				0.850		0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1674	1360	0	1691	1569	0	1658	3316	1483	1658	3282	0
Flt Permitted	0.671			0.728			0.095			0.249		
Satd. Flow (perm)	1160	1360	0	1262	1569	0	166	3316	1316	431	3282	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		42			49				75		4	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		75.9			226.6			279.1			272.7	
Travel Time (s)		5.5			16.3			20.1			19.6	
Confl. Peds. (#/hr)	16		66	20		34	46		38	18		62
Confl. Bikes (#/hr)			2			1			6			8
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	54	2	42	71	41	57	79	1141	123	49	1621	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	44	0	71	98	0	79	1141	123	49	1672	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		5	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	34.3	34.3		34.3	34.3		9.7	33.0	33.0	33.0	33.0	
Total Split (s)	34.3	34.3		34.3	34.3		17.0	96.0	96.0	79.0	79.0	
Total Split (%)	26.3%	26.3%		26.3%	26.3%		13.0%	73.7%	73.7%	60.6%	60.6%	
Maximum Green (s)	28.0	28.0		28.0	28.0		12.3	90.0	90.0	73.0	73.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7	3.7	3.7	3.7	
All-Red Time (s)	3.0	3.0		3.0	3.0		1.0	2.3	2.3	2.3	2.3	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3		4.7	6.0	6.0	6.0	6.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max	C-Max	C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			14.0	14.0	14.0	14.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0			13.0	13.0	13.0	13.0	
Pedestrian Calls (#/hr)	0	0		0	0			0	0	0	0	
Act Effct Green (s)	13.3	13.3		13.3	13.3		106.0	104.7	104.7	94.5	94.5	
Actuated g/C Ratio	0.10	0.10		0.10	0.10		0.81	0.80	0.80	0.73	0.73	
v/c Ratio	0.46	0.25		0.55	0.48		0.36	0.43	0.11	0.16	0.70	
Control Delay	66.6	19.1		71.1	36.5		7.2	4.7	1.7	9.0	13.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	66.6	19.1		71.1	36.5		7.2	4.7	1.7	9.0	13.5	
LOS	E	B		E	D		A	A	A	A	B	
Approach Delay		45.3			51.1			4.5			13.4	
Approach LOS		D			D			A			B	
Queue Length 50th (m)	14.1	0.5		18.7	12.6		3.3	38.7	2.1	3.7	120.5	
Queue Length 95th (m)	27.4	12.0		34.1	30.1		8.0	61.3	7.4	11.6	195.0	
Internal Link Dist (m)		51.9			202.6			255.1			248.7	
Turn Bay Length (m)	15.0			15.0			80.0		25.0	105.0		
Base Capacity (vph)	249	325		271	375		275	2664	1071	312	2381	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.22	0.14		0.26	0.26		0.29	0.43	0.11	0.16	0.70	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130.3			
Actuated Cycle Length: 130.3			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 12.7		Intersection LOS: B	
Intersection Capacity Utilization 88.1%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 50: Bank Street & Retail Access/Kitchener Avenue