

# 180 KANATA AVENUE TRANSPORTATION IMPACT ASSESSMENT, STEP 5 – 1ST ROUND COMMENTS



Project No.: CC0-21-3853

Prepared for:

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December 2021

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December 2, 2021

Mike Giampa and Lisa Stern  
City of Ottawa  
110 Laurier Avenue West  
Ottawa, Ontario  
K1P 1J1

Mr. Giampa and Ms. Stern

Re: Site Plan Control Application – 180 Kanata Ave – 1<sup>st</sup> Review Comments

This cover letter serves to address the first round of comments dated October 8, 2021 for the site plan application for 180 Kanata Avenue. MP has addressed the first review comments which have been incorporated into an updated Step 5 report submission. Comments received have been provided as an attachment to this cover letter. The provided City comments have been addressed as follows:

Traffic

1. A left turn lane warrant should be included for the site access.

A left turn lane warrant was conducted for the site access, however, the warrant showed that a left turn lane was not warranted. Refer to Section 18.2.2 of the TIA.

2. A) The TIA States: “The site access is shown to operate with a LOSF for the 2022 and 2027 total traffic conditions during the PM peak hour. Mitigations measures should be considered for this intersection such as changing the stop control to traffic signals.” Therefore, please model and resubmit synchro for the site access as signalized under 2022 and 2027 conditions.

MP remodelled a scenario where the site access was signalized resulting in improvements to the intersection where the access operates with acceptable LOS. Refer to Section 18.2.2 of the TIA.

- B) Include queue lengths in synchro output on future submissions.

MP included the queue lengths in summary tables throughout report, which include Table 3.3, Table 18.2, Table 18.3, Table 18.4, Table 18.5, Table 18.6 etc.

2. Kanata Avenue is identified for future widening (phase 2) and should only be modelled as a 4-lane arterial.

MP remodelled the 2027 future condition scenarios with Kanata Avenue as a 4-lane arterial as this is schedule to be completed between 2022-2025. This showed improvements to the capacity on the corridor. Refer to Section 18.2.1 of the TIA.

## Planning

14. Parking requirement assessment for the development was updated by MP following a reviewed of applicable parking rate based on revised GFA for the proposed development and its respective uses. Shared parking analysis was completed for the site based on Table 101 of By-Law 2008-250 applying a residential rate of 0.85 per unit as confirmed in comments by the City. Refer to section 11.0 of the TIA.



File No.: D07-12-21-0098

October 8, 2021

Attn: Kayla Blakely, Planner

Novatech Engineering Consultants

*Via email: k.blakely@novatech-eng.com*

Dear Ms. Blakely,

**Subject: Site Plan Control Application – 180 Kanata Ave - 1<sup>st</sup> Review Comments**

The following review comments are provided in response to the Site Plan Control submission:

**Planning (lisa.stern@ottawa.ca):**

The mid-rise built form and sustainability aspects of the plan including solar panels and car share are appreciated.

Zoning:

front lot line which means that lot line, not including a corner lot line, which abuts a street for the shortest distance, whether or not that line jogs or curves, and extending between the side lot lines, more or less for the full width of the lot, and where more than one such lot line exists, means a lot line which abuts the same street as the front lot line of an abutting lot; (By-law 2008-462)

1. The City ROW will be dedicated as road right of way. As such the front yard will be the lot line abutting the ROW, Kanata Ave will be a corner side yard and the westerly lot line will be the rear. This causes a number of inconsistencies with the building envelope proposed.
2. A minor rezoning may be best to clean up these inconsistencies.
3. A 3x3 corner sight triangle is required at the corner of Kanata Ave and the City ROW.
4. The western setback would be considered the rear setback, a 6m setback would be required based on the existing zoning.
5. MC5 requires a 10m front and corner side yard setback to surfaced parking and section 110 Landscaping for Parking lots requires a 3m landscaped buffer adjacent to a street. Please confirm the setback between the laneway and surfaced parking at the rear of the site.

Relief requested from the zoning bylaw:

6. Increase FSI from 2.0 to 2.32 - no comments. The increase is minor in nature and in a mid-rise form as supported by the Kanata Town Centre policies.

7. Reduce parking from 1.0 per unit to 0.85 – no concern with the reduction to 0.85 spaces per unit as the permitted rate for units within a residential building within 600m of transit is 0.5 spaces per unit. Please see additional parking discussion below.
8. Reduce non-residential use from 0.75 to 0.14 – Consideration should be given to providing more non-residential uses. The rationale in support of this could benefit from additional discussion. This also may benefit from a Minor Rezoning as this may not be considered within the scope of C of A (minor in nature).
  - Residential units O and E should also be commercial space at grade – north end of the Kanata Avenue frontage.
  - Residential unit H on the southeast corner of building 4 should be commercial space at grade.
  - Please consider the provision of office, personal service, and medical facility in the building.

#### Site Plan:

Overall it is very difficult to determine the setbacks provided to the building and patios.

1. It is very difficult to determine the setbacks in the plans provided. Please include minimum (and where required maximum) yard setbacks to the building face.
2. Please indicate the minimum walkway and patio width on the site plan, please include location of depressed curbs.
3. Please provide a unit break down with number of bedrooms.
4. Please show location of commercial accesses on the site plan.
5. Additional separation between the parking garage ramp and walkway should be provided. Please consider landscaping/planters in this area.

#### Interface with the public realm:

Overall it is difficult to determine the interface with the public realm due to the grade changes. Additional comments will be provided with the resubmission.

6. It is unclear if there is barrier free access to the commercial units along Campeau.
7. Please provide site sections. Sections as provided in the planning rationale would be helpful to determine the interface with the street frontage and Bill Teron Park.
8. A package of site renderings as included in the planning rationale would be helpful to visualize the “public square”. It appears that the site plan may differ from the renderings provided in the planning rationale. Please see comments below from urban design as related to the POPs.

#### City ROW:

9. The width of the City ROW was reduced to 14m with the expectation of providing a POPs on the private property. Please see comments below from Urban Design.
10. Please provide a development plans and required studies (including an updated Tree Conservation Report and EIS) for the City ROW to be developed with the application. These plans will advise conditions of development and off-site fees/securities required.
11. It is understood that the development of the ROW will be completed at the expense of the developer.

#### Parking:

12. On the first floor of the parking garage, please provide the accessible spaces closer to the elevator entrance.

13. I calculate the base requirement for parking to be 443 parking space. Not 441 parking spaces as indicated on page 15 of the Planning Rationale. This has implications to the shared parking rate.

Existing Parking Rate		
Residential (304 units)	1 (dwelling unit in mixed use building)	304
Visitor	0.2/unit	61
Commercial		
Retail (1192m2)	3.4/100m2 (retail)	41
Gym (170m2)	10/100m2 (recreational athletic facility)	17
Café (200m2)	10/100m2 (restaurant fast food)	20
<b>Total</b>		<b>443</b>

14. Utilizing the shared parking provisions permitted by the zoning bylaw and the proposed residential rate of 0.85 spaces per unit, my calculations exceed the 397 parking spaces proposed. See the table below. Saturday afternoon is the peak parking required. It should be noted that the Section 101 of the Zoning bylaw permits that where all parking spaces provided or required for a permitted land use are located below grade in the same building as that land use, *the parking required by Table 101* for that land use may be reduced by the lesser of:

- 10 per cent of the required parking spaces; or
- 20 parking spaces. (By-law 2016-249)

Please reconfirm the parking rates provided.

Land use	Weekday AM	Weekday Noon	Weekday PM	Weekday Evening	Saturday Morning	Saturday Noon	Saturday PM	Saturday Evening
Residential	285	285	285	285	285	285	285	285
Visitor Parking	50%	50%	75%	100%	100%	100%	100%	100%
	30	30	46	61	61	61	61	61
Retail	75%	80%	85%	75%	60%	90%	100%	50%
	31	33	35	31	25	36	41	21
Gym	17	17	17	17	17	17	17	17
Restaurant	30%	90%	60%	85%	40%	70%	50%	100%
	6	18	12	17	8	14	10	20

Totals							414	
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Limit of Blasting/Grading:

15. It appears that there is a 5-7 m grade difference between the proposed grades at the rear of the site and Bill Teron Park. More discussion of how this significant grade change will be incorporated into the site development plan is required. Please consider reducing the amount of blasting proposed.
16. Fencing will be required on private property at the top of the proposed rock ledge for safety.
17. It is noted that the limit of the proposed parking garage/blasting is in very close proximity to Bill Teron Park, tree removals and shoring within the limit of the park are not supported to facilitate development.
  - o Please confirm the limits of disturbance.
  - o Please consider providing an additional setback between the parking and rock face to ensure there are no conflicts with rock, water or ice.

**Urban Design (mark.young@ottawa.ca):**

1. UDRP review is required, and additional comments/considerations may be provided as a result of this review.
2. Please clearly identify what is included as a Design Brief and ensure that all requested elements at the pre-consultation have been included.
3. Please provide additional connectivity between the public and private realm along Kanata Avenue – use of stairs, terracing and ramping.
4. The Design of Laneway should be tightened at intersection – bulb outs etc. Turning radius looks large.
5. A detailed design is required for the shared public laneway that also serves as access to the site. This should include:

Public:

1. Travelled vehicular width – minimum 6 m – ideally 8.5 m to support 1 lane of on-street parking.
2. Pedestrian realm on both sides of the street in public ownership – minimum width 2 m
3. Design needs to consider lighting/location of lighting poles and any other utilities required, clear of the pedestrian zone.
4. Bike rings – clear of the pedestrian zone

Private with Public Access:

1. Street Trees – adequate soil volumes depending on size and species – Minimum off-set from sidewalk/hard surface 1.5 m (depending on design).
2. Plaza/Patio space – Minimum width 3 m
3. Seating – as designed
4. Lighting – as designed
5. Bike parking/rings
6. Landscaping – as designed.
7. Within the 12.25 m of possibly conveyed land a minimum of 6 m in width should be required for POPS (Privately owned public space) consisting of these elements.

Elevations:



1. Efforts to break the length of the principal façade are appreciated, but a general simplification of the expressions and rhythms should be explored, including consistent horizontal datum lines.
2. Some of the architectural language/style is in conflict. The grand curved corners etc. do not appear to be in keeping with the use of hardie board and a residential look and feel. Either a reconsideration of materials or stylistic approach needs to be considered.

**Engineering:**

1. Engineering comments are forthcoming. Additional Planning comments may be provided as result of the engineering review.

**MVCA ([eogden@mvc.on.ca](mailto:eogden@mvc.on.ca)):**

1. Please see storm water management memo provided under separate cover.

**Transportation ([mike.giampa@ottawa.ca](mailto:mike.giampa@ottawa.ca)):**

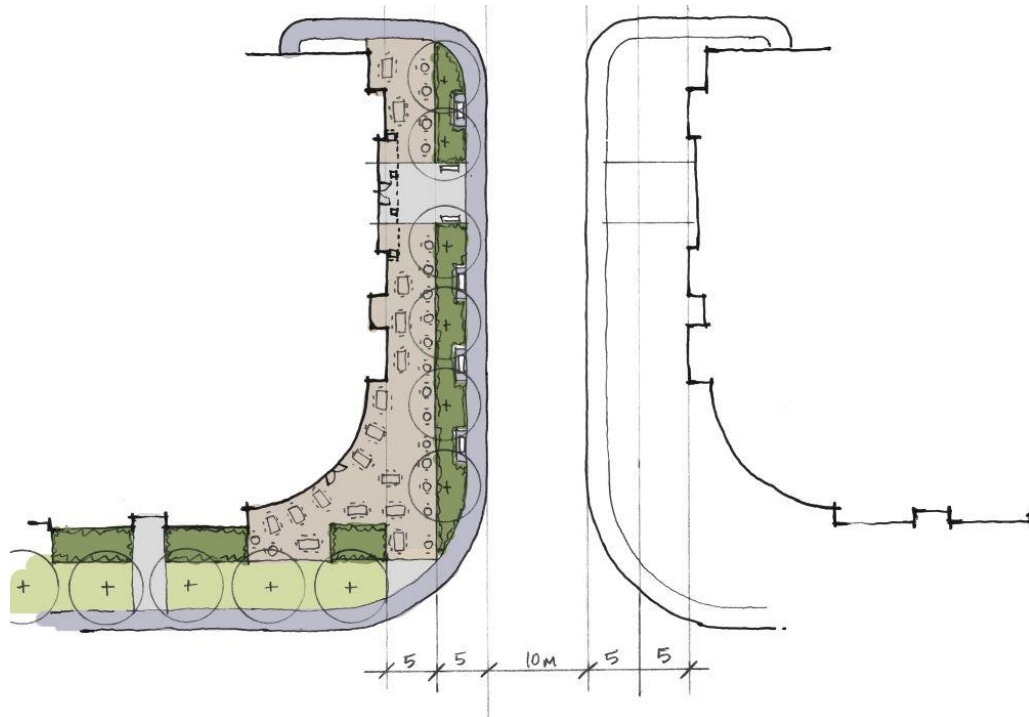
1. A left turn lane warrant should be included for the site access.
2. Traffic Engineering:
  - a. The TIA states: "The site access is shown to operate with a LOS F for the 2022 and 2027 total traffic conditions during the PM peak hour. Mitigation measures should be considered for this intersection such as changing the stop control to traffic signals." Therefore, please model and resubmit synchro for the site access as signalized under 2022 and 2027 conditions.
  - b. Include queue lengths in synchro output on future submissions.
3. Noise comments:
  - a. Kanata Ave is identified for future widening (phase 2) and should only be modeled as a 4-lane arterial.

**Parks Planning ([jeff.goettling@ottawa.ca](mailto:jeff.goettling@ottawa.ca)):**

The following are comments from a Parks & Facilities Planning perspective regarding Site Plan Control application D07-12-21-0098 for 180 Kanata Avenue in Ward 4.

1. Cash-in-lieu of parkland and associated appraisal fee will be required as a condition of approval as per the [Parkland Dedication \(By-law No. 2009-95\) | City of Ottawa](#). Parks will take cash-lieu of parkland at an amount equivalent to 10% of the value of the land area of the site being developed. Value of noted lands to be appraised through a Real Estate Valuation Advisor within the Planning Infrastructure & Eco Development Department. The exact amount will be identified as a condition of site plan approval. In addition, the applicant will be charged a land appraisal fee.
2. Efforts shall be undertaken to ensure that the grade differential between the park block and the development site is minimized to the greatest extent possible. Bill Teron Park is planned to be expanded in the future. The applicant should be mindful of the development's transition to/connection into the future parkland. How does the applicant intend to address the proposed significant grade change (hazard/ drop) between Bill Teron Park located to the north and the new development?

3. Parks planning would like to ensure that pedestrian access to Bill Teron Park is prioritized, designed in accordance with the Parks Development Manual and meets accessibility requirements. The construction of any vehicular and pedestrian access in this area shall be solely at the cost of the developer and shall not be credited toward cash-in-lieu requirements.
  
4. The access laneway between the proposed development and the block to the east is intended as an eventual pedestrian gateway into Bill Teron Park. Parks recognizes that there is a notable grade/ elevation hurdle to overcome. While a trail construction by the developer is not being requested, Parks would like a trail connection and/ or steps demonstrated here for future use to ensure compatibility with the proposed development. This should be illustrated further during the detailed design process.
  
5. It is understood that the applicant will be required to enter into an easement agreement with the City of Ottawa for the use of the access laneway. A Joint Use and Maintenance Agreement will also be required for this access.
  
6. The applicant shall co-ordinate the construction and delivery of this entrance to Bill Teron Park with the purchaser of the parcel located to the east. This to create a cohesive and civic presence on either side of the access off of Kanata Avenue. Consideration shall be given to provide at grade flush curbs, unit paving instead of asphalt, and pedestrian benches as previously noted.
  
7. Consideration to be given to reduce the back of sidewalk e.g. 3:1 landscape slopes as depicted on the cross-sections on the Lot Grading Plan C101.
  
8. Consideration to be given to provide pedestrian access from the north-west corner of Kanata Ave and the laneway leading directly up to the outdoor patio seating (as depicted below on the May 5, 2021 sketch).



May 5, 2021

9. All efforts shall be utilized to protect and retain city owned trees on the abutting city park land. The required TCR shall identify how these trees will be protected and will also address any mitigation measures required for tree retention if blasting and associated grading is required adjacent to the park property line.

10. The owner acknowledges and agrees that should excavation work for the development be shown to detrimentally impact the existing water levels within the pond located in Bill Teron Park, the Owner shall undertake works to ensure that water levels within the pond are maintained and secured on an ongoing basis.

**Environmental ([matthew.hayley@ottawa.ca](mailto:matthew.hayley@ottawa.ca)):**

- EIS - does not identify any constraints and does recommend some mitigation measures. These mitigation measures will need to be included in the site plan approval, including:
  - The EIS's "Appendix A: Hand-out" shall be provided to on-site contractors.
  - Follow the timing windows outlined in the EIS for breeding birds and bat.
  - Submission of Butternut Health Assessments to MECP
- Impact on adjacent forest/park will be addressed by the TCR and Forestry/Parks

**Waste Management ([andre.laplante@ottawa.ca](mailto:andre.laplante@ottawa.ca)):**

This location could get city of Ottawa multi residential collection for the 304 residential units only the commercial portion of the building will need their own garbage room and private service.

Here is what is required or waste containers for the residential portion:

Garbage: 8 x 4 yard bins

Fiber: 3 x 4 yard bins

Glass metal plastic: 2 x 3 yard

Organics: 6 x 240L carts

1. Please provide location and details of the proposed garbage room(s) on the site plan. Please indicate if City waste pick up is requested.

**Building Code Services ([josh.good@ottawa.ca](mailto:josh.good@ottawa.ca)):**

1. The maximum distance a fire hydrant is permitted to be from the building's fire department connection is 45 metres, and shall be along an unobstructed path of travel, as per Article 3.2.5.16. via 3.2.5.5., of the Ontario Building Code. Unfortunately, BCSB was unable to identify the location of the fire department connection(s), in order to verify the design as being O.B.C. compliant in this regard.
2. Please be aware that as shown on the drawings submitted for Site Plan Control Approval, the location of the building on-site may require shoring during the construction stage and possibly permanent encroachment consent. If so, please contact The ROW Permit Office (Right Of Way) at 613-580-2424 x16000 to enquire/obtain a temporary and/or permanent encroachment letter as the shoring is to be adjacent to city property.
3. Shoring details between private properties will also be reviewed by Building Code Service Branch at time of building permit application submission and will require permission(s) from the neighboring property(s) owners if any portion of the shoring is located on the neighboring property.

**Planning Forester ([mark.richardson@ottawa.ca](mailto:mark.richardson@ottawa.ca)):**

1. A permit is required prior to any tree removal on site. Please contact the planner associated with the file or the Planning Forester, Mark Richardson ([mark.richardson@ottawa.ca](mailto:mark.richardson@ottawa.ca)) for information.
2. Tree removal will need to be coordinated with the recommendations in the EIS
3. Confirm if there are mature trees within the retained buffer or within the adjoining city land that may be impacted by the blasting;
4. A preclearing site inspection will be required once property lines have been identified as well as the location of the buffer.

**City Forester ([Amanda.mitchell@ottawa.ca](mailto:Amanda.mitchell@ottawa.ca)):**

1. Additional trees should be added to the landscape plan to help offset the number of removals and maximize canopy cover. If setbacks, sight lines and soil volumes can be met, please add trees to the northeast corner of the lot (where the perennials are proposed and the underground garage does not extend).
2. Trees are to only have one tree stake and only if necessary, on the prevailing wind side of the tree
3. Please ensure the following:

**Minimum Setbacks**

- Maintain 1.5m from sidewalk or MUP/cycle track.
- Maintain 2.5m from curb

- Coniferous species require a minimum 4.5m setback from curb, sidewalk or MUP/cycle track/pathway.
- Maintain 7.5m between large growing trees, and 4m between small growing trees.
- Adhere to Ottawa Hydro’s planting guidelines (species and setbacks) when planting around overhead primary conductors.

**Tree specifications**

- Minimum stock size: 50mm tree caliper for deciduous, 200cm height for coniferous.
- Tree planting on city property shall be in accordance with the City of Ottawa’s Tree Planting Specification; and include watering and warranty as described in the specification (can be provided by Forestry Services).
- No root barriers, dead-man anchor systems, or planters are permitted.

**Soil Volume**

- Please ensure adequate soil volumes are met:

Tree Type/Size	Single Tree Soil Volume (m3)	Multiple Tree Soil Volume (m3/tree)
Ornamental	15	9
Columnar	15	9
Small	20	12
Medium	25	15
Large	30	18
Conifer	25	15

Please note that these soil volumes are not applicable in cases with Sensitive Marine Clay.

**Conseil des écoles catholiques du Centre-Est**

1. No objections.

**Ottawa Carleton District School Board**

1. Request a unit breakdown with number of bedrooms to determine student generation

**Rogers:**

1. Rogers has no comment or concerns regarding this circulation. Please contact Martin Proulx at 613-688-2191 or e-mail at [martin.proulx@rci.rogers.com](mailto:martin.proulx@rci.rogers.com) for Rogers Site Servicing if approved, or if you require additional information

Bell Canada, Enbridge and Hydro Ottawa under separate cover.

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**For the next submission**

- The next submission should address all and each of the comments or issues, to ensure the effectiveness and consistency of the next review.
- A cover letter must be included that states how each comment was addressed in the resubmission. Please co-ordinate the numbering of each resubmission comment, or issue, with the above noted comment number.
- All addenda or revisions to any studies or plans should be submitted as PDF documents.

The development review team will be happy to meet you to discuss comments and resolve issues. We highly recommend holding the comments review meeting within one week from the date of this letter. Please contact me at your earliest convenience to confirm the meeting date, time, format and location.

Should there be any other questions, please do not hesitate to contact me.

Yours Truly,



**Lisa Stern**  
Planner  
Development Review West  
City of Ottawa  
Tel.: 613-580-2424, ext. 21108  
Lisa.Stern@ottawa.ca

cc. Lisa Stern, Planner, City of Ottawa  
Justin Armstrong, Infrastructure Project Manager, City of Ottawa  
Mike Giampa, Transportation Project Manager, City of Ottawa

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## 1.0 SCREENING FORM

The following section describes the initial assessment of the proposal with respect to the Transportation Impact Assessment (TIA) Screening Form and will provide reasoning for potential triggers. The TIA screening form is attached in [Appendix A](#).

### 1.1 Trip Generation Triggers

A mixed-use development is proposed for the subject site consisting of a residential building with 1<sup>st</sup> floor commercial. It is expected that the proposed development will include 304 residential units, 153 m<sup>2</sup> of gym space, 213 m<sup>2</sup> of café space, and 1,083 m<sup>2</sup>. The development unit count is greater than the 90-unit minimum criteria for apartments and as such, the criteria for the trip generation trigger is met.

### 1.2 Location Trigger

The proposed development is located within a Design Priority Area (DPA), Kanata Mixed Use Centre, and not however within a Transit-oriented Development (TOD) zone. The site will have a driveway that accesses Kanata Avenue which is neither designated as part of the City's Transit Priority Network or Spine Bicycle Network. As such, the criteria for a location trigger has been met.

### 1.3 Safety Trigger

The proposed development has a driveway within 150 m of a Signalized intersection (Kanata Avenue and Maritime Way/Lord Byng Way). It has been established that there have been a number of collisions located within 500m of the proposed development. As such, the criteria for a safety trigger has been met.

## 2.0 DESCRIPTION OF PROPOSED DEVELOPMENT

The proposed development will be located at 180 Kanata Avenue fronting onto Kanata Avenue, located in Kanata, Ontario. The proposed development is on the northwest corner of the signalized intersection of Kanata Avenue and Maritime way/Lord Byng Way. The proposed development will include 304 residential units, 153 m<sup>2</sup> of gym space, 213 m<sup>2</sup> of café space, and 1,083 m<sup>2</sup> with a total of 387 parking spaces. The build-out date is expected to be 2022. [Figure 2.1](#) shows the location of the proposed development, subject lands, and surrounding area. The site plan can be found in [Appendix B](#).



Figure 2.1 Proposed Development Location

The development is located in a Mixed-Use Centre Zone with a subcode of MC2 under The City of Ottawa Zoning By-Law. The zone permits a variety of non-residential and residential uses including apartment dwelling; low rise, mid rise, and high rise.

### 3.0 EXISTING CONDITIONS

The following outlines the existing site characteristics and a summary of the expected development transportation conditions.

#### 3.1 Roadways

The following section outlines the existing roadways in the study area obtained from the City of Ottawa Official Plan, Annex 1 – Road Classification and Right-of-Way. MP performed a field review on April 19, 2021, to confirm geometries, lane configurations and existing conditions carried forward in the TIA.

Kanata Avenue within the vicinity of the proposed development is a two lane undivided urban collector roadway, with a 26 m right-of-way and a posted speed limit of 50 km/h. Kanata runs east-west, with concrete sidewalks on both sides of the roadway with the exception of the segment of roadway between the intersections of Kanata Avenue and Earl Grey Drive and Kanata Avenue and Maritime Way/Lord Byng Way where the concrete sidewalk is only present on the northern side of the roadway. There are designated bike lanes of both sides of the roadway, however there is no posted signage nor pavement markings.

Campeau Drive within the Vicinity of the proposed development is a two lane undivided urban arterial roadway, with a 40 m right-of-way and a posted speed limit of 60 km/h. Campeau Drive runs north-south, with separated concrete sidewalks on both sides of the roadway within the vicinity of the proposed development.

Earl Grey Drive within the Vicinity of the proposed development is a two lane undivided urban local roadway, with a 20 m right-of-way and an unposted speed limit of 50 km/h. Earl Grey Drive runs north-south while providing access to Kanata Centrum Shopping centre, with concrete sidewalks on both sides of the roadway within the vicinity of the proposed development.

Lord Byng Way within the Vicinity of the proposed development is a two lane undivided urban local roadway, with a 20 m right-of-way and an unposted speed limit of 50 km/h. Lord Byng Way runs north-south, with concrete sidewalks on both sides of the roadway within the vicinity of the proposed development.

Maritime Way within the Vicinity of the proposed development is a two lane undivided urban local roadway, with a 20 m right-of-way and a posted speed limit of 40 km/h. Maritime Way runs north-south, with concrete sidewalks on both sides of the roadway within the vicinity of the proposed development.

## 3.2 Intersections

The following section documents the existing intersection within the study area, their control type, lane configurations, turning restrictions, and, any other relevant data. The following six intersections were identified within the study area:

- Kanata Avenue and Campeau Drive;
- Kanata Avenue and Earl Grey Drive;
- Kanata Avenue and Entrance to Kanata Centrum (future site entrance);
- Kanata Avenue and Maritime Way/Lord Byng Way;
- Kanata Avenue and Highway 417 Westbound off Ramp; and,
- Kanata Avenue and Highway 417 Eastbound on Ramp.

### 3.2.1 Kanata Avenue and Campeau Drive

Kanata Avenue and Campeau Drive is a four leg, signalized intersection, located to the west of the proposed development.



Figure 3.1 Kanata Avenue and Campeau Drive

- Campeau Drive – Northbound: two lanes; one left turn lane with a storage length of 90 m, and a shared through-right lane.
- Campeau Drive – Southbound: two lanes; one left turn lane with a storage length of 30 m, and a shared through-right lane.
- Kanata Avenue – Eastbound: three lanes; one left-turn lane with a storage length of 90 m, one through lane, one right turn lane with a storage length of 90 m.
- Kanata Avenue – Westbound: three lanes, one left-turn lane with a storage length of 40 m, one through lanes, one right-turn lane with a storage length of 40 m and a designated bike lane with no markings.

### 3.2.2 Kanata Avenue and Earl Grey Drive

Kanata Avenue and Earl Grey Drive is a three leg, signalized intersection, located to the west of the proposed development.





Figure 3.2 Kanata Avenue and Earl Grey Drive

- Earl Grey Drive – Northbound: two lanes; one left turn lane, one right turn lane.
- Kanata Avenue – Eastbound: two lanes; one through lane, one right turn lane with a storage length of 90 m and a designated bike lane with no markings.
- Kanata Avenue – Westbound: two lanes, one left-turn lane with a storage length of 125 m, one through lanes, and a designated bike lane with no markings.

### 3.2.3 Kanata Avenue and Kanata Centrum Entrance

Kanata Avenue and Entrance to Kanata Centrum is a three leg, unsignalized intersection. Kanata avenue is a free-flow movement with the Kanata Centrum Entrance operating under stop control. This is also the location of the proposed site entrance.



Figure 3.3 Kanata Avenue and Kanata Centrum Entrance

- Kanata Centrum Entrance – Northbound: one shared left-right turn lane.
- Kanata Avenue – Eastbound: one share through-right turn lane, and a designated bike lane with no markings.
- Kanata Avenue – Westbound: one shared through-left turn lane, with a designated bike lane with no markings.

#### 3.2.4 Kanata Avenue and Maritime Way/Lord Byng Way

Kanata Avenue and Maritime Way/Lord Byng Way is a four leg, signalized intersection, located adjacent to the proposed development.



Figure 3.4 Kanata Avenue and Maritime Way/Lord Byng Way

- Lord Byng Way – Northbound: two lanes, one left-turn lane with a storage length of 25 m, and one shared through-right turn lane.
- Maritime Way – Southbound: two lanes, one left-turn lane, and one shared through-right turn lane.
- Kanata Avenue – Eastbound: two lanes, one left-turn lane with a storage length of 35 m, one shared through-right turn lane, and a designated bike lane with no markings.
- Kanata Avenue – Westbound: two lanes, one left-turn lane with a storage length of 75 m, one shared through-right turn lane, and a designated bike lane with no markings.

### 3.2.5 Kanata Avenue and Highway 417 Westbound Off-ramp

Kanata Avenue and Highway 417 Westbound Off-ramp is a three leg, signalized intersection, located 375 m east of the proposed development.



Figure 3.5 Kanata Avenue and Highway 417 Westbound Off-ramp

- Highway 417 Westbound Off-ramp – Southbound: two lanes, one left turn lane and one right turn lane.
- Kanata Avenue – Eastbound: two through lanes, and a designated bike lane with no markings.
- Kanata Avenue – Westbound: one through lane, and a designated bike lane with no markings

### 3.2.6 Kanata Avenue and Highway 417 Eastbound On-ramp

Kanata Avenue and Highway 417 Eastbound On-ramp is a three leg, signalized intersection, located 500 m east of the proposed development.

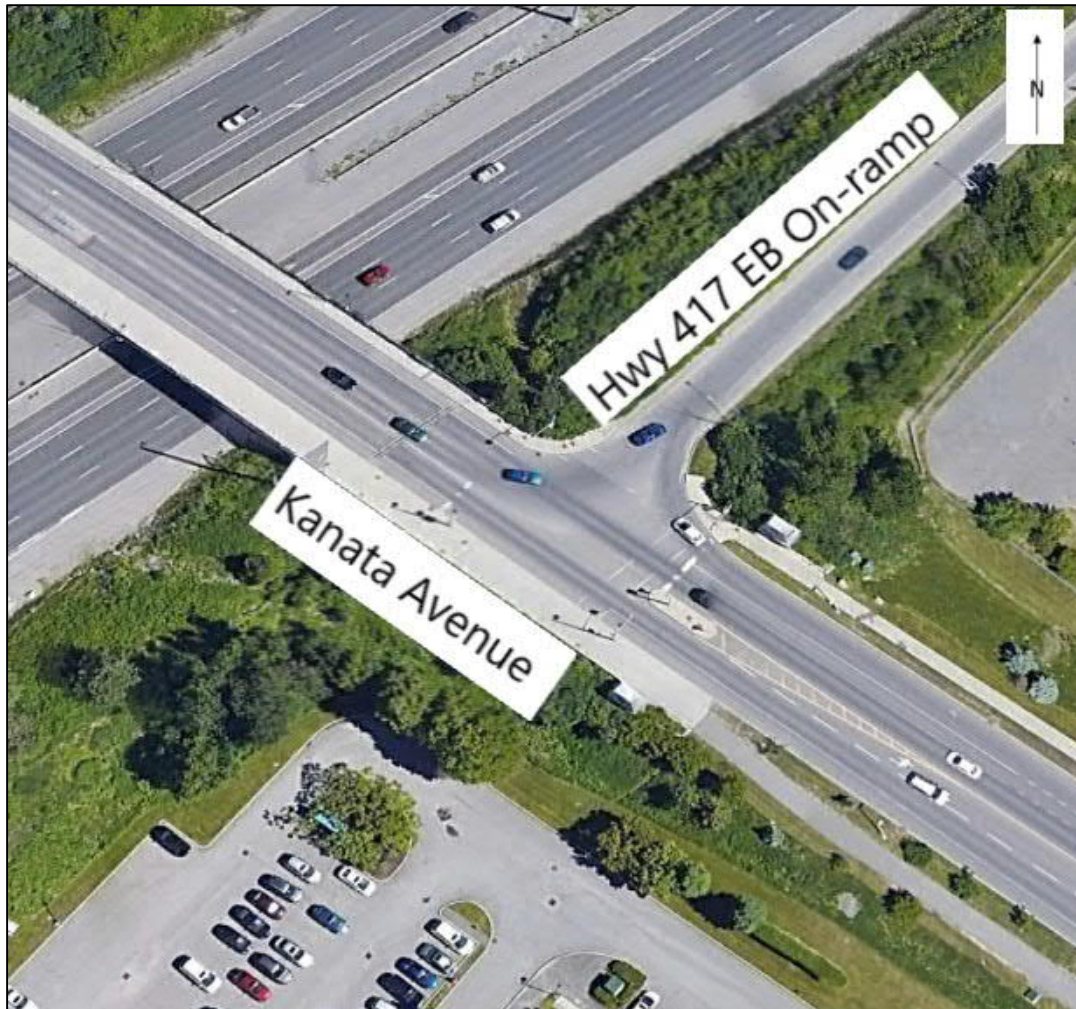


Figure 3.6 Kanata Avenue and Highway 417 Eastbound On-ramp

- Earl Grey Drive – Northbound:
- Kanata Avenue – Eastbound: two lanes
- Kanata Avenue – Westbound: three lanes, one left-turn lane with a storage length of 40 m, one through lanes, one right-turn lane with a storage length of 40 m and a designated bike lane with no markings.

### 3.3 Existing Driveways

The following section documents the existing driveway entrance within a 200m of the proposed site access. Figure 3.7 illustrates the driveways within the vicinity of the proposed site.



Figure 3.7 Existing Driveways

As shown in Figure 3.7 there are no private driveways, however the Kanata Centrum Shopping Center is within 200 m with access to the multiple retail building and parking lots adjacent to the proposed development on the other side of Kanata Avenue.

### 3.4 Existing Multi-Use Pathways



Figure 3.8 Existing Multi-use Pathways

As shown in the Figure 3.8 there are no existing multi use pathways within the vicinity of the proposed development, only a large network of sidewalks.

### 3.5 Existing Transit Network

The following section documents the existing transit networks within the surrounding area. Figure 3.9 illustrates the existing bus routes within the study area of the proposed site.

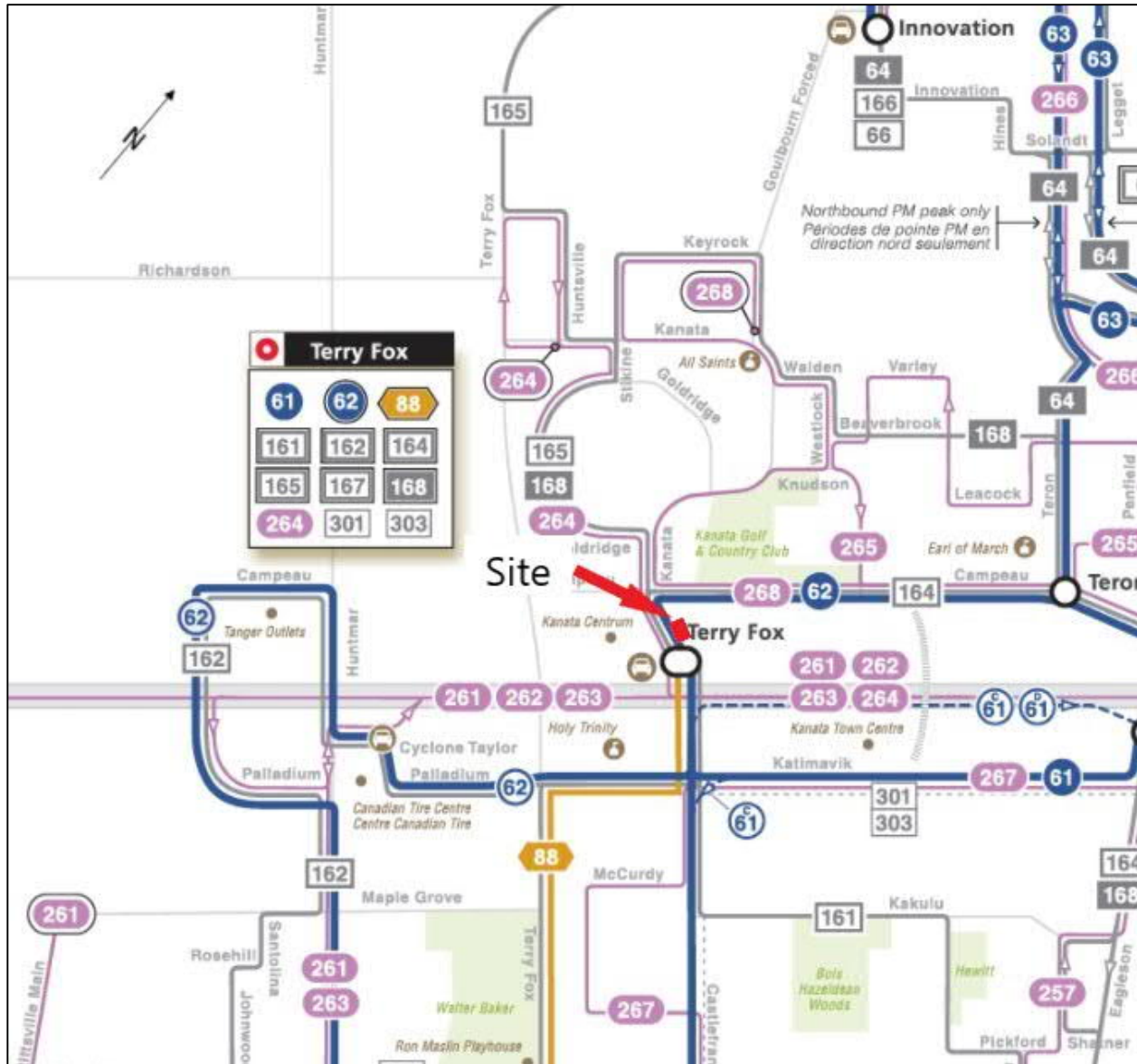


Figure 3.9 Existing Transit Routes

Currently there are 12 transit routes that service the proposed development having stops at the Terry Fox Station as shown in Figure 3.9. The Terry Fox station is approximately 500m along public roadways from the proposed development. The Terry Fox station is part of the City of Ottawa’s Rapid Transit Network.

Figure 3.10 Illustrates the location of the transit stops within the vicinity of the proposed development.





Figure 3.10 Transit Stop Locations

### 3.6 Existing Traffic Management Measures

Within a vicinity of 250m of each study intersection no area traffic calming measures were identified. No traffic calming measures were identified along Kanata Avenue corridor within the study area.

### 3.7 Existing Peak Hour Travel Demand by Mode

The proposed site is located in Ottawa's outer suburbs area Kanata/Stittsville. Transit mode shares leaving the area to other areas of Ottawa account for 15% of morning peak period trips as of 2011, where the 2031 target for transit mode shares leaving is 21%. The 2011 transit mode shares of the morning peak trips arriving to the area is 6% where the target 2031 rate is 11%.

The observed 2011, 24 hour mode shares from the 2011 O-D Tran Survey for the Kanata– Stittsville area, where the development is located, is summarized in Table 3.1. O-D survey information can be found in [Appendix C](#).

Table 3.1 O-D Survey Transportation Mode Shares

Mode	From District (%)	To District (%)	Average (%)
Auto Drive	67	67	67
Auto Passenger	16	16	16
Transit	13	13	13
bicycle	0	0	0
Walk	0	0	0
Other	4	4	4

Based on this survey the Kanata - Stittsville area was shown to have the following mode shares; 16 % of auto passenger, 13% transit, 0 % bicycle, 0 % walking and 4 % other. It should be noted that the other category accounts for trips such as taxis, school buses, motorcycle and scooters. As such, for the purposes of modelling traffic conditions and projections of future conditions, the percentages of “other” trips will be distributed to auto driver, resulting in 71% auto driver trips.

### 3.8 Existing Collision History

Collision data was provided by the city for the years 2015-2019. The data was reviewed for boundary roads within the study area, as identified in [Section 3.0](#). The data was divided into 7 sections, Table 3.2 illustrates the data.

- Kanata Avenue Between Campeau Drive and Earl Grey Drive;
- Kanata Avenue Between Earl Grey Drive and Maritime Way/ Lord Byng Way;
- Maritime Way Between Kanata Avenue and Great Lakes Avenue;
- Lord Byng Way Between Kanata Avenue and End;
- Kanata Avenue at Maritime Way/ Lord Byng Way;
- Kanata Avenue Between Maritime Way/ Lord Byng Way and 417 Westbound Off-Ramp; and,
- Kanata Avenue Between 417 Westbound Off-Ramp and 417 Eastbound On-Ramp.

Table 3.2 Collision data

Location	Collisions							
	2015	2016	2017	2018	2019	total	Cyclist	Pedestrian
Kanata Avenue Between Campeau Drive and Earl Grey Drive	2	1	2	0	0	5	0	0
Kanata Avenue Between Earl Grey Drive and Maritime Way/ Lord Byng Way	5	4	5	3	5	22	0	0
Maritime Way Between Kanata Avenue and Great Lakes Avenue	0	0	0	0	1	1	0	0
Lord Byng Way Between Kanata Avenue and End	0	0	0	0	2	2	0	0
Kanata Avenue @ Maritime Way/ Lord Byng Way	6	7	10	8	11	42	0	1
Kanata Avenue Between Maritime Way/ Lord Byng Way and 417 Westbound Off-Ramp	5	9	8	12	13	47	0	1
Kanata Avenue Between 417 Westbound Off-Ramp and 417 Eastbound On-Ramp	1	0	0	0	0	1	0	0

As seen from table 3.1 there were 5 or less collisions between the years of 2015-2019 at all study locations with the exception of Kanata Avenue Between Earl Grey Drive and Maritime Way/ Lord Byng Way; where 22 total collisions were recorded, Kanata Avenue @ Maritime Way/ Lord Byng Way where 42 total collision were reporting including one collision with a pedestrian, and Kanata Avenue Between Maritime Way/ Lord Byng Way and 417 Westbound Off-Ramp where 47 total collision were recorded including one collisions with a pedestrian. No collision involving cyclists where recorded within the boundary roads.

### 3.9 Existing Traffic Volumes

MP obtained TMC data from the City of Ottawa for the following Intersections:

- Kanata Avenue and Campeau Drive – (December 6<sup>th</sup>, 2017);
- Kanata Avenue and Earl Grey Drive – (November 28<sup>th</sup>, 2018);
- Kanata Avenue and Maritime Way/ Lord Byng Way – (March 20<sup>th</sup>, 2018);
- Kanata Avenue and Highway 417 Westbound off Ramp – (December 6<sup>th</sup>, 2017); and,
- Kanata Avenue and Highway 417 Eastbound on Ramp – (November 27<sup>th</sup>, 2018).

MP also obtained traffic counts from Ontario Traffic Inc at the intersection of Kanata Avenue and the Entrance to Kanata Centrum on May 13, 2021.

In order to use these counts, MP utilized a growth factor of 2% to adjust values to 2021. This factor was decided based on the City of Ottawa Transportation Master Plan, which states that the City of Ottawa is expected to increase its population from 922,00 to 1.14 Million residents from 2011 to 2031. This results in an annual growth rate of 1.1%. Since traffic growth is a function of both population and employment growth, a growth rate of 2% was used to ensure that both background growths are taken into account. The 2021 baseline Traffic Volume scenario for the AM and PM Peak periods can be found in [Figure 3.11](#).

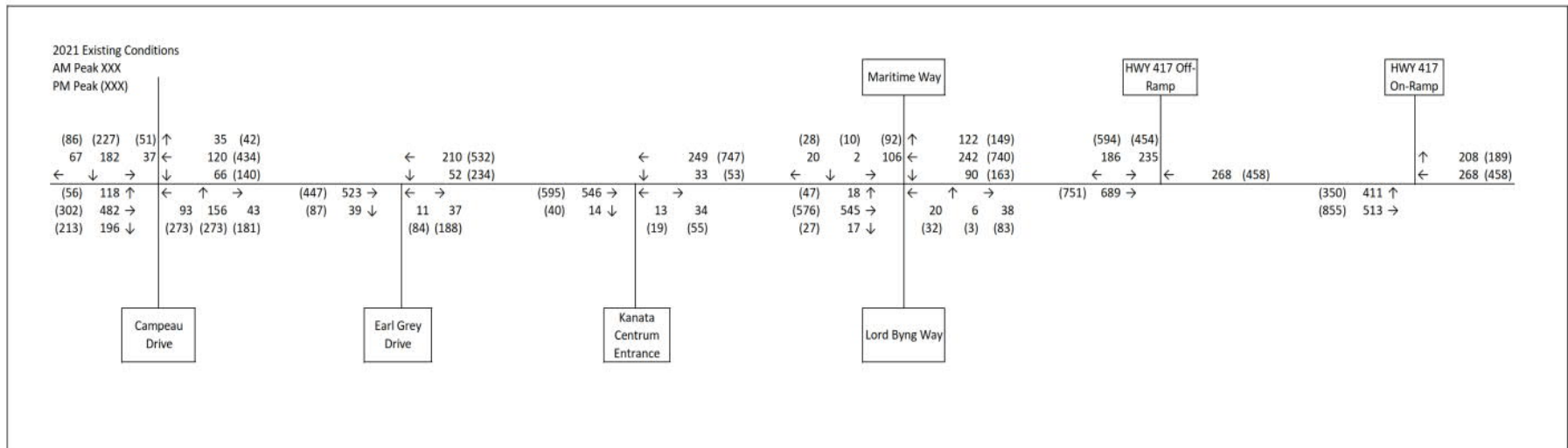


Figure 3.11 Existing Condition

### 3.10 Existing Traffic Operations

Level of Service (LOS) is a qualitative measure of the operating conditions, based on lane configuration, signal operation/phasing. LOS criteria for signalized and unsignalized intersection based on the Multi Modal Level Of Service (MMLOS) Guidelines, are illustrated in Table 3.2.

Table 3.2 Definition of LOS for Intersections

Level of Service	v/c Ratio
A	0 to 0.60
B	0.61 to 0.70
C	0.71 to 0.80
D	0.81 to 0.90
E	0.91 to 1.00
F	> 1.00

Existing traffic operations analysis was performed using Synchro 10 software. Signal timing information was provided by the city. Table 3.3 summarizes the existing conditions.

Table 3.3 Existing Conditions

	AM Peak Hour				PM Peak Hour			
	LOS	V/C	Delay (s)	Queue (m)	LOS	V/C	Delay (s)	Queue (m)
Kanata Avenue and Campeau Drive								
EBL	A	0.31	23.7	26.6	C	0.8	41	76
EBTR	A	0.37	29.1	60.5	D	0.82	47.8	165.5
WBL	A	0.1	21.1	12.7	A	0.24	22.4	15
WBTR	A	0.48	33.3	74.2	C	0.73	49.3	101.4
NBL	A	0.58	29	14.7	A	0.38	22.6	36.3
NBTR	A	0.25	18.6	24.4	A	0.52	25.8	116.4
NBR	A	0.09	1.3	0	A	0.06	0.8	1.4
SBL	A	0.36	29.6	36.9	A	0.2	33.8	24.2
SBT	D	0.87	49.2	147.5	A	0.54	38	103.4
SBR	A	0.32	4.4	15.2	A	0.35	5.5	18.2
Kanata Avenue and Earl Grey Dr								
EBL	A	0.08	22.2	5	A	0.49	50.4	32.9
EBR	A	0.2	10.7	6.7	A	0.59	13	19.7
NBL	A	0.1	2.7	3.9	A	0.4	5.1	21.3
NBTR	A	0.18	2.4	11.4	A	0.41	5.1	57.5
SNT	A	0.4	3.4	33.4	A	0.46	12.6	84.7
SBR	A	0.04	1	1.7	A	0.1	2.4	6.4
Kanata Avenue and the Entrance to Kanata Centrum (Future Site Access)								
EBLR	A	0.17	16.7	0.6	A	0.46	32.6	2.2
NBTL	A	0.04	9.1	0.1	A	0.07	9.1	0.2
Kanata Avenue and Maritime Way/ Lord Byng Way								
EBL	A	0.16	12.3	9.2	A	0.13	28.4	13
EBTR	A	0.27	17.7	8.2	A	0.22	8.3	12.4
WBL	B	0.64	7.2	34.4	A	0.31	30.8	29.9
WBTR	A	0.1	6.4	6.1	A	0.09	13.2	9.4
NBL	A	0.29	32.6	12.2	D	0.83	47.2	51.6
NBTR	A	0.37	14.2	42.4	E	0.91	32.5	231.2
SBL	A	0.04	48.9	6	B	0.68	62.6	25.7
SBTR	A	0.59	13.3	130.7	E	0.92	42.9	146.6
Kanata Avenue and Highway 417 Westbound off Ramp								
WBL	B	0.7	43.6	62.9	B	0.7	28.7	96.3
WBR	A	0.45	7.7	16.1	E	0.93	36.9	136.1
NBTR	A	0.25	3.9	11.6	A	0.56	31.1	132.7
SBT	A	0.4	7.8	44	A	0.45	17.2	68.6
Kanata Avenue and Highway 417 Eastbound on Ramp								
NBTR	A	0.35	15.5	50.1	A	0.33	3.9	34.7
NBR	A	0.27	2.6	10.7	A	0.16	0.7	4.4
SBL	C	0.75	16.2	33.1	A	0.44	3.3	2.4
SBT	A	0.5	8.3	40.3	A	0.49	1.9	0
Note: NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound, L = Left-turn, T = Through, R = Right-turn								

The intersection of Kanata Avenue and Campeau Drive has all approaches operating at an LOS of C or better with the exception of the southbound through lane during the AM Peak Hour which operates at an LOS of D with a v/c of 0.87 and a delay of 49.2 seconds.

The intersection of Kanata Avenue and Earl Grey Drive has all approaches operating at an LOS of A with a v/c of 0.59 or less.

The intersection of Kanata Avenue and the Entrance to Kanata Centrum (Future Site Access) has all approaches operating at an LOS of A and a v/c of 0.46 or less.

The intersection of Kanata Avenue and Maritime Way/Lord Byng Way has all approaches operating at an LOS of D or better with the exception of the northbound shared through right lane and the southbound shared through right lane that is operating at an LOS of E with a v/c of 0.91 and 0.92 respectively during the PM Peak Hour.

The intersection of Kanata Avenue and Highway 417 Westbound off Ramp has all approaches operating at an LOS of B or better with the exception of westbound right turn lane that operates at an LOS of E with a v/c of 0.93 during the PM Peak Hour.

The intersection of Kanata Avenue and Highway 417 Eastbound on Ramp has all approaches operating at a LOS of A with the exception of the southbound left turn lane which operates at a LOS of C with a v/c of 0.75 during the AM Peak Hour.

Detail synchro 10 reports can be found in [Appendix D](#).

## 4.0 PLANNED CONDITIONS

### 4.1 Roadway Network Modifications

According to the City of Ottawa Transportation Master Plan (TMP), Kanata Avenue is expected to be widened to four (4) lanes from the existing two (2) lanes between Highway 417 and Campeau Drive. This is expected to be completed during Phase 2 of the TMP (2020-2025). This will be modelled in the 2027 scenarios only. The TMP also indicates that rapid transit bus routes will be extended further west on Highway 417 ending at Terry Fox Station.

### 4.2 Other Study Area Developments

Within 500m of the proposed development there are currently 12 different development applications. The majority of the application (10) are related to a two storey mixed-used building with ground floor retail consisting of a gross floor area of 2,500 m<sup>2</sup> and parking, to be located in the existing Kanata Centrum Shopping Centre. The other development applications within the area are for two residential apartment buildings, with a combined 632 units and 652 parking spaces located at 1200 Maritime Way.



## 5.0 STUDY AREA AND TIME PERIODS

### 5.1 Study Area

The proposed study area is limited to the following intersection:

- Kanata Avenue and Campeau Drive;
- Kanata Avenue and Earl Grey Drive;
- Kanata Avenue and Entrance to Kanata Centrum (future site entrance);
- Kanata Avenue and Maritime Way/Lord Byng Way;
- Kanata Avenue and Highway 417 Westbound off Ramp; and,
- Kanata Avenue and Highway 417 Eastbound on Ramp.

### 5.2 Time Periods

The proposed time periods for the analysis are:

- AM Peak (7:45-8:45) hour of adjacent roadways, and;
- PM Peak (16:45-17:45) hour of adjacent roadways.

### 5.3 Horizon Years

The proposed horizon years for analysis are:

- Existing Conditions (2021);
- Future Background (2022) and Total Future Traffic (2022) Conditions; and,
- Horizon Background (2027) and Total Horizon Traffic (2027) Conditions.

## 6.0 EXEMPTION REVIEW

Table 6.1 summarizes the exemptions review in accordance with the City of Ottawa TIA Guidelines

Table 6.1 Exemptions Review

Module	Element	Exempted	Reasoning
<b>Design Review Component</b>			
4.1 Development Design	4.1.2 Circulation and Access	No	Not exempted due to being a Site Plan
	4.1.3 New Street Networks	Yes	The development is not a subdivision
4.2 Parking	4.2.1 Parking Supply	No	Not exempted due to being a Site Plan
	4.2.2 Spillover Parking	No	Parking to be confirmed at a later date.
<b>Network Impact Component</b>			
4.5 Transportation Demand Management	All elements	Yes	The development is expected to have fewer than 60 employees/ 200 students
4.6 Neighbourhood Traffic Management	4.6.1 Adjacent Neighbours	No	The development uses collector and arterial streets for access
4.8 Network Concept		No	It is assumed that the development will generate more than 200 new person trips during the peak hour

## 7.0 DEVELOPMENT GENERATED TRAVEL DEMAND

### 7.1 Trip generation

As the site is currently vacant, all trips generated by the proposed development will have an impact on the existing traffic network. The proposed development is anticipated to have 304 residential units, 153 m<sup>2</sup> of gym space, 213 m<sup>2</sup> of café space, and 1,083 m<sup>2</sup>. Table 7.1 shows the ITE Trip Generation for the two land uses of the proposed development.

Table 7.1 ITE Trip Generation

Land Use	Size/ Units	ITE Land Use Code	Vehicle Trips			
			AM Peak Hour		PM Peak Hour	
			Enter	Exit	Enter	Exit
Residential	304	221 (Multifamily Housing Mid-Rise)	28	81	82	52
Gym	153 m <sup>2</sup>	492 (Health/ Fitness Club)	1	1	3	3
Café	213 m <sup>2</sup>	930 (Fast Casual Restaurant)	3	2	17	15
Commercial	1,083 m <sup>2</sup>	820 (shopping Center)	7	4	21	23
Total			39	88	123	93

As shown in Table 7.1, the proposed development is expected to generate 127 trips during the AM Peak hour (39 entering and 88 exiting) and 216 trips during the PM Peak Hour (123 entering and 93 exiting).

As the proposed development is mainly residential it can be assumed that the proposed development will act as the origin or destination of every trip and that no reductions will be made for passby trips.

As ITE trip generation results is in new vehicles trips, these values must be multiplied by a factor of 1.28 from the City of Ottawa Transportation Impact Assessment Guidelines 2017, in order to represent development generated new Person Trips. Table 7.2 illustrates the number of person trips generated by the proposed development.

Table 7.2 Person Trip Generation

Land Use	Size/ Units	ITE Land Use Code	Vehicle Trips			
			AM Peak Hour		PM Peak Hour	
			Enter	Exit	Enter	Exit
Residential	304	221 (Multifamily Housing Mid-Rise)	36	104	105	67
Gym	153 m <sup>2</sup>	492 (Health/ Fitness Club)	1	1	4	4
Café	213 m <sup>2</sup>	930 (Fast Casual Restaurant)	4	3	22	19
Commercial	1,083 m <sup>2</sup>	820 (shopping Center)	9	5	27	29
Total			50	113	157	119

As shown in Table 7.2, the proposed development is expected to generate 163 person trips during the AM Peak, 50 entering and 113 exiting. The proposed development is expected to generate 276 person trips during the PM peak hour, 157 entering and 119 exiting.

## 7.2 Mode Share

As stated previously in this report, the expected build out and occupancy year is 2022. Additionally, the proposed development and surrounding study area is serviced by public transit, has adequate pedestrian and cycling facilities, and a number of multi-use pathways. The City of Ottawa Long Range Financial Plan (2011) estimates a transit ridership increase of 3.8% from 2016 to 2020 and 2.0% increase from 2021-2025. The City of Ottawa Transportation Master Plan has also identified mode share targets for the year 2031 city wide. Table 7.3 shows the mode share targets expected for traffic within the study area.

Table 7.3 Future 2031 Mode Share Targets

Travel Mode	Mode Share Target	Rationale
Auto Drive	50%	Currently average of 71% of person trips. This is expected to decrease in the future as more transit and cycling options become available.
Auto Passenger	9%	% of auto passenger person trips will not change in proportion to Auto Drivers.
Transit	26%	Transit person trips are expected to increase over time, as predicted by City of Ottawa Long Range Financial Plan.
Bicycle	5%	% of cycling is expected to increase as cycling networks become more accessible and increase
Walk	10%	% of walking person trips is expected to increase.

However as these are for the 2031 horizon year, the mode split shall follow the existing mode share. Table 7.4 illustrates the mode share of the development generated person trips based on Table 3.1.

Table 7.4 Mode Share Targets

Travel Mode	Mode Share (%)	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Auto Drive	67	34	76	109	105	80	185
Auto Passenger	16	8	18	26	25	19	44
Transit	13	7	15	21	20	15	36
Bicycle	0	0	0	0	0	0	0
Walk	0	0	0	0	0	0	0
Other	4	2	5	7	6	5	11
Total	100	50	113	163	157	119	276

As the proposed development is within reasonable walking distance to the Kanata Centrum Shopping center it is assumed that the other will be distributed between the walking and bicycle mode shares evenly. As such the proposed development is expected to generate 109 new person auto driver trips during the AM peak hour with 34 entering and 77 exiting the proposed development, and 185 new person auto driver trips during the PM peak hour with 105 entering and 80 exiting the proposed development.

### 7.3 Trip Distribution

Trip distribution was based on existing traffic patterns from acquired TMC data.

### 7.4 Trip Assignment

Figure 7.1 illustrates the AM and PM trip assignment for the proposed development generated auto driver trips.

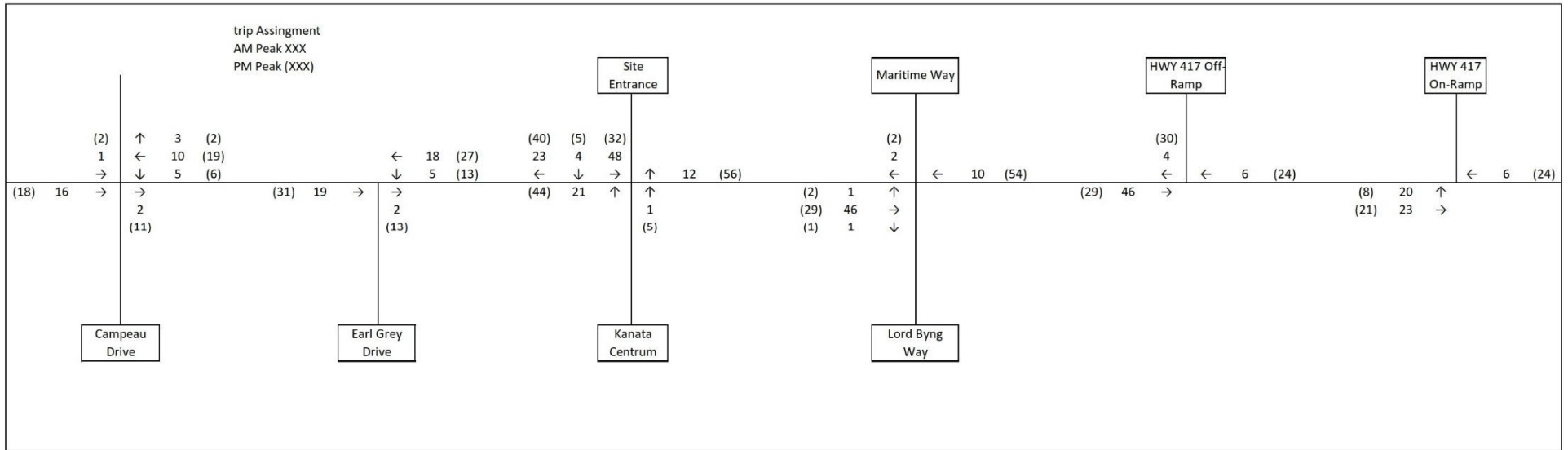


Figure 7.1 Trip Assignment

## 8.0 BACKGROUND NETWORK TRAVEL DEMANDS

As previously stated in [Section 3.9](#), MP received turning movements counts from the city taken at:

- Kanata Avenue and Campeau Drive – (December 6<sup>th</sup>, 2017);
- Kanata Avenue and Earl Grey Drive – (November 28<sup>th</sup>, 2018);
- Kanata Avenue and Entrance to Kanata Centrum (May 13, 2021);
- Kanata Avenue and Maritime Way/Lord Byng Way – (March 20<sup>th</sup>, 2018);
- Kanata Avenue and Highway 417 Westbound off Ramp – (December 6<sup>th</sup>, 2017); and,
- Kanata Avenue and Highway 417 Eastbound on Ramp – (November 27<sup>th</sup>, 2018).

The traffic volumes were projected to 2021, applied to the network and balanced accordingly.

### 8.1 Transportation Network Plans

As mentioned in [section 4.1](#), the City of Ottawa Transportation master Plan indicates that rapid transit bus routes will be extended further west on Highway 417 ending at Terry Fox Station providing more reliable and appealing transit service in the area.

### 8.2 Background Growth

To project the traffic volume to the current and future years, a growth rate of 2% was applied to the existing vehicle traffic volumes to project them to the year 2022 and 2027. The growth rate is considered appropriate as it is to include both the population and employment growth within the City of Ottawa. [Figure 8.1 and 8.2](#) show the expected future background traffic volume during the 2022 buildout year and the 2027 horizon year. [Figure 8.3 and 8.4](#) show the total 2022 and 2027 future traffic volumes.

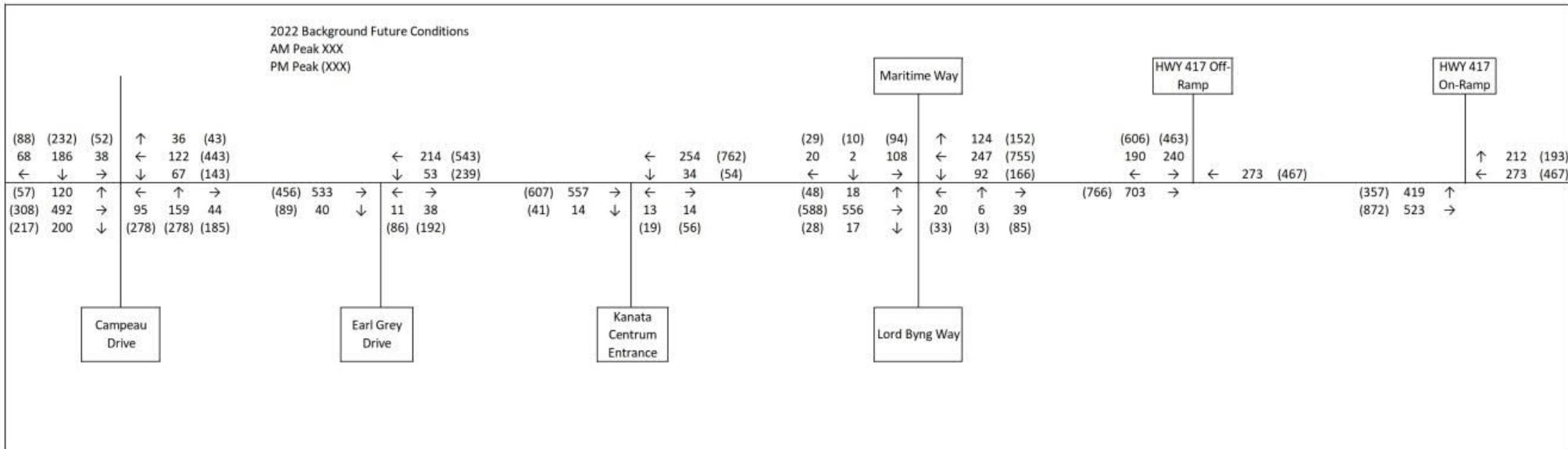


Figure 8.1 2022 Background Traffic Volumes



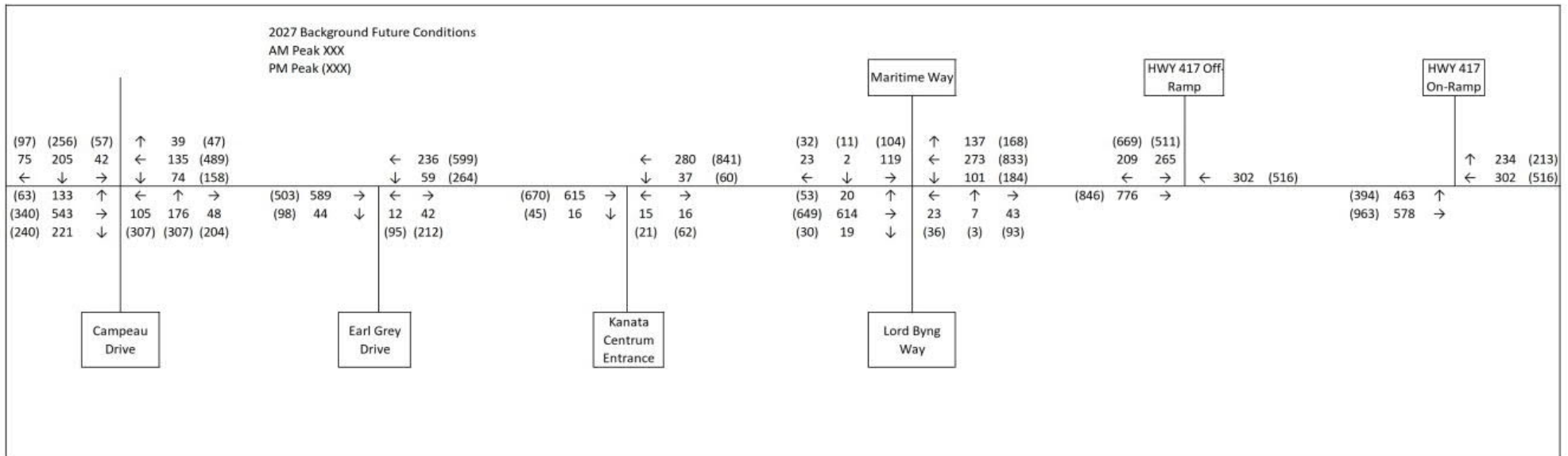


Figure 8.2 2027 Background Traffic Volumes

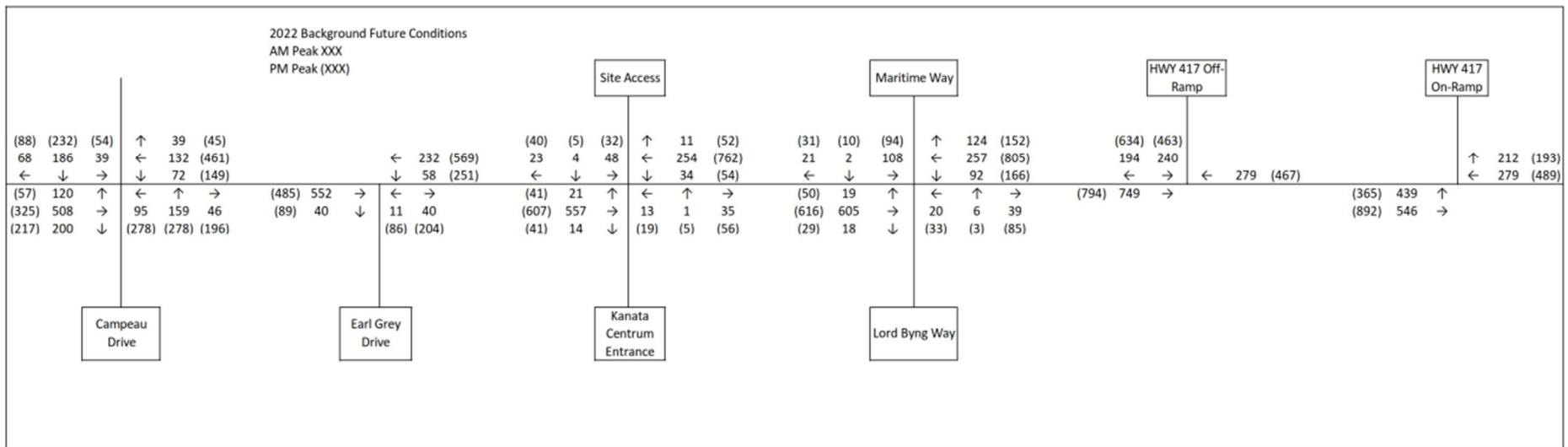


Figure 8.3 2022 Total Traffic Volumes

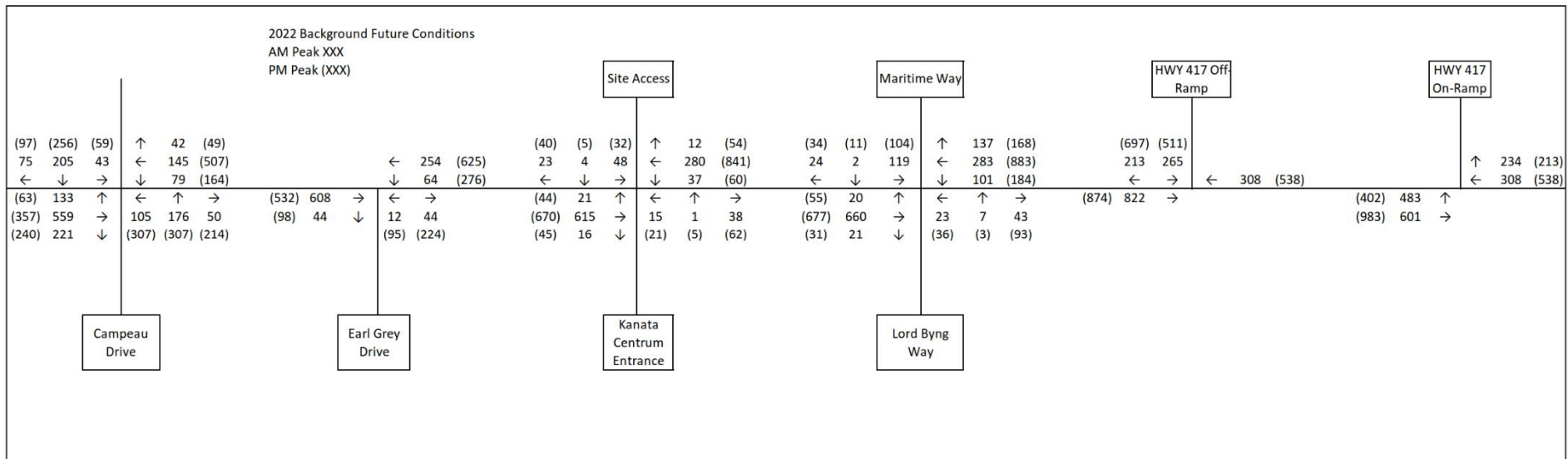


Figure 8.4 2027 Total Traffic Volumes

### 8.3 Other Developments

As mentioned in [section 4.2](#), there are 12 development applications relating to a two-storey mixed-used building with ground floor retail and two residential apartment buildings located at 1200 Maritime Way. The development application for the two-storey mixed use building located within the Kanata Centrum Shopping center application status is under file pending, and no TIA has been prepared. As such, it is anticipated that the development generated traffic from the application will be incorporated into the background network growth. A TIA has been prepared for the two residential buildings at 1200 maritime way. However, the expected buildout year is not until 2028, as such, this is outside the study time period, and will not be included in the TIA background traffic.

## 9.0 DEMAND RATIONALIZATION

With the improvements to the rapid transit bus routes within the vicinity of the proposed development. It is anticipated that the mode share will increase in transit as the transit network becomes more reliable and appealing for use in Kanata. As such this would alleviate some of the stress within the traffic network as some auto trips will become transit trips. With the widening of Kanata Avenue from Highway 417 to Campeau Drive, from two (2) to four (4) lanes, this is also expected to improve operation conditions of the transportation network within the vicinity of the proposed development, therefore increasing network capacity and in turn improving operating conditions during the future scenarios as this is expected to be completed by 2025.

## 10.0 DEVELOPMENT DESIGN

This section will review the proposed development and its transportation network elements in order to ensure that a safe and efficient design has been proposed, to encourage walking, cycling, and transit use. The City of Ottawa's TDM-supportive Development Design and Infrastructure checklist has been completed and attached in [Appendix E](#) for reference. The TDM-supportive Development Design and Infrastructure checklist outlines the TDM elements to be included in the proposed development.

### 10.1 Design Suitable Modes

The proposed development is expected to provide a total of 393 parking spaces, 10 barrier free parking spaces (5 of type A and 5 of Type B), and 237 bicycle parking spaces. As described in [Section 3.5](#), the closest transit stops to the proposed development are located along Lord Byng Wat towards the Terry Fox Station.

### 10.2 Circulation Access

The proposed development is anticipated to include one access off of Kanata Avenue, at the intersection of Kanata Avenue and the entrance to The Kanata Centrum Shopping center. The proposed access will act as the northern leg of the intersection being an all movement stop controlled leg of the intersection.

## 11.0 PARKING

Parking for the site is to be provided to accommodate each of its proposed land uses. This parking justification sections addresses parking needs for development and future operation. The development will consist of both residential and commercial uses, which are to be provided as follows:

- 304 residential units
- 1,083 m<sup>2</sup> of retail
- 213 m<sup>2</sup> Café
- 153 m<sup>2</sup> Gym

### 11.1 Municipal By-law

It is MP's understanding that the site falls under the City of Ottawa Zoning By-Law Number 2008-250, which identifies parking requirements for the subject site. Parking required per the By-law are as follows:

- Residential parking rate of 1 parking space per dwelling unit.
- Residential visitor parking rate of 0.2 parking spaces per dwelling unit
- Retail parking rate of 3.4 parking spaces per 100m<sup>2</sup>
- Cafe parking rate of 10 parking spaces per 100m<sup>2</sup>
- Gym parking rate of 10 parking spaces per 100m<sup>2</sup>

Base on the City of Ottawa Zoning By-Law Number 2008-250 parking requirements, the proposed development will require a parking supply of 438 parking spaces as detailed in Table 11.1.

Table 11.1 Site Parking Requirements

Site Component	Units / GFA (m <sup>2</sup> )	Required Parking Rate	Parking Required
Residential Land Use			
Residential	304	1.0 / unit	304
Residential Visitor	304	0.2 / unit	61
Commercial Land Use			
Retail	1,083	3.4 / 100m <sup>2</sup>	37
Cafe	213	10 / 100m <sup>2</sup>	21
Gym	153	10 / 100m <sup>2</sup>	15
Total			438

### 11.2 Shared Parking Analysis

Per By-Law Number 2008-250, the 438 parking space requirement is the minimum parking supply required for the development, if the individual requirement for each land use was provided. The by-law however, does

allow for the sharing of parking spaces between land uses which ultimately reduces the overall total parking supply required for the development.

A rate of 0.85 however has been identified as being acceptable by the City of Ottawa. See page 2 of 1st Review Comments, zoning item 7.

The sharing of development parking spaces is based on different land uses having peak parking demands that occur at different times through out the day. Parking spaces that can be shared by different land uses and the percentage parking requirement for each use under the City’s by-law have been provided in Appendix F. A shared parking demand summary based on individual requirements is provided in in Table 11.2.

Table 11.2 Shared Parking Demand Analysis

Land Use	Weekday AM	Weekday Noon	Weekday PM	Weekday Evening	Saturday Morning	Saturday Noon	Saturday PM	Saturday Evening
Residential	100%	100%	100%	100%	100%	100%	100%	100%
	258	258	258	258	258	258	258	258
Visitor Parking	50%	50%	75%	100%	100%	100%	100%	100%
	30	30	46	61	61	61	61	61
Retail	75%	80%	85%	75%	60%	90%	100%	50%
	28	29	31	28	22	33	37	18
Gym	100%	100%	100%	100%	100%	100%	100%	100%
	16	16	16	16	16	16	16	16
Restaurant	30%	90%	60%	100%	30%	80%	50%	100%
	6	19	13	21	6	17	11	21
Total	339	353	364	384	364	385	383	375

Shared parking analysis was applied to all parking requirements except spaces for development residents, as this was maintained at 100% parking supply. Parking analysis indicates that site would have a maximum shared parking demand of 127 parking spaces, Saturday at noon and minimum requirement of 80 spaces during the weekday morning for the visitor, retail, gym, and café parking. The resulting total parking demand inclusive of resident parking is a minimum parking requirement of 339 spaces, and a maximum of 385 spaces.

A parking supply of 387 parking spaces, 35 above grade (inclusive of 2 accessible spaces) and 352 below grade (inclusive of 8 accessible spaces) is proposed for the development. The proposed supply is in surplus of 2 parking spaces of the required parking supply.

Given the availability of transit routes, close access to a transit station and proposed bicycle parking supply to promote travel mode change, the 387 parking spaces proposed for the site is considered adequate for the development.

### 11.3 Bicycle Parking

Dedicated bicycle parking facilities have been proposed for the development to meet the requirements for all land uses. Per the City of Ottawa Zoning By-Law Number 2008-250, bicycle parking for the proposed land uses at the site are required as follows:

- Residential parking rate of 0.5 per dwelling unit
- Retail parking rate of 1 per 250 m<sup>2</sup> of GFA
- Café parking rate of 1 per 250 m<sup>2</sup> of GFA
- Gym parking rate of 1 per 1500 m<sup>2</sup> of GFA

Per the Zoning for the site a total bicycle parking supply of 158 spaces will be required. A total of 244 bicycle parking spaces have been proposed consisting of 217 spaces located in the underground garage parking and 27 at grade bicycle parking spaces.

The bicycle parking is provided at a higher rate than required for the site and is considered suitable for the site as it provides an alternative mode of transportation and serves to encourage travel mode change.

## 12.0 BOUNDARY STREET

This section will examine the design elements of the noted boundary street and their ability to accommodate the proposed development as well as being consistent with the City of Ottawa’s Complete Street design philosophy as well as its urban design objectives.

### 12.1 Segment Mobility

#### 12.1.1 Pedestrian Level of Service (PLOS)

The pedestrian level of service (PLOS) is used to evaluate pedestrian comfort, safety and convenience on the boundary street segment. PLOS was assessed for Kanata Avenue, which will provide direct pedestrian access to the proposed development. Table 12.1 illustrates the PLOS of Kanata Avenue.

Table 12.1 Pedestrian level of Service

Direction of Roadway	Sdewalk Width (m)	Boulevard Width (m)	Motor Vehicle Traffic Volume (ADDT)	Prescense of on-street Parking	Operating Speed (km/h)	LOS
Kanata Avenue						
Eastbound	0	0	> 3000	No	50	F
Westbound	1.8	0	> 3000	no	50	D

The eastbound lane of Kanata Avenue currently does not have a sidewalk present and as such has an LOS of F. The westbound lane of Kanata Avenue has a sidewalk width of 1.8 m, no boulevard, an AADT of > 3000, no on street parking and an operating speed of 50 km/h resulting in a PLOS of D. However, based on Exhibit 4 of the City of Ottawa’s Multi-Modal Level of Service (MMLOS) Guidelines, the lowest quality facilities dictates the

overall score, as such the PLOS of Kanata Avenue is F. The MMLOS target for PLOS based on Exhibit 22 of the City of Ottawa’s Multi-Modal Level of Service (MMLOS) Guidelines is C for a Mixed Use Center, as such the segment PLOS does not meet the target.

**12.1.2 Bicycle Level of Service (BLOS)**

Kanata Avenue will provide cyclist with the main method of access to the development. Bicycle level of service (BLOS) is used to evaluate the level of stress experienced by cyclists using the roadway corridor. The BLOS for Kanata Avenue is illustrated in Table 12.2.

Table 12.2 Bicycle Level of Service

Bike Lane Facility	Parking Facilities	Bike Lane Width (m)	Number of Travel Lanes	Operating Speed	LOS
Kanata Avenue					
Bike Lane	No	1.5	1 travel lane in each direction	50	A

Kanata Avenue has designated bike lanes with a width of 1.5 m, no curbside parking, one travel lane in each direction, an operating speed of 50 km/h in both the eastbound and westbound directions. In accordance with Exhibit 11 of the City of Ottawa’s MMLOS Guidelines, Kanata Avenue has a BLOS of A. The MMLOS target for BLOS based on Exhibit 22 of the City of Ottawa’s Multi-Modal Level of Service (MMLOS) Guidelines is B for a Mixed Use Center, as such the segment PLOS does meet the target.

**12.1.3 Transit Level of Service (TLOS)**

Transit level of service (TLOS) is to evaluate the relative attractiveness of transit based on travel time and transit priority. The TLOS of Kanata Avenue was reviewed and is illustrated in Table 12.3.

Table 12.3 Transit Level of Service

Side of Roadway	Facility Type	LOS
Kanata Avenue		
Eastbound	Mixed with limited parking/driveway Friction	D
Westbound		D

Kanata Avenue is considered mixed traffic as there is no designated transit lanes, as well as, there is no parking and minimal driveways/ access along both the eastbound and westbound lanes. In accordance with Exhibit 15 of the City of Ottawa’s MMLOS Guidelines, Kanata Avenue has a TLOS of D. The MMLOS target for TLOS based on Exhibit 22 of the City of Ottawa’s Multi-Modal Level of Service (MMLOS) Guidelines is D for a Mixed Use Center, as such the segment PLOS does meet the target.

**12.1.4 Truck Level of Service (tkLOS)**

Truck level of service (tkLOS) is to evaluate the level of ease of trucks to operate within a corridor. The tkLOS was reviewed for Kanata Avenue and is illustrated in Table 12.4.



Table 12.4 Truck Level of Service

Side of Roadway	Curb Lane Width	Number of Travel Lanes per Direction	LOS
Kanata Avenue			
Eastbound	4	1	B
Westbound	4	1	B

Kanata Avenue has a curb lane width of 4 m, 1 travel lane in each direction for both the eastbound and the westbound lanes. In accordance with Exhibit 20 of the City of Ottawa’s MMLOS Guidelines, Kanata Avenue has a tkLOS of B. The MMLOS target for tkLOS based on Exhibit 22 of the City of Ottawa’s Multi-Modal Level of Service (MMLOS) Guidelines is “No Target” for a Mixed Use Center, as such the segment PLOS does meet the target.

## 12.2 Road Safety

Available collision data within the study area was reviewed and is presented in [Section 3.7](#). No road safety concerns were identified on boundary streets or within the study area. As City of Ottawa collision records do not indicate the direction of travel for vehicles involved, collision diagrams are not feasible.

## 13.0 ACCESS INTERSECTION DESIGN

This section will examine design elements of the proposed developments access points and assess their alignment with the City of Ottawa’s Complete Street philosophy, MMLOS Guidelines and urban design objectives.

### 13.1 Location and Design of Access

The access for the proposed development is anticipated to create the northern leg of the exiting T-intersection of Kanata Avenue and the entrance to the Kanata Centrum Shopping Center. The new proposed access will be a full movement access.

#### 13.1.1 Access sightlines

MP staff performed a field visit to review the sightlines on April 19, 2021, for the proposed development site access.

The TAC Geometric Design Guide for Canadian Roads, June 2017, was used to determine the required sight distances. Section 9.9.4 Design Intersection Sight Distances – Case B1, Left Turn From Stop, and Table 9.9.6 Design Intersection Sight Distances – Case B2, Right Turn from stop, were used in the review of the sight lines for the access of the proposed development.

Table 13.1 illustrates the minimum required length of sight triangle leg. Kanata Avenue has a design speed of 70 km/h, as such 70 km/h will be the design speed analysed.

Table 13.1 Length of Sight Triangle- Case B, Stop Control on the Minor Road

Design Speed (km/h)	Left Turn Required Sight Distance (m)	Right Turn Required Sight Distance (m)
70	150	130

As stated previously the development is expected to have one new full movement access onto Kanata Avenue at the intersection of Kanata Avenue and the Entrance to the Kanata Centrum Shopping Center. Based on the site review done and the desktop review it is anticipated that the sight lines from the proposed access will be adequate.

Figure 13.1 illustrates the sight lines to the adjacent intersections of Kanata Avenue and Earl Grey Drive to the west and the intersection of Kanata Avenue and Maritime Way/Lord Byng Way.

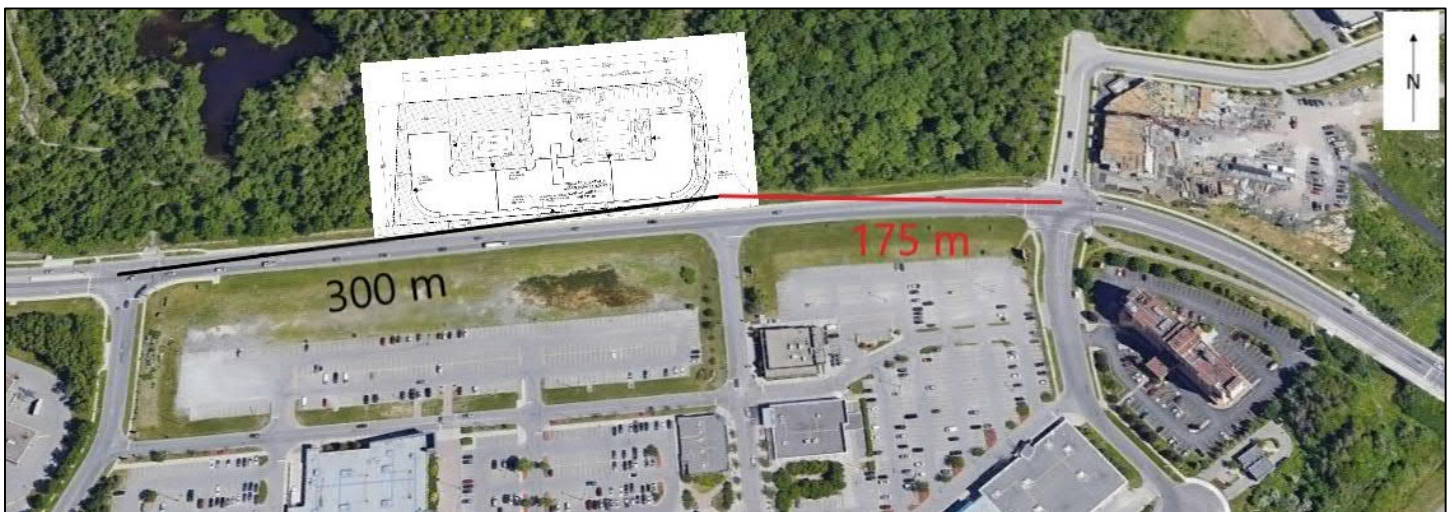


Figure 13.1 Sight Lines

As shown in Figure 13.1 the sight lines for the proposed development are 300m to the west at the intersection of Kanata Avenue and Earl Grey Drive and 175 m to the east at the intersection of Kanata Avenue and Maritime Way/Lord Byng Way. As such the sightlines for the proposed access are sufficient.

### 13.2 Access Intersection Control

In consideration of existing and projected volumes of traffic anticipated to utilize the site access, a stop control at the minor approaches (proposed site access) is recommended.

### 13.3 Access Intersection Design

No concerns are anticipated due to the existing sightlines of the proposed site access and expected low speed of vehicles traveling through the intersection of the proposed site access. As the proposed site access will not be signalized, the MMLOSguidelines do not apply for this intersection.

## 14.0 TRANSPORTATION DEMAND MANAGEMENT

The proposed development is expected to generate fewer than 60 employees and/or students on location at a given time. As such, this section is exempted from this TIA Report.

## 15.0 NEIGHBOURHOOD TRAFFIC MANAGEMENT

This module reviews the significant access routes to the development and identifies any required neighbourhood traffic management (NTM) measures to mitigate impacts on collector and local roads.

### 15.1 Adjacent Neighbourhoods

The proposed development has an access onto Kanata Avenue, an urban collector roadway. As mentioned in [Section 4.1](#), Kanata Avenue is expected to be widened to four (4) lanes from the existing two (2) lanes between Highway 417 and Campeau Drive. This is anticipated to mitigate the impacts of the proposed development site generated traffic on the local network.

## 16.0 TRANSIT

This section will review the potential impacts of the proposed development on existing and planned transit networks and services in order to ensure TLOS is not negatively impacted.

### 16.1 Route Capacity

It is anticipated that the proposed development will generate 31 and 33 transit trips during the AM peak hour and PM peak hour respectively. The relatively low number of development-generated trips are expected to be adequately accommodated by the existing transit routes and is not expected to result in any requirement for additional transit capacity. Further, it is not anticipated that the existing transit routes will require modification as a result of the proposed development.

### 16.2 Transit Priority

As noted in [Section 3.5](#), there are twelve routes in the area which travelers may use to travel to and from the development by using the Terry Fox Transit Station as it is approximately 530 m from the proposed access of the development. It is anticipated that the relatively low number of development-generated transit trips can be accommodated, and it is not anticipated that any additional transit trips will result in impacts to travel times.

## 17.0 REVIEW OF NETWORK CONCEPT

The proposed development is not anticipated to generate more than 200 peak hour person auto-driver trips, this section has been omitted from this TIA Report.

## 18.0 INTERSECTION DESIGN

This section will determine the design elements of the study area intersections required to accommodate the proposed development, ensuring they are consistent with the City of Ottawa Complete Street philosophy and MMLOS practices.

### 18.1 Intersection Control

All study intersections within the study area of the proposed development are signalized with the exception of the intersection of Kanata Avenue and the entrance to Kanata Centrum Shopping Center/proposed site access being stop controlled on the minor legs. No signal warrants are needed due to the low volumes of vehicles at the stop-controlled intersection.

### 18.2 Intersection Design

#### 18.2.1 Intersection Vehicular Level of Service (LOS)

Level of Service (LOS) is a qualitative measure of the operating conditions, based on lane configuration, signal operation/phasing. LOS criteria for signalized and unsignalized intersection based on the Multi Modal Level Of Service (MMLOS) Guidelines, are illustrated in Table 18.1.

Table 18.1 Definition of LOS for Intersections

Level of Service	v/c Ratio
A	0 to 0.60
B	0.61 to 0.70
C	0.71 to 0.80
D	0.81 to 0.90
E	0.91 to 1.00
F	> 1.00

Existing signal timing information such as phasing, pedestrian minimums and clearance intervals were provided by the City of Ottawa and used in the analysis of background conditions for all critical intersections within the study areas. The traffic signal timing forms can be found in Appendix C. Signal timings were optimized for future conditions with all Synchro 10 parameter taken in Accordance with Appendix C: Synchro Analysis Parameters of the City of Ottawa TIA Guidelines (2017) Additionally, all pedestrian clearance timings as well as amber and all red times that were provided by the City of Ottawa were used in the analysis of future operating conditions.

MP reviewed the existing 2021 conditions which can be found in Section 3.3, the future 2022 buildout year: background and total traffic, and the 2027 Background and total traffic operating conditions at all study area intersections. Synchro 10 reports for all analysis periods can be found in Appendix D. table 18.2 summarizes the 2022 Background Traffic V/C and LOS according to the City of Ottawa TIA methodologies.

Table 18.2 2022 Background Traffic Operating Conditions

	AM Peak Hour				PM Peak Hour			
	LOS	V/C	Delay (s)	Queue (m)	LOS	V/C	Delay (s)	Queue (m)
Kanata Avenue and Campeau Drive								
EBL	A	0.32	24.3	27	D	0.82	42.2	73.9
EBTR	A	0.38	29.4	61.5	D	0.83	48.2	171.1
WBL	A	0.11	21.3	12.9	A	0.25	22.3	15.2
WBTR	A	0.49	33.8	75.9	C	0.74	49.6	104.1
NBL	A	0.6	29.7	14.9	A	0.4	23.1	37.1
NBTR	A	0.25	18.4	24.8	A	0.53	26.3	119.3
NBR	A	0.09	1.4	0	A	0.07	0.9	1.5
SBL	A	0.36	29.4	37.3	A	0.21	34.2	24.5
SBT	D	0.87	49.5	151.3	A	0.55	38.7	105.9
SBR	A	0.33	4.4	15.4	A	0.35	5.5	18.5
Kanata Avenue and Earl Grey Dr								
EBL	A	0.08	22.1	5	A	0.5	50.4	33.7
EBR	A	0.21	10.7	6.8	A	0.59	12.8	19.8
NBL	A	0.1	2.7	4	A	0.42	5.3	22.2
NBTR	A	0.19	2.5	11.7	A	0.42	5.3	59.7
SNT	A	0.4	3.5	34.4	A	0.47	13	88.1
SBR	A	0.04	1	1.8	A	0.1	2.4	6.5
Kanata Avenue and the Entrance to Kanata Centrum (Future Site Access)								
EBLR	A	0.18	17	0.6	A	0.48	34.6	2.4
NBTL	A	0.04	9.2	0.1	A	0.07	9.2	0.2
Kanata Avenue and Maritime Way/ Lord Byng Way								
EBL	A	0.16	32.5	9.2	A	0.14	28.6	13
EBTR	A	0.27	14	8.4	A	0.23	8.2	12.6
WBL	B	0.64	48.9	34.7	A	0.32	31.2	30.5
WBTR	A	0.09	13.2	6.1	A	0.1	13.1	9.4
NBL	A	0.3	7.4	12.7	D	0.84	50.4	54
NBTR	A	0.38	6.5	43.7	E	0.92	35	239.9
SBL	A	0.04	12.4	6	B	0.7	66.1	27
SBTR	A	0.6	18.2	135	E	0.93	44.3	157.4
Kanata Avenue and Highway 417 Westbound off Ramp								
WBL	C	0.71	43.6	64	B	0.69	27.8	98.7
WBR	A	0.46	7.6	16.3	E	0.93	38.2	143.1
NBTR	A	0.26	4	11.8	A	0.59	35.8	134.7
SBT	A	0.41	8	45.6	A	0.47	17.9	70.2
Kanata Avenue and Highway 417 Eastbound on Ramp								
NBTR	A	0.36	15.6	50.8	A	0.34	4.2	37.4

	AM Peak Hour				PM Peak Hour			
	LOS	V/C	Delay (s)	Queue (m)	LOS	V/C	Delay (s)	Queue (m)
NBR	A	0.28	2.6	10.9	A	0.16	0.8	4.6
SBL	C	0.77	17.4	34.5	A	0.45	3.4	2.7
SBT	A	0.51	8.3	40.9	A	0.5	2	0

Note: NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound, L = Left-turn, T = Through, R = Right-turn

During the 2022 buildout year background analysis year, all movements at all intersection operate at an LOS of D or better, a v/c of 0.87 or less and a delay of 66.1 or less, with the exception of the northbound and southbound shared through right turn lanes of the intersection of Kanata Avenue and Maritime Way/Lord Byng Way, and the westbound right turn lane at the intersection of Kanata Avenue and HWY 417 Westbound off-ramp which all operate at an LOS of E, with a v/c of 0.92, 0.93 and 0.93 respectively during the pm peak hour.

Table 18.3 summarizes the 2027 Background traffic v/c and LOS according to the City of Ottawa TIA methodology.

Table 18.3 2027 Background Traffic Operating Conditions

	AM Peak Hour				PM Peak Hour			
	LOS	V/C	Delay (s)	Queue (m)	LOS	V/C	Delay (s)	Queue (m)
Kanata Avenue and Campeau Drive								
EBL	A	0.41	27	29.6	D	0.88	49.1	129.5
EBTR	A	0.46	32.8	67.5	D	0.85	48.8	197.1
WBL	A	0.14	22.4	13.8	A	0.28	22.7	17.5
WBTR	A	0.57	36.9	84.3	C	0.74	48	150.5
NBL	C	0.71	40.6	16.2	A	0.53	27.2	36.9
NBTR	A	0.26	17.7	27.2	B	0.62	29.8	126.5
NBR	A	0.09	1.7	0	A	0.08	1.4	0
SBL	A	0.39	29	41.7	A	0.31	37.6	52.4
SBT	E	0.91	52.4	186.6	B	0.68	44.2	107.1
SBR	A	0.34	4.8	17.4	A	0.41	5.7	17.9
Kanata Avenue and Earl Grey Dr								
EBL	A	0.08	22.2	5.3	A	0.43	24.8	20.1
EBR	A	0.22	10.5	7.1	A	0.54	8.4	14.1
NBL	A	0.12	2.9	4.4	B	0.61	12.6	36
NBTR	A	0.11	2	5.9	A	0.34	4.7	22.2
SNT	A	0.23	2.2	14.7	A	0.25	4.2	18.4
SBR	A	0.04	1	1.9	A	0.11	1.4	4
Kanata Avenue and the Entrance to Kanata Centrum (Future Site Access)								
EBLR	A	0.17	15.5	0.6	B	0.41	26.9	1.9
NBTL	A	0.05	9.5	0.1	A	0.08	10.1	0.3
Kanata Avenue and Maritime Way/ Lord Byng Way								

	AM Peak Hour				PM Peak Hour			
	LOS	V/C	Delay (s)	Queue (m)	LOS	V/C	Delay (s)	Queue (m)
EBL	A	0.17	31.9	9.9	A	0.32	50.2	18.7
EBTR	A	0.28	13.5	8.6	A	0.49	15.2	11.4
WBL	B	0.67	49.2	37.3	C	0.78	79.3	46.2
WBTR	A	0.1	12.1	6.3	A	0.19	19.3	12.3
NBL	A	0.3	7.7	14.3	A	0.52	9.5	23.6
NBTR	A	0.42	7.5	52.4	E	0.93	49.7	272.8
SBL	A	0.05	12.9	6.4	A	0.33	26.1	15.4
SBTR	A	0.37	13.8	57.8	A	0.37	13.3	69.4
Kanata Avenue and Highway 417 Westbound off Ramp								
WBL	C	0.73	43.1	68.9	B	0.63	25.1	124.7
WBR	A	0.47	7.1	16.5	E	0.95	45.5	217.2
NBTR	A	0.29	4.4	12.9	A	0.41	26	67
SBT	A	0.47	9.2	54.5	D	0.81	36	117.8
Kanata Avenue and Highway 417 Eastbound on Ramp								
NBTR	A	0.4	16.1	56.9	B	0.65	26.7	157.3
NBR	A	0.3	2.6	11.3	A	0.27	5.5	21.2
SBL	D	0.89	28.2	58.2	D	0.8	20.1	66
SBT	A	0.56	8.4	44.2	D	0.81	64.9	221.4
Note: NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound, L = Left-turn, T = Through, R = Right-turn								

During the 2027 horizon year background am peak period analysis, all movements at all intersection operate at an LOS of D or better, a v/c of 0.89 or less and a delay of 49.2 or less, with the exception of the southbound through movement at the intersection of Kanata Avenue and Campeau Drive which operates to an LOS of E with a v/c of 0.91 and a delay of 52.4 seconds. During the PM peak period all movements at all intersection operate at an LOS of D or better, a v/c of 0.88 or less and a delay of 79.3 seconds or less with the exception of the northbound shared through right turn lane of the intersection of Kanata Avenue and Maritime Way/Lord Byng Way, and the westbound right turn lane at the intersection of Kanata Avenue and HWY 417 Westbound off-ramp which all operate at an LOS of E, with a v/c of 0.93 and 0.95 respectively during the PM peak hour.

Table 18.4 summarizes the 2022 total traffic v/c and LOS according to the City of Ottawa TIA methodology.

Table 18.4 2022 Total Traffic Operating Conditions

	AM Peak Hour				PM Peak Hour			
	LOS	V/C	Delay (s)	Queue (m)	LOS	V/C	Delay (s)	Queue (m)
Kanata Avenue and Campeau Drive								
EBL	A	0.33	24.7	27	C	0.8	40.2	71.7
EBTR	A	0.39	29.9	62.2	D	0.84	48.3	177.5
WBL	A	0.11	21.6	13.2	A	0.26	22.5	15.6
WBTR	A	0.5	34.1	75.9	C	0.72	48	104.1
NBL	B	0.66	33.9	15.8	A	0.45	24.2	38.6

	AM Peak Hour				PM Peak Hour			
	LOS	V/C	Delay (s)	Queue (m)	LOS	V/C	Delay (s)	Queue (m)
NBTR	A	0.27	18.4	26.6	A	0.56	27.3	125.2
NBR	A	0.1	1.7	0	A	0.07	1.1	1.9
SBL	A	0.36	29.1	37.5	A	0.23	35	24.7
SBT	D	0.88	50.3	157.7	A	0.6	40.5	112.4
SBR	A	0.32	4.4	15.4	A	0.36	5.6	18.5
Kanata Avenue and Earl Grey Dr								
EBL	A	0.08	22.2	5	A	0.5	50.4	33.7
EBR	A	0.21	10.6	6.9	B	0.61	12.9	20.2
NBL	A	0.12	2.8	4.3	A	0.46	5.8	23.3
NBTR	A	0.2	2.5	12.7	A	0.44	5.5	64.1
SNT	A	0.42	3.6	36.2	A	0.5	13.7	96.7
SBR	A	0.04	1	1.8	A	0.1	2.4	6.5
Kanata Avenue and the Entrance to Kanata Centrum (Future Site Access)								
EBLTR	A	0.21	19.9	0.8	E	0.95	137.8	6.7
WBLTR	A	0.39	32.4	1.7	F	1.15	256.5	6.4
NBLTR	A	0.04	9.2	0.1	A	0.07	9.2	0.2
SBLTR	A	0.02	7.8	0.1	A	0.06	10.4	0.2
Kanata Avenue and Maritime Way/ Lord Byng Way								
EBL	A	0.16	32.5	9.2	A	0.14	28.7	13
EBTR	A	0.27	14	8.4	A	0.24	8.3	12.6
WBL	B	0.64	48.9	34.7	A	0.33	31.6	30.5
WBTR	A	0.1	13	6.1	A	0.11	12.7	9.7
NBL	A	0.33	8	12.7	D	0.84	49.6	54.2
NBTR	A	0.39	6.7	45.5	E	0.96	46.8	262.5
SBL	A	0.05	12.5	6.4	C	0.73	70.8	28.1
SBTR	B	0.65	19.7	158.8	E	0.96	48.6	178.7
Kanata Avenue and Highway 417 Westbound off Ramp								
WBL	C	0.71	43.6	64	B	0.66	25.6	0.7
WBR	A	0.46	7.6	16.3	E	0.95	42.4	158.8
NBTR	A	0.26	4	12.1	B	0.64	43	140.2
SBT	A	0.44	8.3	49.3	A	0.51	19.2	73.3
Kanata Avenue and Highway 417 Eastbound on Ramp								
NBTR	A	0.37	15.7	52.1	A	0.36	4.8	42
NBR	A	0.28	2.6	10.9	A	0.16	0.8	4.9
SBL	D	0.81	20.3	41	A	0.47	3.6	3.1
SBT	A	0.53	8.3	40.9	A	0.51	2.2	0
Note: NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound, L = Left-turn, T = Through, R = Right-turn								

During the 2022 buildout year total traffic analysis year, all movements at all intersection operate at an LOS of D or better, a v/c of 0.88 or less and a delay of 70.8 or less, with the exception of the northbound and



southbound shared through right turn lanes of the intersection of Kanata Avenue and Maritime Way/Lord Byng Way, and the westbound right turn lane at the intersection of Kanata Avenue and HWY417 Westbound off-ramp which all operate at an LOS of E, with a v/c of 0.96, 0.96 and 0.95 respectively during the PM peak hour.

As shown in Table 18.4 the access fails with a los of F and a v/c of 1.15 during the pm peak hour.

Table 18.5 summarizes the 2027 Total traffic v/c and LOS according to the City of Ottawa TIA methodology. During the 2027 Total traffic analysis signal timings splits were adjusted using Synchro 10 built in optimization feature.

Table 18.5 2027 Total Traffic Operating Conditions

	AM Peak Hour				PM Peak Hour			
	LOS	V/C	Delay (s)	Queue (m)	LOS	V/C	Delay (s)	Queue (m)
Kanata Avenue and Campeau Drive								
EBL	A	0.42	27.7	29.6	D	0.88	49.1	96.6
EBTR	A	0.48	33.8	68.8	D	0.87	51	207.9
WBL	A	0.15	22.5	14.1	A	0.3	23.2	16.7
WBTR	A	0.58	36.9	84	C	0.74	48	116.7
NBL	C	0.77	48.5	17.1	A	0.58	28.8	42
NBTR	A	0.28	17.8	29	B	0.65	30.6	141.9
NBR	A	0.1	2	0	A	0.08	1.6	2.8
SBL	A	0.39	28.9	41.9	A	0.33	38.7	28.2
SBT	E	0.92	54.4	195.6	C	0.71	45.8	125
SBR	A	0.34	5.2	18.6	A	0.41	5.7	19.1
Kanata Avenue and Earl Grey Dr								
EBL	A	0.08	22.2	5.3	A	0.53	50.5	36.1
EBR	A	0.23	10.4	7.3	B	0.63	12.5	21
NBL	A	0.13	3	4.9	A	0.47	6	26.6
NBTR	A	0.12	2	6.4	A	0.25	4	28.7
SNT	A	0.24	2.3	15.4	A	0.29	10.9	46
SBR	A	0.04	1	1.9	A	0.12	2.5	7.1
Kanata Avenue and the Entrance to Kanata Centrum (Future Site Access)								
EBLTR	A	0.21	18.4	0.8	D	0.81	87.1	5.3
WBLTR	A	0.18	22	1.1	F	1.09	223.8	6
NBLTR	A	0.05	9.5	0.1	A	0.08	9.5	0.3
SBLTR	A	0.02	7.9	0.1	A	0.07	10.9	0.2
Kanata Avenue and Maritime Way/Lord Byng Way								
EBL	A	0.17	31.9	9.9	A	0.2	43.6	19
EBTR	A	0.28	13.5	8.6	A	0.3	10.9	16
WBL	B	0.67	49.2	37.3	A	0.48	50	45.2
WBTR	A	0.1	11.9	6.4	A	0.15	18	13.2
NBL	A	0.32	7.9	14.3	A	0.54	11.7	24.6

	AM Peak Hour				PM Peak Hour			
	LOS	V/C	Delay (s)	Queue (m)	LOS	V/C	Delay (s)	Queue (m)
NBTR	A	0.43	7.6	54.3	E	0.92	60.4	347.1
SBL	A	0.05	12.9	6.6	E	0.92	115.1	41.1
SBTR	A	0.4	14.4	62.7	A	0.44	16.6	70.5
Kanata Avenue and Highway 417 Westbound off Ramp								
WBL	C	0.73	43.1	68.9	B	0.62	20.8	102.6
WBR	A	0.47	7.1	16.5	E	0.98	48.4	192.2
NBTR	A	0.16	3.8	6.8	A	0.44	25.4	70.3
SBT	A	0.5	9.6	58.4	B	0.66	25.8	90
Kanata Avenue and Highway 417 Eastbound on Ramp								
NBTR	A	0.4	16.3	58.3	A	0.45	7.8	55.3
NBR	A	0.3	2.6	11.3	A	0.19	1.1	5.9
SBL	E	0.93	35.2	76.3	A	0.51	3.7	4.7
SBT	A	0.58	8.4	44.3	A	0.57	2.9	130.5

During the 2027 total traffic am peak period analysis, all movements at all intersection operate at an LOS of C or better, a v/c of 0.77 or less and a delay of 49.2 or less, with the exception of the southbound through movement at the intersection of Kanata Avenue and Campeau Drive and the southbound left movement at the intersection of Kanata Avenue and HWY 417 eastbound on-ramp which operate at an LOS of E with a v/c of 0.92 and 0.93 respectively. During the pm peak period all movements at all intersection operate at an LOS of D or better, a v/c of 0.88 or less and a delay of 87.1 seconds or less with the exception of the northbound shared through right turn lane, the southbound left turn lane of the intersection of Kanata Avenue and Maritime Way/Lord Byng Way, and the westbound right turn lane at the intersection of Kanata Avenue and HWY 417 Westbound off-ramp which all operate at an LOS of E, with a v/c of 0.92, 0.92, and 0.98 respectively during the pm peak hour.

As shown in Table 18.5 the access (westbound movement) fails with a los of F and a v/c of 1.09. As such mitigation measures should be considered for this intersection such as changing the stop control to traffic signals. The effects of changing the stop control to traffic signals is discussed below in [Section 18.2.2](#).

### 18.2.2 Access Mitigation Measures.

#### 18.2.2.1 Signalization of Access Intersection

MP performed a traffic signal warrant for the intersection of Kanata Avenue and the proposed site access. The warrant was on 80% satisfied, as such, the intersection does not meet the warrant criteria. The Traffic Signal Warrant can be found in [Appendix G](#). However, Based on the failures at the intersection, MP reviewed the operations when the intersection was signalized.

MP Developed the Signal timing for the Site accessed based on City of Ottawa and MTO Standards for Red Timing and Amber Timings. Table 18.6 summarizes the site access for both the 2022 and 2027 pm peak hour

total traffic v/c and LOS according to the City of Ottawa TIA methodology, as the PM peak hour was determined as the most critical.

Table 18.6 Signalized Access Intersection

	2022 PM Peak Hour				2027 PM Peak Hour			
	LOS	V/C	Delay (s)	Queue (m)	LOS	V/C	Delay (s)	Queue (m)
Kanata Avenue and the Entrance to Kanata Centrum (Future Site Access)								
EBLTR	A	0.55	27.3	24.7	A	0.47	16.9	18.7
WBLTR	A	0.53	38.9	25	A	0.42	22.3	17.1
NBLTR	D	0.88	48	276.5	B	0.69	14.2	79
SBLTR	B	0.65	13.4	149.5	A	0.5	11.1	54.9

When signalizing the intersection of Kanata Avenue and the Site Access, during the 2022 total traffic scenario all movements at the intersection operate at an LOS of D or better with a v/c of 0.88 or less. During the 2027 total traffic scenario the all movements of the intersection operate at an LOS of B or better with a v/c of 0.69 or less. This is shown as a large improvement compared to the operation when unsignalized, LOS of E (2022) and F (2027).

The above illustrates that with the changes to the road network, Kanata Avenue being widened to 4 lanes as modelled in the 2027 scenario, as well as the signalization of the intersection of Kanata Avenue and the Site access, the proposed development is anticipated to have minimal impacts to the road network otherwise.

**18.2.2.2 Left turn lane warrant**

A left turn lane warrant was done for the Site access onto Kanata Avenue. Based on the left turn lane warrant calculations, the Site access does not meet the warrant for a left turn lane. The left lane warrant calculations can be found in [Appendix F](#).

**18.2.3 Intersection Pedestrian Level of Service (PLOS)**

The PLOS for the study intersections were determined in accordance with The City of Ottawa's MMLOS Guidelines. The Pedestrian Exposure at Signalized Intersection (PETS), average delay to pedestrians, and corresponding levels of service at the signalized intersections are summarized below in Table 18.7.

Table 18.7 Signalized Intersection Pedestrian Level of Service

Approach	PETS Evaluation		Pedestrian Delay Evaluation		Critical PLOS
	Total Points	LOS	Delay (s)	LOS	
Kanata Avenue and Campeau Drive					
Northbound (E-W)	76	B	46	E	E
Southbound (E-W)	68	C	46	E	E
Eastbound (N-S)	59	D	46	E	E
Westbound (N-S)	76	B	46	E	E
Kanata Avenue and Earl Grey Drive					
Northbound (E-W)	76	B	21	C	C
Eastbound (N-S)	55	D	21	C	D
Westbound (N-S)	51	D	21	C	D
Kanata Avenue and Maritime Way/Lord Byng Way					
Northbound (E-W)	76	B	38	D	D
Southbound (E-W)	83	B	38	D	D
Eastbound (N-S)	68	C	38	D	D
Westbound (N-S)	44	E	38	D	E
Kanata Avenue and HWY417 Westbound Off-Ramp					
Southbound (E-W)	99	A	38	D	D
Eastbound (N-S)	76	B	38	D	D
Westbound (N-S)	79	B	38	D	D
Kanata Avenue and HWY417 Eastbound On-Ramp					
Northbound (E-W)	102	A	38	D	D
Eastbound (N-S)	79	B	38	D	D
Westbound (N-S)	78	B	38	D	D

Upon review of Exhibit 5 to 7 of the City of Ottawa MMLOS Guidelines, the intersection of Kanata Avenue and Campeau Drive have a PLOS of E for all approaches. The intersection of Kanata Avenue and Early grey Drive have a PLOS of D for the eastbound and westbound approaches and a PLOS of C for the northbound approach. The intersections of Kanata Avenue and Maritime Way/Lord Byng Way has a PLOS of D for all approaches except for the westbound approach that has a PLOS of E. The intersections of Kanata Avenue and The HWY 417 On-ramp and the intersection of Kanata Avenue and the HWY 417 Off-ramp both have all approaches at a PLOS of D. The MMLOS target for PLOS based on Exhibit 22 of the City of Ottawa's Multi-Modal Level of Service (MMLOS) Guidelines is C for a Mixed Use Center, as such the segment PLOS does not meet the target for any intersection.

#### 18.2.4 Intersection Bicycle Level of Service (BLOS)

The Bicycle Level of Service (BLOS) for the study intersection was determined in accordance with the City of Ottawa's MMLOS Guidelines. Table 18.8 illustrates the BLOS.

Table 18.8 Signalized Intersection Bicycle Level of Service

Approach	Bike Lane Facility	Right Turn Lane Distance (m)	Lanes Crossed to Turn Left	Speed (km/h)	LOS
Kanata Avenue and Campeau Drive					
Northbound (E-W)	Mixed Traffic	N/a	1	60	F
Southbound (E-W)	Mixed Traffic	N/a	1	60	F
Eastbound (N-S)	Mixed Traffic	100	2	50	F
Westbound (N-S)	Bike Lane	85	1	50	D
Kanata Avenue and Earl Grey Drive					
Northbound (E-W)	Mixed Traffic	N/a	1	50	D
Eastbound (N-S)	Bike Lane	N/a	1	50	C
Westbound (N-S)	Bike Lane	N/a	1	50	C
Kanata Avenue and Maritime Way/ Lord Byng Way					
Northbound (E-W)	Mixed Traffic	N/a	1	50	D
Southbound (E-W)	Mixed Traffic	N/a	1	40	B
Eastbound (N-S)	Bike Lane	N/a	1	50	C
Westbound (N-S)	Bike Lane	N/a	1	50	C
Kanata Avenue and HWY 417 Westbound Off-Ramp					
Southbound (E-W)	Mixed Traffic	N/a	N/a	40	N/a
Eastbound (N-S)	Bike Lane	N/a	N/a	50	B
Westbound (N-S)	Bike Lane	N/a	N/a	50	B
Kanata Avenue and HWY 417 Eastbound On-Ramp					
Northbound (E-W)	Mixed Traffic	N/a	N/a	40	N/a
Eastbound (N-S)	Bike Lane	N/a	N/a	50	B
Westbound (N-S)	Bike Lane	N/a	N/a	50	B

The intersection of Kanata Avenue and Campeau Drive all approaches operate at a BLOS of F with the exception of the westbound approach operating at a BLOS of D. The intersection of Kanata Avenue and Early Grey Drive all approaches operate at an LOS of C with the exception of the northbound approach which operates at an LOS of D. The intersection of Kanata Avenue and Maritime Way/ Lord Byng Way northbound approach operates at a BLOS of D, the southbound approach operates at a LOS of B and the eastbound and westbound approach both operate at an BLOS of C. The two intersections of Kanata Avenue and the HWY 417 On-ramp and Off-ramp, the eastbound and westbound approaches operate at an LOS of B with the approaches from the highway do not have a BLOS as bicycles are not permitted on highways. The MMLOS target for BLOS based on Exhibit 22 of the City of Ottawa's Multi-Modal Level of Service (MMLOS) Guidelines is B for a Mixed Use Center, as such the segment PLOS at all intersections does not meet the target, with the exception of the two intersections of Kanata Avenue and the HWY 417 On-ramp and Off-ramp, the eastbound and westbound approaches, and the southbound approach at the intersection of Kanata Avenue and Maritime Way/ Lord Byng Way operate at an LOS of B and meet the target.

### 18.2.5 Intersection Transit Level of Service (TLOS)

In order to evaluate Transit Level of Service at the study intersections, average delays at approaches were determined based on the intersectional analysis completed as part of this investigation. Detailed analysis reports are presented in Appendix D.

Upon review of Exhibit 16 of The City of Ottawa's MMLOS Guidelines, all signalized intersections operate at an TLOS of F, due to high cycle timings and delays.

### 18.2.6 Intersection Truck Level of Service (tkLOS)

The Truck Level of Service (tkLOS) for the study area intersections was determined in accordance with the City of Ottawa's MMLOS Guidelines. The effective Radii, number of receiving lanes and corresponding LOS at the signalized intersections are summarized in Table 18.9.

Table 18.9 Signalized Intersection Truck Level of Service

Approach	Effective Corner Radius (m)	Number of Receiving Lanes	LOS
Kanata Avenue and Campeau Drive			
Northbound (E-W)	15	1	E
Southbound (E-W)	15	1	E
Eastbound (N-S)	15	1	E
Westbound (N-S)	15	1	E
Kanata Avenue and Earl Grey Drive			
Northbound (E-W)	18	1	F
Eastbound (N-S)	13	1	E
Westbound (N-S)	N/a	N/a	N/a
Kanata Avenue and Maritime Way/ Lord Byng Way			
Northbound (E-W)	15	1	E
Southbound (E-W)	15	1	E
Eastbound (N-S)	15	1	E
Westbound (N-S)	15	1	E
Kanata Avenue and HWY 417 Westbound Off-Ramp			
Southbound (E-W)	15	1	E
Eastbound (N-S)	N/a	N/a	N/a
Westbound (N-S)	N/a	N/a	N/a
Kanata Avenue and HWY 417 Eastbound On-Ramp			
Northbound (E-W)	N/a	N/a	N/a
Eastbound (N-S)	N/a	N/a	N/a
Westbound (N-S)	13	1	E

Upon review of Exhibit 21 of the City of Ottawa’s MMLOS Guidelines all approaches at all intersections operate at a tkLOS of E with the exception of the northbound approach of the intersection of Kanata Avenue and Early Grey Drive which operates at a tkLOS of F. The westbound approach at the intersection of Kanata Avenue and Early Grey Drive, the eastbound and westbound approaches at the intersection of Kanata Avenue and the HWY 417 westbound off-ramp, and the northbound and eastbound approaches at the intersection of Kanata Avenue and the HWY 417 eastbound on-ramp which all do not have a right turn movement and as such no tkLOS is available. The MMLOS target for tkLOS based on Exhibit 22 of the City of Ottawa’s Multi-Modal Level of Service (MMLOS) Guidelines is “No Target” for a Mixed Use Center, as such the intersections PLOS does meet the target.

## 19.0 SUMMARY AND RECOMMENDATIONS

The Forecasting report summarizes the information required to complete a Transportation Impact Assessment for the City of Ottawa. In summary:

- The Phase 1, TIA Screening Form has been completed. The requirement to pursue a TIA is satisfied.
- The proposed development will be located at 180 Kanata Avenue, located in Kanata. The proposed development is on the northwest corner of the signalized intersection of Kanata Avenue and Maritime way/Lord Byng Way. The proposed development will include 304 residential units, 153 m<sup>2</sup> of gym space, 213 m<sup>2</sup> of café space, and 1,083 m<sup>2</sup>.
- The study area has five signalized intersection within the study limits: Kanata Avenue and Campeau Drive; Kanata Avenue and Earl Grey Drive; Kanata Avenue and Maritime Way/ Lord Byng Way; Kanata Avenue and Highway 417 Westbound off Ramp; and, Kanata Avenue and Highway 417 Eastbound on Ramp.
- The study area has one unsignalized intersection within the study limits: Kanata Avenue and Entrance to Kanata Centrum (future site entrance).
- The study time periods will be during the AM and PM peak hours of the adjacent roadways.
- Horizon analysis includes the 2021 existing conditions, 2022 Background and Total Traffic conditions, and 2027 background and total conditions.
- Under Existing Conditions, all six intersections are expected to operate at an LOS of D or better with the exception of the of southbound right turn lane at the intersection of Kanata Avenue and Highway 417 Westbound off Ramp which is expected to operate at a LOS of E with a v/c of 0.93.
- The proposed development is expected to generate 108 new person auto driver trips during the AM peak hour with 33 entering and 75 exiting the proposed development, and 172 new person auto driver trips during the PM peak hour with 98 entering and 74 exiting the proposed development.
- With the changes to the transit network and the widening of Kanata Avenue within the vicinity of the proposed development, it is anticipated that the development generated traffic demand will be satisfied by the transportation network.
- It is anticipated that the proposed development will provide adequate facilities to meet the City of Ottawa's complete Street design philosophy, meeting the majority of the basic and required TDM measures in bicycle walking, and transit. Along the boundary road transit level of service is relatively low, however as the development is not anticipated to generate a large volume of transit mode share trips, the impact on transit due to the development is expected to be minimal.
- Overall, all the roadways within the project study area operate at acceptable levels of service. However, during some movement the v/c is begging to reach capacity. This is anticipated to be dealt with once the plans to increase Kanata Avenue from a 2-lane roadway to a 4-lane roadway are complete.
- The site access is shown to operate with a LOS F for the 2022 and 2027 total traffic conditions during the PM peak hour. Both a left turn warrant and the signalization of the intersection were done to analyze mitigation measures. A left turn lane was not warranted. Signalization of the intersection is shown to improve the operations of the intersection to appropriate levels.



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## APPENDIX A – TIA STEP 1 SCREENING FORM

## City of Ottawa 2017 TIA Guidelines Screening Form

### 1. Description of Proposed Development

Municipal Address	180 Kanata Avenue
Description of Location	<b>Multi-residential</b> building 1 <sup>st</sup> -floor with commercial
Land Use Classification	Mid-rise <b>residential with 1<sup>st</sup>-floor</b> commercial (Land use code 231)
Development Size (units)	304 units
Development Size (m <sup>2</sup> )	1,610 commercial
Number of Accesses and Locations	1 Access onto Kanata Avenue
Phase of Development	1
Buildout Year	2022

If available, **please attach a sketch of the development or site plan** to this form.

### 2. Trip Generation Trigger

Considering the Development's Land Use type and Size (as filled out in the previous section), please refer to the Trip Generation Trigger checks below.

Land Use Type	Minimum Development Size
Single-family homes	40 units
Townhomes or apartments	90 units
Office	3,500 m <sup>2</sup>
Industrial	5,000 m <sup>2</sup>
Fast-food restaurant or coffee shop	100 m <sup>2</sup>
Destination retail	1,000 m <sup>2</sup>
Gas station or convenience market	75 m <sup>2</sup>

\* If the development has a land use type other than what is presented in the table above, estimates of person-trip generation may be made based on average trip generation characteristics represented in the current edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual.

If the proposed development size is greater than the sizes **identified** above, **the Trip Generation Trigger is satisfied.**

### 3. Location Triggers

	Yes	No
Does the development propose a new driveway to a boundary street that is designated as part of the City's Transit Priority, Rapid Transit or Spine Bicycle Networks?		X
Is the development in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone?*	X	

\*DPA and TOD are identified in the City of Ottawa Official Plan (DPA in Section 2.5.1 and Schedules A and B; TOD in Annex 6). See Chapter 4 for a list of City of Ottawa Planning and Engineering documents that support the completion of TIA).

**If any of the above questions were answered with 'Yes,' the Location Trigger is satisfied.**

### 4. Safety Triggers

	Yes	No
Are posted speed limits on a boundary street are 80 km/hr or greater?		X
Are there any horizontal/vertical curvatures on a boundary street limits sight lines at a proposed driveway?		X
Is the proposed driveway within the area of influence of an adjacent traffic signal or roundabout (i.e. within 300 m of intersection in rural conditions, or within 150 m of intersection in urban/ suburban conditions)?	X	
Is the proposed driveway within auxiliary lanes of an intersection?		X
Does the proposed driveway make use of an existing median break that serves an existing site?		X
Is there is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development?	X	
Does the development include a drive-thru facility?		X

**If any of the above questions were answered with 'Yes,' the Safety Trigger is satisfied.**

### 5. Summary

	Yes	No
Does the development satisfy the Trip Generation Trigger?	X	
Does the development satisfy the Location Trigger?	X	

**Transportation Impact Assessment** Screening Form

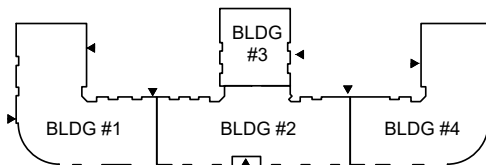
Does the development satisfy the Safety Trigger?	X	
--	---	--

**If none of the triggers are satisfied, the TIA Study is complete.** If one or more of the triggers is satisfied, **the TIA Study must continue into the next stage** (Screening and Scoping).

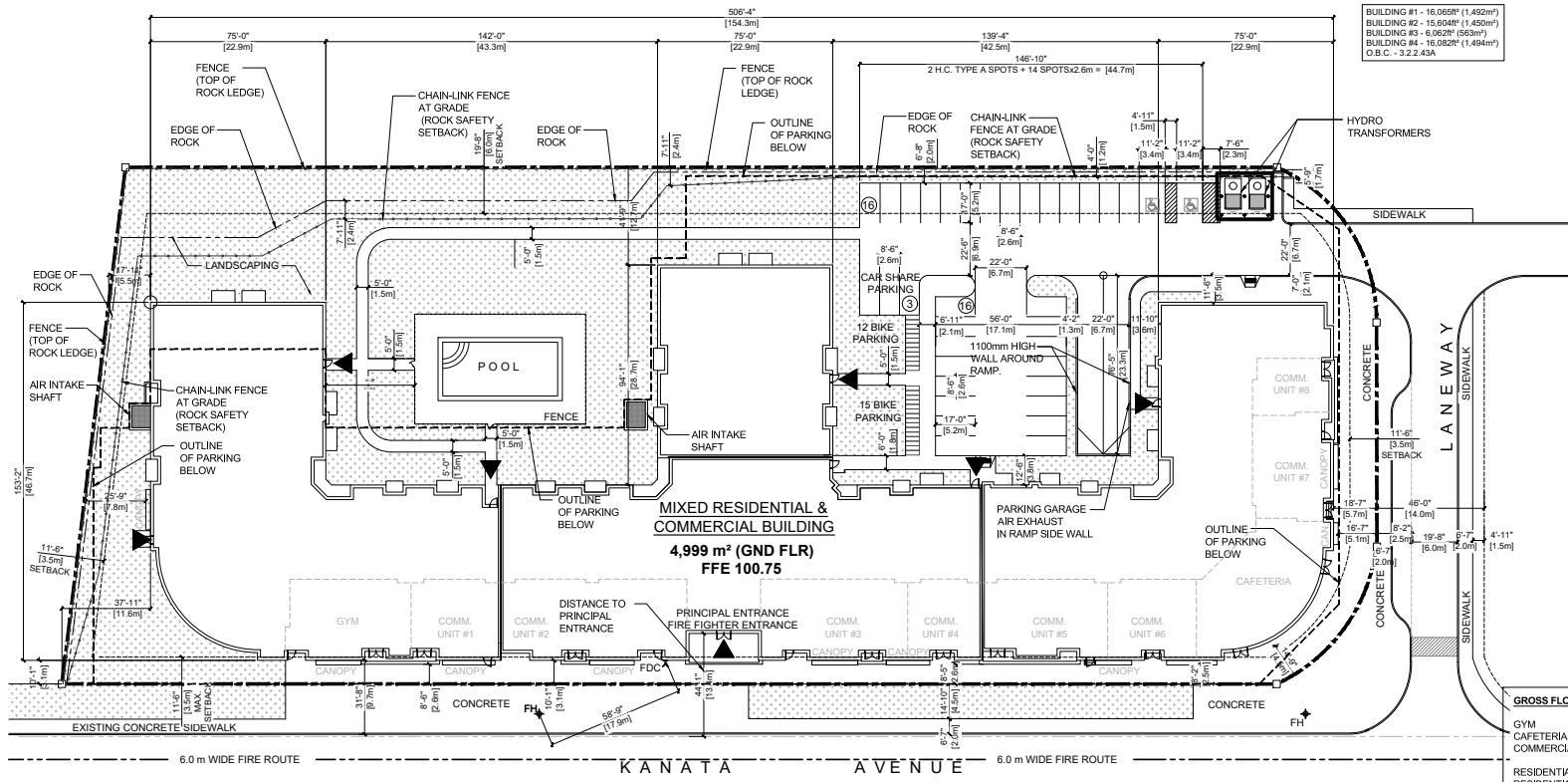
## APPENDIX B – SITE PLAN

AVERAGE NUMBER OF BEDROOMS PER DWELLING UNIT									
NO. OF UNITS	GROUND FLOOR	2ND FLOOR	3RD FLOOR	4TH FLOOR	5TH FLOOR	6TH FLOOR	TOTAL NUMBER OF UNITS	NUMBER OF BEDROOMS	% OF BEDROOMS
STUDIO	2	3	3	3	3	3	17	17	3.84
ONE BEDROOM	18*	26	26	26	26	26	148*	148*	33.41
TWO BEDROOM	9*	26	26	26	26	26	139*	278*	62.73
<b>TOTAL COMBINED</b>	<b>29*</b>	<b>55</b>	<b>55</b>	<b>55</b>	<b>55</b>	<b>55</b>	<b>304*</b>	<b>443</b>	<b>100%</b>
*2 MODEL/GUEST UNITS INCLUDED IN STATS									

BARRIER FREE UNITS				
NO. OF UNITS = 304 x 15% = 46 UNITS REQ'D				
TYPE OF UNITS	# OF UNITS	REQ'D B.F. UNITS (15%)	PROVIDED	B.F. UNITS
STUDIO	17	2.55	5	
ONE BEDROOM	148*	22.20	23	
TWO BEDROOM	139*	20.85	25	
<b>TOTAL COMBINED</b>	<b>304*</b>	<b>45.60</b>	<b>53</b>	
*2 MODEL/GUEST UNITS INCLUDED IN STATS				



CITY OF OTTAWA ZONING BY-LAW 2006-200		
MCS HRS) MIXED-USE ZONE (M1)		
PROPOSED MIXED-USE DEVELOPMENT		
ZONING PROVISION	REQUIRED	PROVIDED
<b>MADE-USE CENTER ZONE PROVISIONS</b>		
LOT AREA (MIN.)	NO MINIMUM	11,135.34m <sup>2</sup>
LOT WIDTH (MIN.)	NO MINIMUM	< 7' 108.7m
FRONT YARD SETBACK (MIN. / MAX.)	NO MINIMUM / MAXIMUM 3.5m	2.5 m
INTERIOR SIDE YARD SETBACK (MIN.)	NO MINIMUM, EXCEPT WHERE THE BUILDING WALL CONTAINS ROOM WINDOWS, THE MINIMUM SETBACK ADJACENT TO WINDOWS IS 3.5m	5.0 m (EAST) & 5.5 m (WEST)
REAR YARD SETBACK (MIN.)	NO MINIMUM, EXCEPT WHERE THE BUILDING WALL CONTAINS ROOM WINDOWS, THE MINIMUM SETBACK ADJACENT TO WINDOWS IS 6m	12.7 m
FLOOR SPACE INDEX (MAX.)	2	2.04
FLOOR SPACE INDEX NON-RESIDENTIAL (MIN.)	0.75	0.33
BUILDING HEIGHT (MIN. / MAX.)	MINIMUM 6.7m / MAXIMUM 35.0m	21.2 m
WIDTH OF LANDSCAPED AREA (MIN.)	NO MINIMUM	VARIES
<b>PARKING PROVISIONS (AREA C)</b>		
PARKING SPACES (MIN.)	0.85 PER DWELLING UNIT + 258.4	
	3.4 PER 100m <sup>2</sup> GFA RETAIL + 36.8	
	10 PER 100m <sup>2</sup> GFA CAFE + 53.3	TOTAL = 387
	10 PER 100m <sup>2</sup> GFA CAFE + 23.3	
VISITOR PARKING SPACES (MIN.)	0.2 PER DWELLING UNIT + 69.8	
TOTAL REQUIRED	TOTAL = 392.6	
ACCESSIBLE PARKING SPACES (MIN.)	5 TYPE A & 5 TYPE B	10 TOTAL
BICYCLE PARKING SPACES (MIN.)	0.5 PER DWELLING UNIT + 152	
	3 PER 250m <sup>2</sup> GFA RETAIL + 5	TOTAL = 244
	3 PER 250m <sup>2</sup> GFA CAFE + 1	INCLUDES 0.75 PER DWELLING UNIT
	1 PER 1500m <sup>2</sup> GFA GYM + 0	
<b>AMENITY AREA PROVISIONS</b>		
TOTAL AMENITY AREA (MIN.)	6m <sup>2</sup> PER DWELLING UNIT = 1824	4,375 m <sup>2</sup>
COMMUNAL AMENITY AREA (MIN.)	50% OF TOTAL = 932 m <sup>2</sup>	3,222 m <sup>2</sup>



GROSS FLOOR AREAS (GFA) - PER CITY	
GYM	= 153m <sup>2</sup> (1,644ft <sup>2</sup> )
CAFETERIA	= 213m <sup>2</sup> (2,292ft <sup>2</sup> )
COMMERCIAL	= 1,083m <sup>2</sup> (11,659ft <sup>2</sup> )
RESIDENTIAL (1ST FLR)	= 2,020m <sup>2</sup> (21,739ft <sup>2</sup> )
RESIDENTIAL (2ND FLR)	= 4,240m <sup>2</sup> (45,640ft <sup>2</sup> )
RESIDENTIAL (3RD FLR)	= 4,240m <sup>2</sup> (45,640ft <sup>2</sup> )
RESIDENTIAL (4TH FLR)	= 4,240m <sup>2</sup> (45,640ft <sup>2</sup> )
RESIDENTIAL (5TH FLR)	= 4,240m <sup>2</sup> (45,640ft <sup>2</sup> )
RESIDENTIAL (6TH FLR)	= 4,240m <sup>2</sup> (45,640ft <sup>2</sup> )

AMENITY AREAS	
COMMUNAL POOL GRASS	= 2,465m <sup>2</sup> (26,534ft <sup>2</sup> )
ROOF TOP	= 379m <sup>2</sup> (4,076ft <sup>2</sup> )
GND FLR AMENITIES	= 378m <sup>2</sup> (4,076ft <sup>2</sup> )
<b>PRIVATE BALCONIES</b>	
GND FLOOR	= 135m <sup>2</sup> (1,456ft <sup>2</sup> )
2ND FLOOR	= 243m <sup>2</sup> (2,617ft <sup>2</sup> )
3RD FLOOR	= 243m <sup>2</sup> (2,639ft <sup>2</sup> )
4TH FLOOR	= 243m <sup>2</sup> (2,627ft <sup>2</sup> )
5TH FLOOR	= 243m <sup>2</sup> (2,612ft <sup>2</sup> )
6TH FLOOR	= 243m <sup>2</sup> (2,612ft <sup>2</sup> )
<b>TOTAL</b>	<b>= 4,575m<sup>2</sup> (49,244ft<sup>2</sup>)</b>

PARKING					
FLOOR	2.6m x 5.2m	2.4m x 5.2m	BF TYPE 'A' (3.4m x 5.2m)	BF TYPE 'B' (2.6m x 5.2m)	TOTAL
SITE	33	0	1	1	35
UIG LVL 1	190	73	2	2	267
UIG LVL 2	61	20	2	2	85
<b>TOTAL</b>	<b>284</b>	<b>93</b>	<b>5</b>	<b>5</b>	<b>387</b>

BUILDING AREA CALCULATIONS (PERIMETER)	
UIG LEVEL 1 =	8,488m <sup>2</sup> (91,359ft <sup>2</sup> )
UIG LEVEL 2 =	3,056m <sup>2</sup> (32,895ft <sup>2</sup> )
GROUND FLR =	4,999m <sup>2</sup> (53,813ft <sup>2</sup> )
2ND FLR =	4,956m <sup>2</sup> (53,773ft <sup>2</sup> )
3RD FLR =	4,950m <sup>2</sup> (53,710ft <sup>2</sup> )
4TH FLR =	4,986m <sup>2</sup> (53,669ft <sup>2</sup> )
5TH FLR =	4,988m <sup>2</sup> (53,669ft <sup>2</sup> )
6TH FLR =	4,986m <sup>2</sup> (53,669ft <sup>2</sup> )
ROOF =	148m <sup>2</sup> (1,596ft <sup>2</sup> )

**SITE PLAN**  
SCALE 1 = 300

**PROGRESSIVE ARCHITECTS, LTD.**  
5255 COUNTY RD. 42, UNIT C, WINDSOR ON, N8N2M1 TEL: 519-256-1607

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8		16			
7		15			
6		14			
5		13			
4	OCT 27 21	RE-ZONING	12		
3	OCT 20 21	UDRP	11		
2	JUNE 30 21	ZONING	10		
1	JUNE 11 21	REVIEW	9		
rev.	date	issued for	rev.	date	issued for

project: THE WOODS ON KANATA AVE.  
address: OTTAWA, ON  
sheet name: SITE PLAN  
project no.: 21-0044  
sheet no.: A-001

## APPENDIX C – TRAFFIC DATA





# 161

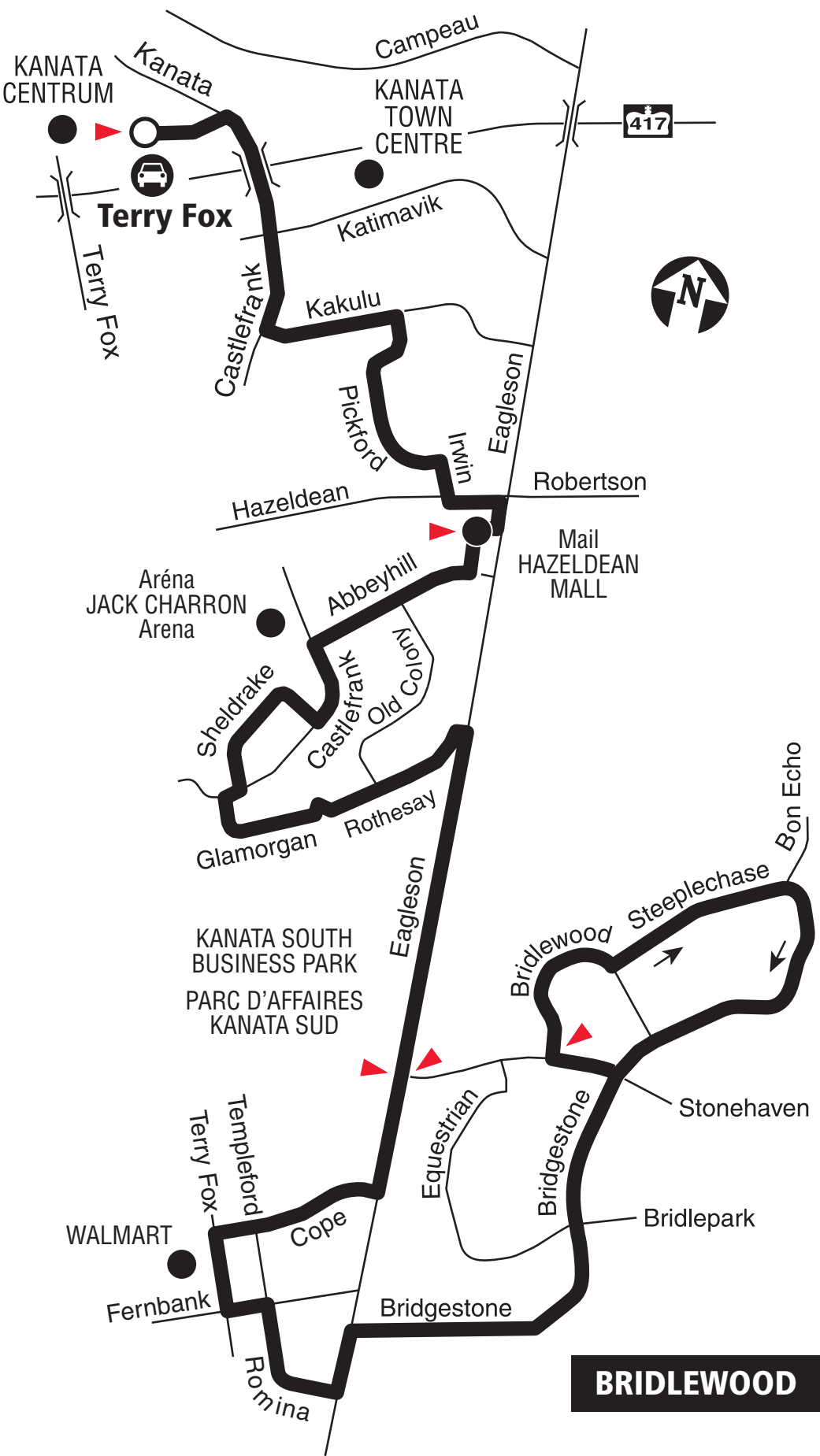
## TERRY FOX BRIDLEWOOD

### Local




### Monday to Friday/ Lundi au vendredi

All day service. No weekend service  
Service toute la journée.  
Aucun service les fins de semaine

**TERRY FOX**



**BRIDLEWOOD**

-  Station
-  Park & Ride / Parc-o-bus
-  Timepoint / Heures de passage

2019.06



**Schedule / Horaire.....613-560-1000**

**Text / Texto .....560560**

*plus your four digit bus stop number / plus votre numéro d'arrêt à quatre chiffres*

Customer Service  
Service à la clientèle ..... **613-741-4390**

Lost and Found / Objets perdus..... **613-563-4011**

Security / Sécurité ..... **613-741-2478**

**Effective June 29, 2015**

**En vigueur 29 juin 2015**



**INFO 613-741-4390**  
**octranspo.com**



# 162

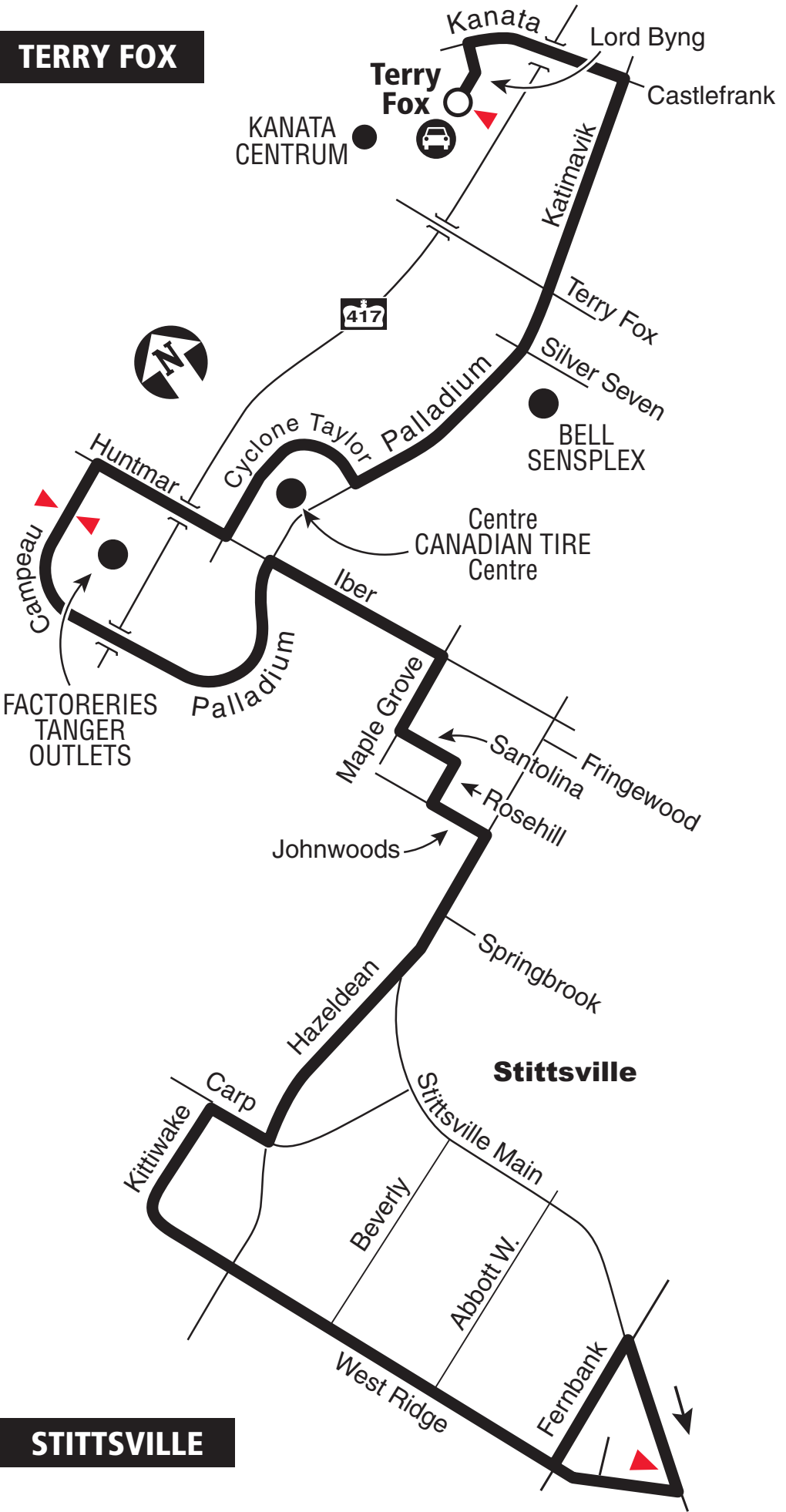
## TERRY FOX STITTSVILLE

### Local

#### Monday to Saturday / Lundi au samedi

Selected trips Mon. to Fri. All day on Saturday /  
Service limité du lundi au vendredi.  
Toute la journée le samedi

#### TERRY FOX



#### STITTSVILLE

- Transitway Station / Station du Transitway
- Park & Ride / Parc-o-bus
- Timepoint / Heures de passage

2021.06



**Schedule / Horaire ..... 613-560-1000**

**Text / Texto\* ..... 560560**

plus your four digit bus stop number / plus votre numéro d'arrêt à quatre chiffres

\*Standard message rates may apply / Les tarifs réguliers de messagerie texte peuvent s'appliquer

Customer Service

Service à la clientèle ..... **613-741-4390**

Lost and Found / Objets perdus..... **613-563-4011**

Security / Sécurité ..... **613-741-2478**

**Effective June 20, 2021**

**En vigueur 20 juin 2021**



**INFO 613-741-4390**  
**octranspo.com**



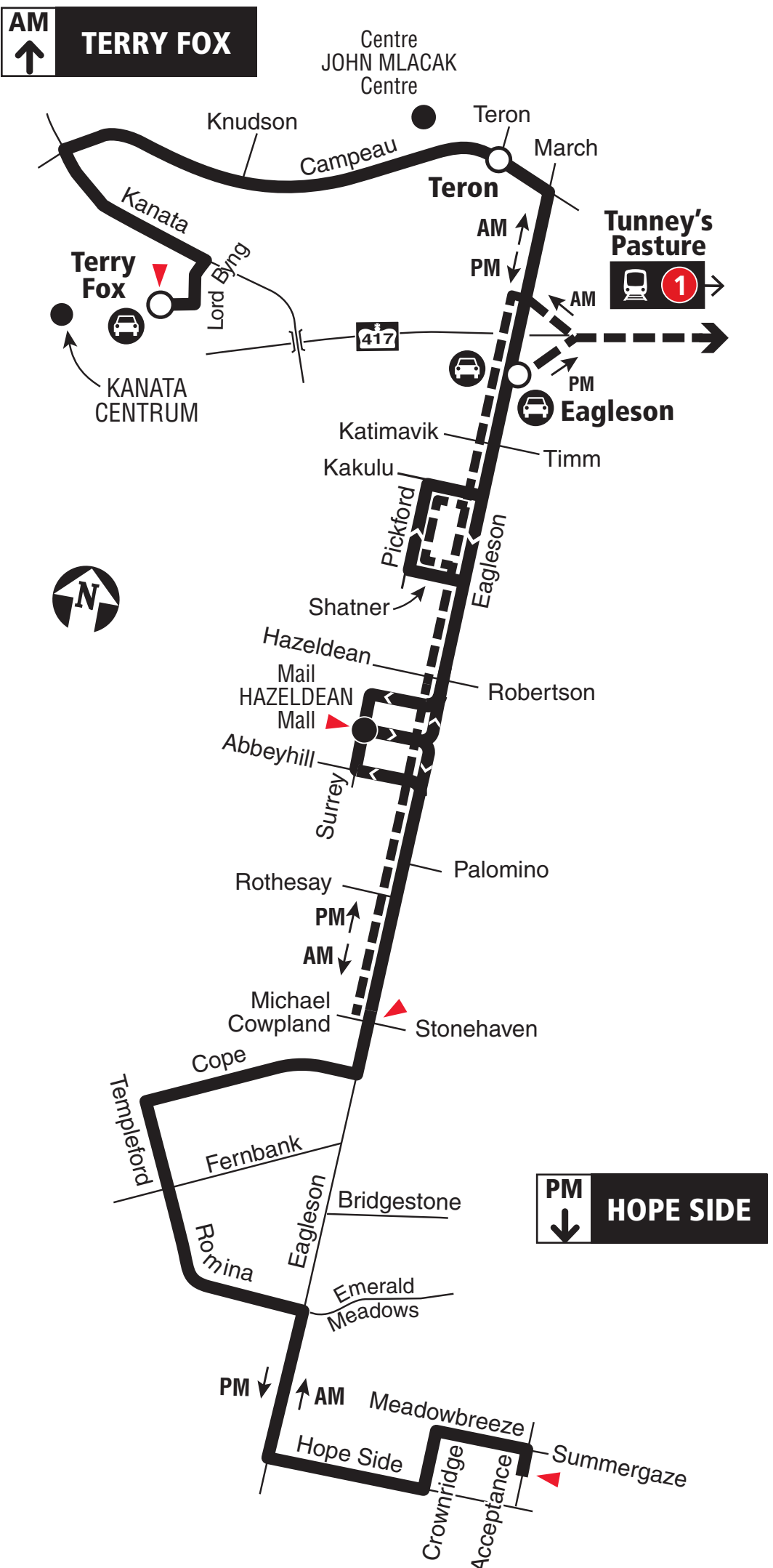
# 164

## TERRY FOX HOPE SIDE

### Local

### Monday to Friday / Lundi au vendredi

Peak periods only  
Périodes de pointe seulement



- Transitway Station / Station du Transitway
- Peak Periods Only / Périodes de pointe seulement  
Some trips to / from Tunney's Pasture  
Quelques trajets de / vers Tunney's Pasture
- Park & Ride / Parc-o-bus
- Timepoint / Heures de passage

2020.12



**Schedule / Horaire..... 613-560-1000**

**Text / Texto ..... 560560**

*plus your four digit bus stop number / plus votre numéro d'arrêt à quatre chiffres*

Customer Service  
Service à la clientèle ..... **613-741-4390**

Lost and Found / Objets perdus..... **613-563-4011**

Security / Sécurité ..... **613-741-2478**

**Effective December 21, 2020  
En vigueur 21 décembre 2020**



**INFO 613-741-4390  
octranspo.com**



# 167

## TERRY FOX BLACKSTONE

### Local

### Monday to Friday/ Lundi au vendredi

Selected time periods  
Périodes sélectionnées

#### TERRY FOX



- Transitway Station / Station du Transitway
- Park & Ride / Parc-o-bus
- Timepoint / Heures de passage

2019.06



**Schedule / Horaire.....613-560-1000**

**Text / Texto .....560560**

*plus your four digit bus stop number / plus votre numéro d'arrêt à quatre chiffres*

Customer Service

Service à la clientèle ..... **613-741-4390**

Lost and Found / Objets perdus..... **613-563-4011**

Security / Sécurité ..... **613-741-2478**

**Effective December 24, 2017**

**En vigueur 24 décembre 2017**



**INFO 613-741-4390**  
**octranspo.com**



# 167

## TERRY FOX BLACKSTONE

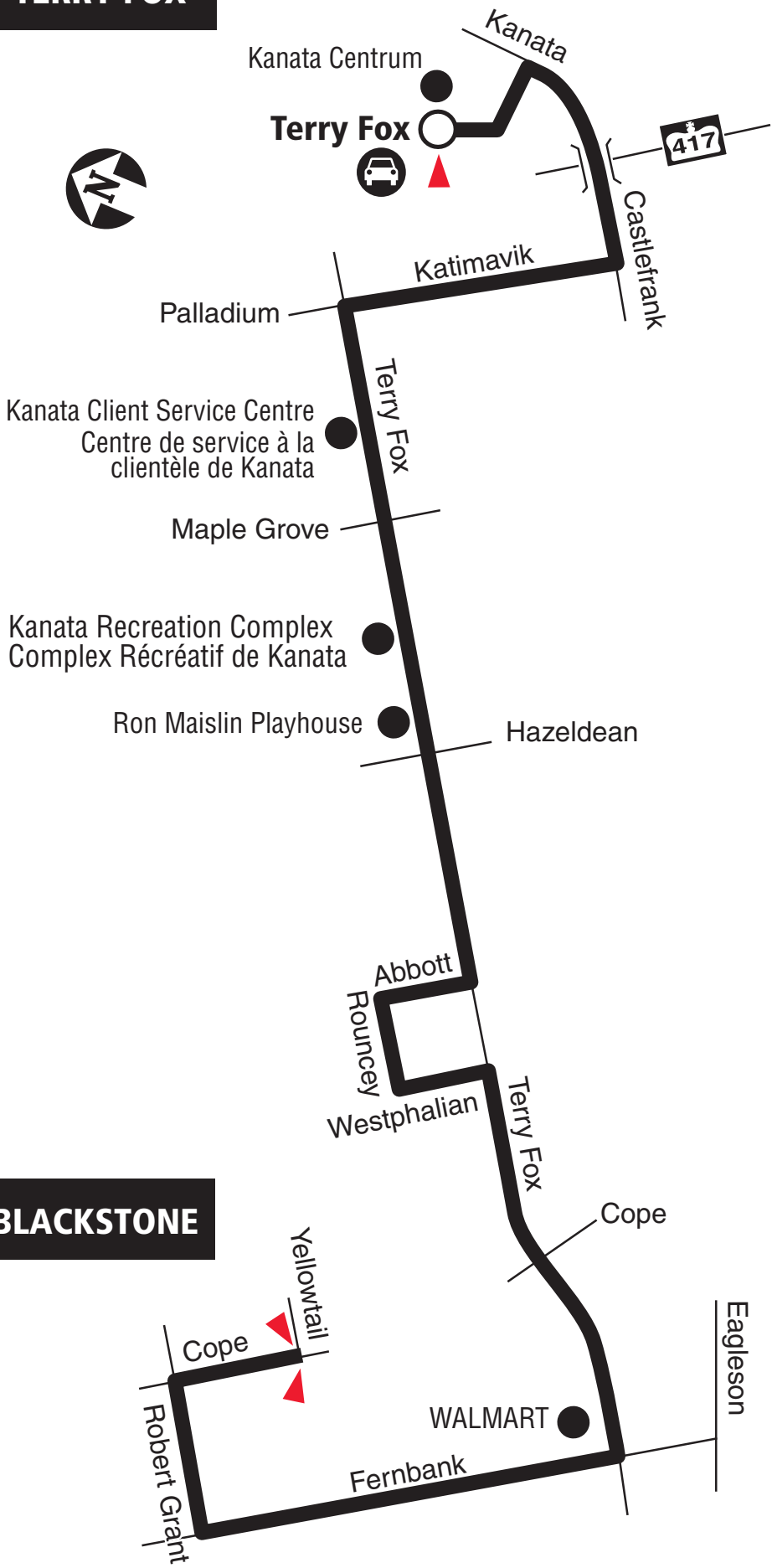
### Local

#### Monday to Friday/ Lundi au vendredi

Selected time periods

Périodes sélectionnées

#### TERRY FOX



#### BLACKSTONE

- Transitway Station / Station du Transitway
- Park & Ride / Parc-o-bus
- Timepoint / Heures de passage

2019.06



**Schedule / Horaire.....613-560-1000**

**Text / Texto .....560560**

*plus your four digit bus stop number / plus votre numéro d'arrêt à quatre chiffres*

Customer Service

Service à la clientèle ..... **613-741-4390**

Lost and Found / Objets perdus..... **613-563-4011**

Security / Sécurité ..... **613-741-2478**

**Effective December 24, 2017**

**En vigueur 24 décembre 2017**



**INFO 613-741-4390**  
**octranspo.com**

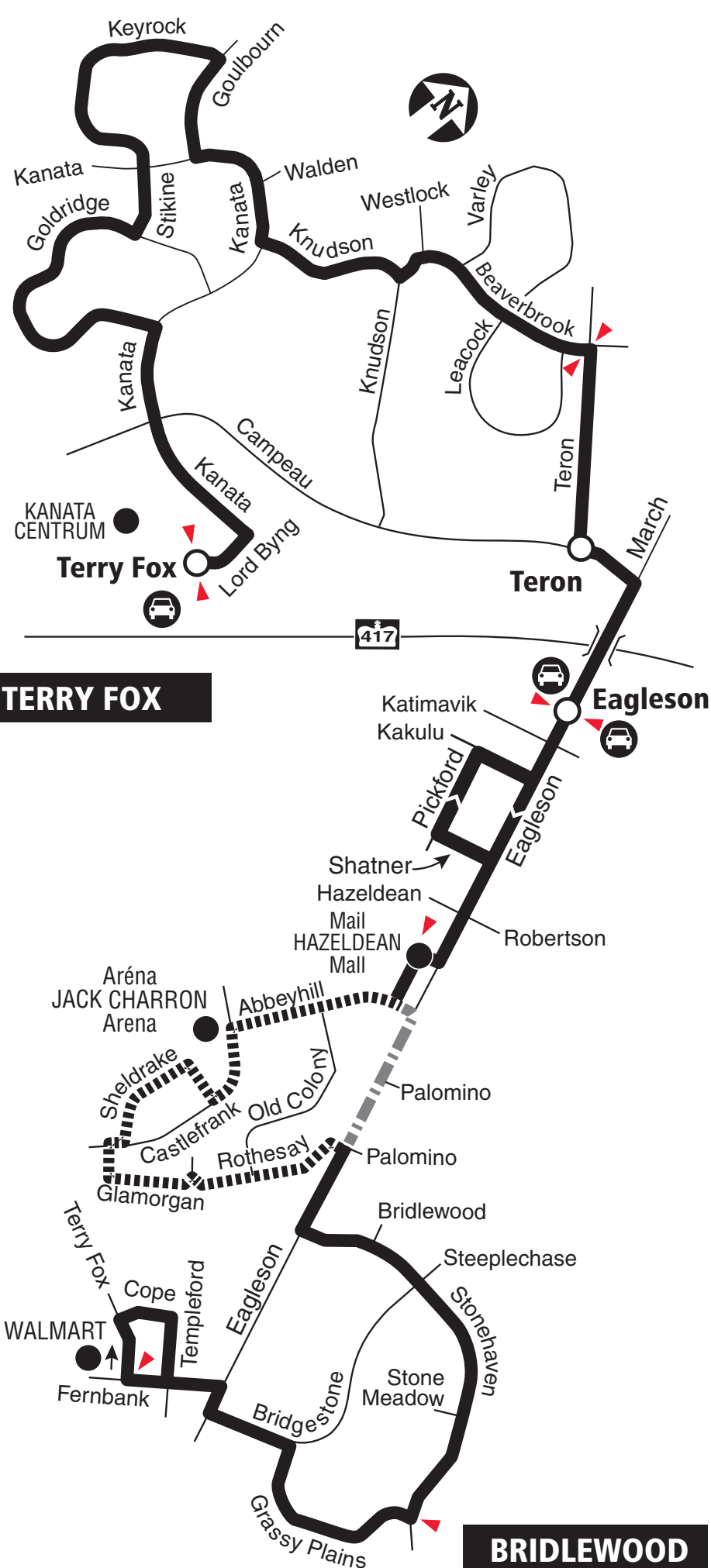


# 168

## TERRY FOX BRIDLEWOOD

### Local

**7 days a week / 7 jours par semaine**  
All day service  
Service toute la journée



- Transitway Station / Station du Transitway
- Saturday and Sunday only / Samedi et dimanche seulement
- No weekend service / Aucun service la fin de semaine
- Park & Ride / Parc-o-bus
- Timepoint / Heures de passage

2019.06



**Schedule / Horaire.....613-560-1000**

**Text / Texto .....560560**

*plus your four digit bus stop number / plus votre numéro d'arrêt à quatre chiffres*

Customer Service

Service à la clientèle ..... **613-741-4390**

Lost and Found / Objets perdus..... **613-563-4011**

Security / Sécurité ..... **613-741-2478**

**Effective December 24, 2017**

**En vigueur 24 décembre 2017**



**INFO 613-741-4390**  
**octranspo.com**



# 264

## TERRY FOX

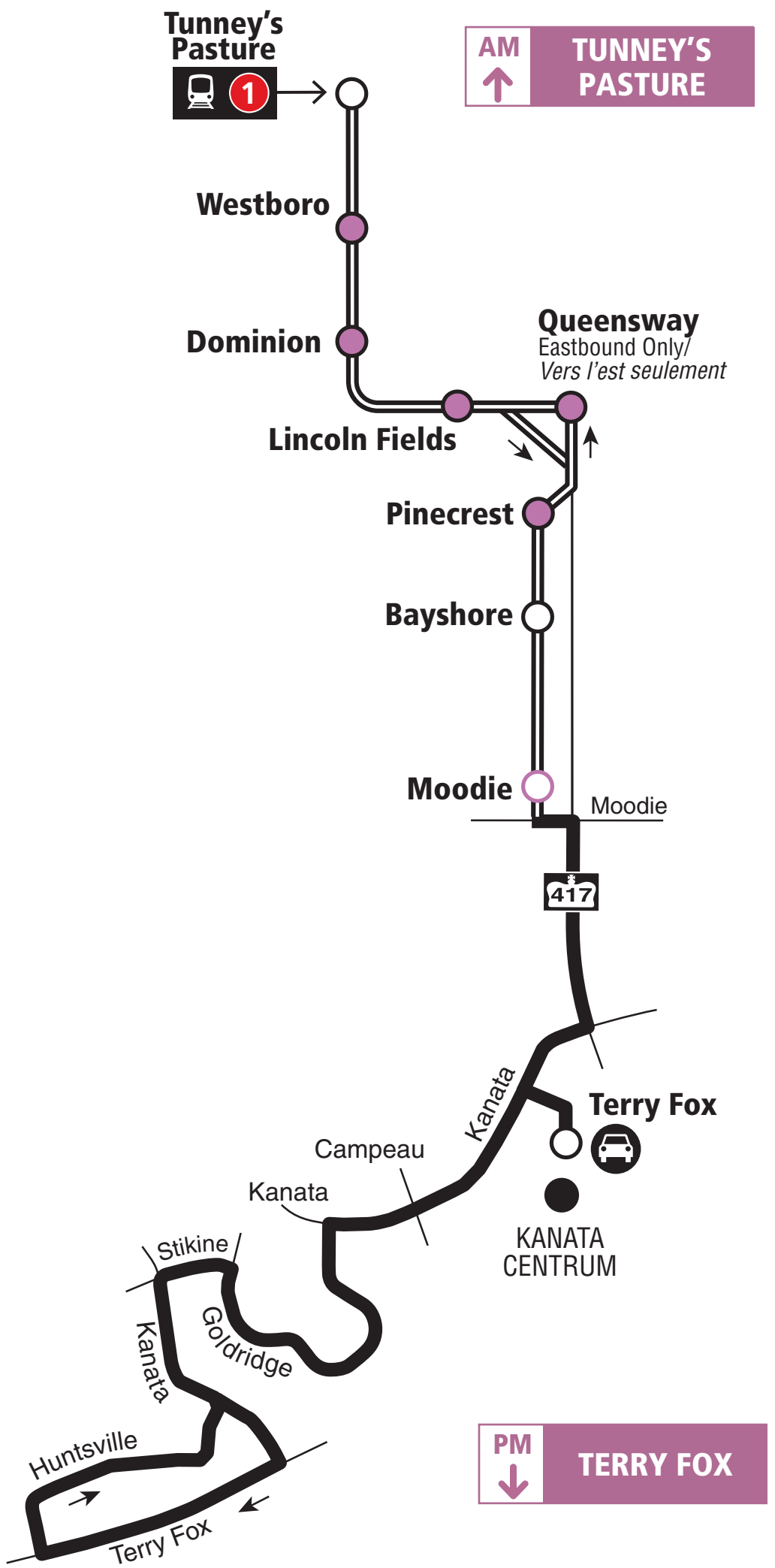
### TUNNEY'S PASTURE

#### Connexion

#### Monday to Friday / Lundi au vendredi

Peak periods only

Périodes de pointe seulement



- Transitway & Station
- Limited stops: Off only in AM / No stop in PM  
Arrêts limités : Débarquement en AM seul. / Aucun arrêt en PM
- AM: Off only - PM: Full Service  
AM: Débarquement seul. - PM: Service complet
- Park & Ride / Parc-o-bus

2019.07



### Future route after O-Train Line 1 is open Trajet du circuit après l'ouverture de la Ligne 1 de l'O-Train

Lost and Found / Objets perdus..... **613-563-4011**

Security / Sécurité ..... **613-741-2478**



INFO 613-741-4390  
octranspo.com



# 303

## CARLINGWOOD DUNROBIN, CARP

### Local

#### Wednesday only / Mercredi seulement

Selected time periods

Périodes sélectionnées



- Transitway & Station
- Request stop zone  
Zone d'arrêt sur demande
- Park & Ride / Parc-o-bus

2019.08



**Schedule / Horaire.....613-560-1000**

**Text / Texto .....560560**

*plus your four digit bus stop number / plus votre numéro d'arrêt à quatre chiffres*

Customer Relations

Service à la clientèle ..... **613-842-3600**

Lost and Found / Objets perdus..... **613-563-4011**

Security / Sécurité ..... **613-741-2478**

**Effective December 24, 2017**

**En vigueur 24 décembre 2017**



**INFO 613-741-4390**  
**octranspo.com**





# 301

## CARLINGWOOD

## RICHMOND STITTSVILLE

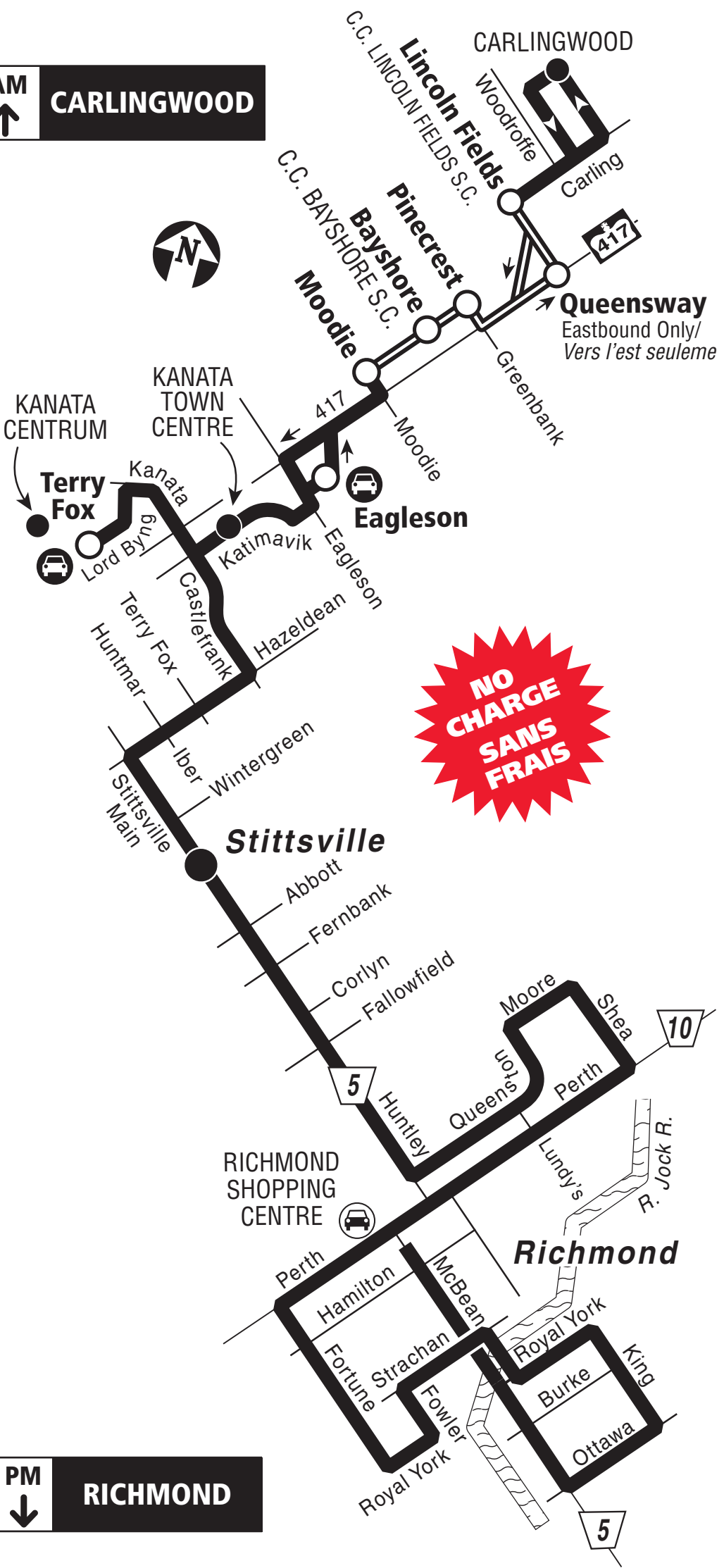
### Local

### Monday only / Lundi seulement

Peak periods only

Périodes de pointe seulement

**AM**  
↑ **CARLINGWOOD**



**PM**  
↓ **RICHMOND**



Transitway & Station



Park & Ride / Parc-o-bus

2019.08



**Schedule / Horaire.....613-560-1000**

**Text / Texto .....560560**

*plus your four digit bus stop number / plus votre numéro d'arrêt à quatre chiffres*

Customer Relations

Service à la clientèle ..... **613-842-3600**

Lost and Found / Objets perdus..... **613-563-4011**

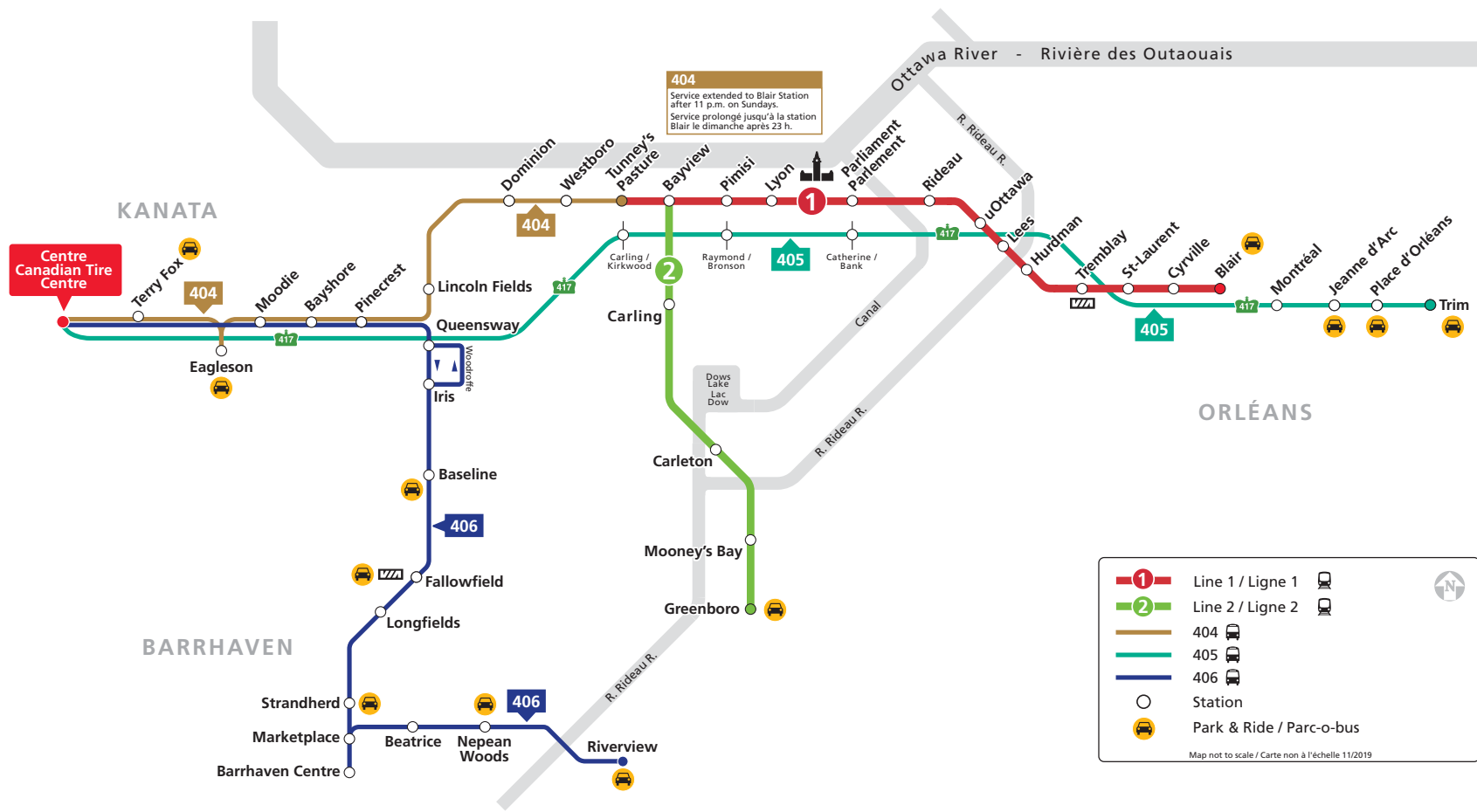
Security / Sécurité ..... **613-741-2478**

**Effective December 24, 2017**

**En vigueur 24 décembre 2017**



**INFO 613-741-4390**  
**octranspo.com**



Take Transit



FREE FOR TICKET HOLDERS



Prenez l'autobus



SERVICE GRATUIT POUR LES DÉTENTEURS DE BILLETS



Park & Shuttle routes travel directly to Lansdowne for major events, including all REDBLACKS games.

Le service Parc-o-navettes effectue directement le lien vers Lansdowne lors des événements importants, dont tous les matches des ROUGE et NOIR.

Free shuttle parking  
Stationnement gratuit de navette

- 452**
- 454 455**
- 456**
- STO** to/vers Gatineau
- 450** on Bank Street sur la rue Bank
- Major transfer point  
Points de correspondance majeurs  
**St-Laurent**
- 451**
- Transit station with direct service to Lansdowne  
Station desservie par un service de transport direct vers Lansdowne

Routes 6 and 7 travel directly to Lansdowne every day

Les circuits 6 et 7 se rendent directement à Lansdowne tous les jours

Other connecting transit service  
Autre service de liaison du transport en commun

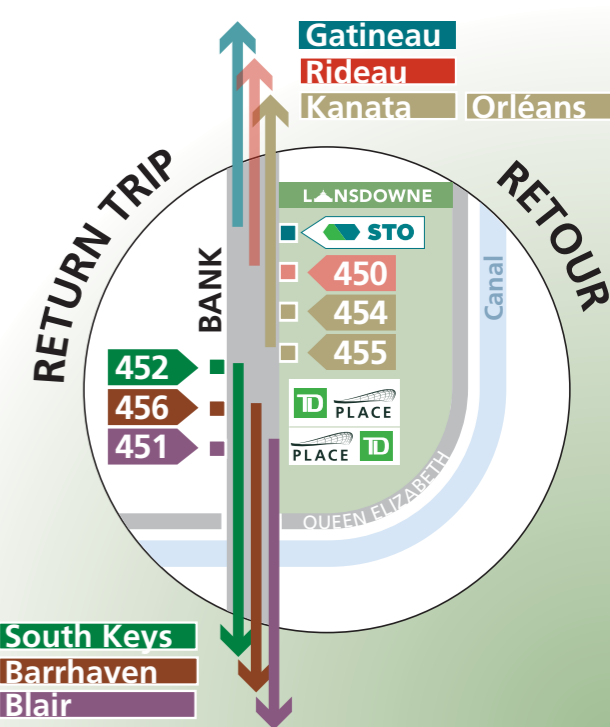
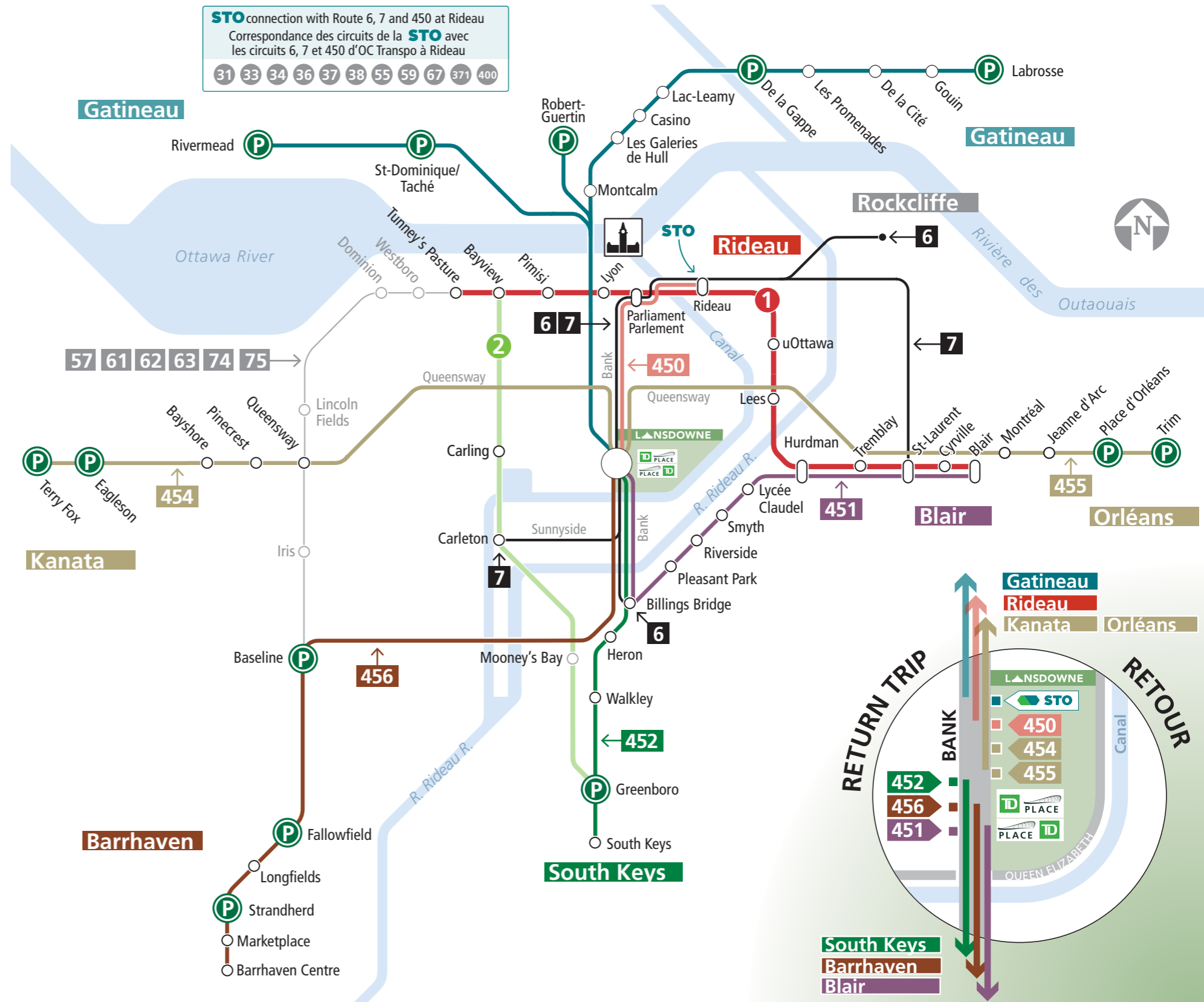
OSEG Shuttles (1-844-326-4636) to Lansdowne depart from various locations. Visit OSEG.CA

Les navettes de l'OSEG (1-844-326-4636) vers le parc Lansdowne partiront de divers endroits. Visitez OSEG.CA.

Map not to scale / Carte non à l'échelle 01/2020

**STO** connection with Route 6, 7 and 450 at Rideau  
Correspondance des circuits de la **STO** avec les circuits 6, 7 et 450 d'OC Transpo à Rideau

31 33 34 36 37 38 55 59 67 371 400





Rapid<sup>e</sup>

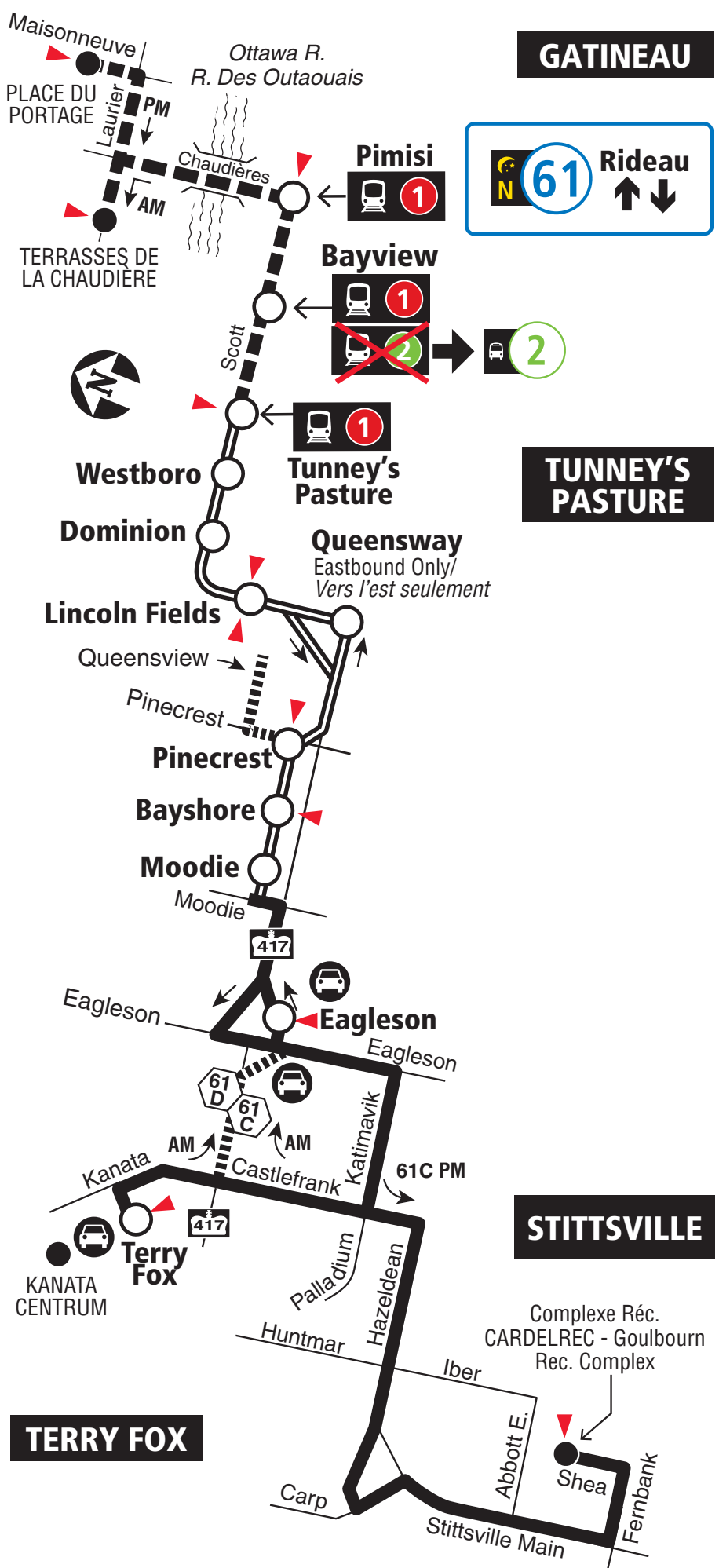
# TERRY FOX STITTSVILLE

# TUNNEY'S PASTURE GATINEAU

7 days a week / 7 jours par semaine

All day service and limited overnight

Service toute la journée et limité la nuit



When O-Train Line 1 is not running overnight, Route 61 will be extended downtown to Rideau Station. / Lorsque la ligne 1 de l'O-Train ne circule pas la nuit, le circuit 61 sera prolongée au centre-ville jusqu'à la station Rideau.

2020.05



**Schedule / Horaire.....613-560-1000**

**Text / Texto .....560560**

plus your four digit bus stop number / plus votre numéro d'arrêt à quatre chiffres

Customer Service

Service à la clientèle ..... **613-741-4390**

Lost and Found / Objets perdus..... **613-563-4011**

Security / Sécurité ..... **613-741-2478**

**Effective May 3, 2020**

**En vigueur 3 mai 2020**



**INFO 613-741-4390**  
**octranspo.com**

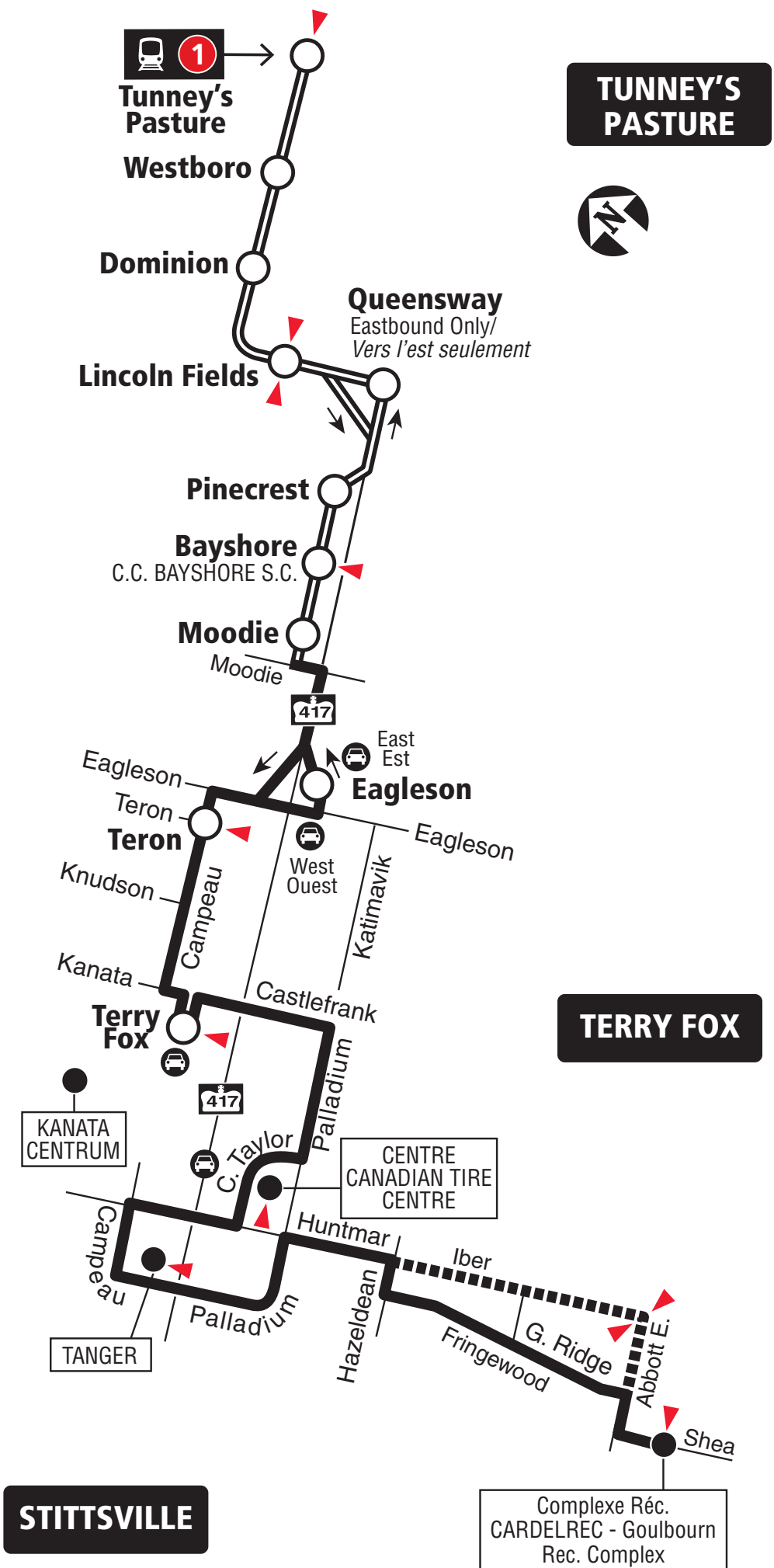


Rapid<sup>e</sup>

# TERRY FOX STITTSVILLE TUNNEY'S PASTURE



7 days a week / 7 jours par semaine  
All day service  
Service toute la journée



- Transitway & Station
- Weekday southbound trips before noon and weekday northbound trips between noon and 8 p.m. travel via Iber and Abbott E.  
Trajets en semaine vers le sud en avant midi et trajets en semaine vers le nord entre midi et 20 h via Iber et Abbott E.
- Park & Ride / Parc-o-bus
- Timepoint / Heures de passage

2021.06

**Schedule / Horaire ..... 613-560-1000**  
**Text / Texto\* ..... 560560**  
*plus your four digit bus stop number / plus votre numéro d'arrêt à quatre chiffres*  
\*Standard message rates may apply / Les tarifs réguliers de messagerie texte peuvent s'appliquer

Customer Service / Service à la clientèle ..... **613-741-4390**  
 Lost and Found / Objets perdus ..... **613-563-4011**  
 Security / Sécurité ..... **613-741-2478**

**Effective June 20, 2021**  
**En vigueur 20 juin 2021**

# Kanata - Stittsville

## Demographic Characteristics

Population	105,210	Actively Travelled	83,460
Employed Population	49,640	Number of Vehicles	64,540
Households	38,010	Area (km <sup>2</sup> )	82.6

Occupation Status (age 5+)	Male	Female	Total
Full Time Employed	24,670	19,590	44,260
Part Time Employed	1,540	3,840	5,380
Student	13,630	13,410	27,040
Retiree	6,480	8,350	14,820
Unemployed	850	940	1,790
Homemaker	160	3,310	3,470
Other	350	1,010	1,360
<b>Total:</b>	<b>47,690</b>	<b>50,440</b>	<b>98,120</b>

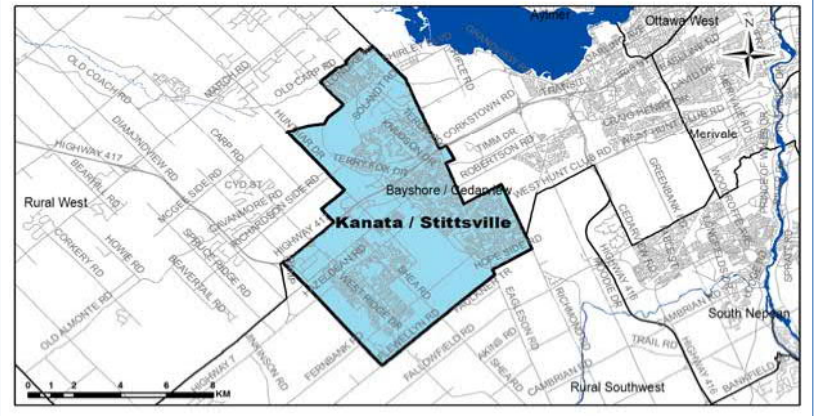
Traveller Characteristics	Male	Female	Total
Transit Pass Holders	5,940	6,920	12,860

Licensed Drivers	36,280	36,790	73,070
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Telecommuters	200	380	580
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Trips made by residents	135,300	143,330	278,630
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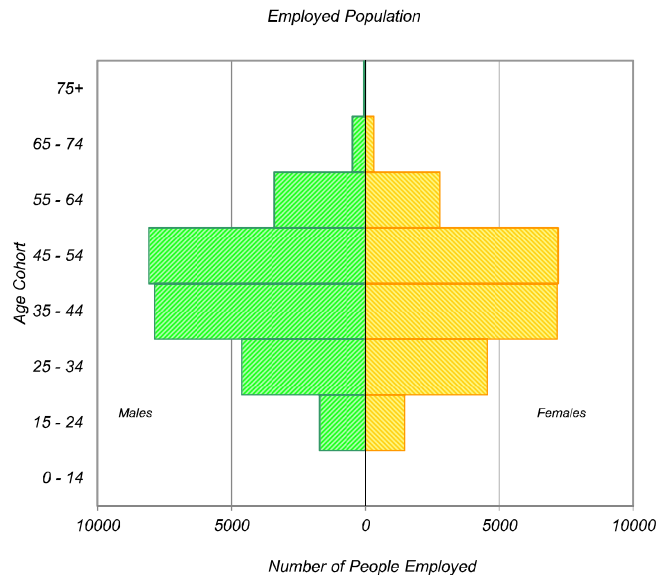
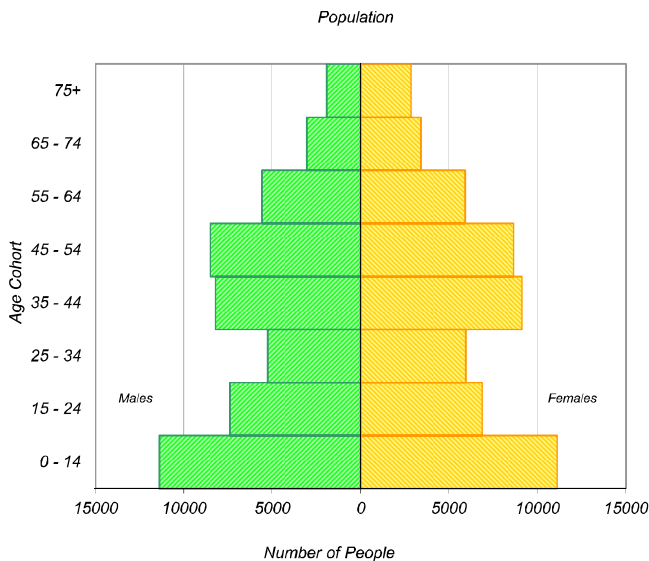
Selected Indicators	
Daily Trips per Person (age 5+)	2.84
Vehicles per Person	0.61
Number of Persons per Household	2.77
Daily Trips per Household	7.33
Vehicles per Household	1.70
Workers per Household	1.31
Population Density (Pop/km <sup>2</sup> )	1270



Household Size		
1 person	5,810	15%
2 persons	11,660	31%
3 persons	7,490	20%
4 persons	8,890	23%
5+ persons	4,160	11%
<b>Total:</b>	<b>38,010</b>	<b>100%</b>

Households by Vehicle Availability		
0 vehicles	1,050	3%
1 vehicle	14,090	37%
2 vehicles	19,110	50%
3 vehicles	3,000	8%
4+ vehicles	770	2%
<b>Total:</b>	<b>38,010</b>	<b>100%</b>

Households by Dwelling Type		
Single-detached	21,610	57%
Semi-detached	3,890	10%
Townhouse	10,550	28%
Apartment/Condo	1,960	5%
<b>Total:</b>	<b>38,010</b>	<b>100%</b>

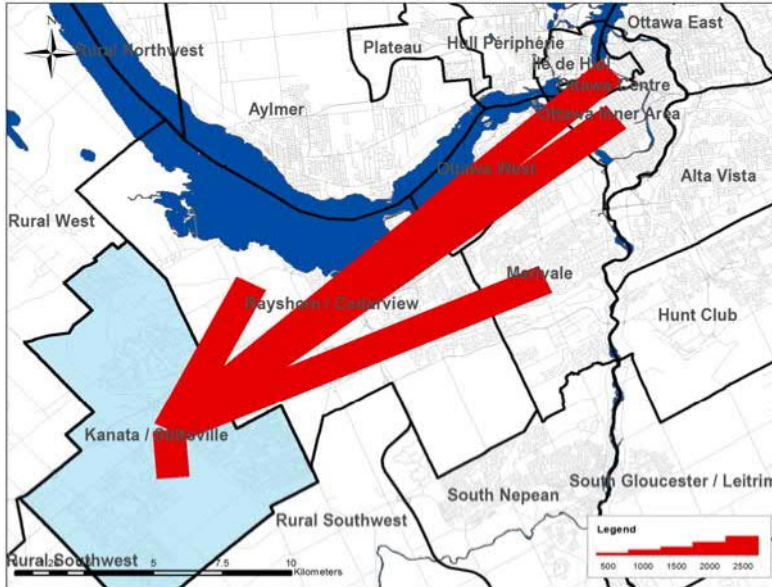


\* In 2005 data was only collected for household members aged 11+ therefore these results cannot be compared to the 2011 data.

## Travel Patterns

### Top Five Destinations of Trips from Kanata - Stittsville

#### AM Peak Period



### Summary of Trips to and from Kanata - Stittsville

#### AM Peak Period (6:30 - 8:59)

Districts	Destinations of Trips From		Origins of Trips To	
	District	% Total	District	% Total
Ottawa Centre	4,560	8%	140	0%
Ottawa Inner Area	3,350	6%	970	2%
Ottawa East	660	1%	260	1%
Beacon Hill	280	0%	170	0%
Alta Vista	1,810	3%	660	1%
Hunt Club	490	1%	420	1%
Merivale	3,410	6%	1,200	3%
Ottawa West	2,020	4%	840	2%
Bayshore / Cedarview	5,010	9%	2,420	5%
Orléans	290	1%	500	1%
Rural East	100	0%	30	0%
Rural Southeast	50	0%	260	1%
South Gloucester / Leirtrim	60	0%	140	0%
South Nepean	690	1%	1,800	4%
Rural Southwest	1,130	2%	1,850	4%
Kanata / Stittsville	30,360	54%	30,360	66%
Rural West	1,050	2%	3,250	7%
Île de Hull	670	1%	30	0%
Hull Périphérie	160	0%	30	0%
Plateau	100	0%	230	0%
Aylmer	0	0%	190	0%
Rural Northwest	20	0%	60	0%
Pointe Gatineau	20	0%	80	0%
Gatineau Est	0	0%	60	0%
Rural Northeast	30	0%	50	0%
Buckingham / Masson-Angers	30	0%	10	0%
<b>Ontario Sub-Total:</b>	<b>55,320</b>	<b>98%</b>	<b>45,270</b>	<b>98%</b>
<b>Québec Sub-Total:</b>	<b>1,030</b>	<b>2%</b>	<b>740</b>	<b>2%</b>
<b>Total:</b>	<b>56,350</b>	<b>100%</b>	<b>46,010</b>	<b>100%</b>

### Trips by Trip Purpose

24 Hours	From District		To District		Within District	
Work or related	27,180	29%	17,020	18%	14,550	9%
School	7,070	7%	2,500	3%	15,110	9%
Shopping	6,070	6%	9,150	10%	22,480	14%
Leisure	8,450	9%	10,590	11%	17,090	11%
Medical	2,520	3%	1,170	1%	2,660	2%
Pick-up / drive passenger	6,570	7%	5,470	6%	15,190	9%
Return Home	33,610	35%	45,620	48%	65,770	41%
Other	3,560	4%	3,590	4%	8,440	5%
<b>Total:</b>	<b>95,030</b>	<b>100%</b>	<b>95,110</b>	<b>100%</b>	<b>161,290</b>	<b>100%</b>

AM Peak (06:30 - 08:59)	From District		To District		Within District	
Work or related	18,030	69%	11,020	70%	7,430	24%
School	4,890	19%	2,280	15%	11,740	39%
Shopping	170	1%	320	2%	760	3%
Leisure	340	1%	400	3%	780	3%
Medical	330	1%	230	1%	350	1%
Pick-up / drive passenger	1,260	5%	580	4%	4,760	16%
Return Home	290	1%	380	2%	1,980	7%
Other	670	3%	430	3%	2,560	8%
<b>Total:</b>	<b>25,980</b>	<b>100%</b>	<b>15,640</b>	<b>100%</b>	<b>30,360</b>	<b>100%</b>

PM Peak (15:30 - 17:59)	From District		To District		Within District	
Work or related	390	2%	350	1%	930	2%
School	370	2%	0	0%	90	0%
Shopping	1,030	5%	1,910	7%	5,100	14%
Leisure	2,140	11%	3,080	11%	4,130	11%
Medical	230	1%	180	1%	400	1%
Pick-up / drive passenger	1,980	10%	1,980	7%	3,410	9%
Return Home	12,130	64%	20,550	71%	21,560	58%
Other	680	4%	860	3%	1,850	5%
<b>Total:</b>	<b>18,950</b>	<b>100%</b>	<b>28,910</b>	<b>100%</b>	<b>37,470</b>	<b>100%</b>

Peak Period (%)	Total:	% of 24 Hours	Within District (%)
24 Hours	351,430		46%
AM Peak Period	71,980	20%	42%
PM Peak Period	85,330	24%	44%

### Trips by Primary Travel Mode

24 Hours	From District		To District		Within District	
Auto Driver	63,470	67%	63,830	67%	92,190	57%
Auto Passenger	15,220	16%	14,920	16%	31,880	20%
Transit	12,200	13%	12,270	13%	4,050	3%
Bicycle	360	0%	410	0%	960	1%
Walk	40	0%	50	0%	21,080	13%
Other	3,730	4%	3,660	4%	11,130	7%
<b>Total:</b>	<b>95,020</b>	<b>100%</b>	<b>95,140</b>	<b>100%</b>	<b>161,290</b>	<b>100%</b>

AM Peak (06:30 - 08:59)	From District		To District		Within District	
Auto Driver	15,360	59%	11,530	74%	13,630	45%
Auto Passenger	2,450	9%	1,160	7%	5,050	17%
Transit	6,230	24%	1,290	8%	1,210	4%
Bicycle	30	0%	80	1%	220	1%
Walk	0	0%	40	0%	5,730	19%
Other	1,900	7%	1,560	10%	4,510	15%
<b>Total:</b>	<b>25,970</b>	<b>100%</b>	<b>15,660</b>	<b>100%</b>	<b>30,350</b>	<b>100%</b>

PM Peak (15:30 - 17:59)	From District		To District		Within District	
Auto Driver	13,850	73%	17,660	61%	21,240	57%
Auto Passenger	3,240	17%	4,270	15%	8,570	23%
Transit	1,270	7%	5,980	21%	670	2%
Bicycle	40	0%	100	0%	260	1%
Walk	40	0%	0	0%	4,570	12%
Other	520	3%	910	3%	2,160	6%
<b>Total:</b>	<b>18,960</b>	<b>100%</b>	<b>28,920</b>	<b>100%</b>	<b>37,470</b>	<b>100%</b>

Avg Vehicle Occupancy	From District		To District		Within District	
24 Hours	1.24		1.23		1.35	
AM Peak Period	1.16		1.10		1.37	
PM Peak Period	1.23		1.24		1.40	

Transit Modal Split	From District		To District		Within District	
24 Hours	13%		13%		3%	
AM Peak Period	26%		9%		6%	
PM Peak Period	7%		21%		2%	



# Transportation Services - Traffic Services

## Turning Movement Count - Full Study Peak Hour Diagram

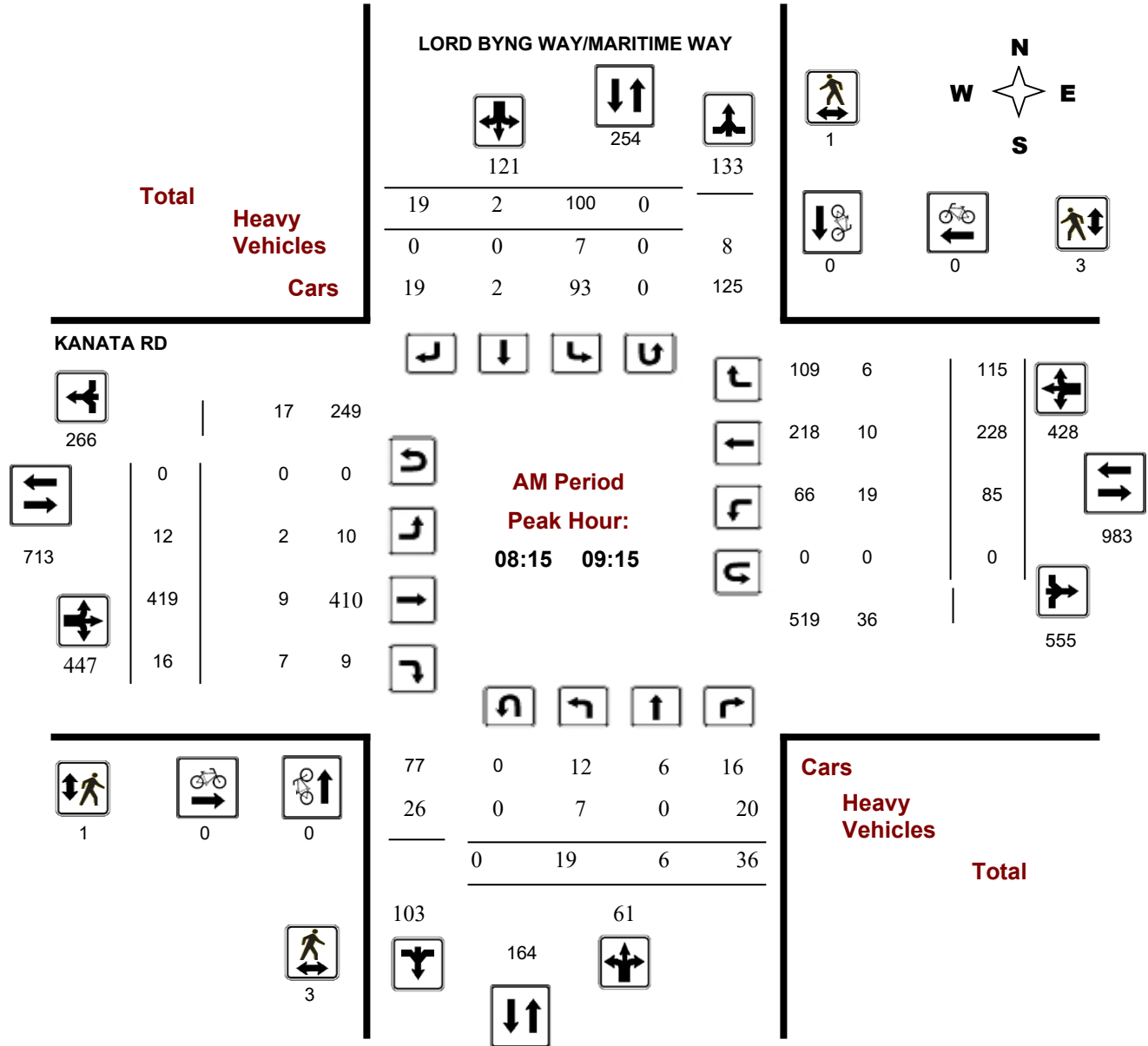
### KANATA RD @ LORD BYNG WAY/MARITIME WAY

**Survey Date:** Tuesday, March 20, 2018

**Start Time:** 07:00

**WO No:** 37606

**Device:** Miovision





## Turning Movement Count - Full Study Peak Hour Diagram

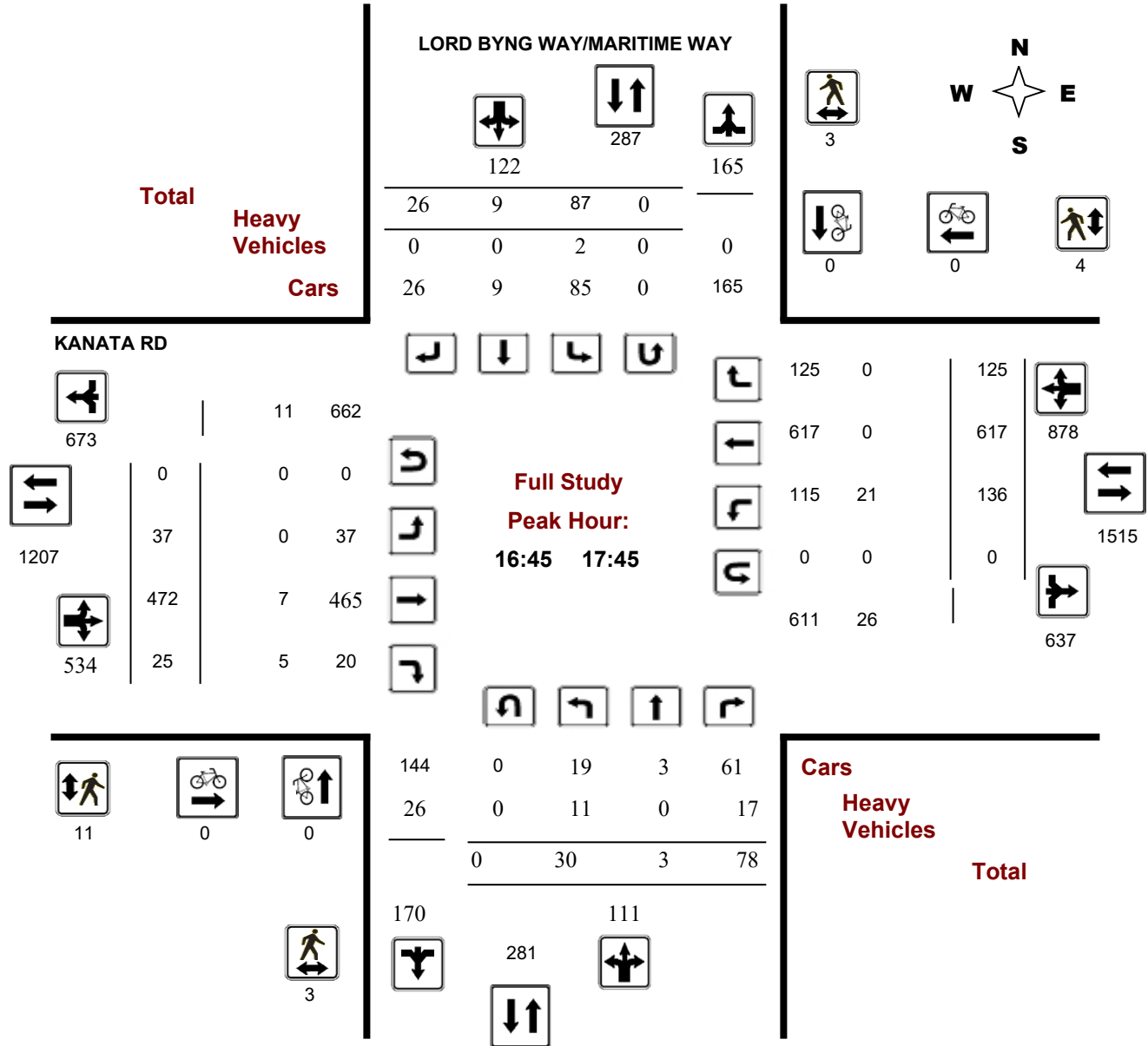
### KANATA RD @ LORD BYNG WAY/MARITIME WAY

**Survey Date:** Tuesday, March 20, 2018

**Start Time:** 07:00

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**Device:** Miovision



**Comments**

## Turning Movement Count - Full Study Peak Hour Diagram

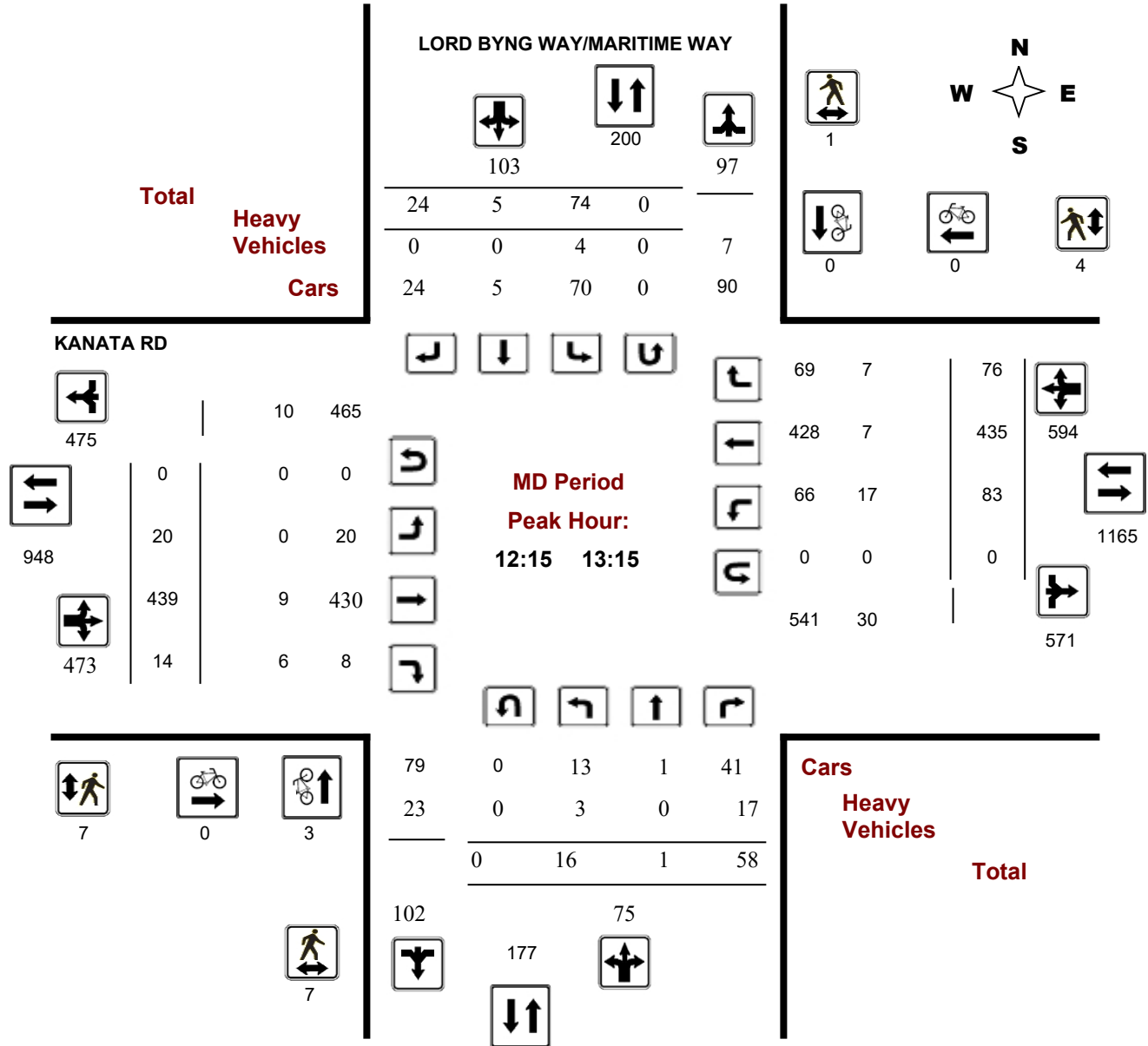
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**WO No:** 37606

**Device:** Miovision



## Turning Movement Count - Full Study Peak Hour Diagram

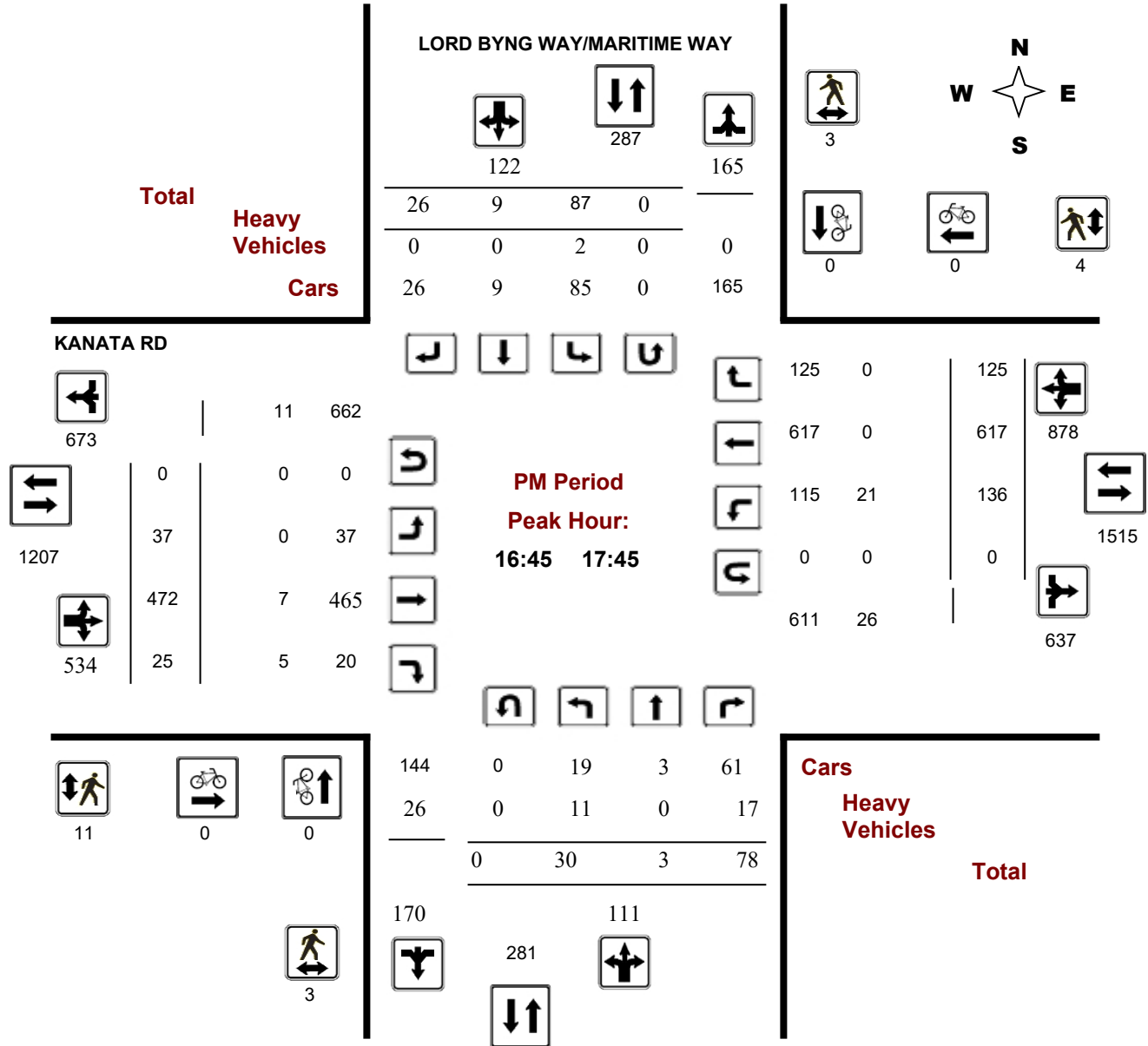
### KANATA RD @ LORD BYNG WAY/MARITIME WAY

**Survey Date:** Tuesday, March 20, 2018

**Start Time:** 07:00

**WO No:** 37606

**Device:** Miovision



**Comments**

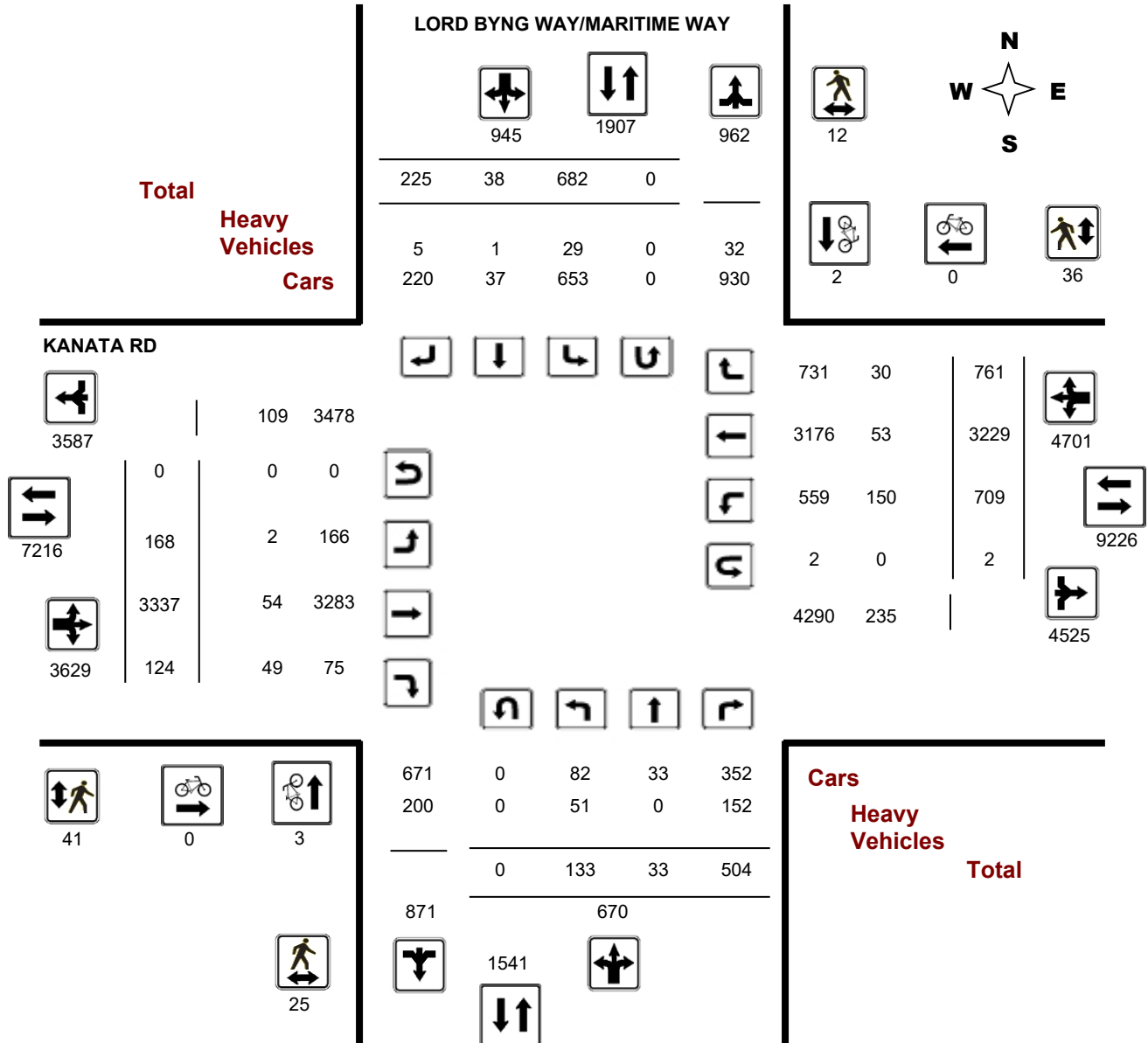
# Transportation Services - Traffic Services

## Turning Movement Count - Full Study Diagram

### KANATA RD @ LORD BYNG WAY/MARITIME WAY

**Survey Date:** Tuesday, March 20, 2018

**WO#:** 37606  
**Device:** Miovision



**Comments**

## Turning Movement Count - Full Study Summary Report

### KANATA RD @ LORD BYNG WAY/MARITIME WAY

**Survey Date:** Tuesday, March 20, 2018

**Total Observed U-Turns**

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

**AADT Factor**

1.00

**Full Study**

Period	LORD BYNG WAY/MARITIME WAY									KANATA RD									Grand Total	
	Northbound				Southbound					Eastbound			Westbound							
	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT		
07:00 08:00	15	1	50	66	81	2	24	107	173	2	482	12	496	44	163	65	272	768	941	
08:00 09:00	18	6	35	59	92	4	20	116	175	14	423	14	451	79	214	119	412	863	1038	
09:00 10:00	11	5	55	71	69	1	33	103	174	15	323	14	352	57	256	67	380	732	906	
11:30 12:30	14	3	54	71	79	6	38	123	194	28	355	12	395	87	432	70	589	984	1178	
12:30 13:30	12	3	60	75	76	4	20	100	175	17	451	12	480	77	416	74	567	1047	1222	
15:00 16:00	15	5	75	95	93	4	27	124	219	27	397	18	442	99	533	116	748	1190	1409	
16:00 17:00	24	3	93	120	101	8	34	143	263	26	448	21	495	122	598	130	850	1345	1608	
17:00 18:00	24	7	82	113	91	9	29	129	242	39	458	21	518	144	617	120	881	1399	1641	
<b>Sub Total</b>	133	33	504	670	682	38	225	945	1615	168	3337	124	3629	709	3229	761	4699	8328	9943	
<b>U Turns</b>				0				0	0				0				2	2	2	
<b>Total</b>	133	33	504	670	682	38	225	945	1615	168	3337	124	3629	709	3229	761	4701	8330	9945	
<b>EQ 12Hr</b>	185	46	701	931	948	53	313	1314	2245	234	4638	172	5044	986	4488	1058	6534	11578	13823	
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													<b>1.39</b>							
<b>AVG 12Hr</b>	185	46	701	931	948	53	313	1314	2245	234	4638	172	5044	986	4488	1058	6534	11578	13823	
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													<b>1.00</b>							
<b>AVG 24Hr</b>	242	60	918	1220	1242	69	410	1721	2941	306	6076	226	6608	1291	5880	1386	8560	15168	18109	
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													<b>1.31</b>							

**Comments:**

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.



Turning Movement Count - 15 Minute Summary Report

KANATA RD @ LORD BYNG WAY/MARITIME WAY

Survey Date: Tuesday, March 20, 2018

Total Observed U-Turns

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

LORD BYNG WAY/MARITIME WAY

KANATA RD

Table with columns for Time Period, Northbound (LT, ST, RT, N TOT), Southbound (LT, ST, RT, S TOT, STR TOT), Eastbound (LT, ST, RT, E TOT), Westbound (LT, ST, RT, W TOT, STR TOT), and Grand Total. Rows represent 15-minute intervals from 07:00 to 18:00.

Note: U-Turns are included in Totals.

Comment:



# Transportation Services - Traffic Services

## Turning Movement Count - Cyclist Volume Report

**Work Order**  
**37606**

### KANATA RD @ LORD BYNG WAY/MARITIME WAY

**Count Date:** Tuesday, March 20, 2018

**Start Time:** 07:00

Time Period	LORD BYNG WAY/MARITIME WAY			KANATA RD			Grand Total
	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
07:00 08:00	0	0	<b>0</b>	0	0	<b>0</b>	<b>0</b>
08:00 09:00	0	0	<b>0</b>	0	0	<b>0</b>	<b>0</b>
09:00 10:00	0	0	<b>0</b>	0	0	<b>0</b>	<b>0</b>
11:30 12:30	0	0	<b>0</b>	0	0	<b>0</b>	<b>0</b>
12:30 13:30	3	0	<b>3</b>	0	0	<b>0</b>	<b>3</b>
15:00 16:00	0	1	<b>1</b>	0	0	<b>0</b>	<b>1</b>
16:00 17:00	0	1	<b>1</b>	0	0	<b>0</b>	<b>1</b>
17:00 18:00	0	0	<b>0</b>	0	0	<b>0</b>	<b>0</b>
<b>Total .....</b>	<b>3</b>	<b>2</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>

**Comment:**

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



# Transportation Services - Traffic Services

W.O.  
37606

## Turning Movement Count - Heavy Vehicle Report

### KANATA RD @ LORD BYNG WAY/MARITIME WAY

**Survey Date:** Tuesday, March 20, 2018

Time Period	LORD BYNG WAY/MARITIME WAY									KANATA RD									Grand Total
	Northbound			Southbound			S TOT	STR TOT	Eastbound			Westbound			W TOT	STR TOT			
	LT	ST	RT	N TOT	LT	ST			RT	LT	ST	RT	E TOT	LT			ST	RT	
07:00 08:00	4	0	27	31	4	0	3	7	38	0	6	6	12	20	11	1	32	44	82
08:00 09:00	7	0	16	23	6	0	0	6	29	0	5	7	12	20	6	10	36	48	77
09:00 10:00	5	0	25	30	4	0	0	4	34	2	6	7	15	22	9	7	38	53	87
11:30 12:30	5	0	15	20	5	0	1	6	26	0	8	7	15	15	8	4	27	42	68
12:30 13:30	3	0	16	19	6	0	1	7	26	0	10	6	16	16	8	7	31	47	73
15:00 16:00	8	0	19	27	2	1	0	3	30	0	9	6	15	18	6	1	25	40	70
16:00 17:00	10	0	15	25	0	0	0	0	25	0	5	4	9	18	5	0	23	32	57
17:00 18:00	9	0	19	28	2	0	0	2	30	0	5	6	11	21	0	0	21	32	62
<b>Sub Total</b>	<b>51</b>	<b>0</b>	<b>152</b>	<b>203</b>	<b>29</b>	<b>1</b>	<b>5</b>	<b>35</b>	<b>238</b>	<b>2</b>	<b>54</b>	<b>49</b>	<b>105</b>	<b>150</b>	<b>53</b>	<b>30</b>	<b>233</b>	<b>338</b>	<b>576</b>
<b>U-Turns (Heavy Vehicles)</b>				<b>0</b>				<b>0</b>	<b>0</b>				<b>0</b>				<b>0</b>	<b>0</b>	<b>0</b>
<b>Total</b>	<b>51</b>	<b>0</b>	<b>152</b>	<b>0</b>	<b>29</b>	<b>1</b>	<b>5</b>	<b>35</b>	<b>238</b>	<b>2</b>	<b>54</b>	<b>49</b>	<b>105</b>	<b>150</b>	<b>53</b>	<b>30</b>	<b>233</b>	<b>338</b>	<b>576</b>

Heavy Vehicles include Buses, Single-Unit Trucks and Articulated Trucks. Further, they ARE included in the Turning Movement Count Summary.





# Transportation Services - Traffic Services

Work Order

37606

## Turning Movement Count - Pedestrian Volume Report

### KANATA RD @ LORD BYNG WAY/MARITIME WAY

Count Date: Tuesday, March 20, 2018

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	1	2	2
07:15 07:30	1	0	1	7	0	7	8
07:30 07:45	0	0	0	0	2	2	2
07:45 08:00	0	1	1	0	2	2	3
<b>07:00 08:00</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>8</b>	<b>5</b>	<b>13</b>	<b>15</b>
08:00 08:15	1	0	1	0	3	3	4
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	1	0	1	0	0	0	1
08:45 09:00	1	1	2	1	1	2	4
<b>08:00 09:00</b>	<b>3</b>	<b>1</b>	<b>4</b>	<b>1</b>	<b>4</b>	<b>5</b>	<b>9</b>
09:00 09:15	1	0	1	0	2	2	3
09:15 09:30	0	1	1	0	0	0	1
09:30 09:45	1	0	1	0	0	0	1
09:45 10:00	0	0	0	0	0	0	0
<b>09:00 10:00</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>5</b>
11:30 11:45	2	0	2	1	0	1	3
11:45 12:00	1	0	1	0	0	0	1
12:00 12:15	0	1	1	1	0	1	2
12:15 12:30	4	0	4	1	0	1	5
<b>11:30 12:30</b>	<b>7</b>	<b>1</b>	<b>8</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>11</b>
12:30 12:45	1	0	1	0	1	1	2
12:45 13:00	1	0	1	0	1	1	2
13:00 13:15	1	1	2	6	2	8	10
13:15 13:30	0	0	0	3	0	3	3
<b>12:30 13:30</b>	<b>3</b>	<b>1</b>	<b>4</b>	<b>9</b>	<b>4</b>	<b>13</b>	<b>17</b>
15:00 15:15	1	1	2	1	0	1	3
15:15 15:30	0	0	0	2	1	3	3
15:30 15:45	0	0	0	2	4	6	6
15:45 16:00	1	0	1	1	3	4	5
<b>15:00 16:00</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>6</b>	<b>8</b>	<b>14</b>	<b>17</b>
16:00 16:15	0	0	0	0	1	1	1
16:15 16:30	0	1	1	2	3	5	6
16:30 16:45	3	0	3	0	2	2	5
16:45 17:00	2	3	5	5	1	6	11
<b>16:00 17:00</b>	<b>5</b>	<b>4</b>	<b>9</b>	<b>7</b>	<b>7</b>	<b>14</b>	<b>23</b>
17:00 17:15	1	0	1	2	0	2	3
17:15 17:30	0	0	0	2	3	5	5
17:30 17:45	0	0	0	2	0	2	2
17:45 18:00	1	2	3	1	3	4	7
<b>17:00 18:00</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>7</b>	<b>6</b>	<b>13</b>	<b>17</b>
<b>Total .....</b>	<b>25</b>	<b>12</b>	<b>37</b>	<b>41</b>	<b>36</b>	<b>77</b>	<b>114</b>

Comment:

## Turning Movement Count - 15 Min U-Turn Total Report

### KANATA RD @ LORD BYNG WAY/MARITIME WAY

**Survey Date:** Tuesday, March 20, 2018

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	1	1
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	1	1
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
Total		0	0	0	2	2

## Turning Movement Count - Study Results

### CAMPEAU DR @ KANATA AVE

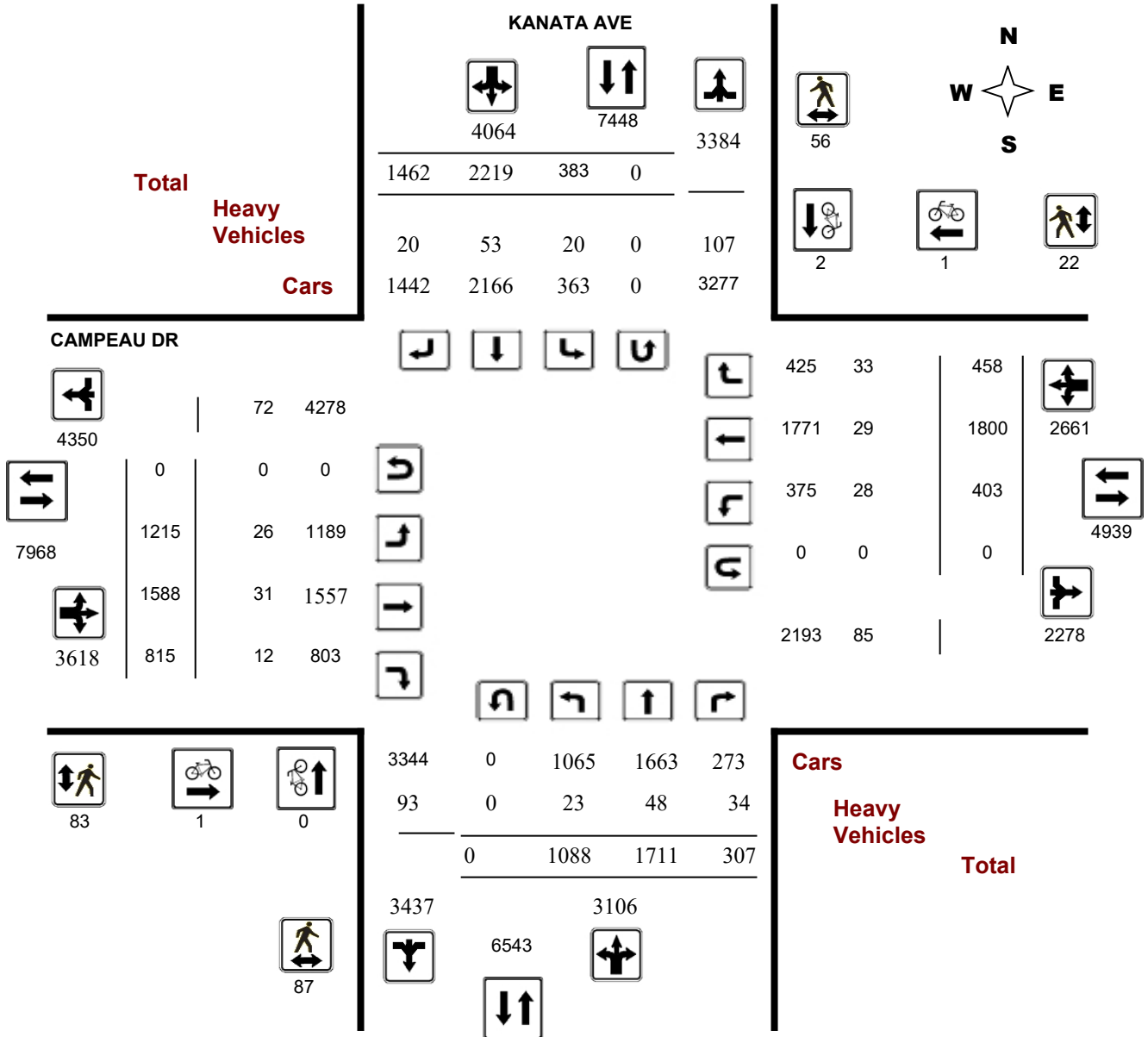
**Survey Date:** Wednesday, December 06, 2017

**WO No:** 37362

**Start Time:** 07:00

**Device:** Miovision

### Full Study Diagram



## Turning Movement Count - Study Results

### CAMPEAU DR @ KANATA AVE

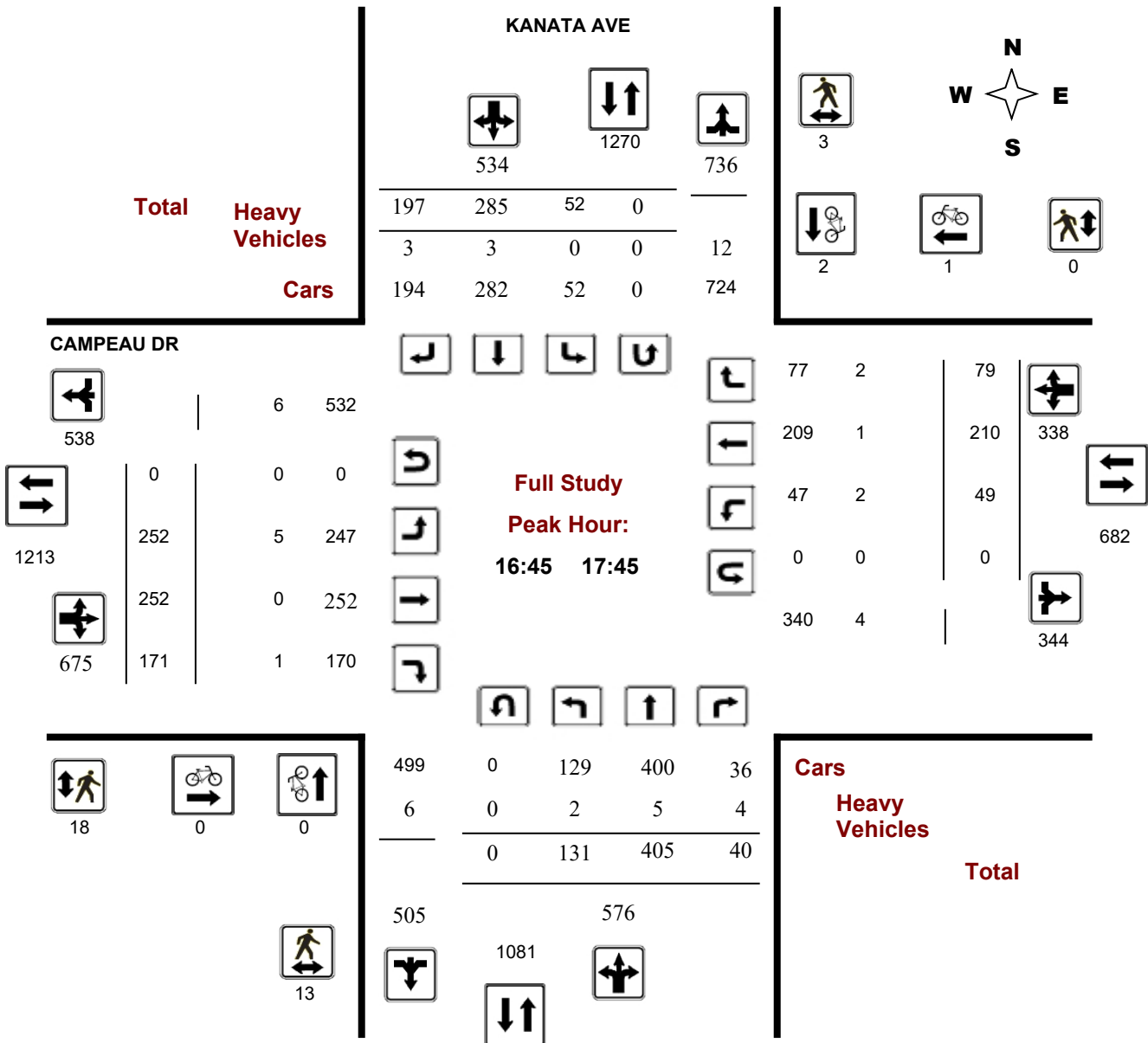
**Survey Date:** Wednesday, December 06, 2017

**WO No:** 37362

**Start Time:** 07:00

**Device:** Miovision

### Full Study Peak Hour Diagram



## Turning Movement Count - Peak Hour Diagram

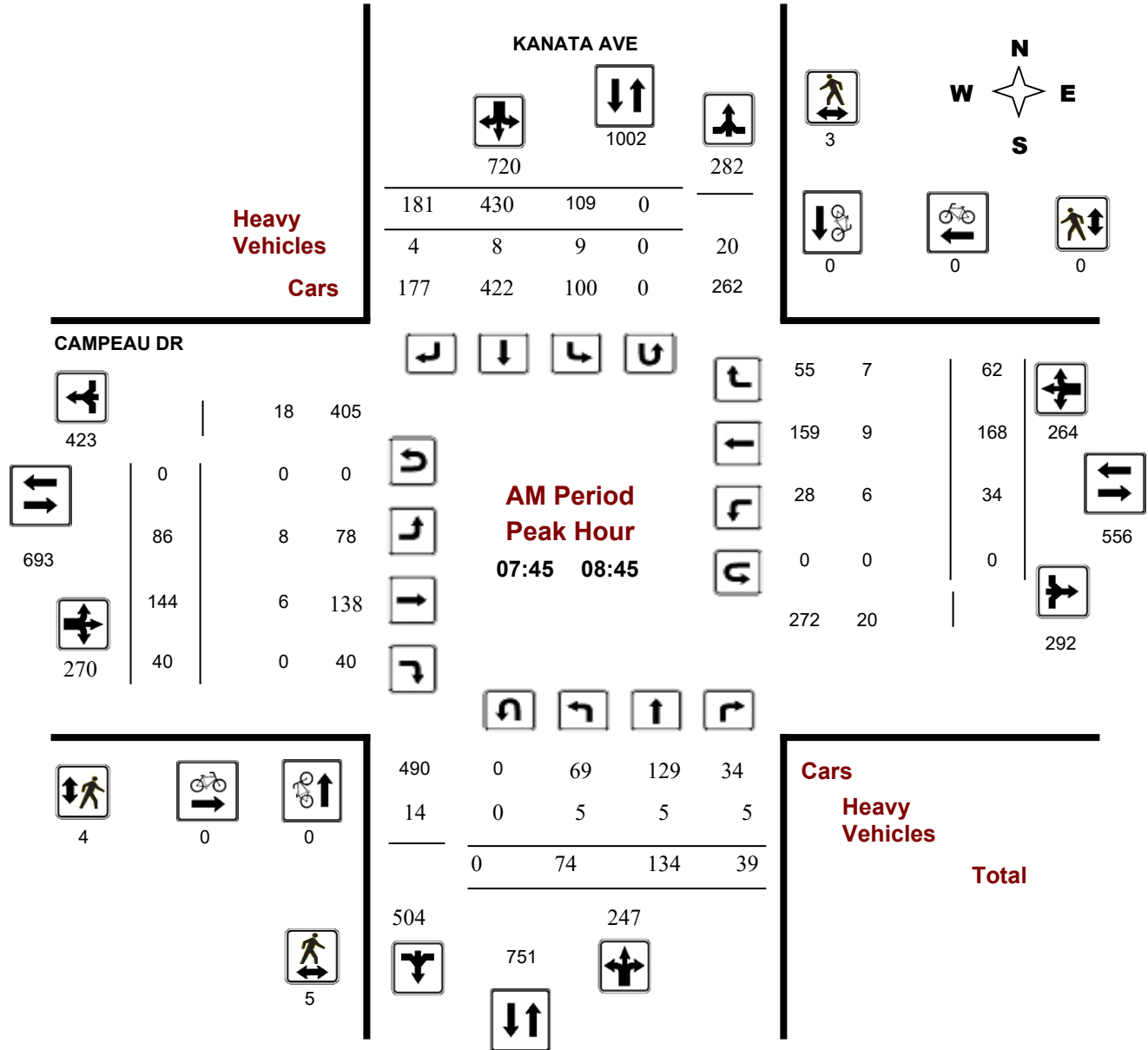
### CAMPEAU DR @ KANATA AVE

**Survey Date:** Wednesday, December 06, 2017

**Start Time:** 07:00

**WO No:** 37362

**Device:** Miovision



**Comments**

## Turning Movement Count - Peak Hour Diagram

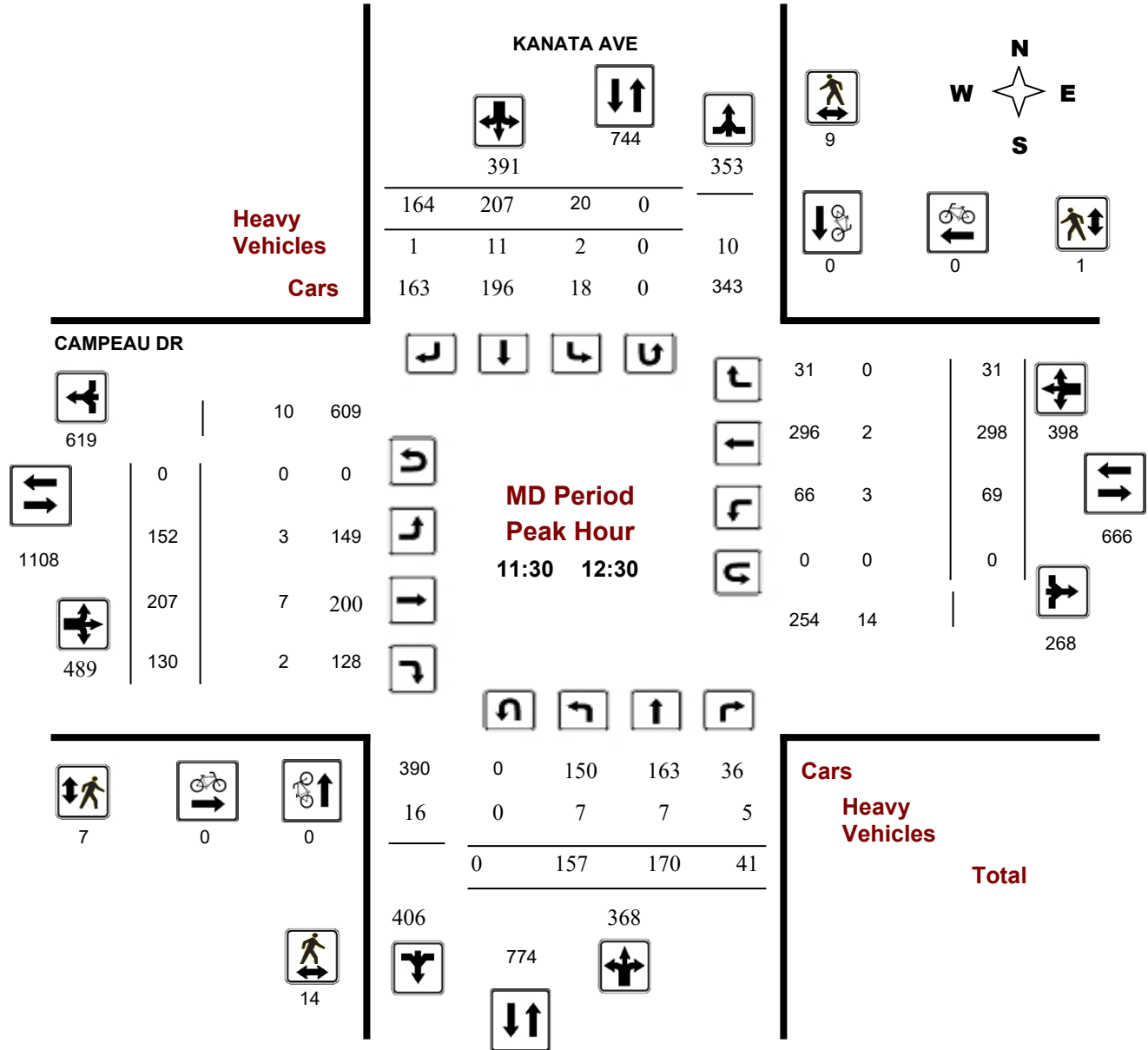
### CAMPEAU DR @ KANATA AVE

**Survey Date:** Wednesday, December 06, 2017

**Start Time:** 07:00

**WO No:** 37362

**Device:** Miovision



## Turning Movement Count - Peak Hour Diagram

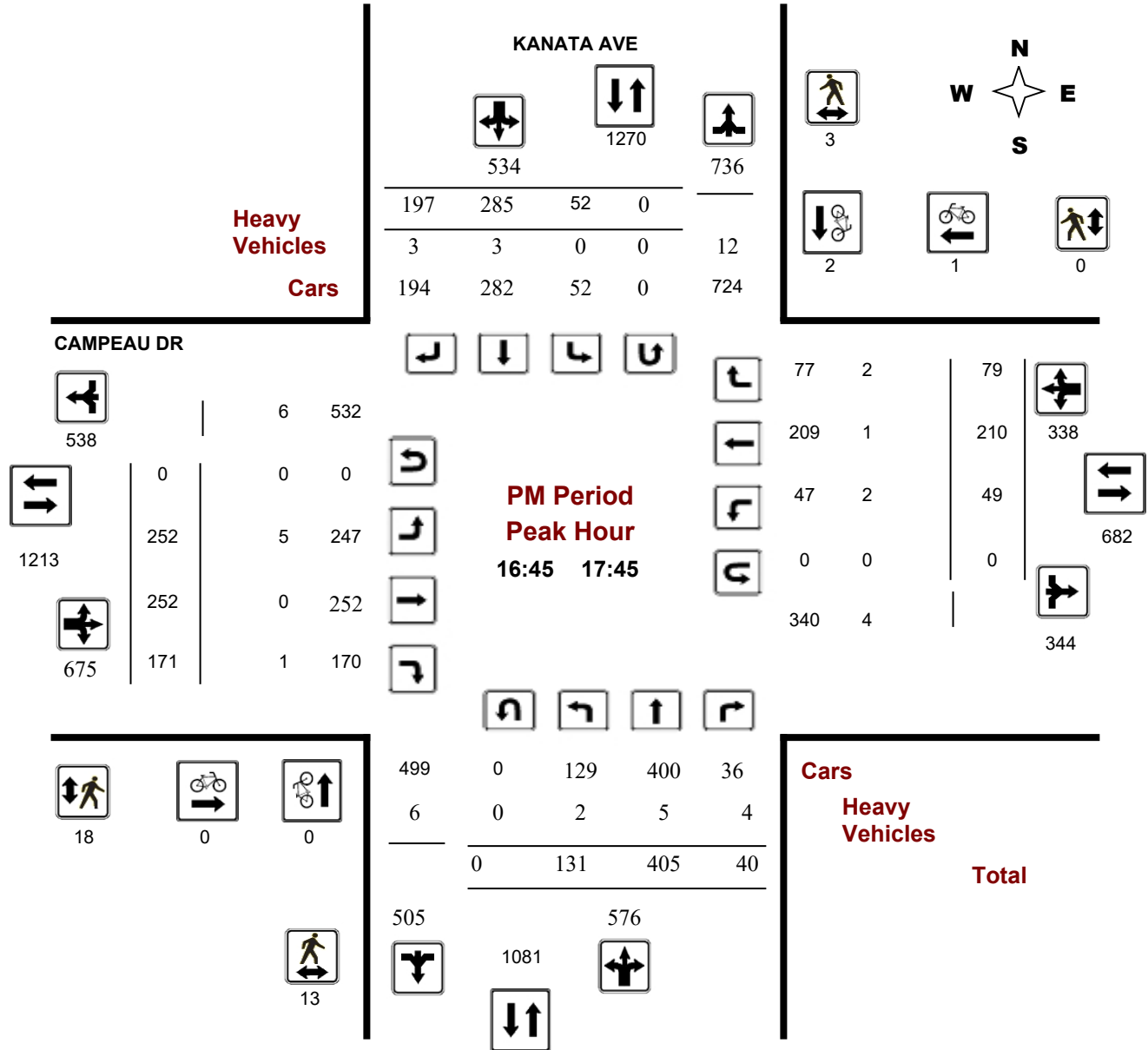
### CAMPEAU DR @ KANATA AVE

**Survey Date:** Wednesday, December 06, 2017

**Start Time:** 07:00

**WO No:** 37362

**Device:** Miovision





# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### CAMPEAU DR @ KANATA AVE

**Survey Date:** Wednesday, December 06, 2017

**WO No:** 37362

**Start Time:** 07:00

**Device:** Miovision

### Full Study Summary (8 HR Standard)

**Survey Date:** Wednesday, December 06, 2017

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

**AADT Factor**  
 1.00

#### KANATA AVE

#### CAMPEAU DR

Period	Northbound					Southbound					Eastbound					Westbound					Grand Total
	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT			
07:00 08:00	63	79	22	164	70	439	152	661	825	51	87	47	185	22	103	33	158	343	1168		
08:00 09:00	73	152	31	256	103	398	190	691	947	85	143	42	270	33	178	58	269	539	1486		
09:00 10:00	106	133	28	267	24	277	189	490	757	104	122	80	306	48	170	19	237	543	1300		
11:30 12:30	157	170	41	368	20	207	164	391	759	152	207	130	489	69	298	31	398	887	1646		
12:30 13:30	177	172	55	404	24	167	164	355	759	151	268	112	531	65	242	31	338	869	1628		
15:00 16:00	242	284	57	583	42	193	180	415	998	211	249	124	584	61	317	98	476	1060	2058		
16:00 17:00	123	340	39	502	48	237	219	504	1006	236	281	122	639	56	274	110	440	1079	2085		
17:00 18:00	147	381	34	562	52	301	204	557	1119	225	231	158	614	49	218	78	345	959	2078		
<b>Sub Total</b>	1088	1711	307	3106	383	2219	1462	4064	7170	1215	1588	815	3618	403	1800	458	2661	6279	13449		
<b>U Turns</b>	0			0	0			0	0	0			0	0			0	0	0		
<b>Total</b>	1088	1711	307	3106	383	2219	1462	4064	7170	1215	1588	815	3618	403	1800	458	2661	6279	13449		
<b>EQ 12Hr</b>	1512	2378	427	4317	532	3084	2032	5648	9965	1689	2207	1133	5029	560	2502	637	3699	8728	18693		
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.																	<b>1.39</b>				
<b>AVG 12Hr</b>	1512	2378	427	4317	532	3084	2032	5648	9965	1689	2207	1133	5029	560	2502	637	3699	8728	18693		
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.																	<b>1.00</b>				
<b>AVG 24Hr</b>	1981	3115	559	5655	697	4040	2662	7399	13054	2213	2891	1484	6588	734	3278	834	4846	11434	24488		
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.																	<b>1.31</b>				

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.





# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### CAMPEAU DR @ KANATA AVE

**Survey Date:** Wednesday, December 06, 2017

**WO No:** 37362

**Start Time:** 07:00

**Device:** Miovision

### Full Study 15 Minute Increments

#### KANATA AVE

#### CAMPEAU DR

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	11	11	2	24	14	118	37	169	193	10	14	10	34	4	24	4	32	66	259
07:15 07:30	15	13	4	32	21	86	43	150	182	8	15	12	35	4	26	7	37	72	254
07:30 07:45	11	36	3	50	20	114	31	165	215	11	24	11	46	6	24	13	43	89	304
07:45 08:00	26	19	13	58	15	121	41	177	235	22	34	14	70	8	29	9	46	116	351
08:00 08:15	20	37	6	63	21	122	56	199	262	23	30	10	63	4	47	11	62	125	387
08:15 08:30	8	32	10	50	50	102	43	195	245	24	38	4	66	5	28	12	45	111	356
08:30 08:45	20	46	10	76	23	85	41	149	225	17	42	12	71	17	64	30	111	182	407
08:45 09:00	25	37	5	67	9	89	50	148	215	21	33	16	70	7	39	5	51	121	336
09:00 09:15	23	38	8	69	2	92	53	147	216	28	30	20	78	10	49	5	64	142	358
09:15 09:30	31	37	5	73	4	69	49	122	195	22	30	21	73	9	37	4	50	123	318
09:30 09:45	29	32	9	70	7	59	37	103	173	22	22	22	66	14	49	6	69	135	308
09:45 10:00	23	26	6	55	11	57	50	118	173	32	40	17	89	15	35	4	54	143	316
11:30 11:45	43	41	9	93	4	58	40	102	195	39	51	30	120	18	85	7	110	230	425
11:45 12:00	39	47	14	100	8	52	35	95	195	36	49	35	120	19	57	7	83	203	398
12:00 12:15	34	43	7	84	4	58	45	107	191	43	44	34	121	22	92	5	119	240	431
12:15 12:30	41	39	11	91	4	39	44	87	178	34	63	31	128	10	64	12	86	214	392
12:30 12:45	56	42	11	109	6	50	46	102	211	38	63	32	133	18	47	4	69	202	413
12:45 13:00	50	45	13	108	7	43	32	82	190	43	63	25	131	14	61	5	80	211	401
13:00 13:15	33	39	19	91	3	36	47	86	177	30	81	27	138	16	69	5	90	228	405
13:15 13:30	38	46	12	96	8	38	39	85	181	40	61	28	129	17	65	17	99	228	409
15:00 15:15	37	51	17	105	14	43	45	102	207	43	67	32	142	15	83	28	126	268	475
15:15 15:30	95	84	14	193	9	42	37	88	281	50	47	31	128	12	83	29	124	252	533
15:30 15:45	73	74	14	161	7	44	44	95	256	57	76	30	163	18	86	22	126	289	545
15:45 16:00	37	75	12	124	12	64	54	130	254	61	59	31	151	16	65	19	100	251	505
16:00 16:15	25	75	8	108	10	47	52	109	217	56	70	26	152	23	83	30	136	288	505
16:15 16:30	37	88	11	136	12	60	61	133	269	49	64	31	144	8	64	26	98	242	511
16:30 16:45	36	69	8	113	6	50	56	112	225	53	80	27	160	9	77	32	118	278	503
16:45 17:00	25	108	12	145	20	80	50	150	295	78	67	38	183	16	50	22	88	271	566
17:00 17:15	41	81	7	129	10	57	49	116	245	58	66	50	174	7	61	20	88	262	507
17:15 17:30	30	109	15	154	12	88	45	145	299	58	59	42	159	16	42	18	76	235	534
17:30 17:45	35	107	6	148	10	60	53	123	271	58	60	41	159	10	57	19	86	245	516
17:45 18:00	41	84	6	131	20	96	57	173	304	51	46	25	122	16	58	21	95	217	521
<b>Total:</b>	<b>1088</b>	<b>1711</b>	<b>307</b>	<b>3106</b>	<b>383</b>	<b>2219</b>	<b>1462</b>	<b>4064</b>	<b>7170</b>	<b>1215</b>	<b>1588</b>	<b>815</b>	<b>3618</b>	<b>403</b>	<b>1800</b>	<b>458</b>	<b>2661</b>	<b>7170</b>	<b>13,449</b>

Note: U-Turns are included in Totals.



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### CAMPEAU DR @ KANATA AVE

**Survey Date:** Wednesday, December 06, 2017

**WO No:** 37362

**Start Time:** 07:00

**Device:** Miovision

### Full Study Cyclist Volume

Time Period	KANATA AVE			CAMPEAU DR			Grand Total
	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
07:00 07:15	0	0	0	0	0	0	0
07:15 07:30	0	0	0	1	0	1	1
07:30 07:45	0	0	0	0	0	0	0
07:45 08:00	0	0	0	0	0	0	0
08:00 08:15	0	0	0	0	0	0	0
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	0	0	0	0	0	0	0
08:45 09:00	0	0	0	0	0	0	0
09:00 09:15	0	0	0	0	0	0	0
09:15 09:30	0	0	0	0	0	0	0
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	0	0	0	0	0	0	0
11:30 11:45	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0	0
12:30 12:45	0	0	0	0	0	0	0
12:45 13:00	0	0	0	0	0	0	0
13:00 13:15	0	0	0	0	0	0	0
13:15 13:30	0	0	0	0	0	0	0
15:00 15:15	0	0	0	0	0	0	0
15:15 15:30	0	0	0	0	0	0	0
15:30 15:45	0	0	0	0	0	0	0
15:45 16:00	0	0	0	0	0	0	0
16:00 16:15	0	0	0	0	0	0	0
16:15 16:30	0	0	0	0	0	0	0
16:30 16:45	0	0	0	0	0	0	0
16:45 17:00	0	0	0	0	0	0	0
17:00 17:15	0	2	2	0	0	0	2
17:15 17:30	0	0	0	0	1	1	1
17:30 17:45	0	0	0	0	0	0	0
17:45 18:00	0	0	0	0	0	0	0
<b>Total</b>	0	2	2	1	1	2	4



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### CAMPEAU DR @ KANATA AVE

**Survey Date:** Wednesday, December 06, 2017

**WO No:** 37362

**Start Time:** 07:00

**Device:** Miovision

### Full Study Pedestrian Volume

#### KANATA AVE

#### CAMPEAU DR

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	2	0	2	3	0	3	5
07:15 07:30	1	0	1	0	1	1	2
07:30 07:45	0	1	1	1	1	2	3
07:45 08:00	1	0	1	1	0	1	2
08:00 08:15	2	0	2	1	0	1	3
08:15 08:30	0	2	2	0	0	0	2
08:30 08:45	2	1	3	2	0	2	5
08:45 09:00	0	0	0	1	1	2	2
09:00 09:15	0	2	2	5	0	5	7
09:15 09:30	1	1	2	2	0	2	4
09:30 09:45	4	0	4	0	0	0	4
09:45 10:00	4	1	5	1	0	1	6
11:30 11:45	8	2	10	4	1	5	15
11:45 12:00	2	1	3	1	0	1	4
12:00 12:15	3	2	5	0	0	0	5
12:15 12:30	1	4	5	2	0	2	7
12:30 12:45	3	1	4	0	0	0	4
12:45 13:00	8	2	10	1	5	6	16
13:00 13:15	0	5	5	5	2	7	12
13:15 13:30	6	2	8	3	2	5	13
15:00 15:15	2	0	2	4	0	4	6
15:15 15:30	5	2	7	2	1	3	10
15:30 15:45	2	2	4	5	1	6	10
15:45 16:00	5	5	10	6	0	6	16
16:00 16:15	6	6	12	6	0	6	18
16:15 16:30	2	3	5	6	3	9	14
16:30 16:45	1	3	4	0	2	2	6
16:45 17:00	6	0	6	5	0	5	11
17:00 17:15	1	1	2	0	0	0	2
17:15 17:30	3	2	5	7	0	7	12
17:30 17:45	3	0	3	6	0	6	9
17:45 18:00	3	5	8	3	2	5	13
<b>Total</b> .....	<b>87</b>	<b>56</b>	<b>143</b>	<b>83</b>	<b>22</b>	<b>105</b>	<b>248</b>



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### CAMPEAU DR @ KANATA AVE

**Survey Date:** Wednesday, December 06, 2017

**WO No:** 37362

**Start Time:** 07:00

**Device:** Miovision

### Full Study Heavy Vehicles

#### KANATA AVE

#### CAMPEAU DR

Northbound

Southbound

Eastbound

Westbound

Time Period	Northbound			N TOT	Southbound			S TOT	STR TOT	Eastbound			E TOT	Westbound			W TOT	STR TOT	Grand Total	
	LT	ST	RT		LT	ST	RT			LT	ST	RT		LT	ST	RT				
07:00 07:15	0	2	0	2	0	1	0	1	3	0	1	2	3	1	1	0	2	5	8	
07:15 07:30	1	0	2	3	1	3	0	4	7	2	0	0	2	0	1	0	1	3	10	
07:30 07:45	0	6	1	7	2	1	0	3	10	0	1	0	1	1	0	1	2	3	13	
07:45 08:00	3	1	1	5	2	4	1	7	12	2	0	0	2	3	0	1	4	6	18	
08:00 08:15	0	2	1	3	2	0	3	5	8	5	2	0	7	1	4	0	5	12	20	
08:15 08:30	1	1	1	3	5	1	0	6	9	1	2	0	3	0	5	5	10	13	22	
08:30 08:45	1	1	2	4	0	3	0	3	7	0	2	0	2	2	0	1	3	5	12	
08:45 09:00	1	1	2	4	1	1	2	4	8	0	2	0	2	0	3	1	4	6	14	
09:00 09:15	0	2	0	2	0	3	1	4	6	1	1	0	2	2	1	0	3	5	11	
09:15 09:30	1	0	1	2	0	0	1	1	3	0	4	0	4	1	0	1	2	6	9	
09:30 09:45	0	1	1	2	0	3	1	4	6	0	1	0	1	2	1	1	4	5	11	
09:45 10:00	0	0	0	0	0	3	0	3	3	0	0	0	0	1	1	0	2	2	5	
11:30 11:45	2	2	1	5	0	3	0	3	8	2	1	1	4	1	1	0	2	6	14	
11:45 12:00	2	2	0	4	2	4	0	6	10	1	2	1	4	2	1	0	3	7	17	
12:00 12:15	0	3	1	4	0	0	1	1	5	0	3	0	3	0	0	0	0	3	8	
12:15 12:30	3	0	3	6	0	4	0	4	10	0	1	0	1	0	0	0	0	1	11	
12:30 12:45	1	2	1	4	2	1	0	3	7	0	0	2	2	1	0	1	2	4	11	
12:45 13:00	0	1	0	1	0	1	1	2	3	0	1	1	2	1	0	0	1	3	6	
13:00 13:15	1	3	2	6	0	0	0	0	6	0	0	2	2	1	2	0	3	5	11	
13:15 13:30	1	0	0	1	1	2	0	3	4	0	1	0	1	1	1	0	2	3	7	
15:00 15:15	0	1	2	3	0	2	0	2	5	2	3	1	6	2	3	7	12	18	23	
15:15 15:30	1	3	1	5	0	2	1	3	8	0	0	1	1	0	0	7	7	8	16	
15:30 15:45	0	1	0	1	0	0	0	0	1	3	1	0	4	1	0	0	1	5	6	
15:45 16:00	1	1	2	4	0	2	2	4	8	0	1	0	1	1	0	0	1	2	10	
16:00 16:15	0	4	1	5	1	1	0	2	7	1	0	0	1	0	1	2	3	4	11	
16:15 16:30	0	1	1	2	1	4	2	7	9	1	1	0	2	1	1	2	4	6	15	
16:30 16:45	0	2	1	3	0	0	1	1	4	0	0	0	0	0	0	1	1	1	5	
16:45 17:00	1	1	1	3	0	0	2	2	5	2	0	1	3	1	0	0	1	4	9	
17:00 17:15	0	2	1	3	0	1	0	1	4	1	0	0	1	0	1	1	2	3	7	
17:15 17:30	0	0	2	2	0	1	1	2	4	1	0	0	1	0	0	0	0	1	5	
17:30 17:45	1	2	0	3	0	1	0	1	4	1	0	0	1	1	0	1	2	3	7	
17:45 18:00	1	0	2	3	0	1	0	1	4	0	0	0	0	0	1	0	1	1	5	
<b>Total:</b>	None	23	48	34	105	20	53	20	93	198	26	31	12	69	28	29	33	90	159	357



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### CAMPEAU DR @ KANATA AVE

**Survey Date:** Wednesday, December 06, 2017

**WO No:** 37362

**Start Time:** 07:00

**Device:** Miovision

### Full Study 15 Minute U-Turn Total

KANATA AVE

CAMPEAU DR

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
Total		0	0	0	0	0



# Transportation Services - Traffic Services

## Turning Movement Count - Full Study Peak Hour Diagram

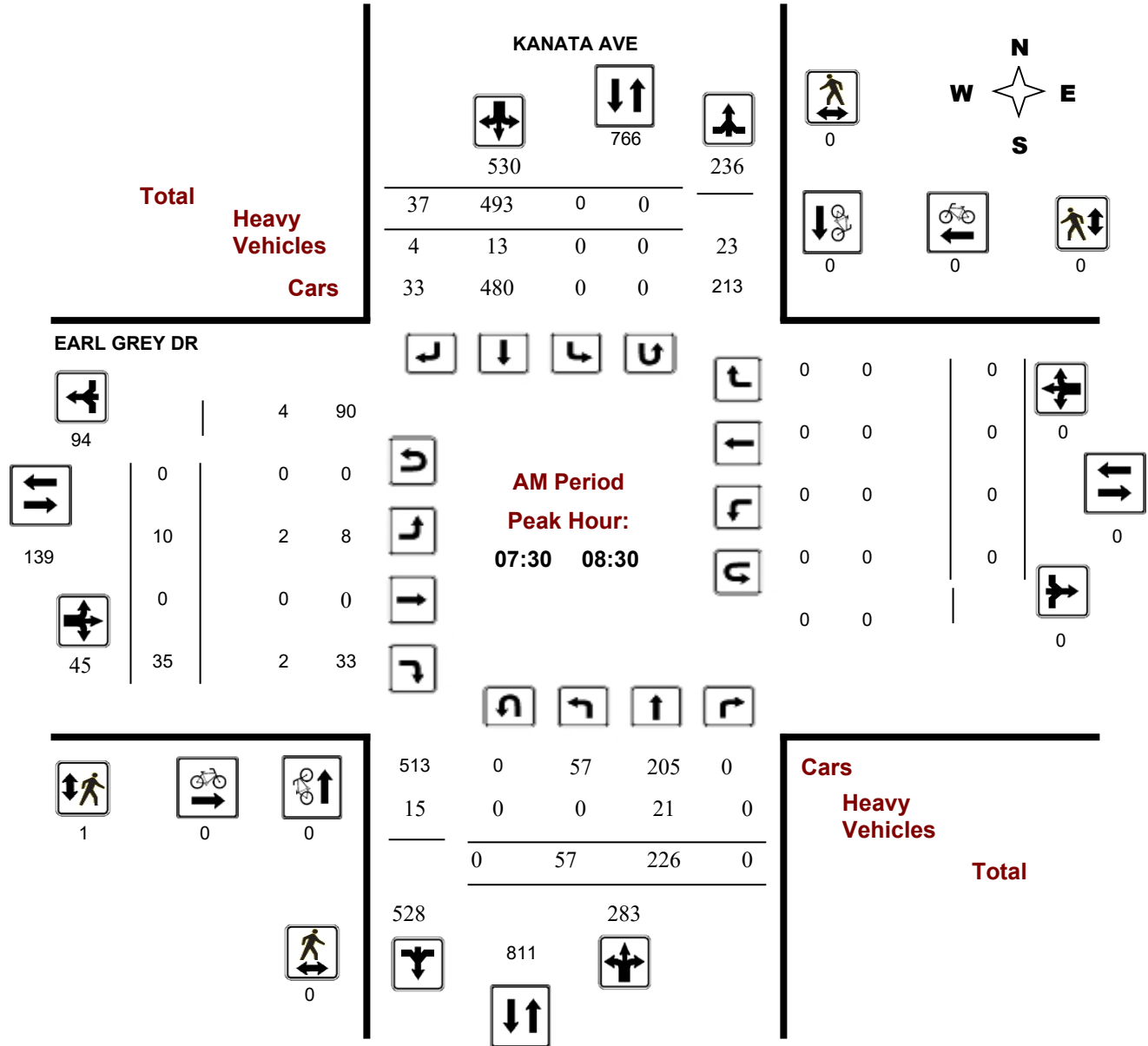
### KANATA AVE @ EARL GREY DR

**Survey Date:** Wednesday, November 28, 2018

**Start Time:** 07:00

**WO No:** 38176

**Device:** Miovision

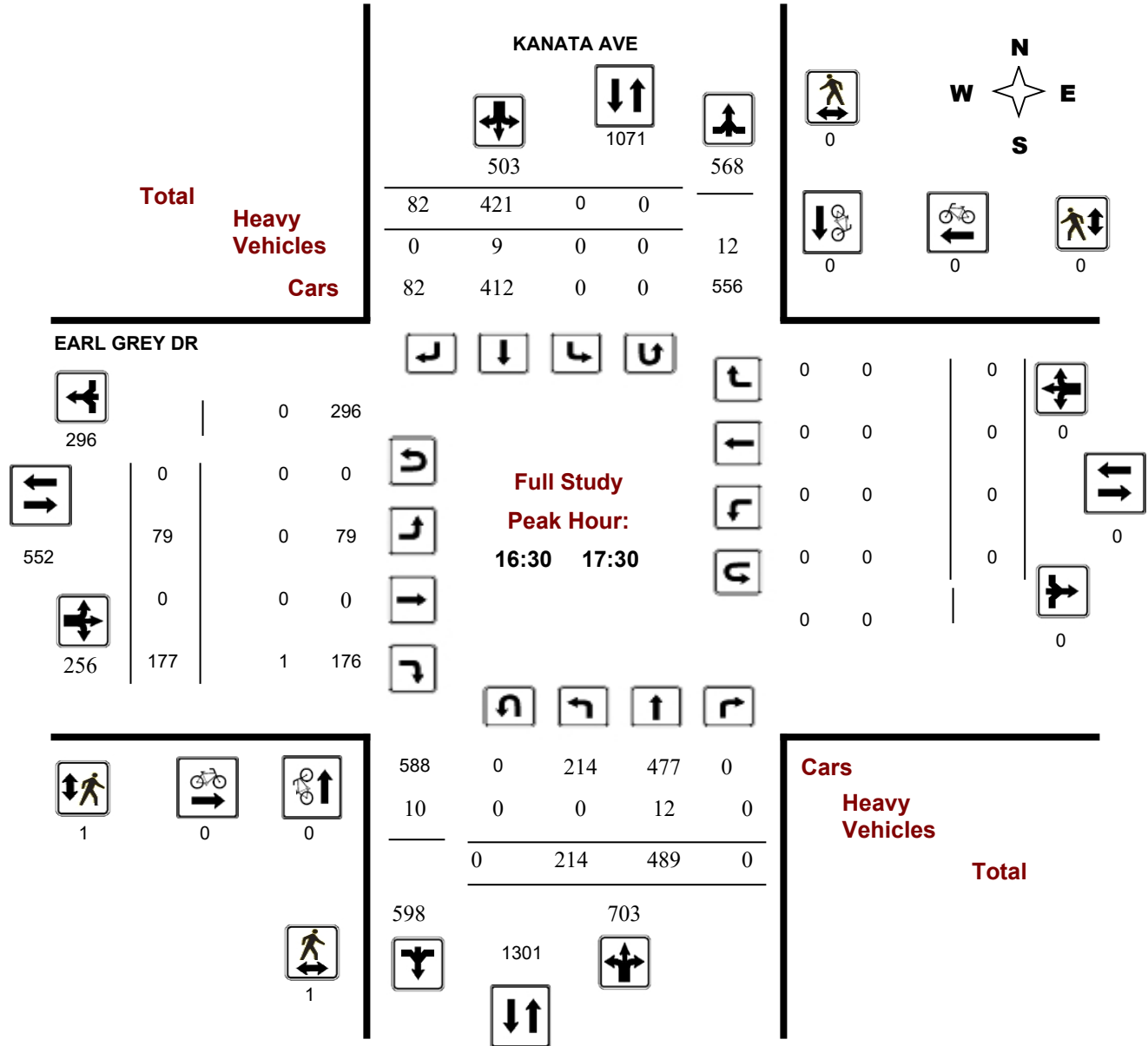


**Survey Date:** Wednesday, November 28, 2018

**Start Time:** 07:00

**WO No:** 38176

**Device:** Miovision



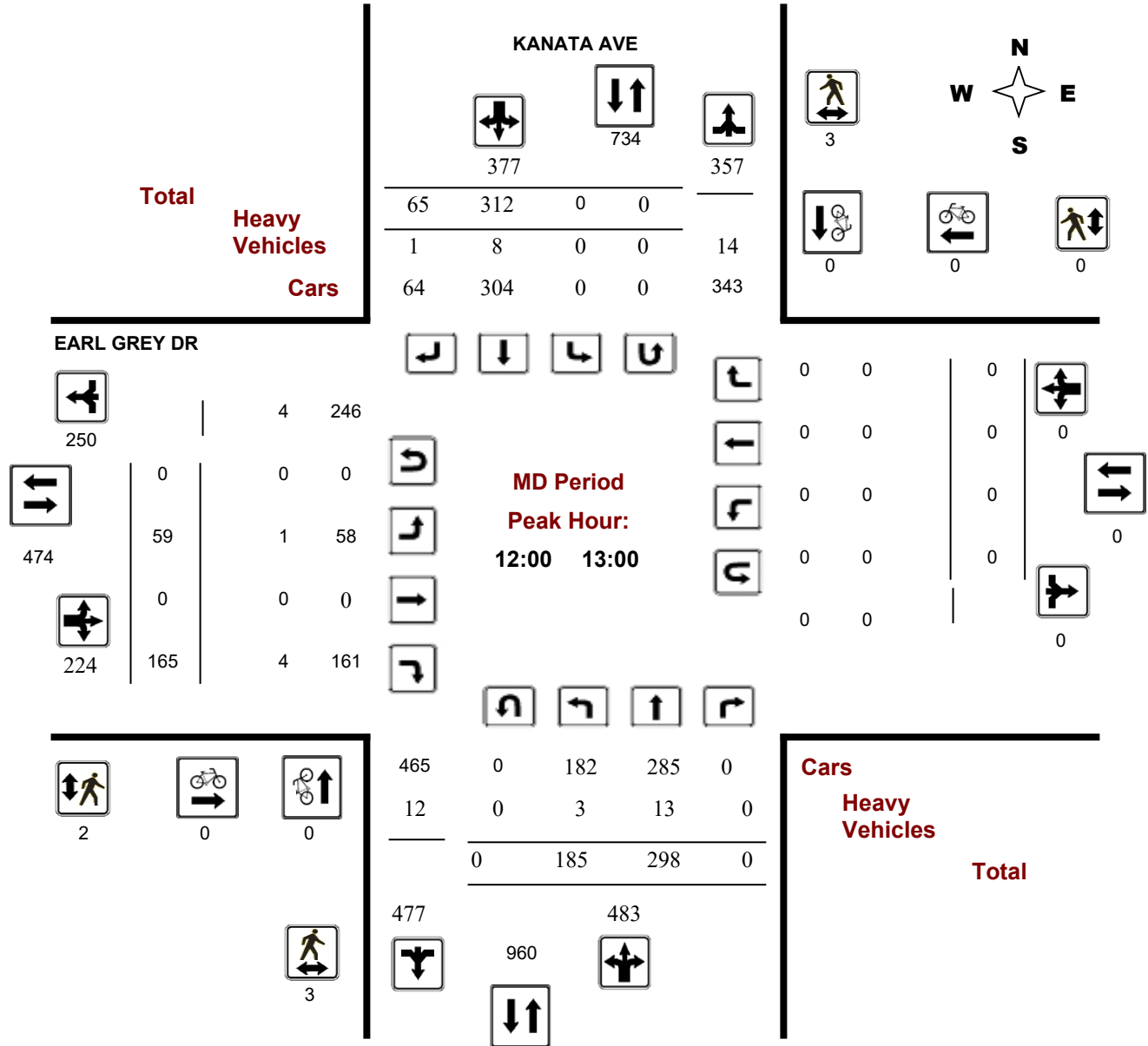
**Comments**

**Survey Date:** Wednesday, November 28, 2018

**Start Time:** 07:00

**WO No:** 38176

**Device:** Miovision



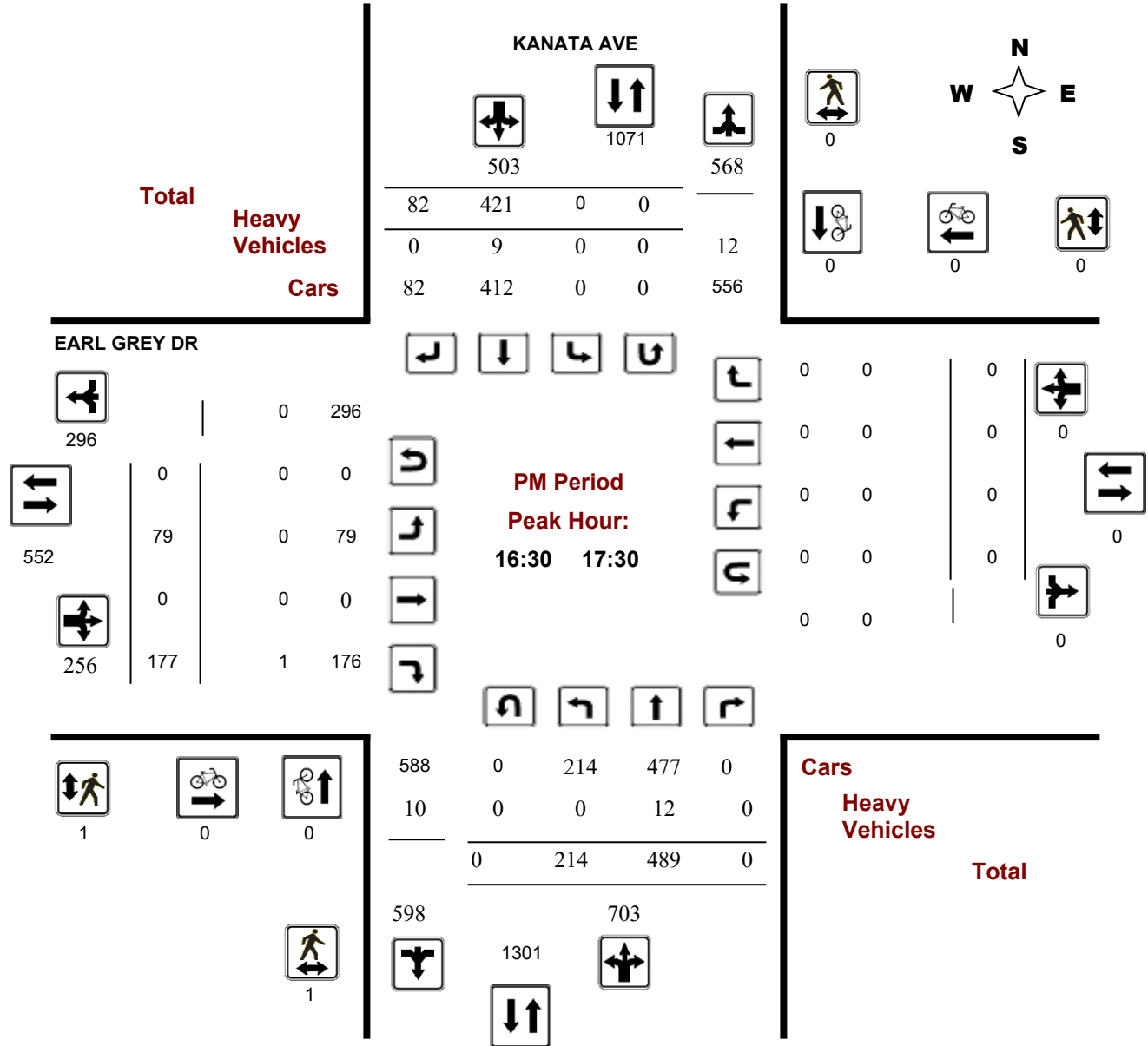


**Survey Date:** Wednesday, November 28, 2018

**Start Time:** 07:00

**WO No:** 38176

**Device:** Miovision



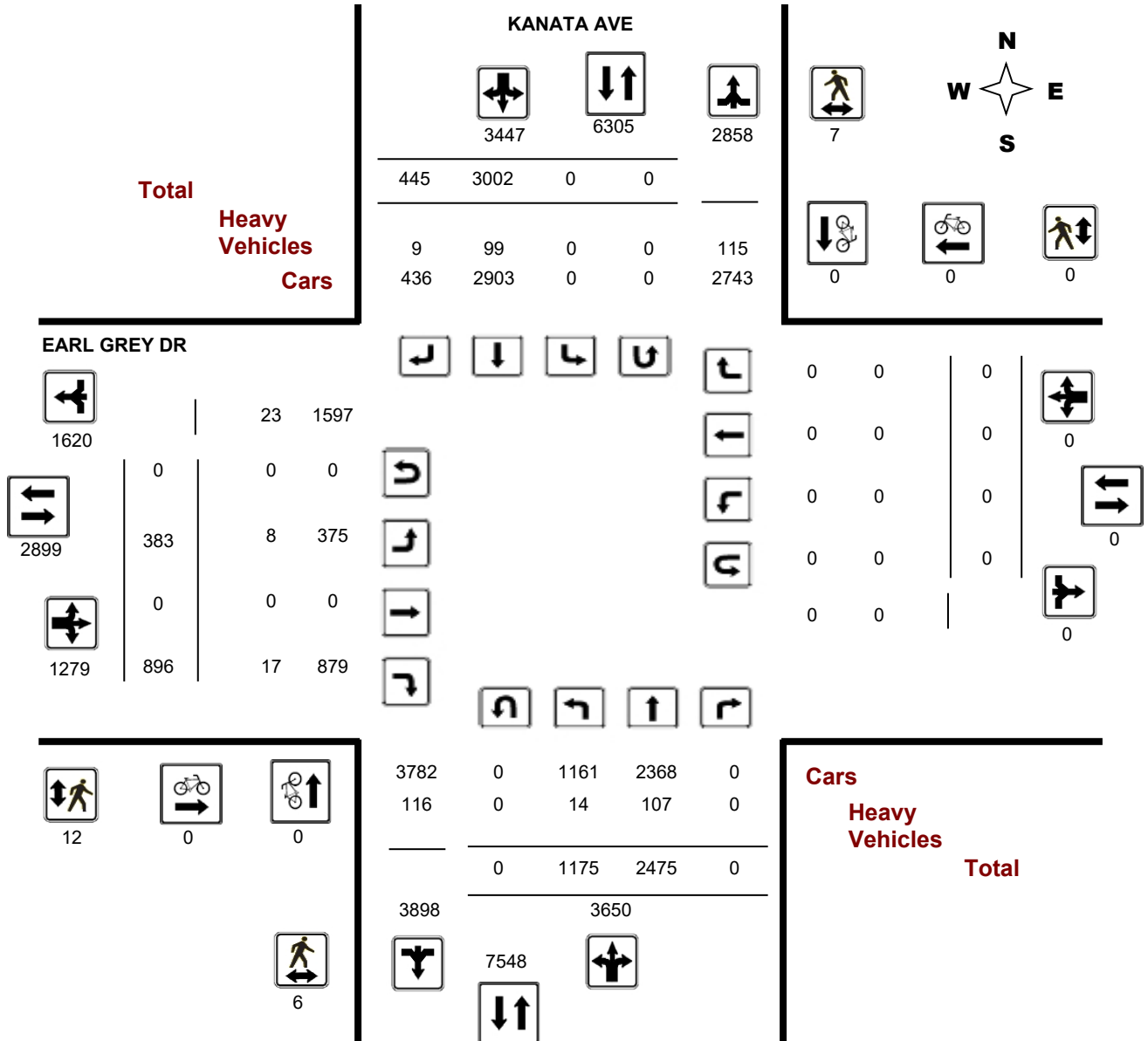
# Transportation Services - Traffic Services

## Turning Movement Count - Full Study Diagram

### KANATA AVE @ EARL GREY DR

**Survey Date:** Wednesday, November 28, 2018

**WO#:** 38176  
**Device:** Miovision



**Comments**



## Turning Movement Count - Full Study Summary Report

### KANATA AVE @ EARL GREY DR

**Survey Date:** Wednesday, November 28, 2018

**Total Observed U-Turns**

**AADT Factor**

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

.90

**Full Study**

Period	KANATA AVE									EARL GREY DR									Grand Total	
	Northbound			Southbound			STR TOT	Eastbound			Westbound			WB TOT	STR TOT					
	LT	ST	RT	NB TOT	LT	ST		RT	SB TOT	LT	ST	RT	EB TOT			LT	ST	RT		
07:00 08:00	43	172	0	215	0	475	30	505	720	7	0	31	38	0	0	0	0	38	758	
08:00 09:00	80	223	0	303	0	439	34	473	776	11	0	29	40	0	0	0	0	40	816	
09:00 10:00	103	208	0	311	0	372	36	408	719	22	0	53	75	0	0	0	0	75	794	
11:30 12:30	209	259	0	468	0	296	82	378	846	45	0	137	182	0	0	0	0	182	1028	
12:30 13:30	164	266	0	430	0	306	59	365	795	67	0	183	250	0	0	0	0	250	1045	
15:00 16:00	179	412	0	591	0	322	54	376	967	70	0	136	206	0	0	0	0	206	1173	
16:00 17:00	202	454	0	656	0	397	76	473	1129	77	0	153	230	0	0	0	0	230	1359	
17:00 18:00	195	481	0	676	0	395	74	469	1145	84	0	174	258	0	0	0	0	258	1403	
<b>Sub Total</b>	1175	2475	0	3650	0	3002	445	3447	7097	383	0	896	1279	0	0	0	0	1279	8376	
<b>U Turns</b>				0				0	0				0				0	0	0	
<b>Total</b>	1175	2475	0	3650	0	3002	445	3447	7097	383	0	896	1279	0	0	0	0	1279	8376	
<b>EQ 12Hr</b>	1633	3440	0	5074	0	4173	619	4791	9865	532	0	1245	1778	0	0	0	0	1778	11643	
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													<b>1.39</b>							
<b>AVG 12Hr</b>	1470	3096	0	4566	0	3756	557	4312	8878	479	0	1121	1600	0	0	0	0	1600	10478	
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													<b>.90</b>							
<b>AVG 24Hr</b>	1926	4056	0	5982	0	4920	729	5649	11631	628	0	1468	2096	0	0	0	0	2096	13727	
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													<b>1.31</b>							

**Comments:**

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.



Turning Movement Count - 15 Minute Summary Report

KANATA AVE @ EARL GREY DR

Survey Date: Wednesday, November 28, 2018

Total Observed U-Turns

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

KANATA AVE

EARL GREY DR

Table with columns: Time Period, Northbound (LT, ST, RT, N TOT), Southbound (LT, ST, RT, S TOT, STR TOT), Eastbound (LT, ST, RT, E TOT), Westbound (LT, ST, RT, W TOT, STR TOT), Grand Total. Rows include 15-minute intervals from 07:00 to 18:00 and a final TOTAL row.

Note: U-Turns are included in Totals.

Comment:



# Transportation Services - Traffic Services

## Turning Movement Count - Cyclist Volume Report

**Work Order**  
**38176**

### KANATA AVE @ EARL GREY DR

**Count Date:** Wednesday, November 28, 2018

**Start Time:** 07:00

Time Period	KANATA AVE			EARL GREY DR			Grand Total
	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
07:00 08:00	0	0	<b>0</b>	0	0	<b>0</b>	<b>0</b>
08:00 09:00	0	0	<b>0</b>	0	0	<b>0</b>	<b>0</b>
09:00 10:00	0	0	<b>0</b>	0	0	<b>0</b>	<b>0</b>
11:30 12:30	0	0	<b>0</b>	0	0	<b>0</b>	<b>0</b>
12:30 13:30	0	0	<b>0</b>	0	0	<b>0</b>	<b>0</b>
15:00 16:00	0	0	<b>0</b>	0	0	<b>0</b>	<b>0</b>
16:00 17:00	0	0	<b>0</b>	0	0	<b>0</b>	<b>0</b>
17:00 18:00	0	0	<b>0</b>	0	0	<b>0</b>	<b>0</b>
<b>Total .....</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

**Comment:**

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



# Transportation Services - Traffic Services

W.O.  
38176

## Turning Movement Count - Heavy Vehicle Report

### KANATA AVE @ EARL GREY DR

**Survey Date:** Wednesday, November 28, 2018

Time Period	KANATA AVE									EARL GREY DR									Grand Total	
	Northbound			Southbound			S TOT	STR TOT	Eastbound			Westbound			W TOT	STR TOT				
	LT	ST	RT	N TOT	LT	ST			RT	LT	ST	RT	E TOT	LT			ST	RT		
07:00 08:00	0	12	0	12	0	12	3	15	27	2	0	1	3	0	0	0	0	0	3	30
08:00 09:00	2	18	0	20	0	16	2	18	38	2	0	1	3	0	0	0	0	0	3	41
09:00 10:00	5	14	0	19	0	14	1	15	34	0	0	2	2	0	0	0	0	0	2	36
11:30 12:30	4	17	0	21	0	10	2	12	33	2	0	3	5	0	0	0	0	0	5	38
12:30 13:30	1	13	0	14	0	13	0	13	27	0	0	3	3	0	0	0	0	0	3	30
15:00 16:00	1	11	0	12	0	12	1	13	25	1	0	5	6	0	0	0	0	0	6	31
16:00 17:00	1	14	0	15	0	11	0	11	26	1	0	2	3	0	0	0	0	0	3	29
17:00 18:00	0	8	0	8	0	11	0	11	19	0	0	0	0	0	0	0	0	0	0	19
<b>Sub Total</b>	<b>14</b>	<b>107</b>	<b>0</b>	<b>121</b>	<b>0</b>	<b>99</b>	<b>9</b>	<b>108</b>	<b>229</b>	<b>8</b>	<b>0</b>	<b>17</b>	<b>25</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>25</b>	<b>254</b>
<b>U-Turns (Heavy Vehicles)</b>				<b>0</b>				<b>0</b>	<b>0</b>				<b>0</b>					<b>0</b>	<b>0</b>	<b>0</b>
<b>Total</b>	<b>14</b>	<b>107</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>99</b>	<b>9</b>	<b>108</b>	<b>229</b>	<b>8</b>	<b>0</b>	<b>17</b>	<b>25</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>25</b>	<b>254</b>

Heavy Vehicles include Buses, Single-Unit Trucks and Articulated Trucks. Further, they ARE included in the Turning Movement Count Summary.



# Transportation Services - Traffic Services

Work Order

38176

## Turning Movement Count - Pedestrian Volume Report

### KANATA AVE @ EARL GREY DR

Count Date: Wednesday, November 28, 2018

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	0	0	0	0
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	0	0	0	0	0	0	0
07:45 08:00	0	0	0	0	0	0	0
<b>07:00 08:00</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
08:00 08:15	0	0	0	1	0	1	1
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	0	0	0	0	0	0	0
08:45 09:00	0	0	0	0	0	0	0
<b>08:00 09:00</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>
09:00 09:15	0	0	0	1	0	1	1
09:15 09:30	1	0	1	1	0	1	2
09:30 09:45	0	1	1	0	0	0	1
09:45 10:00	0	0	0	2	0	2	2
<b>09:00 10:00</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>4</b>	<b>6</b>
11:30 11:45	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0	0
<b>11:30 12:30</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
12:30 12:45	2	1	3	2	0	2	5
12:45 13:00	1	2	3	0	0	0	3
13:00 13:15	0	0	0	0	0	0	0
13:15 13:30	0	0	0	0	0	0	0
<b>12:30 13:30</b>	<b>3</b>	<b>3</b>	<b>6</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>8</b>
15:00 15:15	0	0	0	0	0	0	0
15:15 15:30	0	0	0	0	0	0	0
15:30 15:45	0	0	0	0	0	0	0
15:45 16:00	1	0	1	1	0	1	2
<b>15:00 16:00</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>2</b>
16:00 16:15	0	1	1	1	0	1	2
16:15 16:30	0	0	0	1	0	1	1
16:30 16:45	0	0	0	0	0	0	0
16:45 17:00	1	0	1	1	0	1	2
<b>16:00 17:00</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>5</b>
17:00 17:15	0	0	0	0	0	0	0
17:15 17:30	0	0	0	0	0	0	0
17:30 17:45	0	1	1	0	0	0	1
17:45 18:00	0	1	1	1	0	1	2
<b>17:00 18:00</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>3</b>
<b>Total</b> .....	<b>6</b>	<b>7</b>	<b>13</b>	<b>12</b>	<b>0</b>	<b>12</b>	<b>25</b>

Comment:

## Turning Movement Count - 15 Min U-Turn Total Report

### KANATA AVE @ EARL GREY DR

**Survey Date:** Wednesday, November 28, 2018

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
Total		0	0	0	0	0





# Transportation Services - Traffic Services

## Turning Movement Count - Full Study Peak Hour Diagram

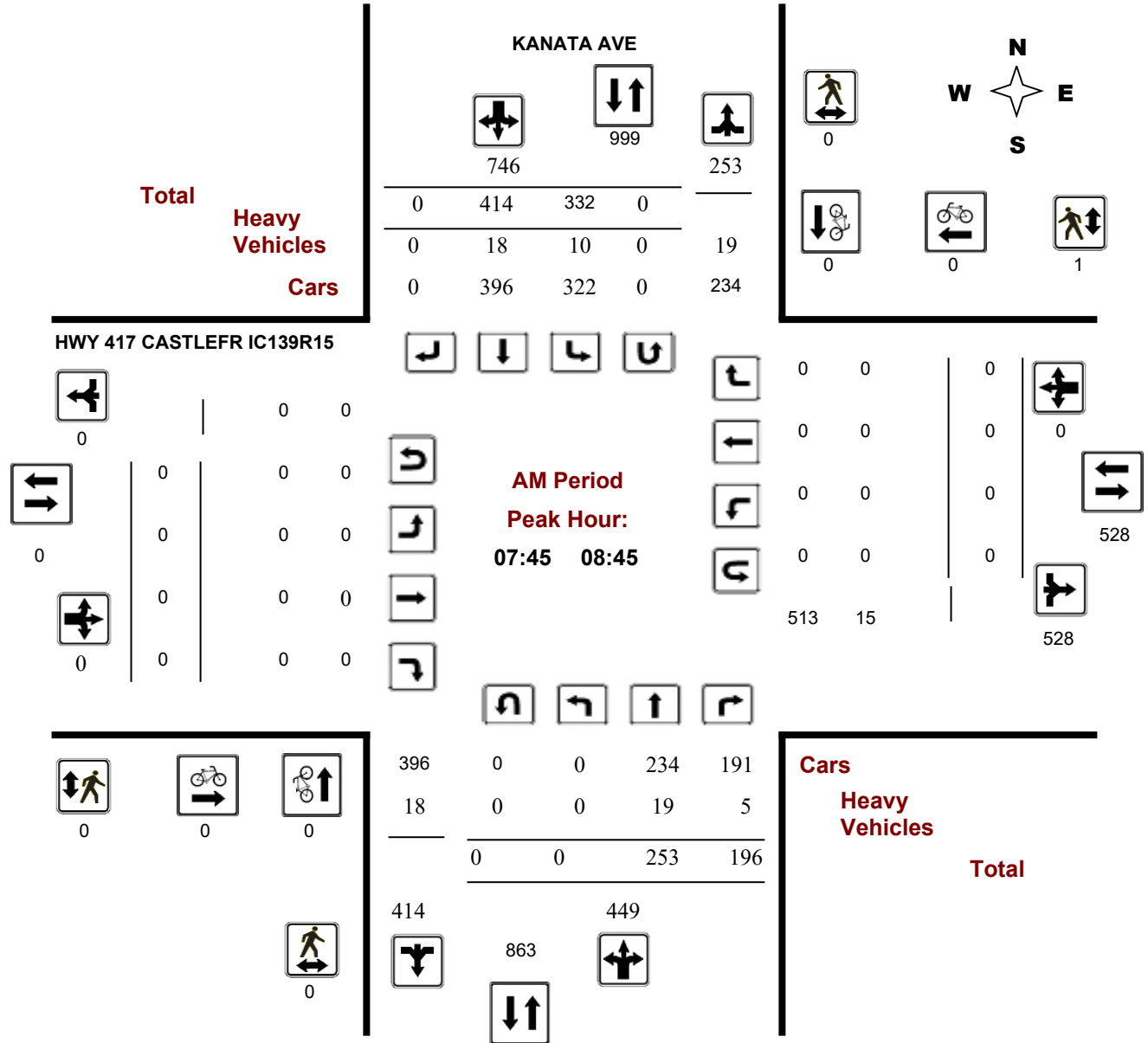
### KANATA AVE @ HWY 417 CASTLEFR IC139R15

**Survey Date:** Tuesday, November 27, 2018

**WO No:** 38168

**Start Time:** 07:00

**Device:** Miovision



**Comments**





# Transportation Services - Traffic Services

## Turning Movement Count - Full Study Peak Hour Diagram

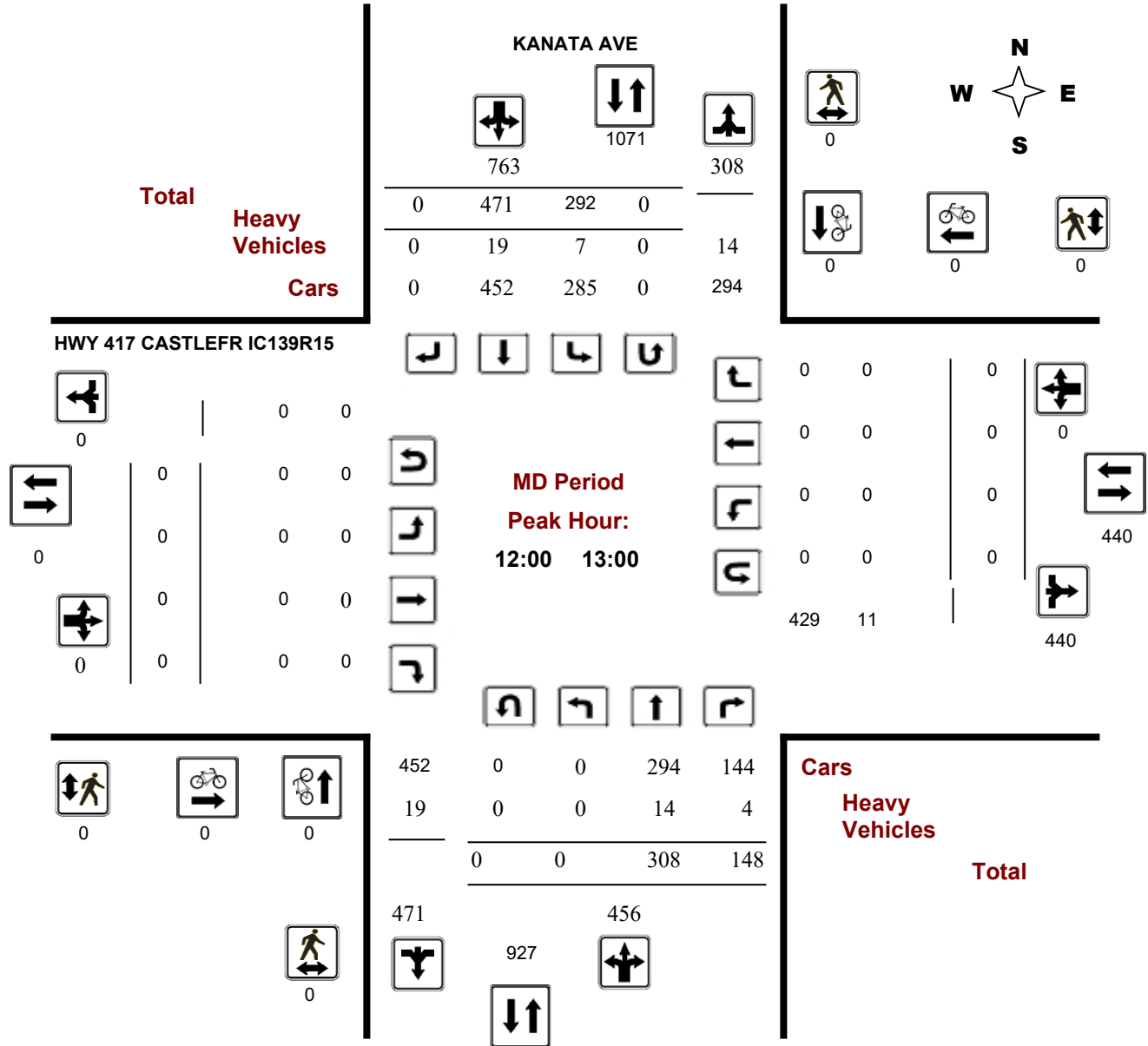
### KANATA AVE @ HWY 417 CASTLEFR IC139R15

**Survey Date:** Tuesday, November 27, 2018

**Start Time:** 07:00

**WO No:** 38168

**Device:** Miovision





# Transportation Services - Traffic Services

## Turning Movement Count - Full Study Peak Hour Diagram

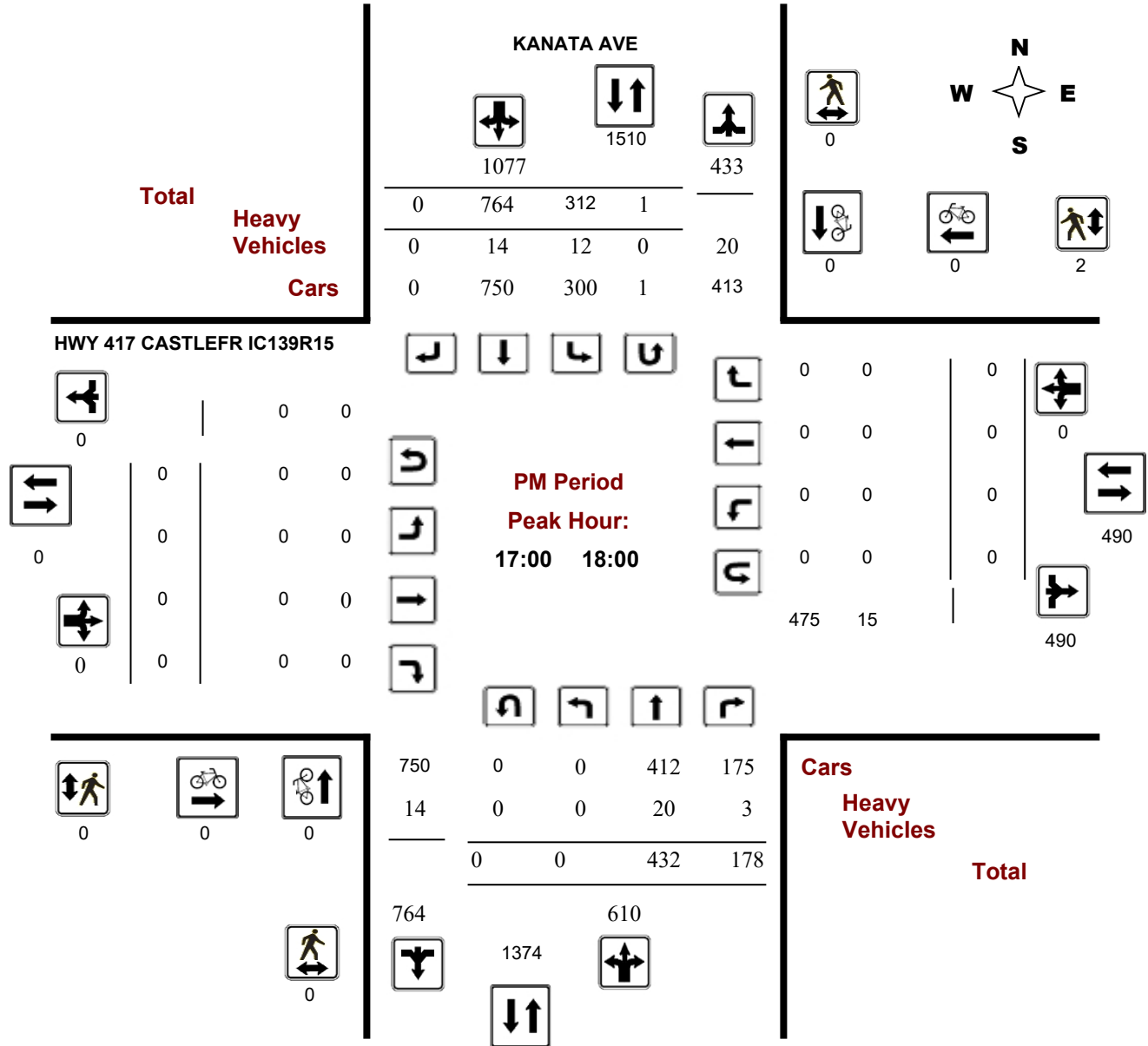
### KANATA AVE @ HWY 417 CASTLEFR IC139R15

**Survey Date:** Tuesday, November 27, 2018

**Start Time:** 07:00

**WO No:** 38168

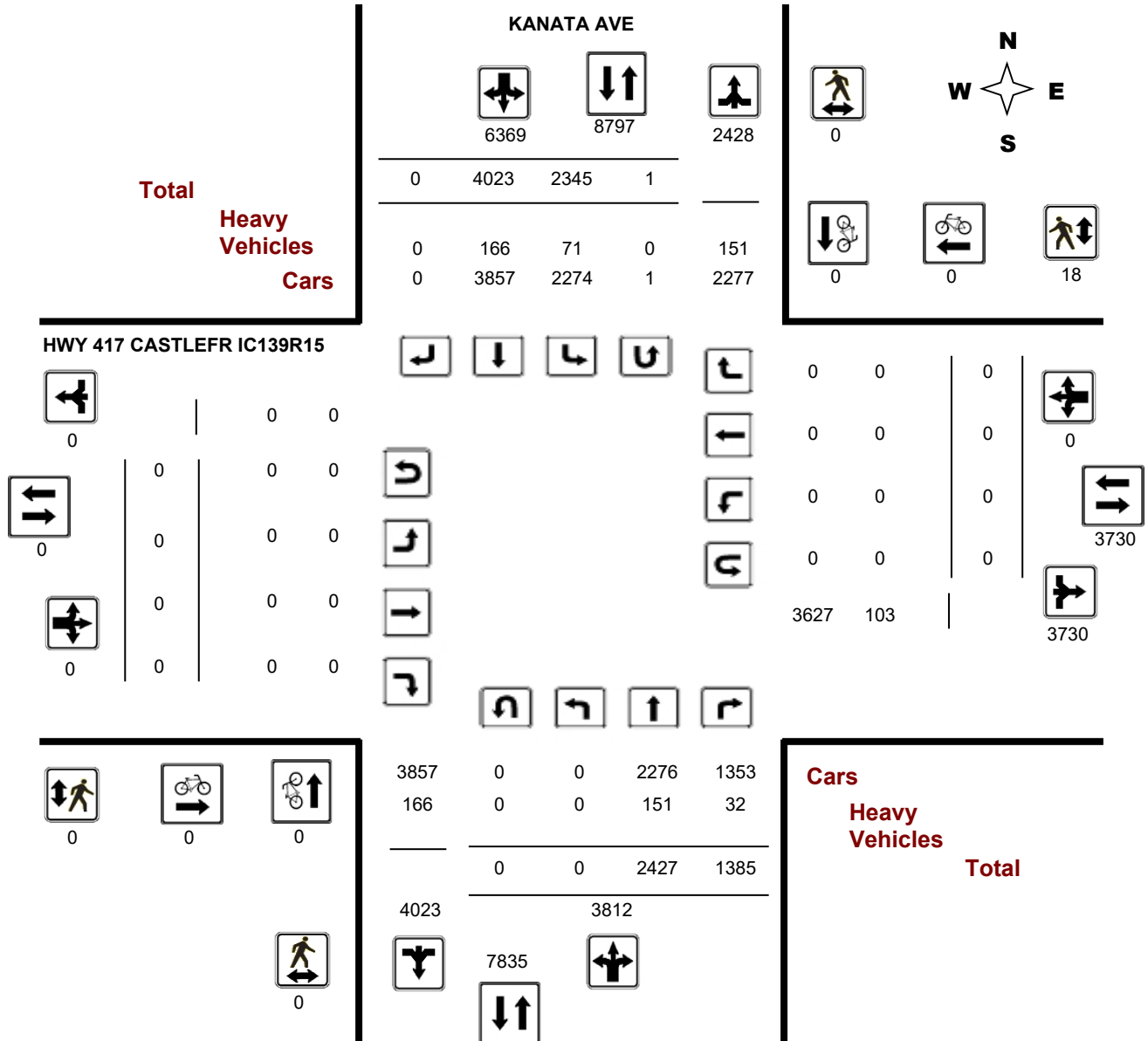
**Device:** Miovision



### KANATA AVE @ HWY 417 CASTLEFR IC139R15

**Survey Date:** Tuesday, November 27, 2018

**WO#:** 38168  
**Device:** Miovision



**Comments**

## Turning Movement Count - Full Study Summary Report

### KANATA AVE @ HWY 417 CASTLEFR IC139R15

**Survey Date:** Tuesday, November 27, 2018

**Total Observed U-Turns**

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

**AADT Factor**

1.00

**Full Study**

Period	KANATA AVE									HWY 417 CASTLEFR IC139R15									Grand Total	
	Northbound			Southbound			STR TOT	Eastbound			Westbound			WB TOT	STR TOT					
	LT	ST	RT	NB TOT	LT	ST		RT	SB TOT	LT	ST	RT	EB TOT			LT	ST	RT		
07:00 08:00	0	137	264	<b>401</b>	393	312	0	<b>705</b>	<b>1106</b>	0	0	0	<b>0</b>	0	0	0	<b>0</b>	<b>0</b>	<b>0</b>	<b>1106</b>
08:00 09:00	0	282	169	<b>451</b>	328	386	0	<b>714</b>	<b>1165</b>	0	0	0	<b>0</b>	0	0	0	<b>0</b>	<b>0</b>	<b>0</b>	<b>1165</b>
09:00 10:00	0	199	151	<b>350</b>	265	388	0	<b>653</b>	<b>1003</b>	0	0	0	<b>0</b>	0	0	0	<b>0</b>	<b>0</b>	<b>0</b>	<b>1003</b>
11:30 12:30	0	277	147	<b>424</b>	236	419	0	<b>655</b>	<b>1079</b>	0	0	0	<b>0</b>	0	0	0	<b>0</b>	<b>0</b>	<b>0</b>	<b>1079</b>
12:30 13:30	0	312	136	<b>448</b>	268	449	0	<b>717</b>	<b>1165</b>	0	0	0	<b>0</b>	0	0	0	<b>0</b>	<b>0</b>	<b>0</b>	<b>1165</b>
15:00 16:00	0	356	158	<b>514</b>	259	637	0	<b>896</b>	<b>1410</b>	0	0	0	<b>0</b>	0	0	0	<b>0</b>	<b>0</b>	<b>0</b>	<b>1410</b>
16:00 17:00	0	432	182	<b>614</b>	284	668	0	<b>952</b>	<b>1566</b>	0	0	0	<b>0</b>	0	0	0	<b>0</b>	<b>0</b>	<b>0</b>	<b>1566</b>
17:00 18:00	0	432	178	<b>610</b>	312	764	0	<b>1076</b>	<b>1686</b>	0	0	0	<b>0</b>	0	0	0	<b>0</b>	<b>0</b>	<b>0</b>	<b>1686</b>
<b>Sub Total</b>	0	2427	1385	<b>3812</b>	2345	4023	0	<b>6368</b>	<b>10180</b>	0	0	0	<b>0</b>	0	0	0	<b>0</b>	<b>0</b>	<b>0</b>	<b>10180</b>
<b>U Turns</b>				<b>0</b>				<b>1</b>	<b>1</b>				<b>0</b>				<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
<b>Total</b>	0	2427	1385	<b>3812</b>	2345	4023	0	<b>6369</b>	<b>10181</b>	0	0	0	<b>0</b>	0	0	0	<b>0</b>	<b>0</b>	<b>0</b>	<b>10181</b>
<b>EQ 12Hr</b>	0	3374	1925	<b>5299</b>	3260	5592	0	<b>8853</b>	<b>14152</b>	0	0	0	<b>0</b>	0	0	0	<b>0</b>	<b>0</b>	<b>0</b>	<b>14152</b>
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													<b>1.39</b>							
<b>AVG 12Hr</b>	0	3374	1925	<b>5299</b>	3260	5592	0	<b>8853</b>	<b>14152</b>	0	0	0	<b>0</b>	0	0	0	<b>0</b>	<b>0</b>	<b>0</b>	<b>14152</b>
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													<b>1.00</b>							
<b>AVG 24Hr</b>	0	4419	2522	<b>6941</b>	4270	7325	0	<b>11597</b>	<b>18538</b>	0	0	0	<b>0</b>	0	0	0	<b>0</b>	<b>0</b>	<b>0</b>	<b>18538</b>
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													<b>1.31</b>							

**Comments:**

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.



Turning Movement Count - 15 Minute Summary Report

**KANATA AVE @ HWY 417 CASTLEFR IC139R15**

Survey Date: Tuesday, November 27, 2018

Total Observed U-Turns

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

Time Period	KANATA AVE									HWY 417 CASTLEFR IC139R15									Grand Total
	Northbound			Southbound			S			STR			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	
07:00 07:15	0	27	77	104	98	39	0	137	241	0	0	0	0	0	0	0	0	0	241
07:15 07:30	0	21	62	83	99	60	0	159	242	0	0	0	0	0	0	0	0	0	242
07:30 07:45	0	41	56	97	102	99	0	201	298	0	0	0	0	0	0	0	0	0	298
07:45 08:00	0	48	69	117	94	114	0	208	325	0	0	0	0	0	0	0	0	0	325
08:00 08:15	0	56	42	98	73	100	0	173	271	0	0	0	0	0	0	0	0	0	271
08:15 08:30	0	69	38	107	82	93	0	175	282	0	0	0	0	0	0	0	0	0	282
08:30 08:45	0	80	47	127	83	107	0	190	317	0	0	0	0	0	0	0	0	0	317
08:45 09:00	0	77	42	119	90	86	0	176	295	0	0	0	0	0	0	0	0	0	295
09:00 09:15	0	49	41	90	82	108	0	190	280	0	0	0	0	0	0	0	0	0	280
09:15 09:30	0	55	40	95	65	97	0	162	257	0	0	0	0	0	0	0	0	0	257
09:30 09:45	0	44	42	86	63	86	0	149	235	0	0	0	0	0	0	0	0	0	235
09:45 10:00	0	51	28	79	55	97	0	152	231	0	0	0	0	0	0	0	0	0	231
11:30 11:45	0	65	38	103	44	96	0	140	243	0	0	0	0	0	0	0	0	0	243
11:45 12:00	0	65	35	100	58	95	0	153	253	0	0	0	0	0	0	0	0	0	253
12:00 12:15	0	70	43	113	67	105	0	172	285	0	0	0	0	0	0	0	0	0	285
12:15 12:30	0	77	31	108	67	123	0	190	298	0	0	0	0	0	0	0	0	0	298
12:30 12:45	0	78	43	121	69	120	0	189	310	0	0	0	0	0	0	0	0	0	310
12:45 13:00	0	83	31	114	89	123	0	212	326	0	0	0	0	0	0	0	0	0	326
13:00 13:15	0	80	39	119	56	101	0	157	276	0	0	0	0	0	0	0	0	0	276
13:15 13:30	0	71	23	94	54	105	0	159	253	0	0	0	0	0	0	0	0	0	253
15:00 15:15	0	66	38	104	59	151	0	210	314	0	0	0	0	0	0	0	0	0	314
15:15 15:30	0	108	50	158	65	151	0	216	374	0	0	0	0	0	0	0	0	0	374
15:30 15:45	0	85	35	120	56	144	0	200	320	0	0	0	0	0	0	0	0	0	320
15:45 16:00	0	97	35	132	79	191	0	270	402	0	0	0	0	0	0	0	0	0	402
16:00 16:15	0	91	44	135	69	157	0	226	361	0	0	0	0	0	0	0	0	0	361
16:15 16:30	0	102	50	152	69	170	0	239	391	0	0	0	0	0	0	0	0	0	391
16:30 16:45	0	119	46	165	73	161	0	234	399	0	0	0	0	0	0	0	0	0	399
16:45 17:00	0	120	42	162	73	180	0	253	415	0	0	0	0	0	0	0	0	0	415
17:00 17:15	0	110	46	156	70	207	0	277	433	0	0	0	0	0	0	0	0	0	433
17:15 17:30	0	95	54	149	66	178	0	244	393	0	0	0	0	0	0	0	0	0	393
17:30 17:45	0	109	40	149	80	185	0	265	414	0	0	0	0	0	0	0	0	0	414
17:45 18:00	0	118	38	156	96	194	0	291	447	0	0	0	0	0	0	0	0	0	447
<b>TOTAL:</b>	0	2427	1385	<b>3812</b>	2345	4023	0	<b>6369</b>	<b>10181</b>	0	0	0	0	0	0	0	0	0	<b>10181</b>

Note: U-Turns are included in Totals.

Comment:



# Transportation Services - Traffic Services

## Turning Movement Count - Cyclist Volume Report

**Work Order**  
**38168**

### KANATA AVE @ HWY 417 CASTLEFR IC139R15

**Count Date:** Tuesday, November 27, 2018

**Start Time:** 07:00

Time Period	KANATA AVE			HWY 417 CASTLEFR IC139R15			Grand Total
	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
07:00 08:00	0	0	<b>0</b>	0	0	<b>0</b>	<b>0</b>
08:00 09:00	0	0	<b>0</b>	0	0	<b>0</b>	<b>0</b>
09:00 10:00	0	0	<b>0</b>	0	0	<b>0</b>	<b>0</b>
11:30 12:30	0	0	<b>0</b>	0	0	<b>0</b>	<b>0</b>
12:30 13:30	0	0	<b>0</b>	0	0	<b>0</b>	<b>0</b>
15:00 16:00	0	0	<b>0</b>	0	0	<b>0</b>	<b>0</b>
16:00 17:00	0	0	<b>0</b>	0	0	<b>0</b>	<b>0</b>
17:00 18:00	0	0	<b>0</b>	0	0	<b>0</b>	<b>0</b>
<b>Total</b> .....	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

**Comment:**

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





# Transportation Services - Traffic Services

W.O.  
38168

## Turning Movement Count - Heavy Vehicle Report

### KANATA AVE @ HWY 417 CASTLEFR IC139R15

**Survey Date:** Tuesday, November 27, 2018

Time Period	KANATA AVE									HWY 417 CASTLEFR IC139R15									Grand Total
	Northbound			Southbound			S TOT	STR TOT	Eastbound			Westbound			W TOT	STR TOT			
	LT	ST	RT	N TOT	LT	ST			RT	LT	ST	RT	E TOT	LT			ST	RT	
07:00 08:00	0	18	6	<b>24</b>	9	21	0	<b>30</b>	<b>54</b>	0	0	0	<b>0</b>	0	0	0	<b>0</b>	<b>0</b>	<b>54</b>
08:00 09:00	0	16	6	<b>22</b>	6	19	0	<b>25</b>	<b>47</b>	0	0	0	<b>0</b>	0	0	0	<b>0</b>	<b>0</b>	<b>47</b>
09:00 10:00	0	22	2	<b>24</b>	8	32	0	<b>40</b>	<b>64</b>	0	0	0	<b>0</b>	0	0	0	<b>0</b>	<b>0</b>	<b>64</b>
11:30 12:30	0	17	3	<b>20</b>	6	18	0	<b>24</b>	<b>44</b>	0	0	0	<b>0</b>	0	0	0	<b>0</b>	<b>0</b>	<b>44</b>
12:30 13:30	0	14	4	<b>18</b>	11	19	0	<b>30</b>	<b>48</b>	0	0	0	<b>0</b>	0	0	0	<b>0</b>	<b>0</b>	<b>48</b>
15:00 16:00	0	26	6	<b>32</b>	10	28	0	<b>38</b>	<b>70</b>	0	0	0	<b>0</b>	0	0	0	<b>0</b>	<b>0</b>	<b>70</b>
16:00 17:00	0	18	2	<b>20</b>	9	15	0	<b>24</b>	<b>44</b>	0	0	0	<b>0</b>	0	0	0	<b>0</b>	<b>0</b>	<b>44</b>
17:00 18:00	0	20	3	<b>23</b>	12	14	0	<b>26</b>	<b>49</b>	0	0	0	<b>0</b>	0	0	0	<b>0</b>	<b>0</b>	<b>49</b>
<b>Sub Total</b>	<b>0</b>	<b>151</b>	<b>32</b>	<b>183</b>	<b>71</b>	<b>166</b>	<b>0</b>	<b>237</b>	<b>420</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>420</b>
<b>U-Turns (Heavy Vehicles)</b>				<b>0</b>				<b>0</b>	<b>0</b>				<b>0</b>				<b>0</b>	<b>0</b>	<b>0</b>
<b>Total</b>	<b>0</b>	<b>151</b>	<b>32</b>	<b>0</b>	<b>71</b>	<b>166</b>	<b>0</b>	<b>237</b>	<b>420</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>420</b>

Heavy Vehicles include Buses, Single-Unit Trucks and Articulated Trucks. Further, they ARE included in the Turning Movement Count Summary.



# Transportation Services - Traffic Services

Work Order

38168

## Turning Movement Count - Pedestrian Volume Report

### KANATA AVE @ HWY 417 CASTLEFR IC139R15

Count Date: Tuesday, November 27, 2018

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	0	0	0	0
07:15 07:30	0	0	0	0	1	1	1
07:30 07:45	0	0	0	0	0	0	0
07:45 08:00	0	0	0	0	0	0	0
<b>07:00 08:00</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>
08:00 08:15	0	0	0	0	1	1	1
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	0	0	0	0	0	0	0
08:45 09:00	0	0	0	0	0	0	0
<b>08:00 09:00</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>
09:00 09:15	0	0	0	0	1	1	1
09:15 09:30	0	0	0	0	1	1	1
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	0	0	0	0	1	1	1
<b>09:00 10:00</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>3</b>
11:30 11:45	0	0	0	0	1	1	1
11:45 12:00	0	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0	0
<b>11:30 12:30</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>
12:30 12:45	0	0	0	0	0	0	0
12:45 13:00	0	0	0	0	0	0	0
13:00 13:15	0	0	0	0	1	1	1
13:15 13:30	0	0	0	0	1	1	1
<b>12:30 13:30</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>2</b>
15:00 15:15	0	0	0	0	0	0	0
15:15 15:30	0	0	0	0	0	0	0
15:30 15:45	0	0	0	0	0	0	0
15:45 16:00	0	0	0	0	0	0	0
<b>15:00 16:00</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
16:00 16:15	0	0	0	0	0	0	0
16:15 16:30	0	0	0	0	7	7	7
16:30 16:45	0	0	0	0	1	1	1
16:45 17:00	0	0	0	0	0	0	0
<b>16:00 17:00</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>8</b>	<b>8</b>
17:00 17:15	0	0	0	0	1	1	1
17:15 17:30	0	0	0	0	0	0	0
17:30 17:45	0	0	0	0	1	1	1
17:45 18:00	0	0	0	0	0	0	0
<b>17:00 18:00</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>2</b>
<b>Total</b> .....	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>18</b>	<b>18</b>	<b>18</b>

Comment:

## Turning Movement Count - 15 Min U-Turn Total Report

### KANATA AVE @ HWY 417 CASTLEFR IC139R15

**Survey Date:** Tuesday, November 27, 2018

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	0	1	0	0	1
Total		0	1	0	0	1

## Turning Movement Count - Full Study Peak Hour Diagram

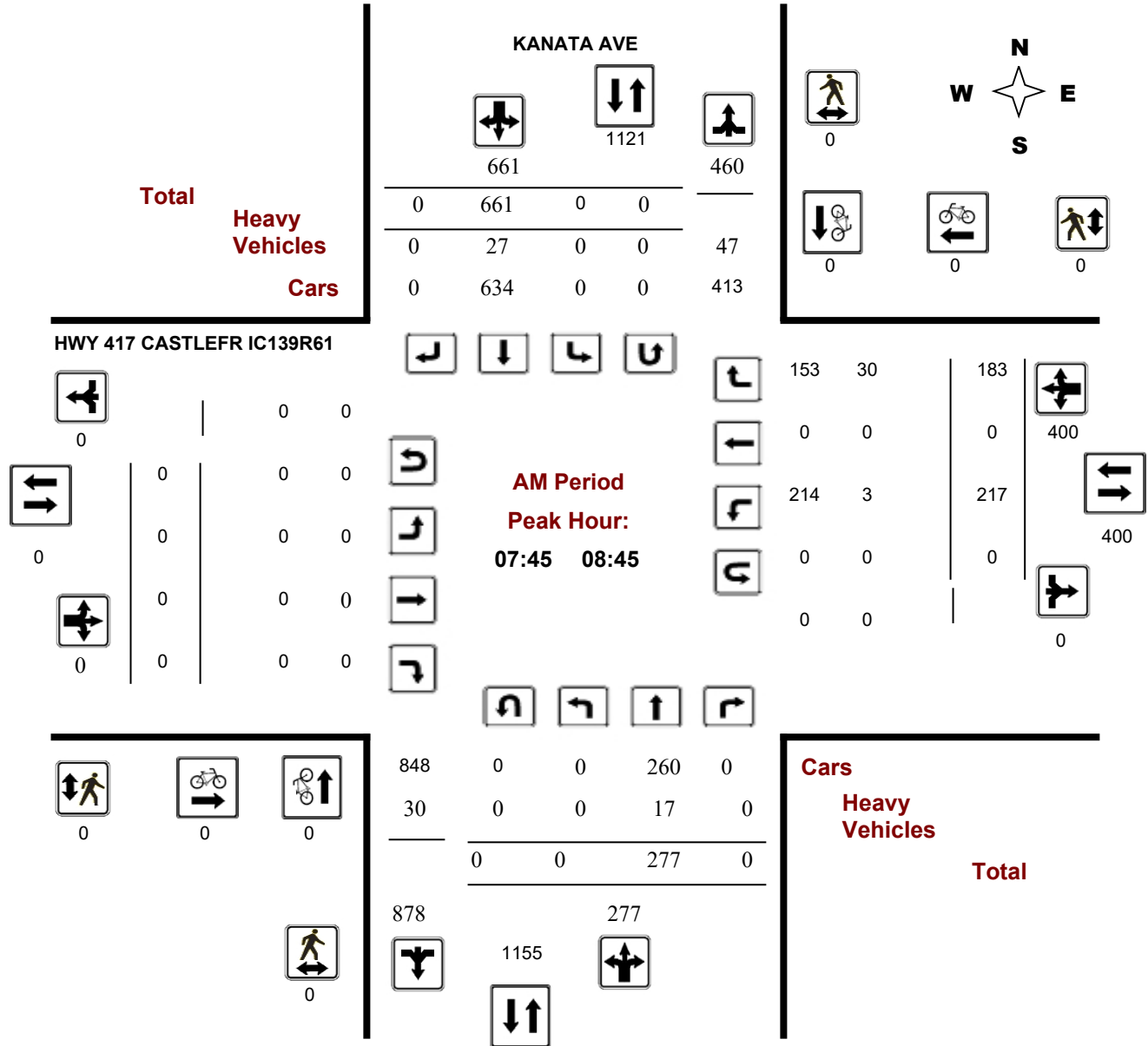
### HWY 417 CASTLEFR IC139R61 @ KANATA AVE

**Survey Date:** Wednesday, December 06, 2017

**Start Time:** 07:00

**WO No:** 37364

**Device:** Miovision



## Turning Movement Count - Full Study Peak Hour Diagram

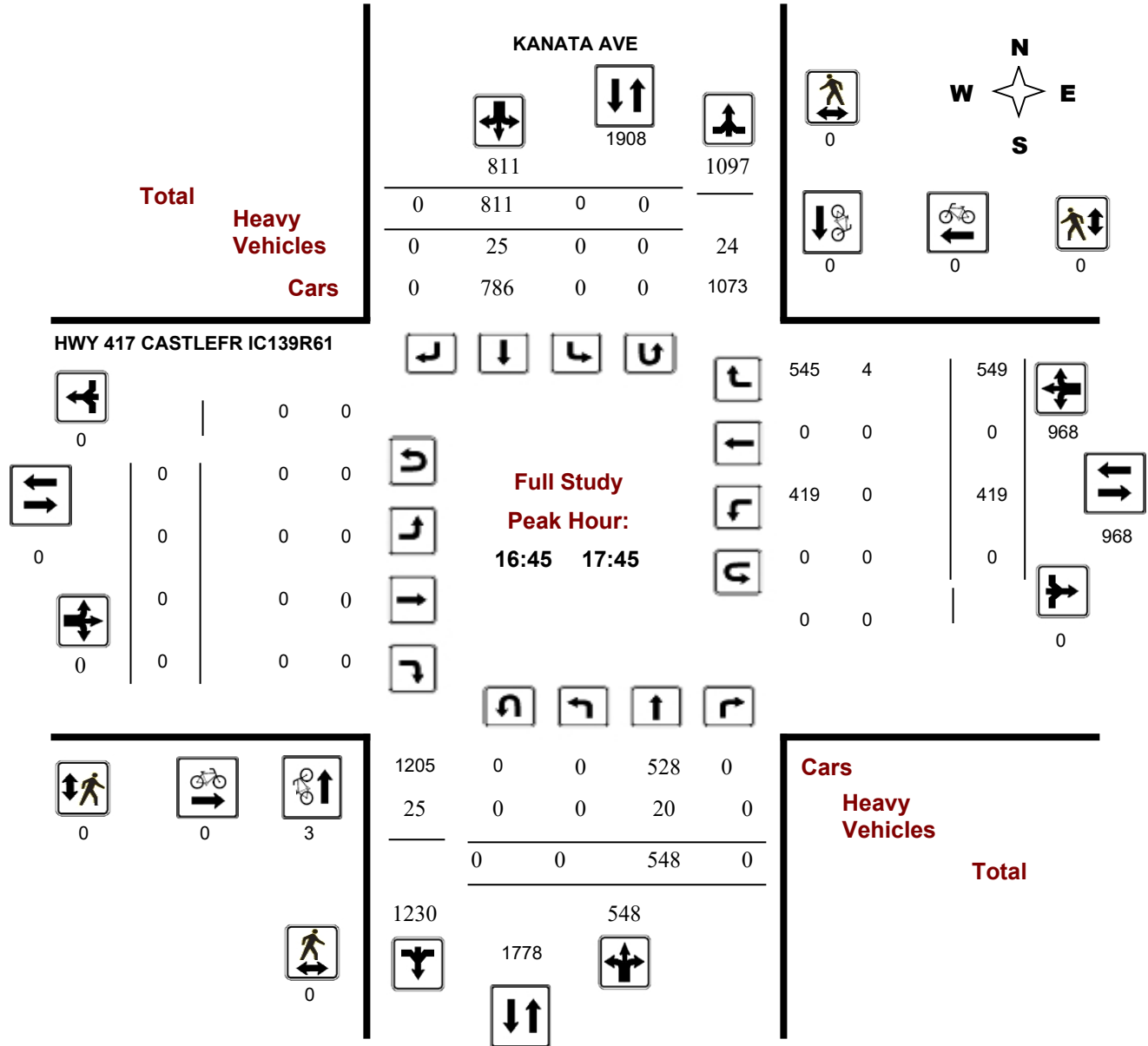
### HWY 417 CASTLEFR IC139R61 @ KANATA AVE

**Survey Date:** Wednesday, December 06, 2017

**Start Time:** 07:00

**WO No:** 37364

**Device:** Miovision



## Turning Movement Count - Full Study Peak Hour Diagram

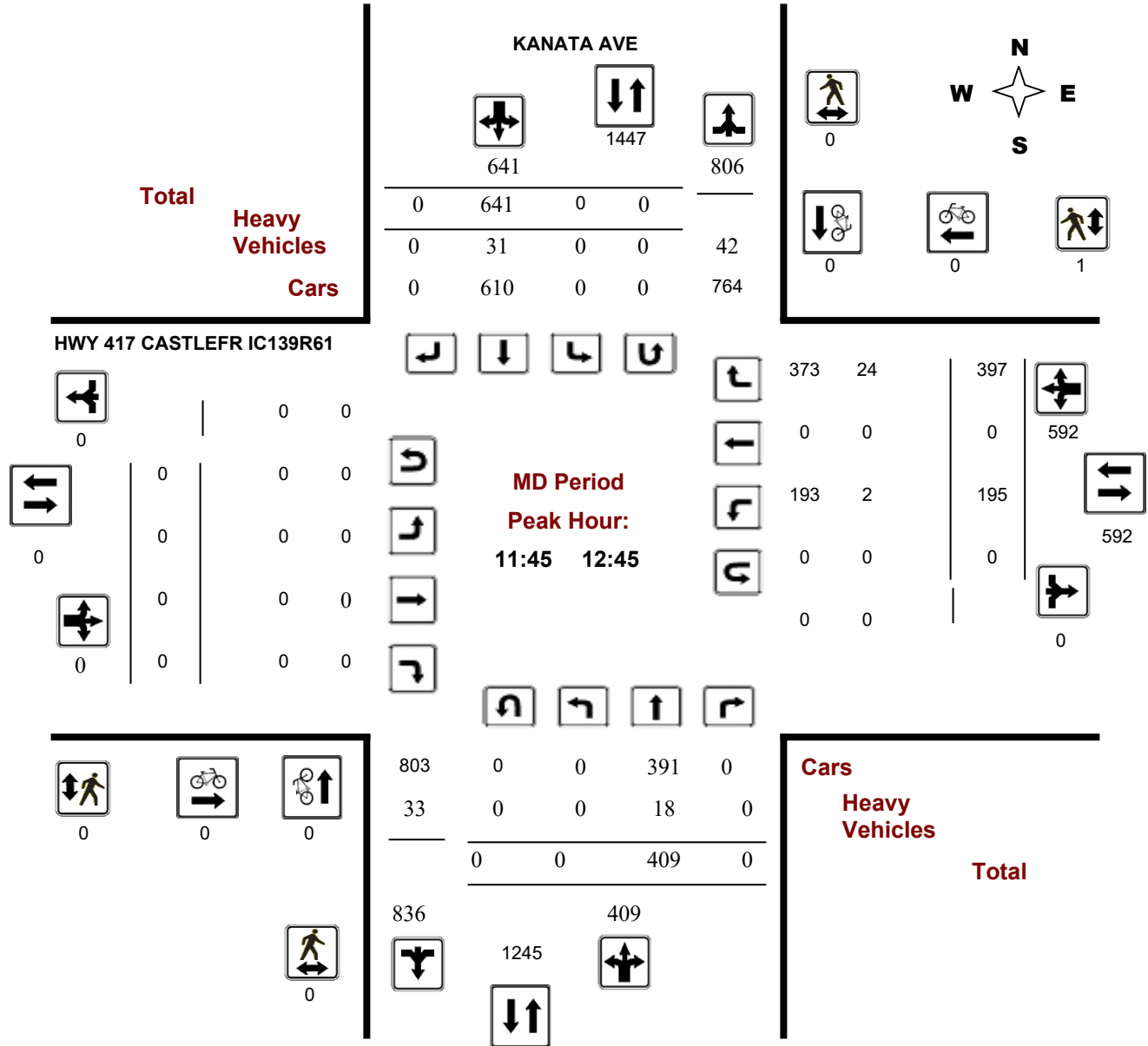
### HWY 417 CASTLEFR IC139R61 @ KANATA AVE

**Survey Date:** Wednesday, December 06, 2017

**Start Time:** 07:00

**WO No:** 37364

**Device:** Miovision



**Comments**

## Turning Movement Count - Full Study Peak Hour Diagram

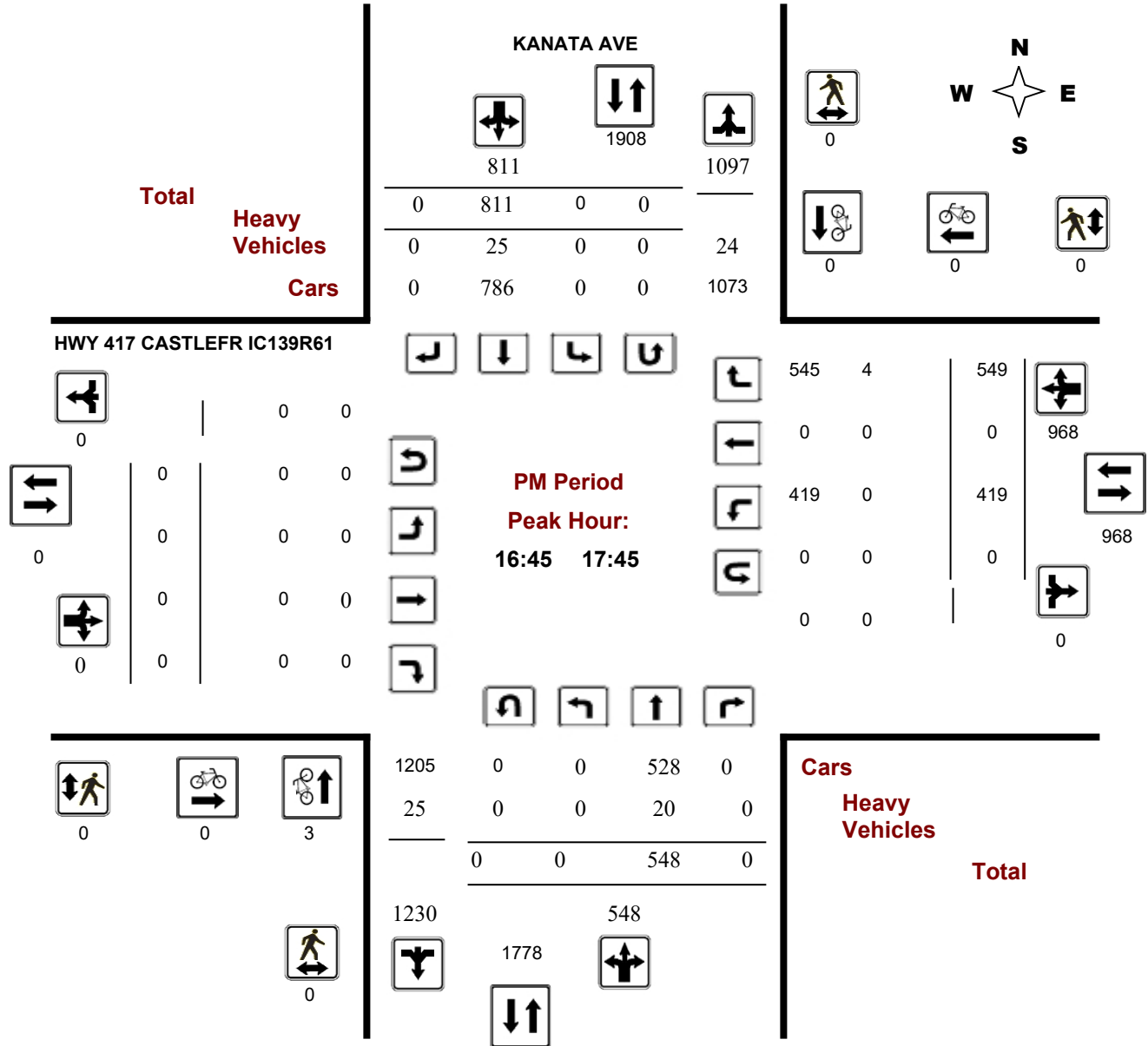
### HWY 417 CASTLEFR IC139R61 @ KANATA AVE

**Survey Date:** Wednesday, December 06, 2017

**Start Time:** 07:00

**WO No:** 37364

**Device:** Miovision



# Transportation Services - Traffic Services

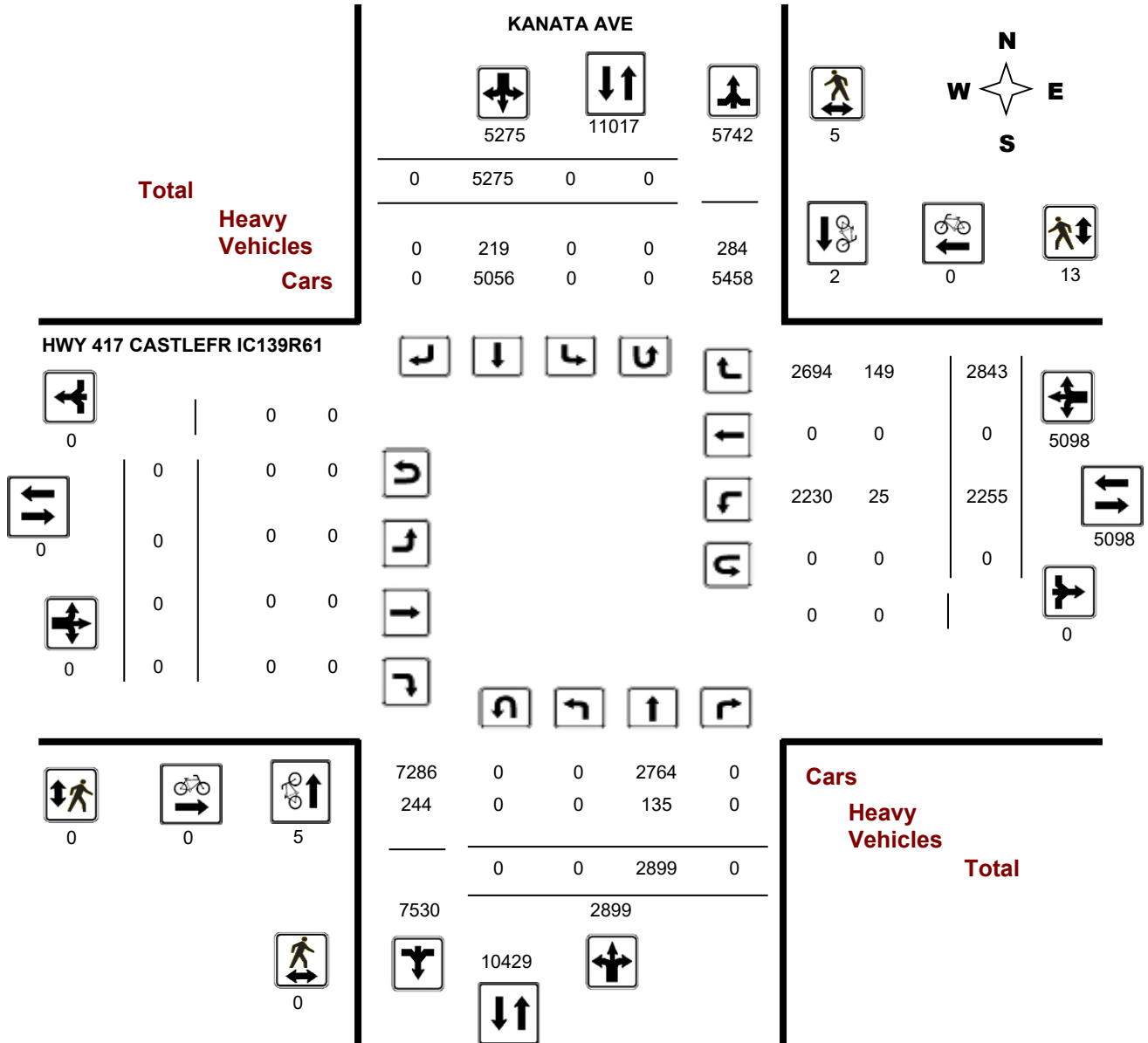
## Turning Movement Count - Full Study Diagram

### HWY 417 CASTLEFR IC139R61 @ KANATA AVE

**Survey Date:** Wednesday, December 06, 2017

**WO#:** 37364

**Device:** Miovision



**Comments**





## Turning Movement Count - Full Study Summary Report

### HWY 417 CASTLEFR IC139R61 @ KANATA AVE

**Survey Date:** Wednesday, December 06, 2017

**Total Observed U-Turns**

**AADT Factor**

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

1.00

**Full Study**

Period	KANATA AVE									HWY 417 CASTLEFR IC139R61									Grand Total
	Northbound			Southbound			STR TOT	Eastbound			Westbound			WB TOT	STR TOT				
	LT	ST	RT	NB TOT	LT	ST		RT	SB TOT	LT	ST	RT	EB TOT			LT	ST	RT	
07:00 08:00	0	149	0	149	0	642	0	642	791	0	0	0	0	170	0	153	323	323	1114
08:00 09:00	0	310	0	310	0	620	0	620	930	0	0	0	0	203	0	186	389	389	1319
09:00 10:00	0	272	0	272	0	577	0	577	849	0	0	0	0	162	0	206	368	368	1217
11:30 12:30	0	397	0	397	0	610	0	610	1007	0	0	0	0	188	0	399	587	587	1594
12:30 13:30	0	387	0	387	0	663	0	663	1050	0	0	0	0	206	0	329	535	535	1585
15:00 16:00	0	405	0	405	0	645	0	645	1050	0	0	0	0	495	0	569	1064	1064	2114
16:00 17:00	0	423	0	423	0	708	0	708	1131	0	0	0	0	422	0	475	897	897	2028
17:00 18:00	0	556	0	556	0	810	0	810	1366	0	0	0	0	409	0	526	935	935	2301
<b>Sub Total</b>	0	2899	0	2899	0	5275	0	5275	8174	0	0	0	0	2255	0	2843	5098	5098	13272
<b>U Turns</b>				0				0	0				0				0	0	0
<b>Total</b>	0	2899	0	2899	0	5275	0	5275	8174	0	0	0	0	2255	0	2843	5098	5098	13272
<b>EQ 12Hr</b>	0	4030	0	4030	0	7332	0	7332	11362	0	0	0	0	3134	0	3952	7086	7086	18448
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													<b>1.39</b>						
<b>AVG 12Hr</b>	0	4030	0	4030	0	7332	0	7332	11362	0	0	0	0	3134	0	3952	7086	7086	18448
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													<b>1.00</b>						
<b>AVG 24Hr</b>	0	5279	0	5279	0	9605	0	9605	14884	0	0	0	0	4106	0	5177	9283	9283	24167
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													<b>1.31</b>						

**Comments:**

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.



Turning Movement Count - 15 Minute Summary Report

HWY 417 CASTLEFR IC139R61 @ KANATA AVE

Survey Date: Wednesday, December 06, 2017

Total Observed U-Turns

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

Time Period	KANATA AVE									HWY 417 CASTLEFR IC139R61									Grand Total
	Northbound			Southbound			S			STR			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	
07:00 07:15	0	30	0	30	0	160	0	160	190	0	0	0	0	19	0	37	56	56	246
07:15 07:30	0	27	0	27	0	128	0	128	155	0	0	0	0	29	0	31	60	60	215
07:30 07:45	0	40	0	40	0	163	0	163	203	0	0	0	0	60	0	39	99	99	302
07:45 08:00	0	52	0	52	0	191	0	191	243	0	0	0	0	62	0	46	108	108	351
08:00 08:15	0	53	0	53	0	174	0	174	227	0	0	0	0	43	0	39	82	82	309
08:15 08:30	0	93	0	93	0	144	0	144	237	0	0	0	0	63	0	40	103	103	340
08:30 08:45	0	79	0	79	0	152	0	152	231	0	0	0	0	49	0	58	107	107	338
08:45 09:00	0	85	0	85	0	150	0	150	235	0	0	0	0	48	0	49	97	97	332
09:00 09:15	0	66	0	66	0	153	0	153	219	0	0	0	0	36	0	45	81	81	300
09:15 09:30	0	65	0	65	0	156	0	156	221	0	0	0	0	49	0	67	116	116	337
09:30 09:45	0	65	0	65	0	141	0	141	206	0	0	0	0	38	0	47	85	85	291
09:45 10:00	0	76	0	76	0	127	0	127	203	0	0	0	0	39	0	47	86	86	289
11:30 11:45	0	88	0	88	0	152	0	152	240	0	0	0	0	43	0	91	134	134	374
11:45 12:00	0	103	0	103	0	154	0	154	257	0	0	0	0	47	0	118	165	165	422
12:00 12:15	0	105	0	105	0	159	0	159	264	0	0	0	0	52	0	93	145	145	409
12:15 12:30	0	101	0	101	0	145	0	145	246	0	0	0	0	46	0	97	143	143	389
12:30 12:45	0	100	0	100	0	183	0	183	283	0	0	0	0	50	0	89	139	139	422
12:45 13:00	0	96	0	96	0	135	0	135	231	0	0	0	0	56	0	89	145	145	376
13:00 13:15	0	91	0	91	0	152	0	152	243	0	0	0	0	49	0	69	118	118	361
13:15 13:30	0	100	0	100	0	193	0	193	293	0	0	0	0	51	0	82	133	133	426
15:00 15:15	0	94	0	94	0	154	0	154	248	0	0	0	0	101	0	119	220	220	468
15:15 15:30	0	112	0	112	0	164	0	164	276	0	0	0	0	166	0	196	362	362	638
15:30 15:45	0	111	0	111	0	158	0	158	269	0	0	0	0	137	0	160	297	297	566
15:45 16:00	0	88	0	88	0	169	0	169	257	0	0	0	0	91	0	94	185	185	442
16:00 16:15	0	103	0	103	0	150	0	150	253	0	0	0	0	97	0	99	196	196	449
16:15 16:30	0	85	0	85	0	190	0	190	275	0	0	0	0	112	0	118	230	230	505
16:30 16:45	0	118	0	118	0	164	0	164	282	0	0	0	0	109	0	122	231	231	513
16:45 17:00	0	117	0	117	0	204	0	204	321	0	0	0	0	104	0	136	240	240	561
17:00 17:15	0	145	0	145	0	201	0	201	346	0	0	0	0	105	0	149	254	254	600
17:15 17:30	0	152	0	152	0	202	0	202	354	0	0	0	0	113	0	138	251	251	605
17:30 17:45	0	134	0	134	0	204	0	204	338	0	0	0	0	97	0	126	223	223	561
17:45 18:00	0	125	0	125	0	203	0	203	328	0	0	0	0	94	0	113	207	207	535
<b>TOTAL:</b>	0	2899	0	2899	0	5275	0	5275	8174	0	0	0	0	2255	0	2843	5098	5098	13272

Note: U-Turns are included in Totals.

Comment:



# Transportation Services - Traffic Services

## Turning Movement Count - Cyclist Volume Report

**Work Order**  
**37364**

### HWY 417 CASTLEFR IC139R61 @ KANATA AVE

**Count Date:** Wednesday, December 06, 2017

**Start Time:** 07:00

Time Period	KANATA AVE			HWY 417 CASTLEFR IC139R61			Grand Total
	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
07:00 08:00	2	1	3	0	0	0	3
08:00 09:00	0	0	0	0	0	0	0
09:00 10:00	0	0	0	0	0	0	0
11:30 12:30	0	0	0	0	0	0	0
12:30 13:30	0	0	0	0	0	0	0
15:00 16:00	0	0	0	0	0	0	0
16:00 17:00	2	0	2	0	0	0	2
17:00 18:00	1	1	2	0	0	0	2
<b>Total .....</b>	<b>5</b>	<b>2</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>

**Comment:**

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



# Transportation Services - Traffic Services

W.O.  
37364

## Turning Movement Count - Heavy Vehicle Report

### HWY 417 CASTLEFR IC139R61 @ KANATA AVE

**Survey Date:** Wednesday, December 06, 2017

Time Period	KANATA AVE									HWY 417 CASTLEFR IC139R61									Grand Total	
	Northbound			Southbound			S TOT	STR TOT	Eastbound			Westbound			W TOT	STR TOT				
	LT	ST	RT	N TOT	LT	ST			RT	LT	ST	RT	E TOT	LT			ST	RT		
07:00 08:00	0	21	0	21	0	34	0	34	55	0	0	0	0	5	0	24	29	29	84	
08:00 09:00	0	16	0	16	0	24	0	24	40	0	0	0	0	2	0	31	33	33	73	
09:00 10:00	0	18	0	18	0	33	0	33	51	0	0	0	0	5	0	26	31	31	82	
11:30 12:30	0	18	0	18	0	25	0	25	43	0	0	0	0	1	0	26	27	27	70	
12:30 13:30	0	13	0	13	0	29	0	29	42	0	0	0	0	7	0	20	27	27	69	
15:00 16:00	0	15	0	15	0	24	0	24	39	0	0	0	0	4	0	11	15	15	54	
16:00 17:00	0	19	0	19	0	24	0	24	43	0	0	0	0	1	0	7	8	8	51	
17:00 18:00	0	15	0	15	0	26	0	26	41	0	0	0	0	0	0	4	4	4	45	
<b>Sub Total</b>	0	135	0	135	0	219	0	219	354	0	0	0	0	25	0	149	174	174	528	
<b>U-Turns (Heavy Vehicles)</b>				0				0	0				0				0	0	0	0
<b>Total</b>	0	135	0	0	0	219	0	219	354	0	0	0	0	25	0	149	174	174	528	

Heavy Vehicles include Buses, Single-Unit Trucks and Articulated Trucks. Further, they ARE included in the Turning Movement Count Summary.



# Transportation Services - Traffic Services

Work Order

37364

## Turning Movement Count - Pedestrian Volume Report

### HWY 417 CASTLEFR IC139R61 @ KANATA AVE

Count Date: Wednesday, December 06, 2017

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	1	1	0	0	0	1
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	0	0	0	0	0	0	0
07:45 08:00	0	0	0	0	0	0	0
<b>07:00 08:00</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
08:00 08:15	0	0	0	0	0	0	0
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	0	0	0	0	0	0	0
08:45 09:00	0	0	0	0	0	0	0
<b>08:00 09:00</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
09:00 09:15	0	0	0	0	1	1	1
09:15 09:30	0	0	0	0	1	1	1
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	0	0	0	0	0	0	0
<b>09:00 10:00</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>2</b>
11:30 11:45	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	1	1	1
<b>11:30 12:30</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>
12:30 12:45	0	0	0	0	0	0	0
12:45 13:00	0	0	0	0	0	0	0
13:00 13:15	0	0	0	0	3	3	3
13:15 13:30	0	0	0	0	0	0	0
<b>12:30 13:30</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>3</b>
15:00 15:15	0	0	0	0	1	1	1
15:15 15:30	0	2	2	0	3	3	5
15:30 15:45	0	0	0	0	0	0	0
15:45 16:00	0	0	0	0	0	0	0
<b>15:00 16:00</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>4</b>	<b>4</b>	<b>6</b>
16:00 16:15	0	0	0	0	1	1	1
16:15 16:30	0	2	2	0	2	2	4
16:30 16:45	0	0	0	0	0	0	0
16:45 17:00	0	0	0	0	0	0	0
<b>16:00 17:00</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>5</b>
17:00 17:15	0	0	0	0	0	0	0
17:15 17:30	0	0	0	0	0	0	0
17:30 17:45	0	0	0	0	0	0	0
17:45 18:00	0	0	0	0	0	0	0
<b>17:00 18:00</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total</b> .....	<b>0</b>	<b>5</b>	<b>5</b>	<b>0</b>	<b>13</b>	<b>13</b>	<b>18</b>

Comment:

## Turning Movement Count - 15 Min U-Turn Total Report

### HWY 417 CASTLEFR IC139R61 @ KANATA AVE

**Survey Date:** Wednesday, December 06, 2017

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
Total		0	0	0	0	0



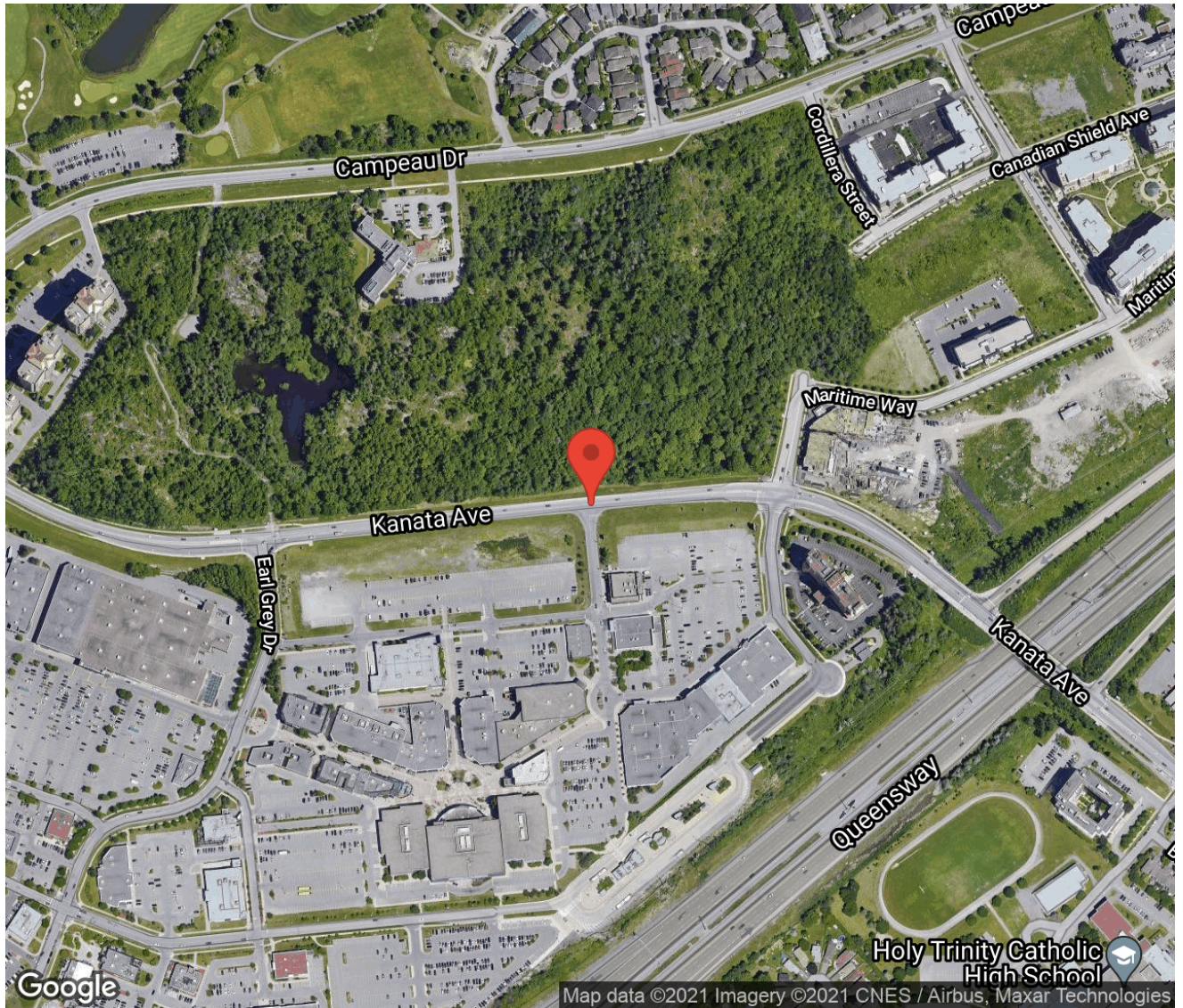
## Project #21-077 - McIntosh Perry

### Intersection Count Report

**Intersection:** Kanata Ave & Kanata Entertainment Centrum  
**Municipality:** Kanata  
**Count Date:** May 13, 2021  
**Site Code:** 2107700001  
**Count Categories:** Cars, Trucks, Bicycles, Pedestrians  
**Count Period:** 07:00-10:00, 15:00-18:00  
**Weather:** Clear

## Traffic Count Map

Intersection: Kanata Ave & Kanata Entertainment  
Centrum  
Site Code: 2107700001  
Municipality: Kanata  
Count Date: May 13, 2021







# Traffic Count Summary

Intersection: Kanata Ave & Kanata Entertainment Centrum  
 Site Code: 2107700001  
 Municipality: Kanata  
 Count Date: May 13, 2021

## Kanata Entertainment Centrum - Traffic Summary

Hour	North Approach Totals						South Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	0	0	0	0	0	11	1	0	6	0	7	0	7
08:00 - 09:00	0	0	0	0	0	16	1	0	7	0	8	1	8
09:00 - 10:00	0	0	0	0	0	8	4	0	9	0	13	2	13
BREAK													
15:00 - 16:00	0	0	0	0	0	22	14	0	34	0	48	2	48
16:00 - 17:00	0	0	0	0	0	21	12	0	38	0	50	0	50
17:00 - 18:00	0	0	0	0	0	12	21	0	54	0	75	1	75
<b>GRAND TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>90</b>	<b>53</b>	<b>0</b>	<b>148</b>	<b>0</b>	<b>201</b>	<b>6</b>	<b>201</b>



## Traffic Count Summary

Intersection: Kanata Ave & Kanata Entertainment Centrum  
 Site Code: 2107700001  
 Municipality: Kanata  
 Count Date: May 13, 2021

### Kanata Ave - Traffic Summary

Hour	East Approach Totals						West Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
<b>07:00 - 08:00</b>	7	131	0	0	138	0	0	211	3	0	214	0	352
<b>08:00 - 09:00</b>	23	166	0	0	189	0	0	253	4	0	257	0	446
<b>09:00 - 10:00</b>	16	206	0	0	222	0	0	272	7	0	279	0	501
BREAK													
<b>15:00 - 16:00</b>	19	369	0	0	388	0	0	329	6	0	335	4	723
<b>16:00 - 17:00</b>	27	414	0	0	441	0	0	364	17	0	381	0	822
<b>17:00 - 18:00</b>	24	381	0	0	405	0	0	340	21	0	361	0	766
<b>GRAND TOTAL</b>	<b>116</b>	<b>1667</b>	<b>0</b>	<b>0</b>	<b>1783</b>	<b>0</b>	<b>0</b>	<b>1769</b>	<b>58</b>	<b>0</b>	<b>1827</b>	<b>4</b>	<b>3610</b>



## Traffic Count Data

Intersection: Kanata Ave & Kanata Entertainment Centrum  
 Site Code: 2107700001  
 Municipality: Kanata  
 Count Date: May 13, 2021

### South Approach - Kanata Entertainment Centrum

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
07:00	0	0	4	0	4	0	0	1	0	1	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	1	0	3	0	4	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	1
09:00	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0
09:15	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	2
09:30	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
09:45	1	0	5	0	6	1	0	0	0	1	0	0	0	0	0	0
<b>SUBTOTAL</b>	5	0	20	0	25	1	0	2	0	3	0	0	0	0	0	3

## Traffic Count Data

Intersection: Kanata Ave & Kanata Entertainment Centrum  
 Site Code: 2107700001  
 Municipality: Kanata  
 Count Date: May 13, 2021

### South Approach - Kanata Entertainment Centrum

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
15:00	3	0	4	0	7	0	0	0	0	0	0	0	0	0	0	1
15:15	3	0	10	0	13	0	0	0	0	0	0	3	0	3	0	
15:30	6	0	10	0	16	0	0	0	0	0	0	0	0	0	0	
15:45	2	0	7	0	9	0	0	0	0	0	0	0	0	0	1	
16:00	5	0	11	0	16	0	0	0	0	0	0	0	0	0	0	
16:15	2	0	8	0	10	0	0	0	0	0	0	0	0	0	0	
16:30	2	0	11	0	13	0	0	0	0	0	0	0	0	0	0	
16:45	3	0	8	0	11	0	0	0	0	0	0	0	0	0	0	
17:00	8	0	15	0	23	0	0	0	0	0	0	0	0	0	0	
17:15	6	0	21	0	27	0	0	0	0	0	0	0	0	0	1	
17:30	4	0	7	0	11	0	0	0	0	0	0	0	0	0	0	
17:45	3	0	11	0	14	0	0	0	0	0	0	0	0	0	0	
<b>SUBTOTAL</b>	47	0	123	0	170	0	0	0	0	0	0	0	3	0	3	
<b>GRAND TOTAL</b>	52	0	143	0	195	1	0	2	0	3	0	0	3	0	3	6



## Traffic Count Data

Intersection: Kanata Ave & Kanata Entertainment Centrum  
 Site Code: 2107700001  
 Municipality: Kanata  
 Count Date: May 13, 2021

### East Approach - Kanata Ave

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
07:00	3	21	0	0	24	0	6	0	0	6	0	0	0	0	0	0
07:15	0	21	0	0	21	0	1	0	0	1	0	0	0	0	0	0
07:30	2	35	0	0	37	0	1	0	0	1	0	0	0	0	0	0
07:45	2	42	0	0	44	0	3	0	0	3	0	1	0	0	1	0
08:00	4	39	0	0	43	0	4	0	0	4	0	0	0	0	0	0
08:15	5	41	0	0	46	0	1	0	0	1	0	0	0	0	0	0
08:30	1	32	0	0	33	0	3	0	0	3	0	0	0	0	0	0
08:45	13	39	0	0	52	0	3	0	0	3	0	4	0	0	4	0
09:00	5	47	0	0	52	0	4	0	0	4	0	0	0	0	0	0
09:15	4	34	0	0	38	0	0	0	0	0	0	0	0	0	0	0
09:30	3	60	0	0	63	0	3	0	0	3	0	2	0	0	2	0
09:45	3	49	0	0	52	1	5	0	0	6	0	2	0	0	2	0
<b>SUBTOTAL</b>	45	460	0	0	505	1	34	0	0	35	0	9	0	0	9	0



## Traffic Count Data

Intersection: Kanata Ave & Kanata Entertainment Centrum  
 Site Code: 2107700001  
 Municipality: Kanata  
 Count Date: May 13, 2021

### East Approach - Kanata Ave

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
15:00	2	94	0	0	96	0	5	0	0	5	0	2	0	0	2	0
15:15	6	85	0	0	91	0	2	0	0	2	0	0	0	0	0	0
15:30	5	82	0	0	87	0	2	0	0	2	0	2	0	0	2	0
15:45	6	91	0	0	97	0	3	0	0	3	0	1	0	0	1	0
16:00	8	115	0	0	123	0	3	0	0	3	0	2	0	0	2	0
16:15	7	76	0	0	83	0	3	0	0	3	0	9	0	0	9	0
16:30	4	103	0	0	107	0	1	0	0	1	0	3	0	0	3	0
16:45	8	96	0	0	104	0	2	0	0	2	0	1	0	0	1	0
17:00	11	96	0	0	107	0	3	0	0	3	0	2	0	0	2	0
17:15	5	93	0	0	98	0	2	0	0	2	0	1	0	0	1	0
17:30	4	99	0	0	103	0	4	0	0	4	0	2	0	0	2	0
17:45	4	77	0	0	81	0	1	0	0	1	0	1	0	0	1	0
<b>SUBTOTAL</b>	70	1107	0	0	1177	0	31	0	0	31	0	26	0	0	26	0
<b>GRAND TOTAL</b>	115	1567	0	0	1682	1	65	0	0	66	0	35	0	0	35	0



## Traffic Count Data

Intersection: Kanata Ave & Kanata Entertainment Centrum  
 Site Code: 2107700001  
 Municipality: Kanata  
 Count Date: May 13, 2021

### West Approach - Kanata Ave

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
07:00	0	41	0	0	41	0	5	0	0	5	0	0	0	0	0	0
07:15	0	32	1	0	33	0	4	1	0	5	0	0	0	0	0	0
07:30	0	57	1	0	58	0	4	0	0	4	0	0	0	0	0	0
07:45	0	65	0	0	65	0	3	0	0	3	0	0	0	0	0	0
08:00	0	50	1	0	51	0	4	0	0	4	0	1	0	0	1	0
08:15	0	51	0	0	51	0	2	0	0	2	0	0	0	0	0	0
08:30	0	68	1	0	69	0	3	0	0	3	0	0	0	0	0	0
08:45	0	72	2	0	74	0	2	0	0	2	0	0	0	0	0	0
09:00	0	66	1	0	67	0	0	0	0	0	0	2	0	0	2	0
09:15	0	69	2	0	71	0	1	0	0	1	0	0	0	0	0	0
09:30	0	70	2	0	72	0	4	0	0	4	0	0	0	0	0	0
09:45	0	58	2	0	60	0	2	0	0	2	0	0	0	0	0	0
<b>SUBTOTAL</b>	0	699	13	0	712	0	34	1	0	35	0	3	0	0	3	0



## Traffic Count Data

Intersection: Kanata Ave & Kanata Entertainment Centrum  
 Site Code: 2107700001  
 Municipality: Kanata  
 Count Date: May 13, 2021

### West Approach - Kanata Ave

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
15:00	0	88	1	0	89	0	3	0	0	3	0	0	0	0	0	0
15:15	0	90	1	0	91	0	0	0	0	0	0	1	0	0	1	2
15:30	0	82	2	0	84	0	3	0	0	3	0	0	0	0	0	0
15:45	0	59	2	0	61	0	2	0	0	2	0	1	0	0	1	2
16:00	0	105	3	0	108	0	3	0	0	3	0	0	0	0	0	0
16:15	0	86	4	0	90	0	0	0	0	0	0	1	0	0	1	0
16:30	0	82	7	0	89	0	1	0	0	1	0	0	0	0	0	0
16:45	0	79	3	0	82	0	7	0	0	7	0	0	0	0	0	0
17:00	0	97	7	0	104	0	2	0	0	2	0	3	2	0	5	0
17:15	0	72	6	0	78	0	3	0	0	3	0	3	0	0	3	0
17:30	0	78	3	0	81	0	6	0	0	6	0	1	0	0	1	0
17:45	0	70	3	0	73	0	0	0	0	0	0	5	0	0	5	0
<b>SUBTOTAL</b>	0	988	42	0	1030	0	30	0	0	30	0	15	2	0	17	4
<b>GRAND TOTAL</b>	0	1687	55	0	1742	0	64	1	0	65	0	18	2	0	20	4



## Peak Hour Diagram

### Specified Period

From: 07:00:00  
To: 10:00:00

### One Hour Peak

From: 08:45:00  
To: 09:45:00

**Intersection:** Kanata Ave & Kanata Entertainment Centrum  
**Site Code:** 2107700001  
**Count Date:** May 13, 2021

**Weather conditions:** Clear

**\*\* Unsignalized Intersection \*\***

**Major Road:** Kanata Ave runs E/W

### East Approach

	Out	In	Total
	205	283	488
	10	8	18
	6	2	8
<b>Totals</b>	<b>221</b>	<b>293</b>	<b>514</b>

### Kanata Ave

			Totals	
0	0	0	0	
2	7	277	286	
0	0	7	7	

Peds: 10

Peds: 0



Peds: 0

### Kanata Ave

Totals				
0	0	0	0	
196	180	10	6	
25	25	0	0	

Peds: 3

### West Approach

	Out	In	Total
	284	182	466
	7	10	17
	2	6	8
<b>Totals</b>	<b>293</b>	<b>198</b>	<b>491</b>

Totals			
2	2	6	0
0	0	1	0
0	0	0	0

**Kanata Entertainment Centrum**

### South Approach

	Out	In	Total
	8	32	40
	1	0	1
	0	0	0
<b>Totals</b>	<b>9</b>	<b>32</b>	<b>41</b>

- Cars

- Trucks

- Bicycles

### Comments



## Peak Hour Summary

Intersection: Kanata Ave & Kanata Entertainment Centrum  
 Site Code: 2107700001  
 Count Date: May 13, 2021  
 Period: 07:00 - 10:00

### Peak Hour Data (08:45 - 09:45)

Start Time	North Approach				South Approach Kanata Entertainment Centrum				East Approach Kanata Ave				West Approach Kanata Ave				Total Vehicles								
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻		Peds	Total						
08:45					5		0		3	0	1	3	13	46			0	0	59	74	2	0	0	76	138
09:00					0		0		3	0	0	3	5	51			0	0	56	68	1	0	0	69	128
09:15					4		1		1	0	2	2	4	34			0	0	38	70	2	0	0	72	112
09:30					1		1		0	0	0	1	3	65			0	0	68	74	2	0	0	76	145
<b>Grand Total</b>					<b>10</b>	<b>0</b>	<b>2</b>	<b>7</b>	<b>0</b>	<b>3</b>	<b>9</b>	<b>25</b>	<b>196</b>	<b>0</b>	<b>0</b>	<b>221</b>	<b>286</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>293</b>	<b>523</b>			
Approach %					-		22.2	77.8	0	-		11.3	88.7	0	-		97.6	2.4	0	-					
Totals %					0		0.4	1.3	0	1.7		4.8	37.5	0	42.3		54.7	1.3	0	56					
<b>PHF</b>					<b>0</b>		<b>0.5</b>	<b>0.58</b>	<b>0</b>	<b>0.75</b>		<b>0.48</b>	<b>0.75</b>	<b>0</b>	<b>0.81</b>		<b>0.97</b>	<b>0.88</b>	<b>0</b>	<b>0.96</b>	<b>0.9</b>				
Cars					0		2	6	0	8		25	180	0	205		277	7	0	284				497	
% Cars					0		100	85.7	0	88.9		100	91.8	0	92.8		96.9	100	0	96.9				95	
Trucks					0		0	1	0	1		0	10	0	10		7	0	0	7				18	
% Trucks					0		0	14.3	0	11.1		0	5.1	0	4.5		2.4	0	0	2.4				3.4	
Bicycles					0		0	0	0	0		0	6	0	6		2	0	0	2				8	
% Bicycles					0		0	0	0	0		0	3.1	0	2.7		0.7	0	0	0.7				1.5	
Peds					10	-			3	-					0	-			0	-				13	
% Peds					76.9	-			23.1	-					0	-			0	-					

## Peak Hour Diagram

### Specified Period

From: 15:00:00  
To: 18:00:00

### One Hour Peak

From: 16:30:00  
To: 17:30:00

**Intersection:** Kanata Ave & Kanata Entertainment Centrum  
**Site Code:** 2107700001  
**Count Date:** May 13, 2021

**Weather conditions:** Clear

**\*\* Unsignalized Intersection \*\***

**Major Road:** Kanata Ave runs E/W

### East Approach

	Out	In	Total
	416	385	801
	8	13	21
	7	6	13
<b>Totals</b>	<b>431</b>	<b>404</b>	<b>835</b>

### Kanata Ave

			Totals
0	0	0	<b>0</b>
6	13	330	<b>349</b>
2	0	23	<b>25</b>

Peds: 20

Peds: 0



Peds: 0

### Kanata Ave

Totals			
<b>0</b>	0	0	0
<b>403</b>	388	8	7
<b>28</b>	28	0	0

Peds: 1

### West Approach

	Out	In	Total
	353	407	760
	13	8	21
	8	7	15
<b>Totals</b>	<b>374</b>	<b>422</b>	<b>796</b>

Totals			
<b>19</b>	<b>55</b>	<b>0</b>	
	19	55	0
	0	0	0
	0	0	0

**Kanata Entertainment Centrum**

### South Approach

	Out	In	Total
	74	51	125
	0	0	0
	0	2	2
<b>Totals</b>	<b>74</b>	<b>53</b>	<b>127</b>

- Cars

- Trucks

- Bicycles

### Comments



## Peak Hour Summary

Intersection: Kanata Ave & Kanata Entertainment Centrum  
 Site Code: 2107700001  
 Count Date: May 13, 2021  
 Period: 15:00 - 18:00

### Peak Hour Data (16:30 - 17:30)

Start Time	North Approach				South Approach Kanata Entertainment Centrum				East Approach Kanata Ave				West Approach Kanata Ave				Total Vehicles								
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻		Peds	Total						
16:30					9		2		11	0	0	13	4	107			0	0	111	83	7	0	0	90	214
16:45					5		3		8	0	0	11	8	99			0	0	107	86	3	0	0	89	207
17:00					6		8		15	0	0	23	11	101			0	0	112	102	9	0	0	111	246
17:15					0		6		21	0	1	27	5	96			0	0	101	78	6	0	0	84	212
<b>Grand Total</b>					<b>20</b>	<b>0</b>	<b>19</b>	<b>55</b>	<b>0</b>	<b>1</b>	<b>74</b>	<b>28</b>	<b>403</b>	<b>0</b>	<b>0</b>	<b>431</b>	<b>349</b>	<b>25</b>	<b>0</b>	<b>0</b>	<b>374</b>	<b>879</b>			
Approach %					-		25.7	74.3	0	-		6.5	93.5	0	-		93.3	6.7	0	-					
Totals %					0		2.2	6.3	0	8.4		3.2	45.8	0	49		39.7	2.8	0	42.5					
<b>PHF</b>					<b>0</b>		<b>0.59</b>	<b>0.65</b>	<b>0</b>	<b>0.69</b>		<b>0.64</b>	<b>0.94</b>	<b>0</b>	<b>0.96</b>		<b>0.86</b>	<b>0.69</b>	<b>0</b>	<b>0.84</b>	<b>0.89</b>				
Cars					0		19	55	0	74		28	388	0	416		330	23	0	353			843		
% Cars					0		100	100	0	100		100	96.3	0	96.5		94.6	92	0	94.4			95.9		
Trucks					0		0	0	0	0		0	8	0	8		13	0	0	13			21		
% Trucks					0		0	0	0	0		0	2	0	1.9		3.7	0	0	3.5			2.4		
Bicycles					0		0	0	0	0		0	7	0	7		6	2	0	8			15		
% Bicycles					0		0	0	0	0		0	1.7	0	1.6		1.7	8	0	2.1			1.7		
Peds					20	-				1	-				0	-				0	-		21		
% Peds					95.2	-				4.8	-				0	-				0	-				

# Traffic Signal Timing

City of Ottawa, Transportation Services Department

## Traffic Signal Operations Unit

**Intersection:** *Main:* Kanata ave *Side:* Earl Grey Dr  
**Controller:** ATC-3 **TSD:** 6658  
**Author:** Jean Nabolle **Date:** 07-Aug-19

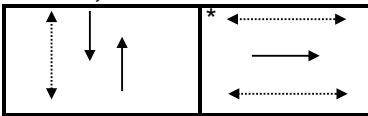
### Existing Timing Plans†

	Plan				Ped Minimum Time		
	AM Peak 1	Off Peak 2	PM Peak 3	Night 9	Walk	DW	A+R
<b>Cycle</b>	55	80	100	Free			
<b>Offset</b>	0	0	0	X			
<i>NB Thru</i>	30	55	70	min=29.4	7	16	3.3+3.1
<i>SB Thru</i>	30	43	58	min=29.4	7	16	3.3+3.1
<i>EB Thru</i>	25	25	30	max=40.9	7	12	3.3+2.6
<i>WB Thru</i>	25	25	30	max=40.9	7	12	3.3+2.6
<i>NB Left</i>	-	12	12	-	-	-	3.3+2.5

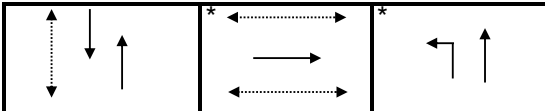
**Note:** Kanata is considered the NS movement

### Phasing Sequence‡

**Plans: 1,9**



**Plans: 2,3**



### Schedule

**Weekday**

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

**Weekend**

Time	Plan
0:15	9
8:30	2
22:30	9

### 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 \$57.63 (\$51 + HST)

# Traffic Signal Timing

City of Ottawa, Transportation Services Department

## Traffic Signal Operations Unit

<b>Intersection:</b>	<b>Main:</b> Campeau	<b>Side:</b> Kanata
<b>Controller:</b>	<b>MS-3200</b>	<b>TSD:</b> 6035
<b>Author:</b>	Matthew Anderson	<b>Date:</b> 26-Apr-2021

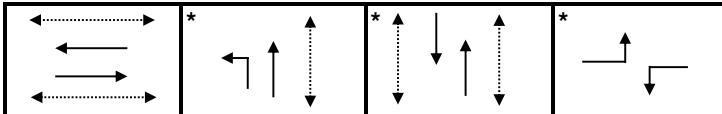
### Existing Timing Plans†

	Plan					Ped Minimum Time		
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Afternoon 13	Walk	DW	A+R
<b>Cycle</b>	110	115	120	85	115			
<b>Offset</b>	67	82	31	X	82			
EB Thru	37	42	39	37	42	9	22	3.7+2.5
WB Thru	37	42	39	37	42	9	22	3.7+2.5
NB Left	13	16	18	-	16	-	-	3.3+2.6
SB Thru	48	42	41	48	42	9	15	3.3+2.6
NB Thru	61	58	59	48	58	9	15	3.3+2.6
EB Left	12	15	22	-	15	-	-	3.7+2.5
WB Left	12	15	22	-	15	-	-	3.7+2.5

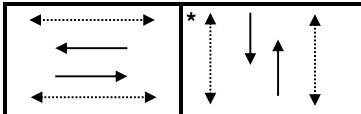
*Note:* Campeau Drive is considered the EW direction

### Phasing Sequence‡

Plans: 1,2,3,13



Plans: 4



### Schedule

Weekday		Saturday		Sunday	
Time	Plan	Time	Plan	Time	Plan
0:10	4	0:10	4	0:10	4
6:45	1	8:45	1	8:00	2
9:30	2	9:45	2	22:30	4
12:00	13	22:30	4		
15:00	3				
19:00	2				
23:00	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 \$59.96 (\$53.06 + HST)

# Traffic Signal Timing

City of Ottawa, Transportation Services Department

## Traffic Signal Operations Unit

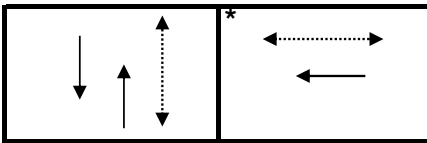
**Intersection:** *Main:* Kanata *Side:* HWY417 WB off ramp  
**Controller:** MS3200 **TSD:** 6556  
**Prepared By:** Jean Nabolle **Date:** 07-Aug-2019

### Existing Timing Plans†

	Plan					Ped Minimum Time		
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Weekend 5	Walk	DW	A+R
<b>Cycle</b>	90	75	90	60	85			
<b>Offset</b>	35	15	32	X	19			
NB Thru	53	38	45	35	45	7	15	3.3 + 2.8
SB Thru	53	38	45	35	45	7	15	3.3 + 2.8
WB Thru	37	37	45	25	40	7	11	3.3 + 1.7

### Phasing Sequence‡

Plan: all



### Schedule

Weekday		Saturday		Sunday	
Time	Plan	Time	Plan	Time	Plan
0:10	4	0:10	4	0:10	4
6:30	1	9:00	5	8:00	5
9:30	2	22:30	4	22:30	4
15:00	3				
19:00	2				
23:00	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 \$57.63 (\$51 + HST)

# Traffic Signal Timing

City of Ottawa, Transportation Services Department

Traffic Signal Operations Unit

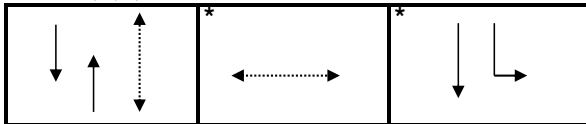
<b>Intersection:</b>	<i>Main:</i> Kanata / Castlefrank	<i>Side:</i> HWY417 EB on ramp
<b>Controller:</b>	<b>MS-3200</b>	<b>TSD:</b> 6557
<b>Prepared By:</b>	Jean Nabolle	<b>Date:</b> 07-Aug-2019

## Existing Timing Plans<sup>†</sup>

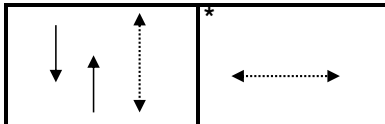
	Plan					Ped Minimum Time		
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Weekend 5	Walk	DW	A+R
<b>Cycle</b>	90	75	90	60	85			
<b>Offset</b>	42	27	27	X	19			
NB Thru	50	35	50	32	45	7	11	3.3+2.4
SB Thru	62	47	62	32	57	7	11	3.3+2.4
EW walk	28	28	28	28	28	7	15	3.0+2.0
SBLT	12	12	12	-	12	-	-	3.3+2.4

## Phasing Sequence<sup>‡</sup>

**Plan: 1,2,3,5**



**Plan: 4**



## Schedule

Weekday		Saturday		Sunday	
Time	Plan	Time	Plan	Time	Plan
0:10	4	0:10	4	0:10	4
6:30	1	9:00	2	8:00	5
9:30	2	22:30	4	22:30	4
15:00	3				
19:00	2				
23:00	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 \$57.63 (\$51 + HST)



# Traffic Signal Timing

City of Ottawa, Transportation Services Department

## Traffic Signal Operations Unit

<b>Intersection:</b>	Main: Kanata	Side: Lord Byng/Maritime Way
<b>Controller:</b>	MS-3200	<b>TSD:</b> 6593
<b>Author:</b>	Jean Nabolle	<b>Date:</b> 07-Aug-2019

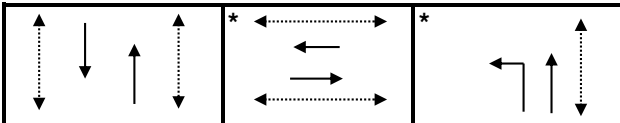
### Existing Timing Plans<sup>†</sup>

	Plan					Ped Minimum Time		
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Weekend 5	Walk	DW	A+R
<b>Cycle</b>	90	75	90	65	85			
<b>Offset</b>	40	14	31	X	9			
NB Thru	62	47	62	37	56	7	20	3.3+3.0
SB Thru	48	34	47	37	41	7	20	3.3+3.0
EB Thru	28	28	28	28	29	7	15	3.0+3.3
WB Thru	28	28	28	28	29	7	15	3.0+3.3
NB Left	14	13	15	-	15	-	-	3.3+3.0

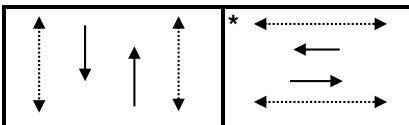
**Note:** Kanata is considered the NS movement

### Phasing Sequence<sup>‡</sup>

#### Plan: 1,2,3



#### Plan: 4



### Schedule

#### Weekday

Time	Plan
0:10	4
6:30	1
9:30	2
15:00	3
19:00	2
23:00	4

#### Saturday

Time	Plan
0:10	4
9:00	5
22:30	4

#### Sunday

Time	Plan
0:10	4
8:00	5
22:30	4

### Notes

<sup>†</sup>: Time for each direction includes amber and all red intervals

<sup>‡</sup>: 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 \$57.63 (\$51 + HST)

## APPENDIX D – SYNCHRO 10 OUTPUT REPORTS

Lanes, Volumes, Timings  
1: Kanata Avenue & Campeau Drive

Existing Conditions  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	156	43	37	182	67	66	120	35	118	482	196
Future Volume (vph)	93	156	43	37	182	67	66	120	35	118	482	196
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0		0.0	30.0		0.0	40.0		40.0	90.0		90.0
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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99		1.00	0.99				0.97	0.99		
Frt		0.968			0.960				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1656	1774	0	1530	1696	0	1687	1827	1429	1671	1863	1583
Flt Permitted	0.436			0.581			0.123			0.630		
Satd. Flow (perm)	755	1774	0	932	1696	0	218	1827	1388	1101	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			17				93			218
Link Speed (k/h)		50			50			50				50
Link Distance (m)		317.4			209.1			382.3				210.1
Travel Time (s)		22.9			15.1			27.5				15.1
Confl. Peds. (#/hr)	5		3	3		5			4	4		
Peak Hour Factor	0.81	0.81	0.81	0.95	0.95	0.95	0.59	0.59	0.59	0.90	0.90	0.90
Heavy Vehicles (%)	9%	4%	0%	18%	5%	11%	7%	4%	13%	8%	2%	2%
Adj. Flow (vph)	115	193	53	39	192	71	112	203	59	131	536	218
Shared Lane Traffic (%)												
Lane Group Flow (vph)	115	246	0	39	263	0	112	203	59	131	536	218
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)		3.6			3.6			3.6				3.6
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	0.0
Detector 1 Queue (s)	0.0	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	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

Lanes, Volumes, Timings  
1: Kanata Avenue & Campeau Drive

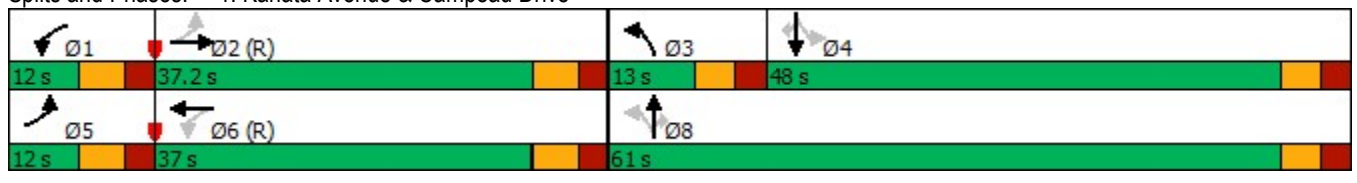
Existing Conditions  
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		1	6		3	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.2	37.2		11.2	30.2		10.9	29.9	29.9	36.9	36.9	36.9
Total Split (s)	12.0	37.2		12.0	37.0		13.0	61.0	61.0	48.0	48.0	48.0
Total Split (%)	10.9%	33.8%		10.9%	33.6%		11.8%	55.4%	55.4%	43.6%	43.6%	43.6%
Maximum Green (s)	5.8	31.0		5.8	30.8		7.1	55.1	55.1	42.1	42.1	42.1
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.5		2.5	2.5		2.6	2.6	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2		6.2	6.2		5.9	5.9	5.9	5.9	5.9	5.9
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	None	None
Walk Time (s)		9.0			9.0			9.0	9.0	9.0	9.0	9.0
Flash Dont Walk (s)		22.0			15.0			15.0	15.0	22.0	22.0	22.0
Pedestrian Calls (#/hr)		0			0			0	0	0	0	0
Act Effct Green (s)	45.4	40.9		41.0	34.8		49.6	49.6	49.6	36.6	36.6	36.6
Actuated g/C Ratio	0.41	0.37		0.37	0.32		0.45	0.45	0.45	0.33	0.33	0.33
v/c Ratio	0.31	0.37		0.10	0.48		0.58	0.25	0.09	0.36	0.87	0.32
Control Delay	23.7	29.1		21.1	33.3		29.0	18.6	1.3	29.6	49.2	4.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.7	29.1		21.1	33.3		29.0	18.6	1.3	29.6	49.2	4.4
LOS	C	C		C	C		C	B	A	C	D	A
Approach Delay		27.4			31.7			19.0			35.2	
Approach LOS		C			C			B			D	

Intersection Summary

Area Type: Other  
 Cycle Length: 110.2  
 Actuated Cycle Length: 110.2  
 Offset: 67 (61%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 100  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.87  
 Intersection Signal Delay: 30.1  
 Intersection LOS: C  
 Intersection Capacity Utilization 79.7%  
 ICU Level of Service D  
 Analysis Period (min) 15

Splits and Phases: 1: Kanata Avenue & Campeau Drive



Queues  
1: Kanata Avenue & Campeau Drive

Existing Conditions  
AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	115	246	39	263	112	203	59	131	536	218
v/c Ratio	0.31	0.37	0.10	0.48	0.58	0.25	0.09	0.36	0.87	0.32
Control Delay	23.7	29.1	21.1	33.3	29.0	18.6	1.3	29.6	49.2	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.7	29.1	21.1	33.3	29.0	18.6	1.3	29.6	49.2	4.4
Queue Length 50th (m)	15.6	42.2	5.1	47.1	14.2	27.2	0.0	21.9	111.1	0.0
Queue Length 95th (m)	26.6	60.5	12.7	74.2	14.7	24.4	0.0	36.9	147.5	15.2
Internal Link Dist (m)		293.4		185.1		358.3			186.1	
Turn Bay Length (m)	90.0		30.0		40.0		40.0	90.0		90.0
Base Capacity (vph)	371	666	380	547	192	913	740	420	711	739
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.37	0.10	0.48	0.58	0.22	0.08	0.31	0.75	0.29

Intersection Summary

Lanes, Volumes, Timings  
2: Kanata Avenue & Earl Grey

Existing Conditions  
AM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	11	37	52	210	523	39
Future Volume (vph)	11	37	52	210	523	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0	0.0	125.0			90.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			1.00			0.98
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1504	1524	1805	1743	1845	1455
Flt Permitted	0.950		0.413			
Satd. Flow (perm)	1504	1524	784	1743	1845	1424
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		43				45
Link Speed (k/h)	50			50	50	
Link Distance (m)	218.4			301.9	382.3	
Travel Time (s)	15.7			21.7	27.5	
Confl. Peds. (#/hr)			1			1
Peak Hour Factor	0.87	0.87	0.79	0.79	0.86	0.86
Heavy Vehicles (%)	20%	6%	0%	9%	3%	11%
Adj. Flow (vph)	13	43	66	266	608	45
Shared Lane Traffic (%)						
Lane Group Flow (vph)	13	43	66	266	608	45
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	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
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	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
Detector 1 Queue (s)	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
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	

Lanes, Volumes, Timings  
2: Kanata Avenue & Earl Grey

Existing Conditions  
AM Peak Hour

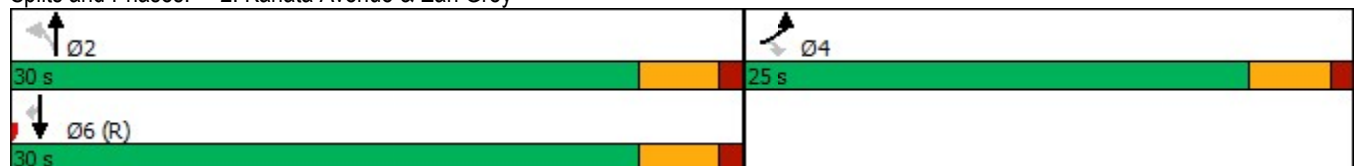


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.3	23.3	27.3	27.3	27.3	27.3
Total Split (s)	25.0	25.0	30.0	30.0	30.0	30.0
Total Split (%)	45.5%	45.5%	54.5%	54.5%	54.5%	54.5%
Maximum Green (s)	20.7	20.7	25.7	25.7	25.7	25.7
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.3	4.3	4.3	4.3	4.3	4.3
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	6.2	6.2	45.8	45.8	45.8	45.8
Actuated g/C Ratio	0.11	0.11	0.83	0.83	0.83	0.83
v/c Ratio	0.08	0.20	0.10	0.18	0.40	0.04
Control Delay	22.2	10.7	2.7	2.4	3.4	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	10.7	2.7	2.4	3.4	1.0
LOS	C	B	A	A	A	A
Approach Delay	13.4			2.5	3.3	
Approach LOS	B			A	A	

Intersection Summary

Area Type: Other  
 Cycle Length: 55  
 Actuated Cycle Length: 55  
 Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green  
 Natural Cycle: 55  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.40  
 Intersection Signal Delay: 3.6  
 Intersection LOS: A  
 Intersection Capacity Utilization 46.6%  
 ICU Level of Service A  
 Analysis Period (min) 15

Splits and Phases: 2: Kanata Avenue & Earl Grey



Queues  
2: Kanata Avenue & Earl Grey

Existing Conditions  
AM Peak Hour

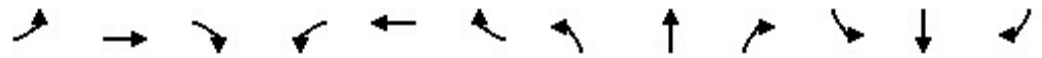


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	13	43	66	266	608	45
v/c Ratio	0.08	0.20	0.10	0.18	0.40	0.04
Control Delay	22.2	10.7	2.7	2.4	3.4	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	10.7	2.7	2.4	3.4	1.0
Queue Length 50th (m)	1.3	0.0	1.4	6.0	17.2	0.0
Queue Length 95th (m)	5.0	6.7	3.9	11.4	33.4	1.7
Internal Link Dist (m)	194.4			277.9	358.3	
Turn Bay Length (m)	70.0		125.0			90.0
Base Capacity (vph)	566	600	653	1451	1536	1193
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.07	0.10	0.18	0.40	0.04
<b>Intersection Summary</b>						



Lanes, Volumes, Timings  
4: Kanata Avenue & Lord Byng/Maritime Way

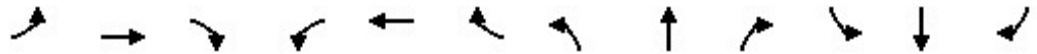
Existing Conditions  
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	6	38	106	2	20	90	242	122	18	545	17
Future Volume (vph)	20	6	38	106	2	20	90	242	122	18	545	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	0.0		0.0	75.0		0.0	35.0		0.0
Storage Lanes	1		0	1		0	1		0	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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		1.00	0.98			0.99		1.00	1.00	
Frt		0.871			0.862			0.950			0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1318	1102	0	1687	1605	0	1480	1717	0	1543	1829	0
Flt Permitted	0.740			0.720			0.274			0.503		
Satd. Flow (perm)	1024	1102	0	1274	1605	0	427	1717	0	816	1829	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		49			24			53			2	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		214.1			97.4			218.2			173.6	
Travel Time (s)		15.4			7.0			15.7			12.5	
Confl. Peds. (#/hr)	1		3	3		1	3		1	1		3
Peak Hour Factor	0.77	0.77	0.77	0.83	0.83	0.83	0.81	0.81	0.81	0.91	0.91	0.91
Heavy Vehicles (%)	37%	0%	56%	7%	0%	0%	22%	4%	5%	17%	2%	44%
Adj. Flow (vph)	26	8	49	128	2	24	111	299	151	20	599	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	26	57	0	128	26	0	111	450	0	20	618	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)		3.6			3.6			3.6			3.6	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		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	
Detector 1 Position(m)	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	0.6	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
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	

Lanes, Volumes, Timings  
4: Kanata Avenue & Lord Byng/Maritime Way

Existing Conditions  
AM Peak Hour

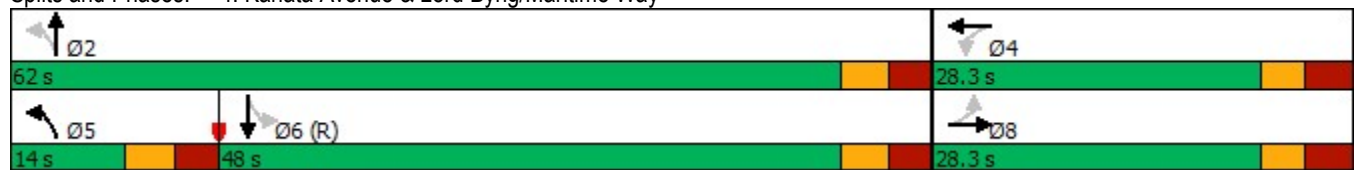


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		5	2				6
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		5	2		6		6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0		5.0
Minimum Split (s)	28.3	28.3		28.3	28.3		11.3	33.3		33.3		33.3
Total Split (s)	28.3	28.3		28.3	28.3		14.0	62.0		48.0		48.0
Total Split (%)	31.3%	31.3%		31.3%	31.3%		15.5%	68.7%		53.2%		53.2%
Maximum Green (s)	22.0	22.0		22.0	22.0		7.7	55.7		41.7		41.7
Yellow Time (s)	3.0	3.0		3.0	3.0		3.3	3.3		3.3		3.3
All-Red Time (s)	3.3	3.3		3.3	3.3		3.0	3.0		3.0		3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	6.3	6.3		6.3	6.3		6.3	6.3		6.3		6.3
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
Recall Mode	None	None		None	None		None	None		C-Max		C-Max
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0		7.0
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0		15.0		15.0
Pedestrian Calls (#/hr)	0	0		0	0			0		0		0
Act Effct Green (s)	14.3	14.3		14.3	14.3		63.4	63.4		51.9		51.9
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.70	0.70		0.57		0.57
v/c Ratio	0.16	0.27		0.64	0.10		0.29	0.37		0.04		0.59
Control Delay	32.6	14.2		48.9	13.3		7.2	6.4		12.3		17.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Delay	32.6	14.2		48.9	13.3		7.2	6.4		12.3		17.7
LOS	C	B		D	B		A	A		B		B
Approach Delay		20.0			42.9			6.5				17.6
Approach LOS		C			D			A				B

Intersection Summary

Area Type:	Other
Cycle Length:	90.3
Actuated Cycle Length:	90.3
Offset:	3.4 (4%), Referenced to phase 6:SBTL, Start of Green
Natural Cycle:	75
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.64
Intersection Signal Delay:	16.1
Intersection LOS:	B
Intersection Capacity Utilization:	63.2%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 4: Kanata Avenue & Lord Byng/Maritime Way



Queues  
4: Kanata Avenue & Lord Byng/Maritime Way

Existing Conditions  
AM Peak Hour














Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	26	57	128	26	111	450	20	618
v/c Ratio	0.16	0.27	0.64	0.10	0.29	0.37	0.04	0.59
Control Delay	32.6	14.2	48.9	13.3	7.2	6.4	12.3	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	14.2	48.9	13.3	7.2	6.4	12.3	17.7
Queue Length 50th (m)	4.2	1.3	22.1	0.3	5.6	24.1	1.6	72.0
Queue Length 95th (m)	9.2	8.2	34.4	6.1	12.2	42.4	6.0	130.7
Internal Link Dist (m)		190.1		73.4		194.2		149.6
Turn Bay Length (m)	25.0				75.0		35.0	
Base Capacity (vph)	249	305	310	409	395	1221	469	1052
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	0.10	0.19	0.41	0.06	0.28	0.37	0.04	0.59

Intersection Summary

Lanes, Volumes, Timings  
5: Kanata Avenue & Hwy 417 WB Off Ramp

Existing Conditions  
AM Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						 
Traffic Volume (vph)	235	186	268	0	0	689
Future Volume (vph)	235	186	268	0	0	689
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Fr <sub>t</sub>	0.850					
Fl <sub>t</sub> Protected	0.950					
Satd. Flow (prot)	1787	1392	1827	0	0	3406
Fl <sub>t</sub> Permitted	0.950					
Satd. Flow (perm)	1787	1392	1827	0	0	3406
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		200				
Link Speed (k/h)	50		50			50
Link Distance (m)	261.6		133.0			218.2
Travel Time (s)	18.8		9.6			15.7
Peak Hour Factor	0.93	0.93	0.87	0.93	0.92	0.74
Heavy Vehicles (%)	1%	16%	4%	2%	2%	6%
Adj. Flow (vph)	253	200	308	0	0	931
Shared Lane Traffic (%)						
Lane Group Flow (vph)	253	200	308	0	0	931
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	2.0	2.0	10.0			10.0
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	2.0	2.0	0.6			0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						

Lanes, Volumes, Timings  
5: Kanata Avenue & Hwy 417 WB Off Ramp

Existing Conditions  
AM Peak Hour

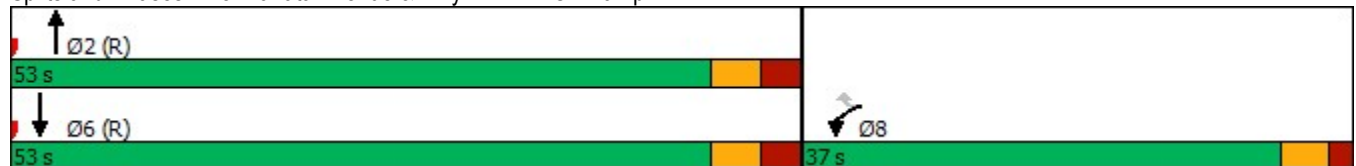


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0			5.0
Minimum Split (s)	23.0	23.0	28.1			28.1
Total Split (s)	37.0	37.0	53.0			53.0
Total Split (%)	41.1%	41.1%	58.9%			58.9%
Maximum Green (s)	32.0	32.0	46.9			46.9
Yellow Time (s)	3.3	3.3	3.3			3.3
All-Red Time (s)	1.7	1.7	2.8			2.8
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	5.0	5.0	6.1			6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	C-Max			C-Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	11.0	11.0	15.0			15.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effect Green (s)	18.1	18.1	60.8			60.8
Actuated g/C Ratio	0.20	0.20	0.68			0.68
v/c Ratio	0.70	0.45	0.25			0.40
Control Delay	43.6	7.7	3.9			7.8
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	43.6	7.7	3.9			7.8
LOS	D	A	A			A
Approach Delay	27.7		3.9			7.8
Approach LOS	C		A			A

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 37 (41%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 55  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.70  
 Intersection Signal Delay: 12.5  
 Intersection LOS: B  
 Intersection Capacity Utilization 47.3%  
 ICU Level of Service A  
 Analysis Period (min) 15

Splits and Phases: 5: Kanata Avenue & Hwy 417 WB Off Ramp



Queues  
5: Kanata Avenue & Hwy 417 WB Off Ramp











Existing Conditions  
AM Peak Hour



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	253	200	308	931
v/c Ratio	0.70	0.45	0.25	0.40
Control Delay	43.6	7.7	3.9	7.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	43.6	7.7	3.9	7.8
Queue Length 50th (m)	43.1	0.0	8.4	35.0
Queue Length 95th (m)	62.9	16.1	11.6	44.0
Internal Link Dist (m)	237.6		109.0	194.2
Turn Bay Length (m)				
Base Capacity (vph)	635	623	1233	2299
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.40	0.32	0.25	0.40
<b>Intersection Summary</b>				

Lanes, Volumes, Timings  
6: Kanata Avenue & Hwy 417 EB On Ramp

Existing Conditions  
AM Peak Hour

							
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø3
Lane Configurations							
Traffic Volume (vph)	0	0	268	208	411	513	
Future Volume (vph)	0	0	268	208	411	513	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	0.0	0.0		60.0	0.0		
Storage Lanes	0	0		1	1		
Taper Length (m)	7.5				7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor				0.98	1.00		
Frt				0.850			
Flt Protected					0.950		
Satd. Flow (prot)	0	0	1759	1568	1752	1827	
Flt Permitted					0.467		
Satd. Flow (perm)	0	0	1759	1533	860	1827	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)				236			
Link Speed (k/h)	50		50			50	
Link Distance (m)	282.6		139.9			133.0	
Travel Time (s)	20.3		10.1			9.6	
Confl. Peds. (#/hr)	1	1		1	1		
Peak Hour Factor	0.89	0.89	0.88	0.88	0.89	0.89	
Heavy Vehicles (%)	2%	2%	8%	3%	3%	4%	
Adj. Flow (vph)	0	0	305	236	462	576	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	0	305	236	462	576	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(m)	0.0		3.6			3.6	
Link Offset(m)	0.0		0.0			0.0	
Crosswalk Width(m)	4.8		4.8			4.8	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (k/h)	25	15		15	25		
Number of Detectors			2	1	1	2	
Detector Template			Thru	Right	Left	Thru	
Leading Detector (m)			10.0	2.0	2.0	10.0	
Trailing Detector (m)			0.0	0.0	0.0	0.0	
Detector 1 Position(m)			0.0	0.0	0.0	0.0	
Detector 1 Size(m)			0.6	2.0	2.0	0.6	
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)			0.0	0.0	0.0	0.0	
Detector 1 Queue (s)			0.0	0.0	0.0	0.0	
Detector 1 Delay (s)			0.0	0.0	0.0	0.0	
Detector 2 Position(m)			9.4			9.4	
Detector 2 Size(m)			0.6			0.6	
Detector 2 Type			Cl+Ex			Cl+Ex	
Detector 2 Channel							
Detector 2 Extend (s)			0.0			0.0	

Lanes, Volumes, Timings  
6: Kanata Avenue & Hwy 417 EB On Ramp

Existing Conditions  
AM Peak Hour

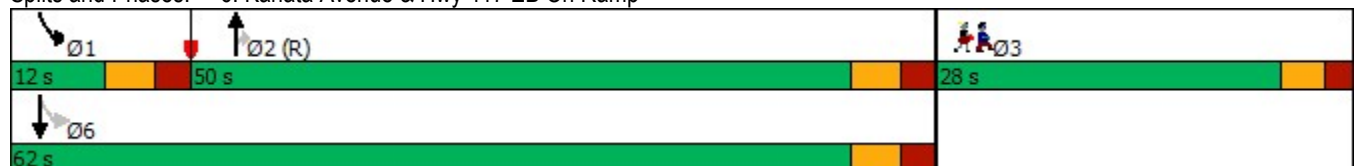


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø3
Turn Type			NA	Perm	pm+pt	NA	
Protected Phases			2		1	6	3
Permitted Phases				2	6		
Detector Phase			2	2	1	6	
Switch Phase							
Minimum Initial (s)			5.0	5.0	5.0	5.0	5.0
Minimum Split (s)			23.7	23.7	10.7	45.5	27.0
Total Split (s)			50.0	50.0	12.0	62.0	28.0
Total Split (%)			55.6%	55.6%	13.3%	68.9%	31%
Maximum Green (s)			44.3	44.3	6.3	56.3	23.0
Yellow Time (s)			3.3	3.3	3.3	3.3	3.0
All-Red Time (s)			2.4	2.4	2.4	2.4	2.0
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	
Total Lost Time (s)			5.7	5.7	5.7	5.7	
Lead/Lag			Lag	Lag	Lead		
Lead-Lag Optimize?			Yes	Yes	Yes		
Vehicle Extension (s)			3.0	3.0	3.0	3.0	3.0
Recall Mode			C-Max	C-Max	None	Max	Ped
Walk Time (s)			7.0	7.0		7.0	7.0
Flash Dont Walk (s)			11.0	11.0		11.0	15.0
Pedestrian Calls (#/hr)			0	0		0	0
Act Effct Green (s)			44.3	44.3	57.3	57.3	
Actuated g/C Ratio			0.49	0.49	0.64	0.64	
v/c Ratio			0.35	0.27	0.75	0.50	
Control Delay			15.5	2.6	16.2	8.1	
Queue Delay			0.0	0.0	0.0	0.2	
Total Delay			15.5	2.6	16.2	8.3	
LOS			B	A	B	A	
Approach Delay			9.9			11.8	
Approach LOS			A			B	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	42 (47%), Referenced to phase 2:NBT, Start of Green
Natural Cycle:	75
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.75
Intersection Signal Delay:	11.2
Intersection LOS:	B
Intersection Capacity Utilization	47.3%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 6: Kanata Avenue & Hwy 417 EB On Ramp





Queues  
6: Kanata Avenue & Hwy 417 EB On Ramp

Existing Conditions  
AM Peak Hour



Lane Group	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	305	236	462	576
v/c Ratio	0.35	0.27	0.75	0.50
Control Delay	15.5	2.6	16.2	8.1
Queue Delay	0.0	0.0	0.0	0.2
Total Delay	15.5	2.6	16.2	8.3
Queue Length 50th (m)	32.6	0.0	25.6	31.9
Queue Length 95th (m)	50.1	10.7	33.1	40.3
Internal Link Dist (m)	115.9			109.0
Turn Bay Length (m)		60.0		
Base Capacity (vph)	865	874	619	1163
Starvation Cap Reductn	0	0	0	141
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.35	0.27	0.75	0.56
Intersection Summary				

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	13	34	33	249	546	14
Future Vol, veh/h	13	34	33	249	546	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	96	96	81	81
Heavy Vehicles, %	2	2	0	5	2	0
Mvmt Flow	17	45	34	259	674	17























Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1010	683	691	0	0
Stage 1	683	-	-	-	-
Stage 2	327	-	-	-	-
Critical Hdwy	6.42	6.22	4.1	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.2	-	-
Pot Cap-1 Maneuver	266	449	913	-	-
Stage 1	502	-	-	-	-
Stage 2	731	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	254	449	913	-	-
Mov Cap-2 Maneuver	254	-	-	-	-
Stage 1	480	-	-	-	-
Stage 2	731	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.7	1.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	913	-	370	-	-
HCM Lane V/C Ratio	0.038	-	0.169	-	-
HCM Control Delay (s)	9.1	0	16.7	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.6	-	-

Lanes, Volumes, Timings  
1: Kanata Avenue & Campeau Drive

Existing Conditions  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	273	273	181	51	227	86	140	434	42	56	302	213
Future Volume (vph)	273	273	181	51	227	86	140	434	42	56	302	213
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0		0.0	30.0		0.0	40.0		40.0	90.0		90.0
Storage Lanes	1		0	1		0	1		0	1		1
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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99		1.00	0.99				0.93	0.97		
Frt		0.940			0.959				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1761	0	1736	1784	0	1770	1881	1468	1805	1881	1583
Flt Permitted	0.257			0.245			0.325			0.497		
Satd. Flow (perm)	472	1761	0	447	1784	0	605	1881	1370	921	1881	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27			16				85			239
Link Speed (k/h)		50			50			50				50
Link Distance (m)		317.4			209.1			382.3				210.1
Travel Time (s)		22.9			15.1			27.5				15.1
Confl. Peds. (#/hr)	14		3	3		14			19	19		
Peak Hour Factor	0.92	0.92	0.92	0.96	0.96	0.96	0.94	0.94	0.94	0.89	0.89	0.89
Heavy Vehicles (%)	2%	0%	1%	4%	0%	3%	2%	1%	10%	0%	1%	2%
Adj. Flow (vph)	297	297	197	53	236	90	149	462	45	63	339	239
Shared Lane Traffic (%)												
Lane Group Flow (vph)	297	494	0	53	326	0	149	462	45	63	339	239
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)		3.6			3.6			3.6				3.6
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	0.0
Detector 1 Queue (s)	0.0	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	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

Lanes, Volumes, Timings  
1: Kanata Avenue & Campeau Drive

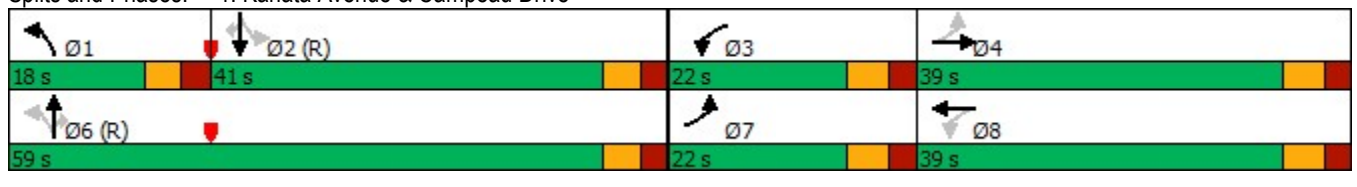
Existing Conditions  
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8		1	6			2	
Permitted Phases	4			8			6		6	2		2
Detector Phase	7	4		3	8		1	6	6	2	2	2
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.2	37.2		11.3	37.2		10.9	29.9	29.9	29.9	29.9	29.9
Total Split (s)	22.0	39.0		22.0	39.0		18.0	59.0	59.0	41.0	41.0	41.0
Total Split (%)	18.3%	32.5%		18.3%	32.5%		15.0%	49.2%	49.2%	34.2%	34.2%	34.2%
Maximum Green (s)	15.8	32.8		15.8	32.8		12.1	53.1	53.1	35.1	35.1	35.1
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.5		2.5	2.5		2.6	2.6	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2		6.2	6.2		5.9	5.9	5.9	5.9	5.9	5.9
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	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	C-Max
Walk Time (s)		9.0			9.0			9.0	9.0	9.0	9.0	9.0
Flash Dont Walk (s)		22.0			22.0			15.0	15.0	15.0	15.0	15.0
Pedestrian Calls (#/hr)		3			0			0	0	3	3	3
Act Effct Green (s)	51.0	39.6		36.7	29.2		56.9	56.9	56.9	40.4	40.4	40.4
Actuated g/C Ratio	0.42	0.33		0.31	0.24		0.47	0.47	0.47	0.34	0.34	0.34
v/c Ratio	0.80	0.82		0.24	0.73		0.38	0.52	0.06	0.20	0.54	0.35
Control Delay	41.0	47.8		22.4	49.3		22.6	25.8	0.8	33.8	38.0	5.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.0	47.8		22.4	49.3		22.6	25.8	0.8	33.8	38.0	5.5
LOS	D	D		C	D		C	C	A	C	D	A
Approach Delay		45.3			45.5			23.3			25.4	
Approach LOS		D			D			C			C	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 85 (71%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.82  
 Intersection Signal Delay: 34.3      Intersection LOS: C  
 Intersection Capacity Utilization 83.0%      ICU Level of Service E  
 Analysis Period (min) 15

Splits and Phases: 1: Kanata Avenue & Campeau Drive



Queues  
1: Kanata Avenue & Campeau Drive

Existing Conditions  
PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	297	494	53	326	149	462	45	63	339	239
v/c Ratio	0.80	0.82	0.24	0.73	0.38	0.52	0.06	0.20	0.54	0.35
Control Delay	41.0	47.8	22.4	49.3	22.6	25.8	0.8	33.8	38.0	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.0	47.8	22.4	49.3	22.6	25.8	0.8	33.8	38.0	5.5
Queue Length 50th (m)	47.0	104.7	7.2	68.2	22.0	82.9	0.0	11.8	72.1	0.0
Queue Length 95th (m)	#76.0	#165.5	15.0	101.4	36.3	116.4	1.4	24.2	103.4	18.2
Internal Link Dist (m)		293.4		185.1		358.3			186.1	
Turn Bay Length (m)	90.0		30.0		40.0		40.0	90.0		90.0
Base Capacity (vph)	371	599	337	499	404	891	693	309	632	691
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.82	0.16	0.65	0.37	0.52	0.06	0.20	0.54	0.35

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Lanes, Volumes, Timings  
2: Kanata Avenue & Earl Grey

Existing Conditions  
PM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	84	188	234	532	447	87
Future Volume (vph)	84	188	234	532	447	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0	0.0	125.0			90.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			1.00			0.98
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1805	1599	1805	1863	1863	1615
Flt Permitted	0.950		0.364			
Satd. Flow (perm)	1805	1599	691	1863	1863	1579
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		211				102
Link Speed (k/h)	50			50	50	
Link Distance (m)	218.4			301.9	382.3	
Travel Time (s)	15.7			21.7	27.5	
Confl. Peds. (#/hr)			1			1
Peak Hour Factor	0.89	0.89	0.91	0.91	0.85	0.85
Heavy Vehicles (%)	0%	1%	0%	2%	2%	0%
Adj. Flow (vph)	94	211	257	585	526	102
Shared Lane Traffic (%)						
Lane Group Flow (vph)	94	211	257	585	526	102
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	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
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	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
Detector 1 Queue (s)	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
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	

Lanes, Volumes, Timings  
2: Kanata Avenue & Earl Grey

Existing Conditions  
PM Peak Hour

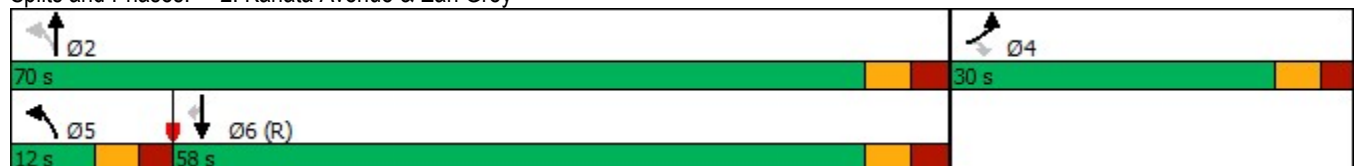


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.9	24.9	10.8	29.4	29.4	29.4
Total Split (s)	30.0	30.0	12.0	70.0	58.0	58.0
Total Split (%)	30.0%	30.0%	12.0%	70.0%	58.0%	58.0%
Maximum Green (s)	24.1	24.1	6.2	63.6	51.6	51.6
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.6	2.6	2.5	3.1	3.1	3.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.9	5.9	5.8	6.4	6.4	6.4
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
Recall Mode	None	None	None	None	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0		0	0	0
Act Effct Green (s)	10.5	10.5	77.8	77.2	62.0	62.0
Actuated g/C Ratio	0.10	0.10	0.78	0.77	0.62	0.62
v/c Ratio	0.49	0.59	0.40	0.41	0.46	0.10
Control Delay	50.4	13.0	5.1	5.1	12.6	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.4	13.0	5.1	5.1	12.6	2.4
LOS	D	B	A	A	B	A
Approach Delay	24.5			5.1	11.0	
Approach LOS	C			A	B	

Intersection Summary

Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 58 (58%), Referenced to phase 6:SBT, Start of Green  
 Natural Cycle: 70  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.59  
 Intersection Signal Delay: 10.5  
 Intersection LOS: B  
 Intersection Capacity Utilization 56.2%  
 ICU Level of Service B  
 Analysis Period (min) 15

Splits and Phases: 2: Kanata Avenue & Earl Grey



Queues  
2: Kanata Avenue & Earl Grey

Existing Conditions  
PM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	94	211	257	585	526	102
v/c Ratio	0.49	0.59	0.40	0.41	0.46	0.10
Control Delay	50.4	13.0	5.1	5.1	12.6	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.4	13.0	5.1	5.1	12.6	2.4
Queue Length 50th (m)	18.4	0.0	10.8	31.9	51.7	0.0
Queue Length 95th (m)	32.9	19.7	21.3	57.5	84.7	6.4
Internal Link Dist (m)	194.4			277.9	358.3	
Turn Bay Length (m)	70.0		125.0			90.0
Base Capacity (vph)	435	545	641	1437	1154	1017
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.39	0.40	0.41	0.46	0.10
<b>Intersection Summary</b>						



Lanes, Volumes, Timings  
4: Kanata Avenue & Lord Byng/Maritime Way

Existing Conditions  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	3	83	92	10	28	163	740	149	47	576	27
Future Volume (vph)	32	3	83	92	10	28	163	740	149	47	576	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	0.0		0.0	75.0		0.0	35.0		0.0
Storage Lanes	1		0	1		0	1		0	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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98	0.98		1.00	0.97			1.00		1.00	1.00	
Frt		0.855			0.888			0.975			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1318	1318	0	1770	1632	0	1570	1845	0	1805	1850	0
Flt Permitted	0.729			0.697			0.089			0.103		
Satd. Flow (perm)	988	1318	0	1293	1632	0	147	1845	0	196	1850	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		89			32			21			3	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		214.1			97.4			218.2			173.6	
Travel Time (s)		15.4			7.0			15.7			12.5	
Confl. Peds. (#/hr)	12		4	4		12	3		3	3		3
Peak Hour Factor	0.93	0.93	0.93	0.87	0.87	0.87	0.88	0.88	0.88	0.82	0.82	0.82
Heavy Vehicles (%)	37%	0%	22%	2%	0%	0%	15%	0%	0%	0%	1%	20%
Adj. Flow (vph)	34	3	89	106	11	32	185	841	169	57	702	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	92	0	106	43	0	185	1010	0	57	735	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)		3.6			3.6			3.6			3.6	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		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	
Detector 1 Position(m)	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	0.6	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
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	

Lanes, Volumes, Timings  
4: Kanata Avenue & Lord Byng/Maritime Way

Existing Conditions  
PM Peak Hour

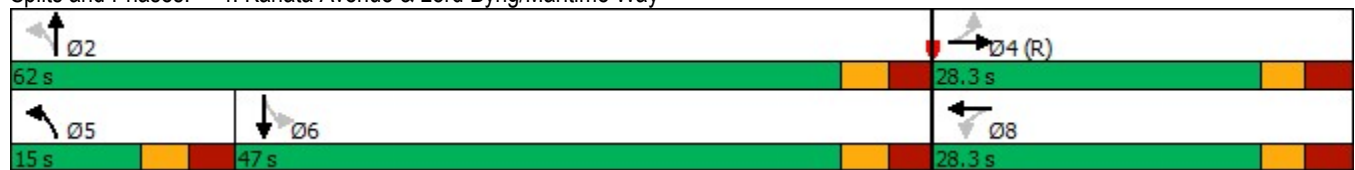


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2				6
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6		6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0		5.0
Minimum Split (s)	28.3	28.3		28.3	28.3		11.3	33.3		33.3		33.3
Total Split (s)	28.3	28.3		28.3	28.3		15.0	62.0		47.0		47.0
Total Split (%)	31.3%	31.3%		31.3%	31.3%		16.6%	68.7%		52.0%		52.0%
Maximum Green (s)	22.0	22.0		22.0	22.0		8.7	55.7		40.7		40.7
Yellow Time (s)	3.0	3.0		3.0	3.0		3.3	3.3		3.3		3.3
All-Red Time (s)	3.3	3.3		3.3	3.3		3.0	3.0		3.0		3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	6.3	6.3		6.3	6.3		6.3	6.3		6.3		6.3
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
Recall Mode	C-Max	C-Max		None	None		None	None		None		None
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0		7.0
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			20.0		20.0		20.0
Pedestrian Calls (#/hr)	14	14		3	3			3		14		14
Act Effct Green (s)	23.9	23.9		23.9	23.9		53.8	53.8		38.8		38.8
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.60	0.60		0.43		0.43
v/c Ratio	0.13	0.22		0.31	0.09		0.83	0.91		0.68		0.92
Control Delay	28.4	8.3		30.8	13.2		47.2	29.3		62.6		42.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	3.2		0.0		0.0
Total Delay	28.4	8.3		30.8	13.2		47.2	32.5		62.6		42.9
LOS	C	A		C	B		D	C		E		D
Approach Delay		13.7			25.7			34.8				44.3
Approach LOS		B			C			C				D

Intersection Summary

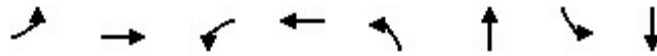
Area Type: Other  
 Cycle Length: 90.3  
 Actuated Cycle Length: 90.3  
 Offset: 31 (34%), Referenced to phase 4:EBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.92  
 Intersection Signal Delay: 36.3  
 Intersection LOS: D  
 Intersection Capacity Utilization 86.3%  
 ICU Level of Service E  
 Analysis Period (min) 15

Splits and Phases: 4: Kanata Avenue & Lord Byng/Maritime Way



Queues  
4: Kanata Avenue & Lord Byng/Maritime Way

Existing Conditions  
PM Peak Hour














Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	34	92	106	43	185	1010	57	735
v/c Ratio	0.13	0.22	0.31	0.09	0.83	0.91	0.68	0.92
Control Delay	28.4	8.3	30.8	13.2	47.2	29.3	62.6	42.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	3.2	0.0	0.0
Total Delay	28.4	8.3	30.8	13.2	47.2	32.5	62.6	42.9
Queue Length 50th (m)	4.9	0.4	16.0	1.6	17.9	138.6	7.8	117.7
Queue Length 95th (m)	13.0	12.4	29.9	9.4	#51.6	#231.2	#25.7	146.6
Internal Link Dist (m)		190.1		73.4		194.2		149.6
Turn Bay Length (m)	25.0				75.0		35.0	
Base Capacity (vph)	261	414	342	455	224	1146	88	835
Starvation Cap Reductn	0	0	0	0	0	73	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	0.13	0.22	0.31	0.09	0.83	0.94	0.65	0.88

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Lanes, Volumes, Timings  
5: Kanata Avenue & Hwy 417 WB Off Ramp

Existing Conditions  
PM Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						 
Traffic Volume (vph)	454	594	458	0	0	751
Future Volume (vph)	454	594	458	0	0	751
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Fr <sub>t</sub>		0.850				
Fl <sub>t</sub> Protected	0.950					
Satd. Flow (prot)	1787	1392	1827	0	0	3406
Fl <sub>t</sub> Permitted	0.950					
Satd. Flow (perm)	1787	1392	1827	0	0	3406
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		234				
Link Speed (k/h)	50		50			50
Link Distance (m)	261.6		133.0			218.2
Travel Time (s)	18.8		9.6			15.7
Peak Hour Factor	0.95	0.95	0.90	0.93	0.92	0.99
Heavy Vehicles (%)	1%	16%	4%	2%	2%	6%
Adj. Flow (vph)	478	625	509	0	0	759
Shared Lane Traffic (%)						
Lane Group Flow (vph)	478	625	509	0	0	759
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	2.0	2.0	10.0			10.0
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	2.0	2.0	0.6			0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						

Lanes, Volumes, Timings  
 5: Kanata Avenue & Hwy 417 WB Off Ramp

Existing Conditions  
 PM Peak Hour

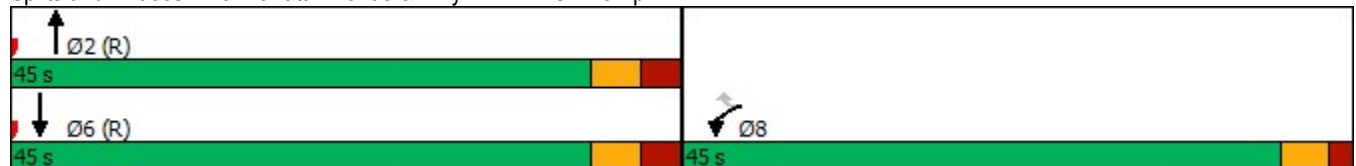


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0			5.0
Minimum Split (s)	23.0	23.0	28.1			28.1
Total Split (s)	45.0	45.0	45.0			45.0
Total Split (%)	50.0%	50.0%	50.0%			50.0%
Maximum Green (s)	40.0	40.0	38.9			38.9
Yellow Time (s)	3.3	3.3	3.3			3.3
All-Red Time (s)	1.7	1.7	2.8			2.8
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	5.0	5.0	6.1			6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	C-Max			C-Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	11.0	11.0	15.0			15.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	34.3	34.3	44.6			44.6
Actuated g/C Ratio	0.38	0.38	0.50			0.50
v/c Ratio	0.70	0.93	0.56			0.45
Control Delay	28.7	36.9	31.1			17.2
Queue Delay	0.0	0.0	3.3			0.0
Total Delay	28.7	36.9	34.5			17.2
LOS	C	D	C			B
Approach Delay	33.4		34.5			17.2
Approach LOS	C		C			B

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 32 (36%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.93  
 Intersection Signal Delay: 28.4  
 Intersection LOS: C  
 Intersection Capacity Utilization 95.6%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 5: Kanata Avenue & Hwy 417 WB Off Ramp



Queues  
5: Kanata Avenue & Hwy 417 WB Off Ramp

Existing Conditions  
PM Peak Hour













Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	478	625	509	759
v/c Ratio	0.70	0.93	0.56	0.45
Control Delay	28.7	36.9	31.1	17.2
Queue Delay	0.0	0.0	3.3	0.0
Total Delay	28.7	36.9	34.5	17.2
Queue Length 50th (m)	67.1	67.4	91.9	49.0
Queue Length 95th (m)	96.3	#136.1	132.7	68.6
Internal Link Dist (m)	237.6		109.0	194.2
Turn Bay Length (m)				
Base Capacity (vph)	794	748	904	1686
Starvation Cap Reductn	0	0	291	0
Spillback Cap Reductn	0	0	0	30
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.60	0.84	0.83	0.46

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Lanes, Volumes, Timings  
6: Kanata Avenue & Hwy 417 EB On Ramp

Existing Conditions  
PM Peak Hour

							
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø3
Lane Configurations							
Traffic Volume (vph)	0	0	458	189	350	855	
Future Volume (vph)	0	0	458	189	350	855	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	0.0	0.0		60.0	0.0		
Storage Lanes	0	0		1	1		
Taper Length (m)	7.5				7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor				0.98	1.00		
Frt				0.850			
Flt Protected					0.950		
Satd. Flow (prot)	0	0	1810	1583	1736	1863	
Flt Permitted					0.449		
Satd. Flow (perm)	0	0	1810	1544	819	1863	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)				193			
Link Speed (k/h)	50		50			50	
Link Distance (m)	282.6		139.9			133.0	
Travel Time (s)	20.3		10.1			9.6	
Confl. Peds. (#/hr)				2	2		
Peak Hour Factor	0.89	0.89	0.98	0.98	0.93	0.93	
Heavy Vehicles (%)	2%	2%	5%	2%	4%	2%	
Adj. Flow (vph)	0	0	467	193	376	919	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	0	467	193	376	919	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(m)	0.0		3.6			3.6	
Link Offset(m)	0.0		0.0			0.0	
Crosswalk Width(m)	4.8		4.8			4.8	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (k/h)	25	15		15	25		
Number of Detectors			2	1	1	2	
Detector Template			Thru	Right	Left	Thru	
Leading Detector (m)			10.0	2.0	2.0	10.0	
Trailing Detector (m)			0.0	0.0	0.0	0.0	
Detector 1 Position(m)			0.0	0.0	0.0	0.0	
Detector 1 Size(m)			0.6	2.0	2.0	0.6	
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)			0.0	0.0	0.0	0.0	
Detector 1 Queue (s)			0.0	0.0	0.0	0.0	
Detector 1 Delay (s)			0.0	0.0	0.0	0.0	
Detector 2 Position(m)			9.4			9.4	
Detector 2 Size(m)			0.6			0.6	
Detector 2 Type			Cl+Ex			Cl+Ex	
Detector 2 Channel							
Detector 2 Extend (s)			0.0			0.0	

Lanes, Volumes, Timings  
 6: Kanata Avenue & Hwy 417 EB On Ramp

Existing Conditions  
 PM Peak Hour

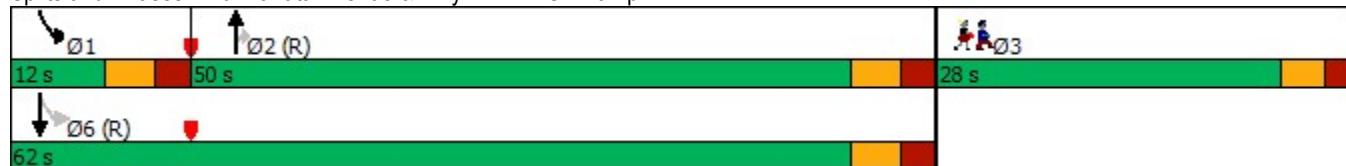


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø3
Turn Type			NA	Perm	pm+pt	NA	
Protected Phases			2		1	6	3
Permitted Phases				2	6		
Detector Phase			2	2	1	6	
Switch Phase							
Minimum Initial (s)			5.0	5.0	5.0	5.0	5.0
Minimum Split (s)			23.9	23.9	10.9	23.9	27.0
Total Split (s)			50.0	50.0	12.0	62.0	28.0
Total Split (%)			55.6%	55.6%	13.3%	68.9%	31%
Maximum Green (s)			44.3	44.3	6.3	56.3	23.0
Yellow Time (s)			3.3	3.3	3.3	3.3	3.0
All-Red Time (s)			2.4	2.4	2.4	2.4	2.0
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	
Total Lost Time (s)			5.7	5.7	5.7	5.7	
Lead/Lag			Lag	Lag	Lead		
Lead-Lag Optimize?			Yes	Yes	Yes		
Vehicle Extension (s)			3.0	3.0	3.0	3.0	3.0
Recall Mode			C-Max	C-Max	None	C-Max	None
Walk Time (s)			7.0	7.0		7.0	7.0
Flash Dont Walk (s)			11.0	11.0		11.0	15.0
Pedestrian Calls (#/hr)			0	0		0	0
Act Effct Green (s)			70.0	70.0	84.3	90.0	
Actuated g/C Ratio			0.78	0.78	0.94	1.00	
v/c Ratio			0.33	0.16	0.44	0.49	
Control Delay			3.9	0.7	2.6	1.9	
Queue Delay			0.1	0.0	0.7	0.0	
Total Delay			3.9	0.7	3.3	1.9	
LOS			A	A	A	A	
Approach Delay			3.0			2.3	
Approach LOS			A			A	

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.49  
 Intersection Signal Delay: 2.6  
 Intersection LOS: A  
 Intersection Capacity Utilization 95.6%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 6: Kanata Avenue & Hwy 417 EB On Ramp





Queues  
6: Kanata Avenue & Hwy 417 EB On Ramp

Existing Conditions  
PM Peak Hour



Lane Group	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	467	193	376	919
v/c Ratio	0.33	0.16	0.44	0.49
Control Delay	3.9	0.7	2.6	1.9
Queue Delay	0.1	0.0	0.7	0.0
Total Delay	3.9	0.7	3.3	1.9
Queue Length 50th (m)	19.1	0.0	3.7	0.0
Queue Length 95th (m)	34.7	4.4	2.4	0.0
Internal Link Dist (m)	115.9			109.0
Turn Bay Length (m)		60.0		
Base Capacity (vph)	1407	1243	854	1863
Starvation Cap Reductn	0	0	216	0
Spillback Cap Reductn	140	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.37	0.16	0.59	0.49
Intersection Summary				

Intersection						
Int Delay, s/veh	2.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	19	55	53	747	595	40
Future Vol, veh/h	19	55	53	747	595	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	84	84	96	96
Heavy Vehicles, %	0	0	0	2	4	0
Mvmt Flow	28	80	63	889	620	42

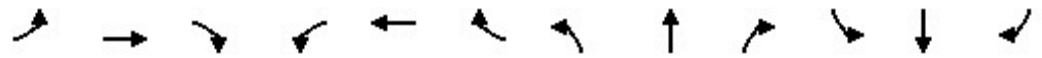
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1656	641	662	0	-	0
Stage 1	641	-	-	-	-	-
Stage 2	1015	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	109	478	936	-	-	-
Stage 1	528	-	-	-	-	-
Stage 2	353	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	95	478	936	-	-	-
Mov Cap-2 Maneuver	95	-	-	-	-	-
Stage 1	458	-	-	-	-	-
Stage 2	353	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	32.6	0.6	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	936	-	235	-	-
HCM Lane V/C Ratio	0.067	-	0.456	-	-
HCM Control Delay (s)	9.1	0	32.6	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0.2	-	2.2	-	-

Lanes, Volumes, Timings  
1: Kanata Avenue & Campeau Drive

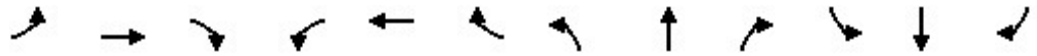
2022 Background  
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	159	44	38	186	68	67	122	36	120	492	200
Future Volume (vph)	95	159	44	38	186	68	67	122	36	120	492	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0		0.0	30.0		0.0	40.0		40.0	90.0		90.0
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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99		1.00	0.99				0.97	0.99		
Frt		0.968			0.960				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1656	1774	0	1530	1697	0	1687	1827	1429	1671	1863	1583
Flt Permitted	0.429			0.570			0.119			0.628		
Satd. Flow (perm)	743	1774	0	915	1697	0	211	1827	1388	1097	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			17				93			222
Link Speed (k/h)		50			50			50				50
Link Distance (m)		317.4			209.1			382.3				210.1
Travel Time (s)		22.9			15.1			27.5				15.1
Confl. Peds. (#/hr)	5		3	3		5			4	4		
Peak Hour Factor	0.81	0.81	0.81	0.95	0.95	0.95	0.59	0.59	0.59	0.90	0.90	0.90
Heavy Vehicles (%)	9%	4%	0%	18%	5%	11%	7%	4%	13%	8%	2%	2%
Adj. Flow (vph)	117	196	54	40	196	72	114	207	61	133	547	222
Shared Lane Traffic (%)												
Lane Group Flow (vph)	117	250	0	40	268	0	114	207	61	133	547	222
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)		3.6			3.6			3.6				3.6
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	0.0
Detector 1 Queue (s)	0.0	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	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

Lanes, Volumes, Timings  
1: Kanata Avenue & Campeau Drive

2022 Background  
AM Peak Hour

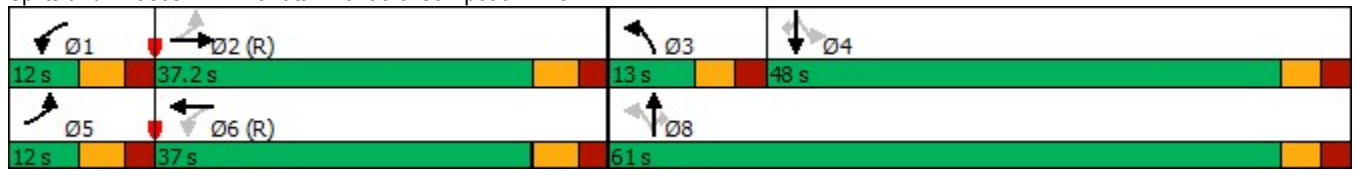


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		1	6		3	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.2	37.2		11.2	30.2		10.9	29.9	29.9	36.9	36.9	36.9
Total Split (s)	12.0	37.2		12.0	37.0		13.0	61.0	61.0	48.0	48.0	48.0
Total Split (%)	10.9%	33.8%		10.9%	33.6%		11.8%	55.4%	55.4%	43.6%	43.6%	43.6%
Maximum Green (s)	5.8	31.0		5.8	30.8		7.1	55.1	55.1	42.1	42.1	42.1
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.5		2.5	2.5		2.6	2.6	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2		6.2	6.2		5.9	5.9	5.9	5.9	5.9	5.9
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	None	None
Walk Time (s)		9.0			9.0			9.0	9.0	9.0	9.0	9.0
Flash Dont Walk (s)		22.0			15.0			15.0	15.0	22.0	22.0	22.0
Pedestrian Calls (#/hr)		0			0			0	0	0	0	0
Act Effct Green (s)	44.7	40.5		40.6	34.5		50.1	50.1	50.1	37.1	37.1	37.1
Actuated g/C Ratio	0.41	0.37		0.37	0.31		0.45	0.45	0.45	0.34	0.34	0.34
v/c Ratio	0.32	0.38		0.11	0.49		0.60	0.25	0.09	0.36	0.87	0.33
Control Delay	24.3	29.4		21.3	33.8		29.7	18.4	1.4	29.4	49.5	4.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.3	29.4		21.3	33.8		29.7	18.4	1.4	29.4	49.5	4.4
LOS	C	C		C	C		C	B	A	C	D	A
Approach Delay		27.8			32.2			19.1			35.4	
Approach LOS		C			C			B			D	

Intersection Summary

Area Type: Other  
 Cycle Length: 110.2  
 Actuated Cycle Length: 110.2  
 Offset: 67 (61%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 100  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.87  
 Intersection Signal Delay: 30.3  
 Intersection LOS: C  
 Intersection Capacity Utilization 80.2%  
 ICU Level of Service D  
 Analysis Period (min) 15

Splits and Phases: 1: Kanata Avenue & Campeau Drive



Queues  
1: Kanata Avenue & Campeau Drive

2022 Background  
AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	117	250	40	268	114	207	61	133	547	222
v/c Ratio	0.32	0.38	0.11	0.49	0.60	0.25	0.09	0.36	0.87	0.33
Control Delay	24.3	29.4	21.3	33.8	29.7	18.4	1.4	29.4	49.5	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.3	29.4	21.3	33.8	29.7	18.4	1.4	29.4	49.5	4.4
Queue Length 50th (m)	16.1	43.3	5.3	48.3	14.3	27.4	0.0	22.1	113.1	0.0
Queue Length 95th (m)	27.0	61.5	12.9	75.9	14.9	24.8	0.0	37.3	151.3	15.4
Internal Link Dist (m)		293.4		185.1		358.3			186.1	
Turn Bay Length (m)	90.0		30.0		40.0		40.0	90.0		90.0
Base Capacity (vph)	361	660	372	542	190	913	740	419	711	741
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.38	0.11	0.49	0.60	0.23	0.08	0.32	0.77	0.30

Intersection Summary

Lanes, Volumes, Timings  
2: Kanata Avenue & Earl Grey

2022 Background  
AM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	11	38	53	214	533	40
Future Volume (vph)	11	38	53	214	533	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0	0.0	125.0			90.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			1.00			0.98
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1504	1524	1805	1743	1845	1455
Flt Permitted	0.950		0.406			
Satd. Flow (perm)	1504	1524	771	1743	1845	1424
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		44				47
Link Speed (k/h)	50			50	50	
Link Distance (m)	218.4			301.9	382.3	
Travel Time (s)	15.7			21.7	27.5	
Confl. Peds. (#/hr)			1			1
Peak Hour Factor	0.87	0.87	0.79	0.79	0.86	0.86
Heavy Vehicles (%)	20%	6%	0%	9%	3%	11%
Adj. Flow (vph)	13	44	67	271	620	47
Shared Lane Traffic (%)						
Lane Group Flow (vph)	13	44	67	271	620	47
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	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
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	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
Detector 1 Queue (s)	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
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	

Lanes, Volumes, Timings  
2: Kanata Avenue & Earl Grey

2022 Background  
AM Peak Hour

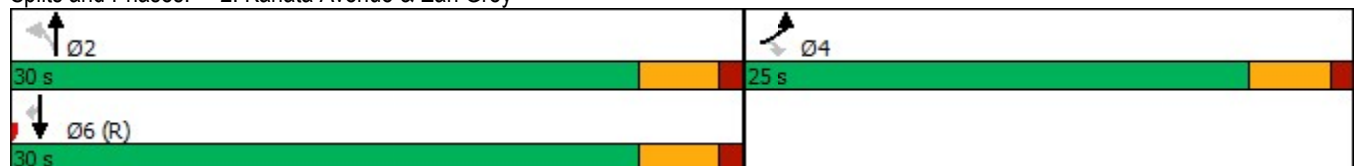


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.3	23.3	27.3	27.3	27.3	27.3
Total Split (s)	25.0	25.0	30.0	30.0	30.0	30.0
Total Split (%)	45.5%	45.5%	54.5%	54.5%	54.5%	54.5%
Maximum Green (s)	20.7	20.7	25.7	25.7	25.7	25.7
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.3	4.3	4.3	4.3	4.3	4.3
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	6.2	6.2	45.8	45.8	45.8	45.8
Actuated g/C Ratio	0.11	0.11	0.83	0.83	0.83	0.83
v/c Ratio	0.08	0.21	0.10	0.19	0.40	0.04
Control Delay	22.2	10.7	2.7	2.5	3.5	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	10.7	2.7	2.5	3.5	1.0
LOS	C	B	A	A	A	A
Approach Delay	13.3			2.5	3.3	
Approach LOS	B			A	A	

Intersection Summary

Area Type: Other  
 Cycle Length: 55  
 Actuated Cycle Length: 55  
 Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green  
 Natural Cycle: 55  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.40  
 Intersection Signal Delay: 3.6  
 Intersection LOS: A  
 Intersection Capacity Utilization 47.1%  
 ICU Level of Service A  
 Analysis Period (min) 15

Splits and Phases: 2: Kanata Avenue & Earl Grey



Queues  
2: Kanata Avenue & Earl Grey

2022 Background  
AM Peak Hour

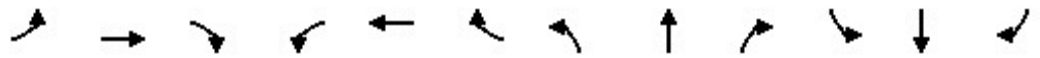


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	13	44	67	271	620	47
v/c Ratio	0.08	0.21	0.10	0.19	0.40	0.04
Control Delay	22.2	10.7	2.7	2.5	3.5	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	10.7	2.7	2.5	3.5	1.0
Queue Length 50th (m)	1.3	0.0	1.4	6.1	17.7	0.0
Queue Length 95th (m)	5.0	6.8	4.0	11.7	34.4	1.8
Internal Link Dist (m)	194.4			277.9	358.3	
Turn Bay Length (m)	70.0		125.0			90.0
Base Capacity (vph)	566	601	642	1451	1536	1193
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.07	0.10	0.19	0.40	0.04
Intersection Summary						



Lanes, Volumes, Timings  
4: Kanata Avenue & Lord Byng/Maritime Way

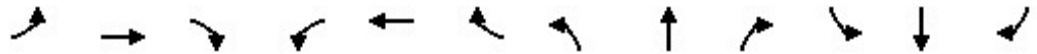
2022 Background  
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	6	39	108	2	20	92	247	124	18	556	17
Future Volume (vph)	20	6	39	108	2	20	92	247	124	18	556	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	0.0		0.0	75.0		0.0	35.0		0.0
Storage Lanes	1		0	1		0	1		0	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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		1.00	0.98			0.99		1.00	1.00	
Frt		0.870			0.862			0.950			0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1318	1099	0	1687	1605	0	1480	1717	0	1543	1829	0
Flt Permitted	0.740			0.719			0.265			0.499		
Satd. Flow (perm)	1024	1099	0	1272	1605	0	413	1717	0	809	1829	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		51			24			52				2
Link Speed (k/h)		50			50			50				50
Link Distance (m)		214.1			97.4			218.2				173.6
Travel Time (s)		15.4			7.0			15.7				12.5
Confl. Peds. (#/hr)	1		3	3		1	3		1	1		3
Peak Hour Factor	0.77	0.77	0.77	0.83	0.83	0.83	0.81	0.81	0.81	0.91	0.91	0.91
Heavy Vehicles (%)	37%	0%	56%	7%	0%	0%	22%	4%	5%	17%	2%	44%
Adj. Flow (vph)	26	8	51	130	2	24	114	305	153	20	611	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	26	59	0	130	26	0	114	458	0	20	630	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)		3.6			3.6			3.6				3.6
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		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	
Detector 1 Position(m)	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	0.6	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
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	

Lanes, Volumes, Timings  
4: Kanata Avenue & Lord Byng/Maritime Way

2022 Background  
AM Peak Hour

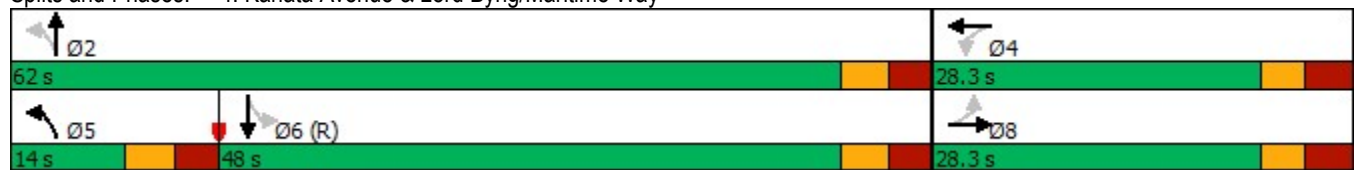


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		5	2				6
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		5	2		6		6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0		5.0
Minimum Split (s)	28.3	28.3		28.3	28.3		11.3	33.3		33.3		33.3
Total Split (s)	28.3	28.3		28.3	28.3		14.0	62.0		48.0		48.0
Total Split (%)	31.3%	31.3%		31.3%	31.3%		15.5%	68.7%		53.2%		53.2%
Maximum Green (s)	22.0	22.0		22.0	22.0		7.7	55.7		41.7		41.7
Yellow Time (s)	3.0	3.0		3.0	3.0		3.3	3.3		3.3		3.3
All-Red Time (s)	3.3	3.3		3.3	3.3		3.0	3.0		3.0		3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	6.3	6.3		6.3	6.3		6.3	6.3		6.3		6.3
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
Recall Mode	None	None		None	None		None	None		C-Max		C-Max
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0		7.0
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0		15.0		15.0
Pedestrian Calls (#/hr)	0	0		0	0			0		0		0
Act Effect Green (s)	14.5	14.5		14.5	14.5		63.2	63.2		51.8		51.8
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.70	0.70		0.57		0.57
v/c Ratio	0.16	0.27		0.64	0.09		0.30	0.38		0.04		0.60
Control Delay	32.5	14.0		48.9	13.2		7.4	6.5		12.4		18.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Delay	32.5	14.0		48.9	13.2		7.4	6.5		12.4		18.2
LOS	C	B		D	B		A	A		B		B
Approach Delay		19.6			42.9			6.7				18.0
Approach LOS		B			D			A				B

Intersection Summary

Area Type:	Other
Cycle Length:	90.3
Actuated Cycle Length:	90.3
Offset:	3.4 (4%), Referenced to phase 6:SBTL, Start of Green
Natural Cycle:	75
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.64
Intersection Signal Delay:	16.3
Intersection LOS:	B
Intersection Capacity Utilization:	64.0%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 4: Kanata Avenue & Lord Byng/Maritime Way



Queues  
4: Kanata Avenue & Lord Byng/Maritime Way












2022 Background  
AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	26	59	130	26	114	458	20	630
v/c Ratio	0.16	0.27	0.64	0.09	0.30	0.38	0.04	0.60
Control Delay	32.5	14.0	48.9	13.2	7.4	6.5	12.4	18.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.5	14.0	48.9	13.2	7.4	6.5	12.4	18.2
Queue Length 50th (m)	4.2	1.3	22.5	0.3	5.8	25.1	1.6	74.8
Queue Length 95th (m)	9.2	8.4	34.7	6.1	12.7	43.7	6.0	135.0
Internal Link Dist (m)		190.1		73.4		194.2		149.6
Turn Bay Length (m)	25.0				75.0		35.0	
Base Capacity (vph)	249	306	309	409	385	1218	463	1049
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	0.10	0.19	0.42	0.06	0.30	0.38	0.04	0.60
Intersection Summary								

Lanes, Volumes, Timings  
5: Kanata Avenue & Hwy 417 WB Off Ramp

2022 Background  
AM Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						 
Traffic Volume (vph)	240	190	273	0	0	703
Future Volume (vph)	240	190	273	0	0	703
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Fr <sub>t</sub>	0.850					
Fl <sub>t</sub> Protected	0.950					
Satd. Flow (prot)	1787	1392	1827	0	0	3406
Fl <sub>t</sub> Permitted	0.950					
Satd. Flow (perm)	1787	1392	1827	0	0	3406
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		204				
Link Speed (k/h)	50		50			50
Link Distance (m)	261.6		133.0			218.2
Travel Time (s)	18.8		9.6			15.7
Peak Hour Factor	0.93	0.93	0.87	0.93	0.92	0.74
Heavy Vehicles (%)	1%	16%	4%	2%	2%	6%
Adj. Flow (vph)	258	204	314	0	0	950
Shared Lane Traffic (%)						
Lane Group Flow (vph)	258	204	314	0	0	950
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	2.0	2.0	10.0			10.0
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	2.0	2.0	0.6			0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						

Lanes, Volumes, Timings  
 5: Kanata Avenue & Hwy 417 WB Off Ramp

2022 Background  
 AM Peak Hour

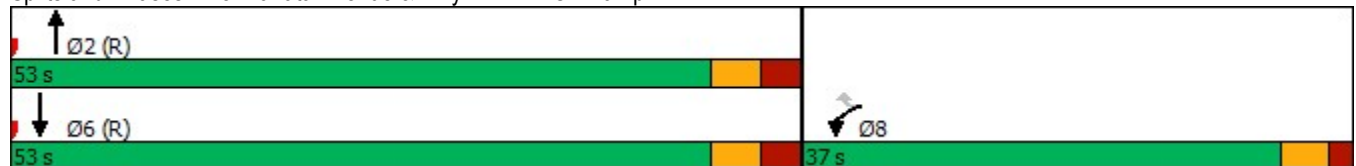


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0			5.0
Minimum Split (s)	23.0	23.0	28.1			28.1
Total Split (s)	37.0	37.0	53.0			53.0
Total Split (%)	41.1%	41.1%	58.9%			58.9%
Maximum Green (s)	32.0	32.0	46.9			46.9
Yellow Time (s)	3.3	3.3	3.3			3.3
All-Red Time (s)	1.7	1.7	2.8			2.8
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	5.0	5.0	6.1			6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	C-Max			C-Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	11.0	11.0	15.0			15.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	18.4	18.4	60.5			60.5
Actuated g/C Ratio	0.20	0.20	0.67			0.67
v/c Ratio	0.71	0.46	0.26			0.41
Control Delay	43.6	7.6	4.0			8.0
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	43.6	7.6	4.0			8.0
LOS	D	A	A			A
Approach Delay	27.7		4.0			8.0
Approach LOS	C		A			A

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 37 (41%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 55  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.71  
 Intersection Signal Delay: 12.6  
 Intersection LOS: B  
 Intersection Capacity Utilization 47.7%  
 ICU Level of Service A  
 Analysis Period (min) 15

Splits and Phases: 5: Kanata Avenue & Hwy 417 WB Off Ramp



Queues  
5: Kanata Avenue & Hwy 417 WB Off Ramp











2022 Background  
AM Peak Hour



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	258	204	314	950
v/c Ratio	0.71	0.46	0.26	0.41
Control Delay	43.6	7.6	4.0	8.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	43.6	7.6	4.0	8.0
Queue Length 50th (m)	44.0	0.0	8.6	36.2
Queue Length 95th (m)	64.0	16.3	11.8	45.6
Internal Link Dist (m)	237.6		109.0	194.2
Turn Bay Length (m)				
Base Capacity (vph)	635	626	1228	2290
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.41	0.33	0.26	0.41
Intersection Summary				

Lanes, Volumes, Timings  
6: Kanata Avenue & Hwy 417 EB On Ramp

2022 Background  
AM Peak Hour

							
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø3
Lane Configurations							
Traffic Volume (vph)	0	0	273	212	419	523	
Future Volume (vph)	0	0	273	212	419	523	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	0.0	0.0		60.0	0.0		
Storage Lanes	0	0		1	1		
Taper Length (m)	7.5				7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor				0.98	1.00		
Frt				0.850			
Flt Protected					0.950		
Satd. Flow (prot)	0	0	1759	1568	1752	1827	
Flt Permitted					0.463		
Satd. Flow (perm)	0	0	1759	1533	853	1827	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)				241			
Link Speed (k/h)	50		50			50	
Link Distance (m)	282.6		139.9			133.0	
Travel Time (s)	20.3		10.1			9.6	
Confl. Peds. (#/hr)	1	1		1	1		
Peak Hour Factor	0.89	0.89	0.88	0.88	0.89	0.89	
Heavy Vehicles (%)	2%	2%	8%	3%	3%	4%	
Adj. Flow (vph)	0	0	310	241	471	588	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	0	310	241	471	588	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(m)	0.0		3.6			3.6	
Link Offset(m)	0.0		0.0			0.0	
Crosswalk Width(m)	4.8		4.8			4.8	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (k/h)	25	15		15	25		
Number of Detectors			2	1	1	2	
Detector Template			Thru	Right	Left	Thru	
Leading Detector (m)			10.0	2.0	2.0	10.0	
Trailing Detector (m)			0.0	0.0	0.0	0.0	
Detector 1 Position(m)			0.0	0.0	0.0	0.0	
Detector 1 Size(m)			0.6	2.0	2.0	0.6	
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)			0.0	0.0	0.0	0.0	
Detector 1 Queue (s)			0.0	0.0	0.0	0.0	
Detector 1 Delay (s)			0.0	0.0	0.0	0.0	
Detector 2 Position(m)			9.4			9.4	
Detector 2 Size(m)			0.6			0.6	
Detector 2 Type			Cl+Ex			Cl+Ex	
Detector 2 Channel							
Detector 2 Extend (s)			0.0			0.0	

Lanes, Volumes, Timings  
6: Kanata Avenue & Hwy 417 EB On Ramp

2022 Background  
AM Peak Hour

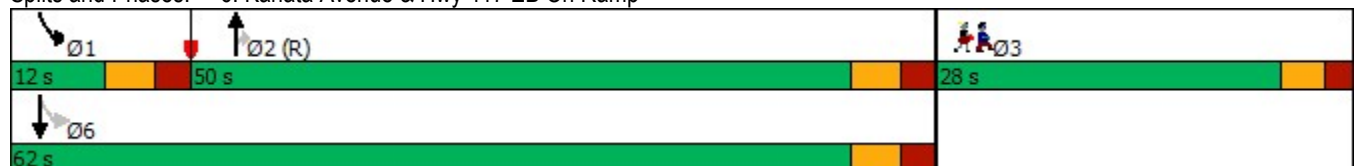


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø3
Turn Type			NA	Perm	pm+pt	NA	
Protected Phases			2		1	6	3
Permitted Phases				2	6		
Detector Phase			2	2	1	6	
Switch Phase							
Minimum Initial (s)			5.0	5.0	5.0	5.0	5.0
Minimum Split (s)			23.7	23.7	10.7	45.5	27.0
Total Split (s)			50.0	50.0	12.0	62.0	28.0
Total Split (%)			55.6%	55.6%	13.3%	68.9%	31%
Maximum Green (s)			44.3	44.3	6.3	56.3	23.0
Yellow Time (s)			3.3	3.3	3.3	3.3	3.0
All-Red Time (s)			2.4	2.4	2.4	2.4	2.0
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	
Total Lost Time (s)			5.7	5.7	5.7	5.7	
Lead/Lag			Lag	Lag	Lead		
Lead-Lag Optimize?			Yes	Yes	Yes		
Vehicle Extension (s)			3.0	3.0	3.0	3.0	3.0
Recall Mode			C-Max	C-Max	None	Max	Ped
Walk Time (s)			7.0	7.0		7.0	7.0
Flash Dont Walk (s)			11.0	11.0		11.0	15.0
Pedestrian Calls (#/hr)			0	0		0	0
Act Effct Green (s)			44.3	44.3	57.3	57.3	
Actuated g/C Ratio			0.49	0.49	0.64	0.64	
v/c Ratio			0.36	0.28	0.77	0.51	
Control Delay			15.6	2.6	17.4	8.1	
Queue Delay			0.0	0.0	0.0	0.2	
Total Delay			15.6	2.6	17.4	8.3	
LOS			B	A	B	A	
Approach Delay			9.9			12.3	
Approach LOS			A			B	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	42 (47%), Referenced to phase 2:NBT, Start of Green
Natural Cycle:	75
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.77
Intersection Signal Delay:	11.5
Intersection LOS:	B
Intersection Capacity Utilization:	47.7%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 6: Kanata Avenue & Hwy 417 EB On Ramp





Queues  
6: Kanata Avenue & Hwy 417 EB On Ramp

2022 Background  
AM Peak Hour



Lane Group	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	310	241	471	588
v/c Ratio	0.36	0.28	0.77	0.51
Control Delay	15.6	2.6	17.4	8.1
Queue Delay	0.0	0.0	0.0	0.2
Total Delay	15.6	2.6	17.4	8.3
Queue Length 50th (m)	33.2	0.0	26.1	32.6
Queue Length 95th (m)	50.8	10.9	#34.5	40.9
Internal Link Dist (m)	115.9			109.0
Turn Bay Length (m)		60.0		
Base Capacity (vph)	865	876	615	1163
Starvation Cap Reductn	0	0	0	129
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.36	0.28	0.77	0.57

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	13	35	34	254	557	14
Future Vol, veh/h	13	35	34	254	557	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	96	96	81	81
Heavy Vehicles, %	2	2	0	5	2	0
Mvmt Flow	17	47	35	265	688	17























Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1032	697	705	0	-	0
Stage 1	697	-	-	-	-	-
Stage 2	335	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.1	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.2	-	-	-
Pot Cap-1 Maneuver	258	441	902	-	-	-
Stage 1	494	-	-	-	-	-
Stage 2	725	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	246	441	902	-	-	-
Mov Cap-2 Maneuver	246	-	-	-	-	-
Stage 1	472	-	-	-	-	-
Stage 2	725	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17	1.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	902	-	363	-	-
HCM Lane V/C Ratio	0.039	-	0.176	-	-
HCM Control Delay (s)	9.2	0	17	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.6	-	-

Lanes, Volumes, Timings  
1: Kanata Avenue & Campeau Drive

2022 Background  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	278	278	185	52	232	88	143	443	43	57	308	217
Future Volume (vph)	278	278	185	52	232	88	143	443	43	57	308	217
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0		0.0	30.0		0.0	40.0		40.0	90.0		90.0
Storage Lanes	1		0	1		0	1		0	1		1
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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99		1.00	0.99				0.93	0.98		
Frt		0.940			0.959				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1761	0	1736	1784	0	1770	1881	1468	1805	1881	1583
Flt Permitted	0.253			0.237			0.312			0.487		
Satd. Flow (perm)	465	1761	0	432	1784	0	581	1881	1370	902	1881	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27			16				85			244
Link Speed (k/h)		50			50			50				50
Link Distance (m)		317.4			209.1			382.3				210.1
Travel Time (s)		22.9			15.1			27.5				15.1
Confl. Peds. (#/hr)	14		3	3		14			19	19		
Peak Hour Factor	0.92	0.92	0.92	0.96	0.96	0.96	0.94	0.94	0.94	0.89	0.89	0.89
Heavy Vehicles (%)	2%	0%	1%	4%	0%	3%	2%	1%	10%	0%	1%	2%
Adj. Flow (vph)	302	302	201	54	242	92	152	471	46	64	346	244
Shared Lane Traffic (%)												
Lane Group Flow (vph)	302	503	0	54	334	0	152	471	46	64	346	244
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)		3.6			3.6			3.6				3.6
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	0.0
Detector 1 Queue (s)	0.0	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	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

Lanes, Volumes, Timings  
1: Kanata Avenue & Campeau Drive

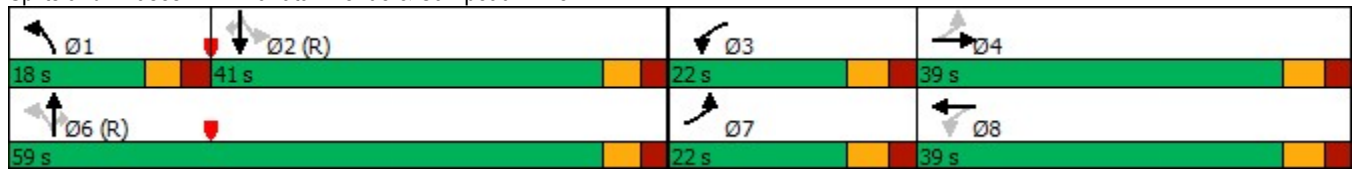
2022 Background  
PM Peak Hour

	↖	→	↘	↙	←	↖	↙	↑	↘	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8		1	6			2	
Permitted Phases	4			8			6		6	2		2
Detector Phase	7	4		3	8		1	6	6	2	2	2
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.2	37.2		11.3	37.2		10.9	29.9	29.9	29.9	29.9	29.9
Total Split (s)	22.0	39.0		22.0	39.0		18.0	59.0	59.0	41.0	41.0	41.0
Total Split (%)	18.3%	32.5%		18.3%	32.5%		15.0%	49.2%	49.2%	34.2%	34.2%	34.2%
Maximum Green (s)	15.8	32.8		15.8	32.8		12.1	53.1	53.1	35.1	35.1	35.1
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.5		2.5	2.5		2.6	2.6	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2		6.2	6.2		5.9	5.9	5.9	5.9	5.9	5.9
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	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	C-Max
Walk Time (s)		9.0			9.0			9.0	9.0	9.0	9.0	9.0
Flash Dont Walk (s)		22.0			22.0			15.0	15.0	15.0	15.0	15.0
Pedestrian Calls (#/hr)		3			0			0	0	3	3	3
Act Effct Green (s)	51.5	40.1		37.2	29.6		56.4	56.4	56.4	39.8	39.8	39.8
Actuated g/C Ratio	0.43	0.33		0.31	0.25		0.47	0.47	0.47	0.33	0.33	0.33
v/c Ratio	0.82	0.83		0.25	0.74		0.40	0.53	0.07	0.21	0.55	0.35
Control Delay	42.2	48.2		22.3	49.6		23.1	26.3	0.9	34.2	38.7	5.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.2	48.2		22.3	49.6		23.1	26.3	0.9	34.2	38.7	5.5
LOS	D	D		C	D		C	C	A	C	D	A
Approach Delay		45.9			45.8			23.9			25.9	
Approach LOS		D			D			C			C	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 85 (71%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.83  
 Intersection Signal Delay: 34.8      Intersection LOS: C  
 Intersection Capacity Utilization 83.9%      ICU Level of Service E  
 Analysis Period (min) 15

Splits and Phases: 1: Kanata Avenue & Campeau Drive



Queues  
1: Kanata Avenue & Campeau Drive

2022 Background  
PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	302	503	54	334	152	471	46	64	346	244
v/c Ratio	0.82	0.83	0.25	0.74	0.40	0.53	0.07	0.21	0.55	0.35
Control Delay	42.2	48.2	22.3	49.6	23.1	26.3	0.9	34.2	38.7	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.2	48.2	22.3	49.6	23.1	26.3	0.9	34.2	38.7	5.5
Queue Length 50th (m)	48.0	107.5	7.3	70.4	22.5	85.0	0.0	12.0	74.0	0.0
Queue Length 95th (m)	#73.9	#171.1	15.2	104.1	37.1	119.3	1.5	24.5	105.9	18.5
Internal Link Dist (m)		293.4		185.1		358.3			186.1	
Turn Bay Length (m)	90.0		30.0		40.0		40.0	90.0		90.0
Base Capacity (vph)	371	605	335	499	392	884	689	299	624	688
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.83	0.16	0.67	0.39	0.53	0.07	0.21	0.55	0.35

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Lanes, Volumes, Timings  
2: Kanata Avenue & Earl Grey

2022 Background  
PM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	86	192	239	543	456	89
Future Volume (vph)	86	192	239	543	456	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0	0.0	125.0			90.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			1.00			0.98
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1805	1599	1805	1863	1863	1615
Flt Permitted	0.950		0.357			
Satd. Flow (perm)	1805	1599	678	1863	1863	1579
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		216				105
Link Speed (k/h)	50			50	50	
Link Distance (m)	218.4			301.9	382.3	
Travel Time (s)	15.7			21.7	27.5	
Confl. Peds. (#/hr)			1			1
Peak Hour Factor	0.89	0.89	0.91	0.91	0.85	0.85
Heavy Vehicles (%)	0%	1%	0%	2%	2%	0%
Adj. Flow (vph)	97	216	263	597	536	105
Shared Lane Traffic (%)						
Lane Group Flow (vph)	97	216	263	597	536	105
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	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
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	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
Detector 1 Queue (s)	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
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	

Lanes, Volumes, Timings  
2: Kanata Avenue & Earl Grey

2022 Background  
PM Peak Hour

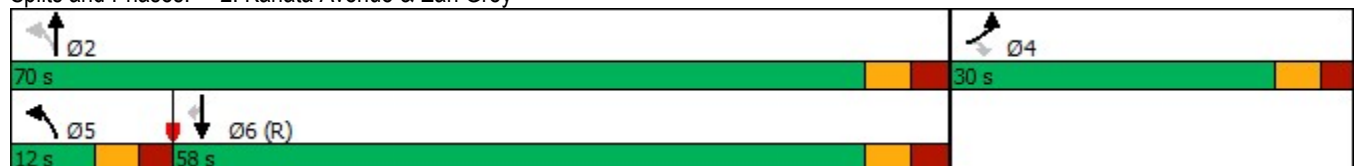


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.9	24.9	10.8	29.4	29.4	29.4
Total Split (s)	30.0	30.0	12.0	70.0	58.0	58.0
Total Split (%)	30.0%	30.0%	12.0%	70.0%	58.0%	58.0%
Maximum Green (s)	24.1	24.1	6.2	63.6	51.6	51.6
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.6	2.6	2.5	3.1	3.1	3.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.9	5.9	5.8	6.4	6.4	6.4
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
Recall Mode	None	None	None	None	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0		0	0	0
Act Effct Green (s)	10.7	10.7	77.6	77.0	61.6	61.6
Actuated g/C Ratio	0.11	0.11	0.78	0.77	0.62	0.62
v/c Ratio	0.50	0.59	0.42	0.42	0.47	0.10
Control Delay	50.4	12.8	5.3	5.3	13.0	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.4	12.8	5.3	5.3	13.0	2.4
LOS	D	B	A	A	B	A
Approach Delay	24.4			5.3	11.3	
Approach LOS	C			A	B	

Intersection Summary

Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 58 (58%), Referenced to phase 6:SBT, Start of Green  
 Natural Cycle: 70  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.59  
 Intersection Signal Delay: 10.7  
 Intersection LOS: B  
 Intersection Capacity Utilization 57.1%  
 ICU Level of Service B  
 Analysis Period (min) 15

Splits and Phases: 2: Kanata Avenue & Earl Grey



Queues  
2: Kanata Avenue & Earl Grey

2022 Background  
PM Peak Hour

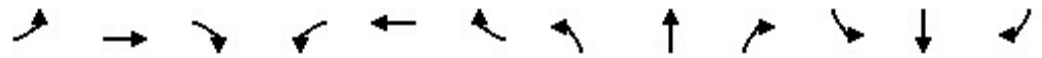


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	97	216	263	597	536	105
v/c Ratio	0.50	0.59	0.42	0.42	0.47	0.10
Control Delay	50.4	12.8	5.3	5.3	13.0	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.4	12.8	5.3	5.3	13.0	2.4
Queue Length 50th (m)	19.0	0.0	11.3	33.2	53.7	0.0
Queue Length 95th (m)	33.7	19.8	22.2	59.7	88.1	6.5
Internal Link Dist (m)	194.4			277.9	358.3	
Turn Bay Length (m)	70.0		125.0			90.0
Base Capacity (vph)	435	549	633	1434	1148	1013
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.39	0.42	0.42	0.47	0.10
<b>Intersection Summary</b>						



Lanes, Volumes, Timings  
4: Kanata Avenue & Lord Byng/Maritime Way

2022 Background  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	3	85	94	10	29	166	755	152	48	588	28
Future Volume (vph)	33	3	85	94	10	29	166	755	152	48	588	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	0.0		0.0	75.0		0.0	35.0		0.0
Storage Lanes	1		0	1		0	1		0	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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98	0.98		1.00	0.97			1.00		1.00	1.00	
Frt		0.855			0.887			0.975			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1318	1317	0	1770	1630	0	1570	1845	0	1805	1850	0
Flt Permitted	0.728			0.696			0.088			0.102		
Satd. Flow (perm)	986	1317	0	1291	1630	0	145	1845	0	194	1850	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		91			33			21			3	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		214.1			97.4			218.2			173.6	
Travel Time (s)		15.4			7.0			15.7			12.5	
Confl. Peds. (#/hr)	12		4	4		12	3		3	3		3
Peak Hour Factor	0.93	0.93	0.93	0.87	0.87	0.87	0.88	0.88	0.88	0.82	0.82	0.82
Heavy Vehicles (%)	37%	0%	22%	2%	0%	0%	15%	0%	0%	0%	1%	20%
Adj. Flow (vph)	35	3	91	108	11	33	189	858	173	59	717	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	94	0	108	44	0	189	1031	0	59	751	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)		3.6			3.6			3.6			3.6	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		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	
Detector 1 Position(m)	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	0.6	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
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	

Lanes, Volumes, Timings  
4: Kanata Avenue & Lord Byng/Maritime Way

2022 Background  
PM Peak Hour

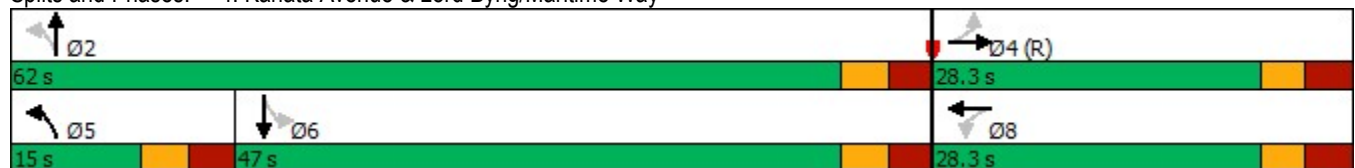


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2				6
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6		6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	28.3	28.3		28.3	28.3		11.3	33.3		33.3	33.3	
Total Split (s)	28.3	28.3		28.3	28.3		15.0	62.0		47.0	47.0	
Total Split (%)	31.3%	31.3%		31.3%	31.3%		16.6%	68.7%		52.0%	52.0%	
Maximum Green (s)	22.0	22.0		22.0	22.0		8.7	55.7		40.7	40.7	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.3	3.3		3.3	3.3		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3		6.3	6.3		6.3	6.3	
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	
Recall Mode	C-Max	C-Max		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			20.0		20.0	20.0	
Pedestrian Calls (#/hr)	14	14		3	3			3		14	14	
Act Effct Green (s)	23.5	23.5		23.5	23.5		54.2	54.2		39.2	39.2	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.60	0.60		0.43	0.43	
v/c Ratio	0.14	0.23		0.32	0.10		0.84	0.92		0.70	0.93	
Control Delay	28.6	8.2		31.2	13.1		50.4	30.8		66.1	44.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	4.3		0.0	0.0	
Total Delay	28.6	8.2		31.2	13.1		50.4	35.0		66.1	44.3	
LOS	C	A		C	B		D	D		E	D	
Approach Delay		13.7			25.9			37.4			45.9	
Approach LOS		B			C			D			D	

Intersection Summary

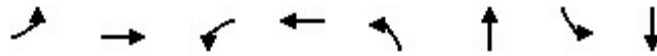
Area Type:	Other
Cycle Length:	90.3
Actuated Cycle Length:	90.3
Offset:	31 (34%), Referenced to phase 4:EBTL, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.93
Intersection Signal Delay:	38.3
Intersection LOS:	D
Intersection Capacity Utilization:	87.3%
ICU Level of Service:	E
Analysis Period (min):	15

Splits and Phases: 4: Kanata Avenue & Lord Byng/Maritime Way



Queues  
4: Kanata Avenue & Lord Byng/Maritime Way

2022 Background  
PM Peak Hour














Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	35	94	108	44	189	1031	59	751
v/c Ratio	0.14	0.23	0.32	0.10	0.84	0.92	0.70	0.93
Control Delay	28.6	8.2	31.2	13.1	50.4	30.8	66.1	44.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	4.3	0.0	0.0
Total Delay	28.6	8.2	31.2	13.1	50.4	35.0	66.1	44.3
Queue Length 50th (m)	5.0	0.4	16.3	1.6	18.9	145.1	8.2	122.1
Queue Length 95th (m)	13.0	12.6	30.5	9.4	#54.0	#239.9	#27.0	#157.4
Internal Link Dist (m)		190.1		73.4		194.2		149.6
Turn Bay Length (m)	25.0				75.0		35.0	
Base Capacity (vph)	256	409	335	448	224	1146	87	835
Starvation Cap Reductn	0	0	0	0	0	71	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	0.14	0.23	0.32	0.10	0.84	0.96	0.68	0.90

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Lanes, Volumes, Timings  
5: Kanata Avenue & Hwy 417 WB Off Ramp

2022 Background  
PM Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						 
Traffic Volume (vph)	463	606	467	0	0	766
Future Volume (vph)	463	606	467	0	0	766
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Fr <sub>t</sub>	0.850					
Fl <sub>t</sub> Protected	0.950					
Satd. Flow (prot)	1787	1392	1827	0	0	3406
Fl <sub>t</sub> Permitted	0.950					
Satd. Flow (perm)	1787	1392	1827	0	0	3406
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		227				
Link Speed (k/h)	50		50		50	
Link Distance (m)	261.6		133.0		218.2	
Travel Time (s)	18.8		9.6		15.7	
Peak Hour Factor	0.95	0.95	0.90	0.93	0.92	0.99
Heavy Vehicles (%)	1%	16%	4%	2%	2%	6%
Adj. Flow (vph)	487	638	519	0	0	774
Shared Lane Traffic (%)						
Lane Group Flow (vph)	487	638	519	0	0	774
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		3.6		3.6	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	4.8		4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	2.0	2.0	10.0			10.0
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	2.0	2.0	0.6			0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						

Lanes, Volumes, Timings  
5: Kanata Avenue & Hwy 417 WB Off Ramp

2022 Background  
PM Peak Hour

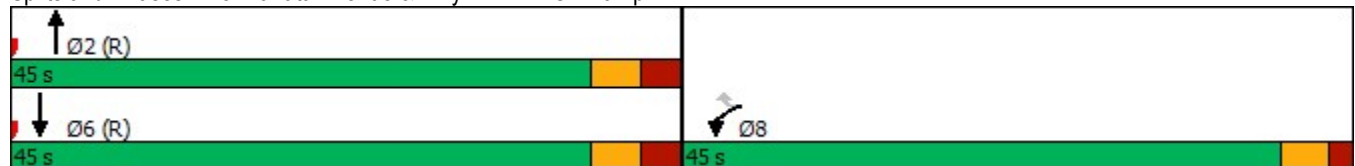


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0			5.0
Minimum Split (s)	23.0	23.0	28.1			28.1
Total Split (s)	45.0	45.0	45.0			45.0
Total Split (%)	50.0%	50.0%	50.0%			50.0%
Maximum Green (s)	40.0	40.0	38.9			38.9
Yellow Time (s)	3.3	3.3	3.3			3.3
All-Red Time (s)	1.7	1.7	2.8			2.8
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	5.0	5.0	6.1			6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	C-Max			C-Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	11.0	11.0	15.0			15.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	35.4	35.4	43.5			43.5
Actuated g/C Ratio	0.39	0.39	0.48			0.48
v/c Ratio	0.69	0.93	0.59			0.47
Control Delay	27.8	38.2	32.2			17.9
Queue Delay	0.0	0.0	3.6			0.0
Total Delay	27.8	38.2	35.8			17.9
LOS	C	D	D			B
Approach Delay	33.7		35.8			17.9
Approach LOS	C		D			B

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 32 (36%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.93  
 Intersection Signal Delay: 29.1  
 Intersection LOS: C  
 Intersection Capacity Utilization 97.3%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 5: Kanata Avenue & Hwy 417 WB Off Ramp



Queues  
5: Kanata Avenue & Hwy 417 WB Off Ramp

2022 Background  
PM Peak Hour













Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	487	638	519	774
v/c Ratio	0.69	0.93	0.59	0.47
Control Delay	27.8	38.2	32.2	17.9
Queue Delay	0.0	0.0	3.6	0.0
Total Delay	27.8	38.2	35.8	17.9
Queue Length 50th (m)	66.1	69.4	97.2	52.4
Queue Length 95th (m)	98.7	#143.1	134.7	70.2
Internal Link Dist (m)	237.6		109.0	194.2
Turn Bay Length (m)				
Base Capacity (vph)	794	744	883	1647
Starvation Cap Reductn	0	0	268	0
Spillback Cap Reductn	0	0	0	37
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.61	0.86	0.84	0.48

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Lanes, Volumes, Timings  
6: Kanata Avenue & Hwy 417 EB On Ramp

2022 Background  
PM Peak Hour

							
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø3
Lane Configurations							
Traffic Volume (vph)	0	0	467	193	357	872	
Future Volume (vph)	0	0	467	193	357	872	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	0.0	0.0		60.0	0.0		
Storage Lanes	0	0		1	1		
Taper Length (m)	7.5				7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor				0.98	1.00		
Frt				0.850			
Flt Protected					0.950		
Satd. Flow (prot)	0	0	1810	1583	1736	1863	
Flt Permitted					0.442		
Satd. Flow (perm)	0	0	1810	1544	806	1863	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)				197			
Link Speed (k/h)	50		50			50	
Link Distance (m)	282.6		139.9			133.0	
Travel Time (s)	20.3		10.1			9.6	
Confl. Peds. (#/hr)				2	2		
Peak Hour Factor	0.89	0.89	0.98	0.98	0.93	0.93	
Heavy Vehicles (%)	2%	2%	5%	2%	4%	2%	
Adj. Flow (vph)	0	0	477	197	384	938	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	0	477	197	384	938	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(m)	0.0		3.6			3.6	
Link Offset(m)	0.0		0.0			0.0	
Crosswalk Width(m)	4.8		4.8			4.8	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (k/h)	25	15		15	25		
Number of Detectors			2	1	1	2	
Detector Template			Thru	Right	Left	Thru	
Leading Detector (m)			10.0	2.0	2.0	10.0	
Trailing Detector (m)			0.0	0.0	0.0	0.0	
Detector 1 Position(m)			0.0	0.0	0.0	0.0	
Detector 1 Size(m)			0.6	2.0	2.0	0.6	
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)			0.0	0.0	0.0	0.0	
Detector 1 Queue (s)			0.0	0.0	0.0	0.0	
Detector 1 Delay (s)			0.0	0.0	0.0	0.0	
Detector 2 Position(m)			9.4			9.4	
Detector 2 Size(m)			0.6			0.6	
Detector 2 Type			Cl+Ex			Cl+Ex	
Detector 2 Channel							
Detector 2 Extend (s)			0.0			0.0	

Lanes, Volumes, Timings  
6: Kanata Avenue & Hwy 417 EB On Ramp

2022 Background  
PM Peak Hour

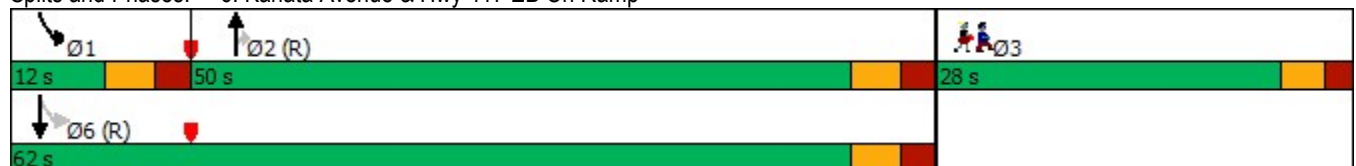


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø3
Turn Type			NA	Perm	pm+pt	NA	
Protected Phases			2		1	6	3
Permitted Phases				2	6		
Detector Phase			2	2	1	6	
Switch Phase							
Minimum Initial (s)			5.0	5.0	5.0	5.0	5.0
Minimum Split (s)			23.9	23.9	10.9	23.9	27.0
Total Split (s)			50.0	50.0	12.0	62.0	28.0
Total Split (%)			55.6%	55.6%	13.3%	68.9%	31%
Maximum Green (s)			44.3	44.3	6.3	56.3	23.0
Yellow Time (s)			3.3	3.3	3.3	3.3	3.0
All-Red Time (s)			2.4	2.4	2.4	2.4	2.0
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	
Total Lost Time (s)			5.7	5.7	5.7	5.7	
Lead/Lag			Lag	Lag	Lead		
Lead-Lag Optimize?			Yes	Yes	Yes		
Vehicle Extension (s)			3.0	3.0	3.0	3.0	3.0
Recall Mode			C-Max	C-Max	None	C-Max	None
Walk Time (s)			7.0	7.0		7.0	7.0
Flash Dont Walk (s)			11.0	11.0		11.0	15.0
Pedestrian Calls (#/hr)			0	0		0	0
Act Effct Green (s)			69.3	69.3	84.3	90.0	
Actuated g/C Ratio			0.77	0.77	0.94	1.00	
v/c Ratio			0.34	0.16	0.45	0.50	
Control Delay			4.2	0.8	2.7	2.0	
Queue Delay			0.1	0.0	0.7	0.0	
Total Delay			4.2	0.8	3.4	2.0	
LOS			A	A	A	A	
Approach Delay			3.2			2.4	
Approach LOS			A			A	

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.50  
 Intersection Signal Delay: 2.7  
 Intersection LOS: A  
 Intersection Capacity Utilization 97.3%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 6: Kanata Avenue & Hwy 417 EB On Ramp





Queues  
6: Kanata Avenue & Hwy 417 EB On Ramp

2022 Background  
PM Peak Hour



Lane Group	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	477	197	384	938
v/c Ratio	0.34	0.16	0.45	0.50
Control Delay	4.2	0.8	2.7	2.0
Queue Delay	0.1	0.0	0.7	0.0
Total Delay	4.2	0.8	3.4	2.0
Queue Length 50th (m)	20.6	0.0	2.0	0.0
Queue Length 95th (m)	37.4	4.6	2.7	0.0
Internal Link Dist (m)	115.9			109.0
Turn Bay Length (m)		60.0		
Base Capacity (vph)	1393	1234	850	1863
Starvation Cap Reductn	0	0	212	0
Spillback Cap Reductn	148	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.38	0.16	0.60	0.50
<b>Intersection Summary</b>				

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	19	56	54	762	607	41
Future Vol, veh/h	19	56	54	762	607	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	84	84	96	96
Heavy Vehicles, %	0	0	0	2	4	0
Mvmt Flow	28	81	64	907	632	43























Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1689	654	675	0	-	0
Stage 1	654	-	-	-	-	-
Stage 2	1035	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	104	470	926	-	-	-
Stage 1	521	-	-	-	-	-
Stage 2	345	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	90	470	926	-	-	-
Mov Cap-2 Maneuver	90	-	-	-	-	-
Stage 1	449	-	-	-	-	-
Stage 2	345	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	34.6	0.6	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	926	-	227	-	-
HCM Lane V/C Ratio	0.069	-	0.479	-	-
HCM Control Delay (s)	9.2	0	34.6	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0.2	-	2.4	-	-

Lanes, Volumes, Timings  
1: Kanata Avenue & Campeau Drive

2027 Background  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	176	48	42	205	75	74	135	39	133	543	221
Future Volume (vph)	105	176	48	42	205	75	74	135	39	133	543	221
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0		0.0	30.0		0.0	0.0		40.0	90.0		90.0
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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	0.99				0.97	0.99		
Frt		0.968			0.960				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1656	1777	0	1530	1697	0	1687	1827	1429	1671	1863	1583
Flt Permitted	0.387			0.505			0.092			0.616		
Satd. Flow (perm)	671	1777	0	812	1697	0	163	1827	1388	1076	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			17				93			237
Link Speed (k/h)		50			50			50				50
Link Distance (m)		317.4			209.1			382.3				210.1
Travel Time (s)		22.9			15.1			27.5				15.1
Confl. Peds. (#/hr)	5		3	3		5			4	4		
Peak Hour Factor	0.81	0.81	0.81	0.95	0.95	0.95	0.59	0.59	0.59	0.90	0.90	0.90
Heavy Vehicles (%)	9%	4%	0%	18%	5%	11%	7%	4%	13%	8%	2%	2%
Adj. Flow (vph)	130	217	59	44	216	79	125	229	66	148	603	246
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	276	0	44	295	0	125	229	66	148	603	246
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)		3.6			3.6			3.6				3.6
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	0.0
Detector 1 Queue (s)	0.0	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	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

Lanes, Volumes, Timings  
1: Kanata Avenue & Campeau Drive

2027 Background  
AM Peak Hour

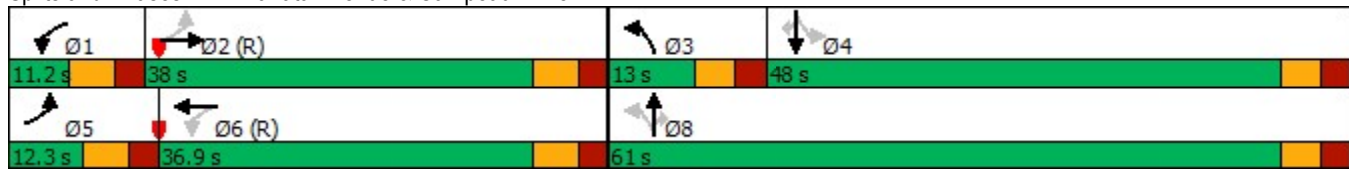


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		1	6		3	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.2	37.2		11.2	30.2		10.9	29.9	29.9	36.9	36.9	36.9
Total Split (s)	12.3	38.0		11.2	36.9		13.0	61.0	61.0	48.0	48.0	48.0
Total Split (%)	11.2%	34.5%		10.2%	33.5%		11.8%	55.4%	55.4%	43.6%	43.6%	43.6%
Maximum Green (s)	6.1	31.8		5.0	30.7		7.1	55.1	55.1	42.1	42.1	42.1
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.5		2.5	2.5		2.6	2.6	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2		6.2	6.2		5.9	5.9	5.9	5.9	5.9	5.9
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	None	None
Walk Time (s)		9.0			9.0			9.0	9.0	9.0	9.0	9.0
Flash Dont Walk (s)		22.0			15.0			15.0	15.0	22.0	22.0	22.0
Pedestrian Calls (#/hr)		0			0			0	0	0	0	0
Act Effct Green (s)	42.1	36.5		38.0	32.6		52.3	52.3	52.3	39.3	39.3	39.3
Actuated g/C Ratio	0.38	0.33		0.34	0.30		0.47	0.47	0.47	0.36	0.36	0.36
v/c Ratio	0.41	0.46		0.14	0.57		0.71	0.26	0.09	0.39	0.91	0.34
Control Delay	27.0	32.8		22.4	36.9		40.6	17.7	1.7	29.0	52.4	4.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.0	32.8		22.4	36.9		40.6	17.7	1.7	29.0	52.4	4.8
LOS	C	C		C	D		D	B	A	C	D	A
Approach Delay		30.9			35.0			22.0			37.2	
Approach LOS		C			D			C			D	

Intersection Summary

Area Type: Other  
 Cycle Length: 110.2  
 Actuated Cycle Length: 110.2  
 Offset: 67 (61%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 100  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.91  
 Intersection Signal Delay: 32.7  
 Intersection LOS: C  
 Intersection Capacity Utilization 82.9%  
 ICU Level of Service E  
 Analysis Period (min) 15

Splits and Phases: 1: Kanata Avenue & Campeau Drive



Queues  
1: Kanata Avenue & Campeau Drive

2027 Background  
AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	130	276	44	295	125	229	66	148	603	246
v/c Ratio	0.41	0.46	0.14	0.57	0.71	0.26	0.09	0.39	0.91	0.34
Control Delay	27.0	32.8	22.4	36.9	40.6	17.7	1.7	29.0	52.4	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.0	32.8	22.4	36.9	40.6	17.7	1.7	29.0	52.4	4.8
Queue Length 50th (m)	19.2	50.1	6.2	54.7	14.7	28.6	0.0	23.7	123.1	1.3
Queue Length 95th (m)	29.6	67.5	13.8	84.3	16.2	27.2	0.0	41.7	#186.6	17.4
Internal Link Dist (m)		293.4		185.1		358.3			186.1	
Turn Bay Length (m)	90.0		30.0				40.0	90.0		90.0
Base Capacity (vph)	318	597	315	514	175	913	740	411	711	751
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.46	0.14	0.57	0.71	0.25	0.09	0.36	0.85	0.33

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Lanes, Volumes, Timings  
2: Kanata Avenue & Earl Grey

2027 Background  
AM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	12	42	59	236	589	44
Future Volume (vph)	12	42	59	236	589	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0	0.0	125.0			90.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor			1.00			0.98
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1504	1524	1805	3312	3505	1455
Flt Permitted	0.950		0.391			
Satd. Flow (perm)	1504	1524	743	3312	3505	1424
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		48				51
Link Speed (k/h)	50			50	50	
Link Distance (m)	218.4			301.9	382.3	
Travel Time (s)	15.7			21.7	27.5	
Confl. Peds. (#/hr)			1			1
Peak Hour Factor	0.87	0.87	0.79	0.79	0.86	0.86
Heavy Vehicles (%)	20%	6%	0%	9%	3%	11%
Adj. Flow (vph)	14	48	75	299	685	51
Shared Lane Traffic (%)						
Lane Group Flow (vph)	14	48	75	299	685	51
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	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
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	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
Detector 1 Queue (s)	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
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	

Lanes, Volumes, Timings  
2: Kanata Avenue & Earl Grey

2027 Background  
AM Peak Hour

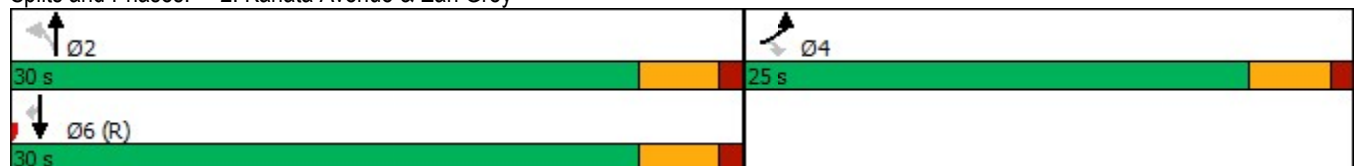


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.3	23.3	27.3	27.3	27.3	27.3
Total Split (s)	25.0	25.0	30.0	30.0	30.0	30.0
Total Split (%)	45.5%	45.5%	54.5%	54.5%	54.5%	54.5%
Maximum Green (s)	20.7	20.7	25.7	25.7	25.7	25.7
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.3	4.3	4.3	4.3	4.3	4.3
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	6.3	6.3	45.8	45.8	45.8	45.8
Actuated g/C Ratio	0.11	0.11	0.83	0.83	0.83	0.83
v/c Ratio	0.08	0.22	0.12	0.11	0.23	0.04
Control Delay	22.2	10.5	2.9	2.0	2.2	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	10.5	2.9	2.0	2.2	1.0
LOS	C	B	A	A	A	A
Approach Delay	13.2			2.2	2.2	
Approach LOS	B			A	A	

Intersection Summary

Area Type: Other  
 Cycle Length: 55  
 Actuated Cycle Length: 55  
 Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green  
 Natural Cycle: 55  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.23  
 Intersection Signal Delay: 2.7  
 Intersection LOS: A  
 Intersection Capacity Utilization 38.3%  
 ICU Level of Service A  
 Analysis Period (min) 15

Splits and Phases: 2: Kanata Avenue & Earl Grey



Queues  
2: Kanata Avenue & Earl Grey

2027 Background  
AM Peak Hour

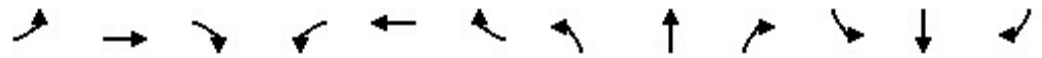


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	14	48	75	299	685	51
v/c Ratio	0.08	0.22	0.12	0.11	0.23	0.04
Control Delay	22.2	10.5	2.9	2.0	2.2	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	10.5	2.9	2.0	2.2	1.0
Queue Length 50th (m)	1.4	0.0	1.6	3.2	8.5	0.0
Queue Length 95th (m)	5.3	7.1	4.4	5.9	14.7	1.9
Internal Link Dist (m)	194.4			277.9	358.3	
Turn Bay Length (m)	70.0		125.0			90.0
Base Capacity (vph)	566	603	618	2755	2916	1193
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.08	0.12	0.11	0.23	0.04
Intersection Summary						



Lanes, Volumes, Timings  
4: Kanata Avenue & Lord Byng/Maritime Way

2027 Background  
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	7	43	119	2	23	101	273	137	19	614	20
Future Volume (vph)	23	7	43	119	2	23	101	273	137	19	614	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	0.0		0.0	0.0		0.0	35.0		0.0
Storage Lanes	1		0	1		0	1		0	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	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor	1.00	0.99		1.00	0.99		1.00	0.99		1.00	1.00	
Frt		0.871			0.860			0.950			0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1318	1101	0	1687	1614	0	1480	1717	0	1543	3473	0
Flt Permitted	0.738			0.715			0.311			0.478		
Satd. Flow (perm)	1022	1101	0	1265	1614	0	484	1717	0	775	3473	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		56			28			52			5	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		214.1			97.4			218.2			173.6	
Travel Time (s)		15.4			7.0			15.7			12.5	
Confl. Peds. (#/hr)	1		3	3		1	3		1	1		3
Peak Hour Factor	0.77	0.77	0.77	0.83	0.83	0.83	0.81	0.81	0.81	0.91	0.91	0.91
Heavy Vehicles (%)	37%	0%	56%	7%	0%	0%	22%	4%	5%	17%	2%	44%
Adj. Flow (vph)	30	9	56	143	2	28	125	337	169	21	675	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	65	0	143	30	0	125	506	0	21	697	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)		3.6			3.6			3.6			3.6	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		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	
Detector 1 Position(m)	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	0.6	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
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	

Lanes, Volumes, Timings  
4: Kanata Avenue & Lord Byng/Maritime Way

2027 Background  
AM Peak Hour

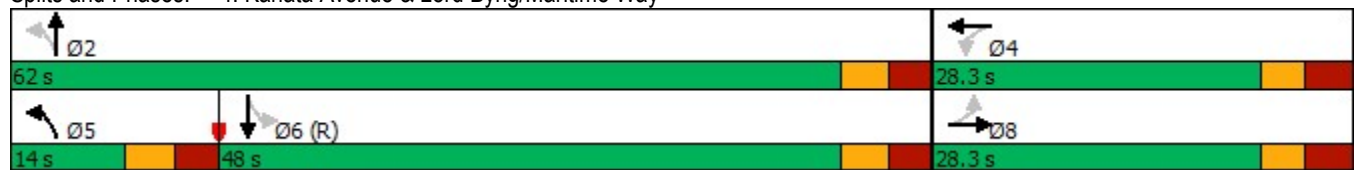


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		5	2				6
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		5	2		6		6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0		5.0
Minimum Split (s)	28.3	28.3		28.3	28.3		11.3	33.3		33.3		33.3
Total Split (s)	28.3	28.3		28.3	28.3		14.0	62.0		48.0		48.0
Total Split (%)	31.3%	31.3%		31.3%	31.3%		15.5%	68.7%		53.2%		53.2%
Maximum Green (s)	22.0	22.0		22.0	22.0		7.7	55.7		41.7		41.7
Yellow Time (s)	3.0	3.0		3.0	3.0		3.3	3.3		3.3		3.3
All-Red Time (s)	3.3	3.3		3.3	3.3		3.0	3.0		3.0		3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	6.3	6.3		6.3	6.3		6.3	6.3		6.3		6.3
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
Recall Mode	None	None		None	None		None	None		C-Max		C-Max
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0		7.0
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0		15.0		15.0
Pedestrian Calls (#/hr)	0	0		0	0			0		0		0
Act Effect Green (s)	15.4	15.4		15.4	15.4		62.3	62.3		48.5		48.5
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.69	0.69		0.54		0.54
v/c Ratio	0.17	0.28		0.67	0.10		0.30	0.42		0.05		0.37
Control Delay	31.9	13.5		49.2	12.1		7.7	7.5		12.9		13.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Delay	31.9	13.5		49.2	12.1		7.7	7.5		12.9		13.8
LOS	C	B		D	B		A	A		B		B
Approach Delay		19.3			42.8			7.5				13.7
Approach LOS		B			D			A				B

Intersection Summary

Area Type: Other  
 Cycle Length: 90.3  
 Actuated Cycle Length: 90.3  
 Offset: 3.4 (4%), Referenced to phase 6:SBTL, Start of Green  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.67  
 Intersection Signal Delay: 14.7  
 Intersection LOS: B  
 Intersection Capacity Utilization 56.1%  
 ICU Level of Service B  
 Analysis Period (min) 15

Splits and Phases: 4: Kanata Avenue & Lord Byng/Maritime Way



Queues  
4: Kanata Avenue & Lord Byng/Maritime Way












2027 Background  
AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	30	65	143	30	125	506	21	697
v/c Ratio	0.17	0.28	0.67	0.10	0.30	0.42	0.05	0.37
Control Delay	31.9	13.5	49.2	12.1	7.7	7.5	12.9	13.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.9	13.5	49.2	12.1	7.7	7.5	12.9	13.8
Queue Length 50th (m)	4.7	1.4	24.7	0.3	6.7	30.5	1.8	36.7
Queue Length 95th (m)	9.9	8.6	37.3	6.3	14.3	52.4	6.4	57.8
Internal Link Dist (m)		190.1		73.4		194.2		149.6
Turn Bay Length (m)	25.0						35.0	
Base Capacity (vph)	248	310	308	414	423	1201	415	1866
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	0.12	0.21	0.46	0.07	0.30	0.42	0.05	0.37
<b>Intersection Summary</b>								

Lanes, Volumes, Timings  
5: Kanata Avenue & Hwy 417 WB Off Ramp

2027 Background  
AM Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						 
Traffic Volume (vph)	265	209	302	0	0	776
Future Volume (vph)	265	209	302	0	0	776
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Fr <sub>t</sub>	0.850					
Fl <sub>t</sub> Protected	0.950					
Satd. Flow (prot)	1787	1392	1827	0	0	3406
Fl <sub>t</sub> Permitted	0.950					
Satd. Flow (perm)	1787	1392	1827	0	0	3406
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		225				
Link Speed (k/h)	50		50			50
Link Distance (m)	261.6		133.0			218.2
Travel Time (s)	18.8		9.6			15.7
Peak Hour Factor	0.93	0.93	0.87	0.93	0.92	0.74
Heavy Vehicles (%)	1%	16%	4%	2%	2%	6%
Adj. Flow (vph)	285	225	347	0	0	1049
Shared Lane Traffic (%)						
Lane Group Flow (vph)	285	225	347	0	0	1049
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	2.0	2.0	10.0			10.0
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	2.0	2.0	0.6			0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						

Lanes, Volumes, Timings  
 5: Kanata Avenue & Hwy 417 WB Off Ramp

2027 Background  
 AM Peak Hour

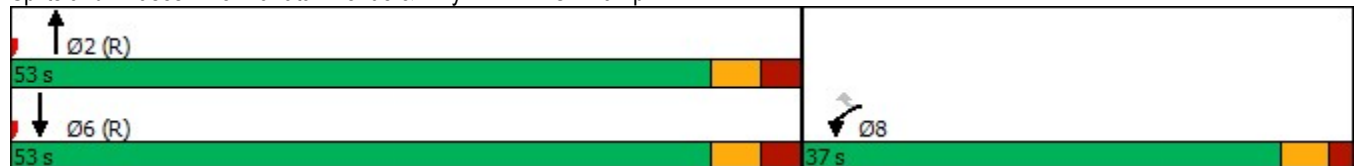


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0			5.0
Minimum Split (s)	23.0	23.0	28.1			28.1
Total Split (s)	37.0	37.0	53.0			53.0
Total Split (%)	41.1%	41.1%	58.9%			58.9%
Maximum Green (s)	32.0	32.0	46.9			46.9
Yellow Time (s)	3.3	3.3	3.3			3.3
All-Red Time (s)	1.7	1.7	2.8			2.8
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	5.0	5.0	6.1			6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	C-Max			C-Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	11.0	11.0	15.0			15.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effect Green (s)	19.7	19.7	59.2			59.2
Actuated g/C Ratio	0.22	0.22	0.66			0.66
v/c Ratio	0.73	0.47	0.29			0.47
Control Delay	43.1	7.1	4.3			9.2
Queue Delay	0.0	0.0	0.1			0.0
Total Delay	43.1	7.1	4.4			9.2
LOS	D	A	A			A
Approach Delay	27.2		4.4			9.3
Approach LOS	C		A			A

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 37 (41%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 55  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.73  
 Intersection Signal Delay: 13.2  
 Intersection LOS: B  
 Intersection Capacity Utilization 51.0%  
 ICU Level of Service A  
 Analysis Period (min) 15

Splits and Phases: 5: Kanata Avenue & Hwy 417 WB Off Ramp



Queues  
5: Kanata Avenue & Hwy 417 WB Off Ramp











2027 Background  
AM Peak Hour



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	285	225	347	1049
v/c Ratio	0.73	0.47	0.29	0.47
Control Delay	43.1	7.1	4.3	9.2
Queue Delay	0.0	0.0	0.1	0.0
Total Delay	43.1	7.1	4.4	9.2
Queue Length 50th (m)	48.4	0.0	9.4	44.2
Queue Length 95th (m)	68.9	16.5	12.9	54.5
Internal Link Dist (m)	237.6		109.0	194.2
Turn Bay Length (m)				
Base Capacity (vph)	635	639	1200	2238
Starvation Cap Reductn	0	0	161	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.45	0.35	0.33	0.47
Intersection Summary				

Lanes, Volumes, Timings  
6: Kanata Avenue & Hwy 417 EB On Ramp

2027 Background  
AM Peak Hour

							
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø3
Lane Configurations							
Traffic Volume (vph)	0	0	302	234	463	578	
Future Volume (vph)	0	0	302	234	463	578	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	0.0	0.0		60.0	0.0		
Storage Lanes	0	0		1	1		
Taper Length (m)	7.5				7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor				0.98	1.00		
Frt				0.850			
Flt Protected					0.950		
Satd. Flow (prot)	0	0	1759	1568	1752	1827	
Flt Permitted					0.435		
Satd. Flow (perm)	0	0	1759	1533	802	1827	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)				266			
Link Speed (k/h)	50		50			50	
Link Distance (m)	282.6		139.9			133.0	
Travel Time (s)	20.3		10.1			9.6	
Confl. Peds. (#/hr)	1	1		1	1		
Peak Hour Factor	0.89	0.89	0.88	0.88	0.89	0.89	
Heavy Vehicles (%)	2%	2%	8%	3%	3%	4%	
Adj. Flow (vph)	0	0	343	266	520	649	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	0	343	266	520	649	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(m)	0.0		3.6			3.6	
Link Offset(m)	0.0		0.0			0.0	
Crosswalk Width(m)	4.8		4.8			4.8	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (k/h)	25	15		15	25		
Number of Detectors			2	1	1	2	
Detector Template			Thru	Right	Left	Thru	
Leading Detector (m)			10.0	2.0	2.0	10.0	
Trailing Detector (m)			0.0	0.0	0.0	0.0	
Detector 1 Position(m)			0.0	0.0	0.0	0.0	
Detector 1 Size(m)			0.6	2.0	2.0	0.6	
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)			0.0	0.0	0.0	0.0	
Detector 1 Queue (s)			0.0	0.0	0.0	0.0	
Detector 1 Delay (s)			0.0	0.0	0.0	0.0	
Detector 2 Position(m)			9.4			9.4	
Detector 2 Size(m)			0.6			0.6	
Detector 2 Type			Cl+Ex			Cl+Ex	
Detector 2 Channel							
Detector 2 Extend (s)			0.0			0.0	

Lanes, Volumes, Timings  
6: Kanata Avenue & Hwy 417 EB On Ramp

2027 Background  
AM Peak Hour

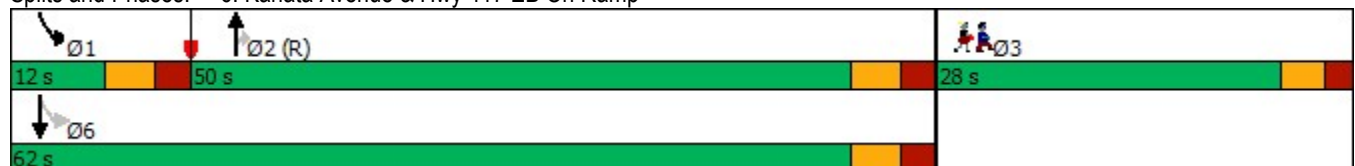


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø3
Turn Type			NA	Perm	pm+pt	NA	
Protected Phases			2		1	6	3
Permitted Phases				2	6		
Detector Phase			2	2	1	6	
Switch Phase							
Minimum Initial (s)			5.0	5.0	5.0	5.0	5.0
Minimum Split (s)			23.7	23.7	10.7	45.5	27.0
Total Split (s)			50.0	50.0	12.0	62.0	28.0
Total Split (%)			55.6%	55.6%	13.3%	68.9%	31%
Maximum Green (s)			44.3	44.3	6.3	56.3	23.0
Yellow Time (s)			3.3	3.3	3.3	3.3	3.0
All-Red Time (s)			2.4	2.4	2.4	2.4	2.0
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	
Total Lost Time (s)			5.7	5.7	5.7	5.7	
Lead/Lag			Lag	Lag	Lead		
Lead-Lag Optimize?			Yes	Yes	Yes		
Vehicle Extension (s)			3.0	3.0	3.0	3.0	3.0
Recall Mode			C-Max	C-Max	None	Max	Ped
Walk Time (s)			7.0	7.0		7.0	7.0
Flash Dont Walk (s)			11.0	11.0		11.0	15.0
Pedestrian Calls (#/hr)			0	0		0	0
Act Effct Green (s)			44.3	44.3	57.3	57.3	
Actuated g/C Ratio			0.49	0.49	0.64	0.64	
v/c Ratio			0.40	0.30	0.89	0.56	
Control Delay			16.1	2.6	28.2	8.3	
Queue Delay			0.0	0.0	0.0	0.1	
Total Delay			16.1	2.6	28.2	8.4	
LOS			B	A	C	A	
Approach Delay			10.2			17.2	
Approach LOS			B			B	

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 42 (47%), Referenced to phase 2:NBT, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.89  
 Intersection Signal Delay: 14.8  
 Intersection Capacity Utilization 51.0%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service A

Splits and Phases: 6: Kanata Avenue & Hwy 417 EB On Ramp





Queues  
6: Kanata Avenue & Hwy 417 EB On Ramp

2027 Background  
AM Peak Hour



Lane Group	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	343	266	520	649
v/c Ratio	0.40	0.30	0.89	0.56
Control Delay	16.1	2.6	28.2	8.3
Queue Delay	0.0	0.0	0.0	0.1
Total Delay	16.1	2.6	28.2	8.4
Queue Length 50th (m)	37.6	0.0	28.8	36.0
Queue Length 95th (m)	56.9	11.3	#58.2	44.2
Internal Link Dist (m)	115.9			109.0
Turn Bay Length (m)		60.0		
Base Capacity (vph)	865	889	587	1163
Starvation Cap Reductn	0	0	0	73
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.40	0.30	0.89	0.60

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	15	38	37	280	615	16
Future Vol, veh/h	15	38	37	280	615	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	96	96	81	81
Heavy Vehicles, %	2	2	0	5	2	0
Mvmt Flow	20	51	39	292	759	20























Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	993	390	779	0	-	0
Stage 1	769	-	-	-	-	-
Stage 2	224	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.1	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.2	-	-	-
Pot Cap-1 Maneuver	242	609	847	-	-	-
Stage 1	418	-	-	-	-	-
Stage 2	792	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	229	609	847	-	-	-
Mov Cap-2 Maneuver	229	-	-	-	-	-
Stage 1	395	-	-	-	-	-
Stage 2	792	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.5	1.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	847	-	414	-	-
HCM Lane V/C Ratio	0.046	-	0.171	-	-
HCM Control Delay (s)	9.5	0.2	15.5	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.6	-	-

Lanes, Volumes, Timings  
1: Kanata Avenue & Campeau Drive

2027 Background  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	307	307	204	57	256	97	158	486	47	63	340	240
Future Volume (vph)	307	307	204	57	256	97	158	486	47	63	340	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0		0.0	30.0		0.0	0.0		40.0	90.0		90.0
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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99		1.00	0.99				0.97			
Frt		0.940			0.959				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1656	1733	0	1530	1693	0	1687	1827	1429	1671	1863	1583
Flt Permitted	0.144			0.149			0.313			0.093		
Satd. Flow (perm)	251	1733	0	240	1693	0	556	1827	1387	164	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		30			15				142			267
Link Speed (k/h)		50			50			50				50
Link Distance (m)		317.4			209.1			382.3				210.1
Travel Time (s)		22.9			15.1			27.5				15.1
Confl. Peds. (#/hr)	5		3	3		5			4	4		
Peak Hour Factor	0.81	0.81	0.81	0.95	0.95	0.95	0.59	0.59	0.59	0.90	0.90	0.90
Heavy Vehicles (%)	9%	4%	0%	18%	5%	11%	7%	4%	13%	8%	2%	2%
Adj. Flow (vph)	379	379	252	60	269	102	268	824	80	70	378	267
Shared Lane Traffic (%)												
Lane Group Flow (vph)	379	631	0	60	371	0	268	824	80	70	378	267
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)		3.6			3.6			3.6				3.6
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	0.0
Detector 1 Queue (s)	0.0	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	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

Lanes, Volumes, Timings  
1: Kanata Avenue & Campeau Drive

2027 Background  
PM Peak Hour

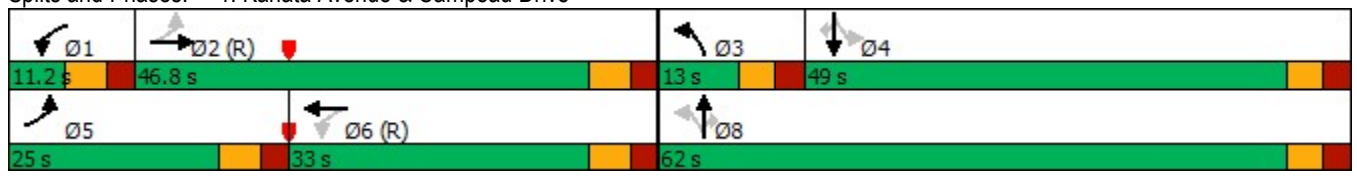


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		1	6		3	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.2	37.2		11.2	30.2		10.9	29.9	29.9	36.9	36.9	36.9
Total Split (s)	25.0	46.8		11.2	33.0		13.0	62.0	62.0	49.0	49.0	49.0
Total Split (%)	20.8%	39.0%		9.3%	27.5%		10.8%	51.7%	51.7%	40.8%	40.8%	40.8%
Maximum Green (s)	18.8	40.6		5.0	26.8		7.1	56.1	56.1	43.1	43.1	43.1
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.5		2.5	2.5		2.6	2.6	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2		6.2	6.2		5.9	5.9	5.9	5.9	5.9	5.9
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	None	None
Walk Time (s)		9.0			9.0			9.0	9.0	9.0	9.0	9.0
Flash Dont Walk (s)		22.0			15.0			15.0	15.0	22.0	22.0	22.0
Pedestrian Calls (#/hr)		0			0			0	0	0	0	0
Act Effct Green (s)	51.8	42.8		31.8	26.8		56.1	56.1	56.1	43.1	43.1	43.1
Actuated g/C Ratio	0.43	0.36		0.26	0.22		0.47	0.47	0.47	0.36	0.36	0.36
v/c Ratio	1.16	0.99		0.51	0.95		0.82	0.96	0.11	1.21	0.57	0.36
Control Delay	129.1	70.9		39.0	80.0		45.4	55.1	0.4	221.5	34.9	4.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	129.1	70.9		39.0	80.0		45.4	55.1	0.4	221.5	34.9	4.6
LOS	F	E		D	F		D	E	A	F	C	A
Approach Delay		92.7			74.3			49.2			41.9	
Approach LOS		F			E			D			D	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 100  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.21  
 Intersection Signal Delay: 64.1  
 Intersection LOS: E  
 Intersection Capacity Utilization 86.9%  
 ICU Level of Service E  
 Analysis Period (min) 15

Splits and Phases: 1: Kanata Avenue & Campeau Drive



Queues  
1: Kanata Avenue & Campeau Drive

2027 Background  
PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	379	631	60	371	268	824	80	70	378	267
v/c Ratio	1.16	0.99	0.51	0.95	0.82	0.96	0.11	1.21	0.57	0.36
Control Delay	129.1	70.9	39.0	80.0	45.4	55.1	0.4	221.5	34.9	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	129.1	70.9	39.0	80.0	45.4	55.1	0.4	221.5	34.9	4.6
Queue Length 50th (m)	~92.8	~164.1	8.7	88.1	41.0	193.1	0.0	~20.9	74.7	0.0
Queue Length 95th (m)	#129.5	#197.1	17.5	#150.5	36.9	126.5	0.0	#52.4	107.1	17.9
Internal Link Dist (m)		293.4		185.1		358.3			186.1	
Turn Bay Length (m)	90.0		30.0				40.0	90.0		90.0
Base Capacity (vph)	328	638	117	389	326	854	724	58	669	739
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.16	0.99	0.51	0.95	0.82	0.96	0.11	1.21	0.57	0.36

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

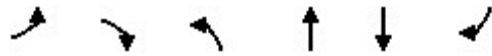
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Lanes, Volumes, Timings  
2: Kanata Avenue & Earl Grey

2027 Background  
PM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	95	212	264	599	503	98
Future Volume (vph)	95	212	264	599	503	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0	0.0	125.0			90.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor			1.00			0.98
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1504	1524	1805	3312	3505	1455
Flt Permitted	0.950		0.431			
Satd. Flow (perm)	1504	1524	818	3312	3505	1424
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		235				114
Link Speed (k/h)	50			50	50	
Link Distance (m)	218.4			301.9	382.3	
Travel Time (s)	15.7			21.7	27.5	
Confl. Peds. (#/hr)			1			1
Peak Hour Factor	0.87	0.87	0.79	0.79	0.86	0.86
Heavy Vehicles (%)	20%	6%	0%	9%	3%	11%
Adj. Flow (vph)	109	244	334	758	585	114
Shared Lane Traffic (%)						
Lane Group Flow (vph)	109	244	334	758	585	114
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	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
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	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
Detector 1 Queue (s)	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
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	

Lanes, Volumes, Timings  
2: Kanata Avenue & Earl Grey

2027 Background  
PM Peak Hour

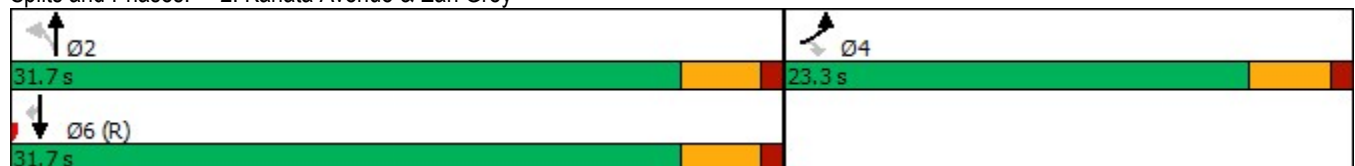


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.3	23.3	27.3	27.3	27.3	27.3
Total Split (s)	23.3	23.3	31.7	31.7	31.7	31.7
Total Split (%)	42.4%	42.4%	57.6%	57.6%	57.6%	57.6%
Maximum Green (s)	19.0	19.0	27.4	27.4	27.4	27.4
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.3	4.3	4.3	4.3	4.3	4.3
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	9.3	9.3	37.1	37.1	37.1	37.1
Actuated g/C Ratio	0.17	0.17	0.67	0.67	0.67	0.67
v/c Ratio	0.43	0.54	0.61	0.34	0.25	0.11
Control Delay	24.8	8.4	12.6	4.7	4.2	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.8	8.4	12.6	4.7	4.2	1.4
LOS	C	A	B	A	A	A
Approach Delay	13.5			7.1	3.8	
Approach LOS	B			A	A	

Intersection Summary

Area Type: Other  
 Cycle Length: 55  
 Actuated Cycle Length: 55  
 Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.61  
 Intersection Signal Delay: 7.1  
 Intersection LOS: A  
 Intersection Capacity Utilization 49.8%  
 ICU Level of Service A  
 Analysis Period (min) 15

Splits and Phases: 2: Kanata Avenue & Earl Grey



Queues  
2: Kanata Avenue & Earl Grey

2027 Background  
PM Peak Hour



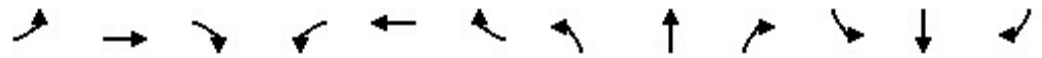
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	109	244	334	758	585	114
v/c Ratio	0.43	0.54	0.61	0.34	0.25	0.11
Control Delay	24.8	8.4	12.6	4.7	4.2	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.8	8.4	12.6	4.7	4.2	1.4
Queue Length 50th (m)	10.4	0.8	15.0	13.7	9.7	0.0
Queue Length 95th (m)	20.1	14.1	36.0	22.2	18.4	4.0
Internal Link Dist (m)	194.4			277.9	358.3	
Turn Bay Length (m)	70.0		125.0			90.0
Base Capacity (vph)	519	680	551	2234	2364	997
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.36	0.61	0.34	0.25	0.11

Intersection Summary



Lanes, Volumes, Timings  
4: Kanata Avenue & Lord Byng/Maritime Way

2027 Background  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	3	93	104	11	32	184	833	168	30	649	53
Future Volume (vph)	36	3	93	104	11	32	184	833	168	30	649	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	0.0		0.0	0.0		0.0	35.0		0.0
Storage Lanes	1		0	1		0	1		0	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	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor	1.00	0.98		1.00	0.99		1.00	1.00			1.00	
Frt		0.855			0.887			0.975			0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1318	1036	0	1687	1668	0	1480	1772	0	1543	3388	0
Flt Permitted	0.723			0.625			0.297			0.101		
Satd. Flow (perm)	1001	1036	0	1105	1668	0	462	1772	0	164	3388	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		121			39			21			11	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		214.1			97.4			218.2			173.6	
Travel Time (s)		15.4			7.0			15.7			12.5	
Confl. Peds. (#/hr)	1		3	3		1	3		1	1		3
Peak Hour Factor	0.77	0.77	0.77	0.83	0.83	0.83	0.81	0.81	0.81	0.91	0.91	0.91
Heavy Vehicles (%)	37%	0%	56%	7%	0%	0%	22%	4%	5%	17%	2%	44%
Adj. Flow (vph)	47	4	121	125	13	39	227	1028	207	33	713	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	47	125	0	125	52	0	227	1235	0	33	771	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)		3.6			3.6			3.6			3.6	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		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	
Detector 1 Position(m)	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	0.6	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
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	

Lanes, Volumes, Timings  
4: Kanata Avenue & Lord Byng/Maritime Way

2027 Background  
PM Peak Hour

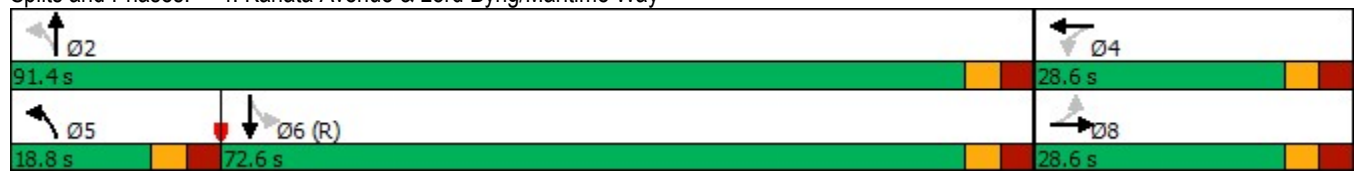


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		5	2				6
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		5	2		6		6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0		5.0
Minimum Split (s)	28.3	28.3		28.3	28.3		11.3	33.3		33.3		33.3
Total Split (s)	28.6	28.6		28.6	28.6		18.8	91.4		72.6		72.6
Total Split (%)	23.8%	23.8%		23.8%	23.8%		15.7%	76.2%		60.5%		60.5%
Maximum Green (s)	22.3	22.3		22.3	22.3		12.5	85.1		66.3		66.3
Yellow Time (s)	3.0	3.0		3.0	3.0		3.3	3.3		3.3		3.3
All-Red Time (s)	3.3	3.3		3.3	3.3		3.0	3.0		3.0		3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	6.3	6.3		6.3	6.3		6.3	6.3		6.3		6.3
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
Recall Mode	None	None		None	None		None	None		C-Max		C-Max
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0		7.0
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0		15.0		15.0
Pedestrian Calls (#/hr)	0	0		0	0			0		0		0
Act Effect Green (s)	17.5	17.5		17.5	17.5		89.9	89.9		72.9		72.9
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.75	0.75		0.61		0.61
v/c Ratio	0.32	0.49		0.78	0.19		0.52	0.93		0.33		0.37
Control Delay	50.2	15.2		79.3	19.3		9.5	27.0		26.1		13.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	22.7		0.0		0.0
Total Delay	50.2	15.2		79.3	19.3		9.5	49.7		26.1		13.3
LOS	D	B		E	B		A	D		C		B
Approach Delay		24.8			61.6			43.5				13.8
Approach LOS		C			E			D				B

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	0 (0%), Referenced to phase 6:SBTL, Start of Green
Natural Cycle:	110
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.93
Intersection Signal Delay:	34.3
Intersection LOS:	C
Intersection Capacity Utilization	86.6%
ICU Level of Service	E
Analysis Period (min)	15

Splits and Phases: 4: Kanata Avenue & Lord Byng/Maritime Way



Queues  
4: Kanata Avenue & Lord Byng/Maritime Way

2027 Background  
PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	47	125	125	52	227	1235	33	771
v/c Ratio	0.32	0.49	0.78	0.19	0.52	0.93	0.33	0.37
Control Delay	50.2	15.2	79.3	19.3	9.5	27.0	26.1	13.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	22.7	0.0	0.0
Total Delay	50.2	15.2	79.3	19.3	9.5	49.7	26.1	13.3
Queue Length 50th (m)	10.5	0.9	30.0	2.8	14.8	221.0	3.9	48.4
Queue Length 95th (m)	18.7	11.4	46.2	12.3	23.6	272.8	15.4	69.4
Internal Link Dist (m)		190.1		73.4		194.2		149.6
Turn Bay Length (m)	25.0						35.0	
Base Capacity (vph)	186	291	205	341	453	1333	99	2063
Starvation Cap Reductn	0	0	0	0	0	149	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	0.25	0.43	0.61	0.15	0.50	1.04	0.33	0.37

Intersection Summary

Lanes, Volumes, Timings  
5: Kanata Avenue & Hwy 417 WB Off Ramp

2027 Background  
PM Peak Hour



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	511	669	516	0	0	846
Future Volume (vph)	511	669	516	0	0	846
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Fr <sub>t</sub>	0.850					
Fl <sub>t</sub> Protected	0.950					
Satd. Flow (prot)	1787	1392	3471	0	0	3406
Fl <sub>t</sub> Permitted	0.950					
Satd. Flow (perm)	1787	1392	3471	0	0	3406
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		148				
Link Speed (k/h)	50		50		50	
Link Distance (m)	261.6		133.0		218.2	
Travel Time (s)	18.8		9.6		15.7	
Peak Hour Factor	0.93	0.93	0.87	0.93	0.92	0.74
Heavy Vehicles (%)	1%	16%	4%	2%	2%	6%
Adj. Flow (vph)	549	719	593	0	0	1143
Shared Lane Traffic (%)						
Lane Group Flow (vph)	549	719	593	0	0	1143
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0		0.0	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	4.8		4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	2.0	2.0	10.0			10.0
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	2.0	2.0	0.6			0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						

Lanes, Volumes, Timings  
 5: Kanata Avenue & Hwy 417 WB Off Ramp

2027 Background  
 PM Peak Hour

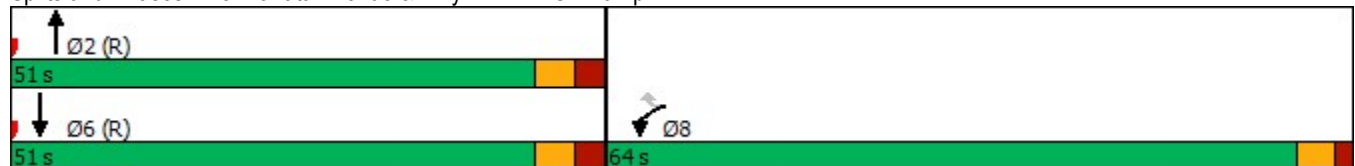


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0			5.0
Minimum Split (s)	23.0	23.0	28.1			28.1
Total Split (s)	64.0	64.0	51.0			51.0
Total Split (%)	55.7%	55.7%	44.3%			44.3%
Maximum Green (s)	59.0	59.0	44.9			44.9
Yellow Time (s)	3.3	3.3	3.3			3.3
All-Red Time (s)	1.7	1.7	2.8			2.8
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	5.0	5.0	6.1			6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	C-Max			C-Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	11.0	11.0	15.0			15.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	56.2	56.2	47.7			47.7
Actuated g/C Ratio	0.49	0.49	0.41			0.41
v/c Ratio	0.63	0.95	0.41			0.81
Control Delay	25.1	45.5	25.5			36.0
Queue Delay	0.0	0.0	0.5			0.0
Total Delay	25.1	45.5	26.0			36.0
LOS	C	D	C			D
Approach Delay	36.7		26.0			36.0
Approach LOS	D		C			D

Intersection Summary

Area Type: Other  
 Cycle Length: 115  
 Actuated Cycle Length: 115  
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.95  
 Intersection Signal Delay: 34.3  
 Intersection LOS: C  
 Intersection Capacity Utilization 106.0%  
 ICU Level of Service G  
 Analysis Period (min) 15

Splits and Phases: 5: Kanata Avenue & Hwy 417 WB Off Ramp



Queues  
5: Kanata Avenue & Hwy 417 WB Off Ramp

2027 Background  
PM Peak Hour













Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	549	719	593	1143
v/c Ratio	0.63	0.95	0.41	0.81
Control Delay	25.1	45.5	25.5	36.0
Queue Delay	0.0	0.0	0.5	0.0
Total Delay	25.1	45.5	26.0	36.0
Queue Length 50th (m)	88.2	127.2	53.6	129.1
Queue Length 95th (m)	124.7	#217.2	67.0	117.8
Internal Link Dist (m)	237.6		109.0	194.2
Turn Bay Length (m)				
Base Capacity (vph)	916	786	1441	1413
Starvation Cap Reductn	0	0	439	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.60	0.91	0.59	0.81

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Lanes, Volumes, Timings  
6: Kanata Avenue & Hwy 417 EB On Ramp

2027 Background  
PM Peak Hour

							
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø3
Lane Configurations							
Traffic Volume (vph)	0	0	516	213	394	963	
Future Volume (vph)	0	0	516	213	394	963	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	0.0	0.0		60.0	0.0		
Storage Lanes	0	0		1	1		
Taper Length (m)	7.5				7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor				0.98			
Frt				0.850			
Flt Protected					0.950		
Satd. Flow (prot)	0	0	1759	1568	1752	1827	
Flt Permitted					0.259		
Satd. Flow (perm)	0	0	1759	1531	478	1827	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)				192			
Link Speed (k/h)	50		50			50	
Link Distance (m)	282.6		139.9			133.0	
Travel Time (s)	20.3		10.1			9.6	
Confl. Peds. (#/hr)	1	1		1	1		
Peak Hour Factor	0.89	0.89	0.88	0.88	0.89	0.89	
Heavy Vehicles (%)	2%	2%	8%	3%	3%	4%	
Adj. Flow (vph)	0	0	586	242	443	1082	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	0	586	242	443	1082	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(m)	0.0		3.6			3.6	
Link Offset(m)	0.0		0.0			0.0	
Crosswalk Width(m)	4.8		4.8			4.8	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (k/h)	25	15		15	25		
Number of Detectors			2	1	1	2	
Detector Template			Thru	Right	Left	Thru	
Leading Detector (m)			10.0	2.0	2.0	10.0	
Trailing Detector (m)			0.0	0.0	0.0	0.0	
Detector 1 Position(m)			0.0	0.0	0.0	0.0	
Detector 1 Size(m)			0.6	2.0	2.0	0.6	
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)			0.0	0.0	0.0	0.0	
Detector 1 Queue (s)			0.0	0.0	0.0	0.0	
Detector 1 Delay (s)			0.0	0.0	0.0	0.0	
Detector 2 Position(m)			9.4			9.4	
Detector 2 Size(m)			0.6			0.6	
Detector 2 Type			Cl+Ex			Cl+Ex	
Detector 2 Channel							
Detector 2 Extend (s)			0.0			0.0	

Lanes, Volumes, Timings  
6: Kanata Avenue & Hwy 417 EB On Ramp

2027 Background  
PM Peak Hour

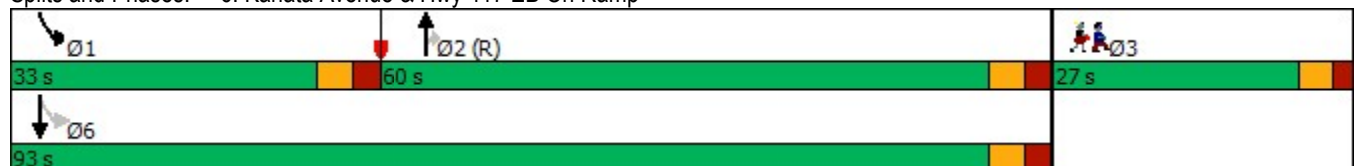


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø3
Turn Type			NA	Perm	pm+pt	NA	
Protected Phases			2		1	6	3
Permitted Phases				2	6		
Detector Phase			2	2	1	6	
Switch Phase							
Minimum Initial (s)			5.0	5.0	5.0	5.0	5.0
Minimum Split (s)			23.7	23.7	10.7	45.5	27.0
Total Split (s)			60.0	60.0	33.0	93.0	27.0
Total Split (%)			50.0%	50.0%	27.5%	77.5%	23%
Maximum Green (s)			54.3	54.3	27.3	87.3	22.0
Yellow Time (s)			3.3	3.3	3.3	3.3	3.0
All-Red Time (s)			2.4	2.4	2.4	2.4	2.0
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	
Total Lost Time (s)			5.7	5.7	5.7	5.7	
Lead/Lag			Lag	Lag	Lead		
Lead-Lag Optimize?			Yes	Yes	Yes		
Vehicle Extension (s)			3.0	3.0	3.0	3.0	3.0
Recall Mode			C-Max	C-Max	None	Max	Ped
Walk Time (s)			7.0	7.0		7.0	7.0
Flash Dont Walk (s)			11.0	11.0		11.0	15.0
Pedestrian Calls (#/hr)			0	0		0	0
Act Effct Green (s)			61.9	61.9	87.3	87.3	
Actuated g/C Ratio			0.52	0.52	0.73	0.73	
v/c Ratio			0.65	0.27	0.80	0.81	
Control Delay			26.7	5.5	19.9	17.4	
Queue Delay			0.0	0.0	0.2	47.6	
Total Delay			26.7	5.5	20.1	64.9	
LOS			C	A	C	E	
Approach Delay			20.5			51.9	
Approach LOS			C			D	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:NBT, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.81  
 Intersection Signal Delay: 40.9  
 Intersection LOS: D  
 Intersection Capacity Utilization 106.0%  
 ICU Level of Service G  
 Analysis Period (min) 15

Splits and Phases: 6: Kanata Avenue & Hwy 417 EB On Ramp





## 6: Kanata Avenue &amp; Hwy 417 EB On Ramp

PM Peak Hour



Lane Group	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	586	242	443	1082
v/c Ratio	0.65	0.27	0.80	0.81
Control Delay	26.7	5.5	19.9	17.4
Queue Delay	0.0	0.0	0.2	47.6
Total Delay	26.7	5.5	20.1	64.9
Queue Length 50th (m)	101.5	6.0	35.2	157.6
Queue Length 95th (m)	157.3	21.2	66.0	221.4
Internal Link Dist (m)	115.9			109.0
Turn Bay Length (m)		60.0		
Base Capacity (vph)	907	882	637	1329
Starvation Cap Reductn	0	0	14	343
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.65	0.27	0.71	1.10

## Intersection Summary

Intersection						
Int Delay, s/veh	2.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			↑↑		↑↑
Traffic Vol, veh/h	21	62	60	841	670	45
Future Vol, veh/h	21	62	60	841	670	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	96	96	81	81
Heavy Vehicles, %	2	2	0	5	2	0
Mvmt Flow	28	83	63	876	827	56























Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1419	442	883	0	0
Stage 1	855	-	-	-	-
Stage 2	564	-	-	-	-
Critical Hdwy	6.84	6.94	4.1	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.2	-	-
Pot Cap-1 Maneuver	128	563	775	-	-
Stage 1	377	-	-	-	-
Stage 2	533	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	108	563	775	-	-
Mov Cap-2 Maneuver	108	-	-	-	-
Stage 1	317	-	-	-	-
Stage 2	533	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	26.9	1.3	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	775	-	273	-	-
HCM Lane V/C Ratio	0.081	-	0.405	-	-
HCM Control Delay (s)	10.1	0.7	26.9	-	-
HCM Lane LOS	B	A	D	-	-
HCM 95th %tile Q(veh)	0.3	-	1.9	-	-

Lanes, Volumes, Timings  
1: Kanata Avenue & Campeau Drive

2022 Total  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	159	46	39	186	68	72	132	39	120	508	200
Future Volume (vph)	95	159	46	39	186	68	72	132	39	120	508	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0		0.0	30.0		0.0	40.0		40.0	90.0		90.0
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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99		1.00	0.99				0.97	0.99		
Frt		0.966			0.960				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1656	1770	0	1530	1697	0	1687	1827	1429	1671	1863	1583
Flt Permitted	0.428			0.559			0.110			0.619		
Satd. Flow (perm)	741	1770	0	897	1697	0	195	1827	1388	1082	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			17				93			222
Link Speed (k/h)		50			50			50				50
Link Distance (m)		317.4			209.1			382.3				210.1
Travel Time (s)		22.9			15.1			27.5				15.1
Confl. Peds. (#/hr)	5		3	3		5			4	4		
Peak Hour Factor	0.81	0.81	0.81	0.95	0.95	0.95	0.59	0.59	0.59	0.90	0.90	0.90
Heavy Vehicles (%)	9%	4%	0%	18%	5%	11%	7%	4%	13%	8%	2%	2%
Adj. Flow (vph)	117	196	57	41	196	72	122	224	66	133	564	222
Shared Lane Traffic (%)												
Lane Group Flow (vph)	117	253	0	41	268	0	122	224	66	133	564	222
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)		3.6			3.6			3.6				3.6
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	0.0
Detector 1 Queue (s)	0.0	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	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

Lanes, Volumes, Timings  
1: Kanata Avenue & Campeau Drive

2022 Total  
AM Peak Hour

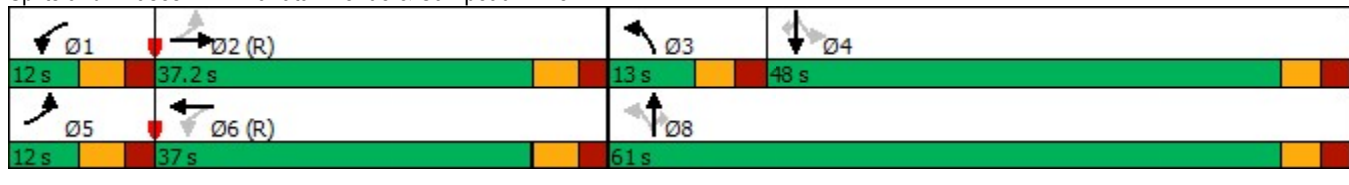


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		1	6		3	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.2	37.2		11.2	30.2		10.9	29.9	29.9	36.9	36.9	36.9
Total Split (s)	12.0	37.2		12.0	37.0		13.0	61.0	61.0	48.0	48.0	48.0
Total Split (%)	10.9%	33.8%		10.9%	33.6%		11.8%	55.4%	55.4%	43.6%	43.6%	43.6%
Maximum Green (s)	5.8	31.0		5.8	30.8		7.1	55.1	55.1	42.1	42.1	42.1
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.5		2.5	2.5		2.6	2.6	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2		6.2	6.2		5.9	5.9	5.9	5.9	5.9	5.9
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	None	None
Walk Time (s)		9.0			9.0			9.0	9.0	9.0	9.0	9.0
Flash Dont Walk (s)		22.0			15.0			15.0	15.0	22.0	22.0	22.0
Pedestrian Calls (#/hr)		0			0			0	0	0	0	0
Act Effct Green (s)	43.8	39.8		40.1	34.0		50.8	50.8	50.8	37.8	37.8	37.8
Actuated g/C Ratio	0.40	0.36		0.36	0.31		0.46	0.46	0.46	0.34	0.34	0.34
v/c Ratio	0.33	0.39		0.11	0.50		0.66	0.27	0.10	0.36	0.88	0.32
Control Delay	24.7	29.9		21.6	34.1		33.9	18.4	1.7	29.1	50.3	4.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.7	29.9		21.6	34.1		33.9	18.4	1.7	29.1	50.3	4.4
LOS	C	C		C	C		C	B	A	C	D	A
Approach Delay		28.3			32.5			20.3			36.1	
Approach LOS		C			C			C			D	

Intersection Summary

Area Type: Other  
 Cycle Length: 110.2  
 Actuated Cycle Length: 110.2  
 Offset: 67 (61%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 100  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.88  
 Intersection Signal Delay: 30.9  
 Intersection LOS: C  
 Intersection Capacity Utilization 81.1%  
 ICU Level of Service D  
 Analysis Period (min) 15

Splits and Phases: 1: Kanata Avenue & Campeau Drive



Queues  
1: Kanata Avenue & Campeau Drive

2022 Total  
AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	117	253	41	268	122	224	66	133	564	222
v/c Ratio	0.33	0.39	0.11	0.50	0.66	0.27	0.10	0.36	0.88	0.32
Control Delay	24.7	29.9	21.6	34.1	33.9	18.4	1.7	29.1	50.3	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.7	29.9	21.6	34.1	33.9	18.4	1.7	29.1	50.3	4.4
Queue Length 50th (m)	16.4	44.7	5.5	48.3	15.1	29.3	0.0	21.8	116.1	0.0
Queue Length 95th (m)	27.0	62.2	13.2	75.9	15.8	26.6	0.0	37.5	157.7	15.4
Internal Link Dist (m)		293.4		185.1		358.3			186.1	
Turn Bay Length (m)	90.0		30.0		40.0		40.0	90.0		90.0
Base Capacity (vph)	353	647	362	535	185	913	740	413	711	741
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.39	0.11	0.50	0.66	0.25	0.09	0.32	0.79	0.30

Intersection Summary

Lanes, Volumes, Timings  
2: Kanata Avenue & Earl Grey

2022 Total  
AM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	11	40	58	232	552	40
Future Volume (vph)	11	40	58	232	552	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0	0.0	125.0			90.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			1.00			0.98
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1504	1524	1805	1743	1845	1455
Flt Permitted	0.950		0.394			
Satd. Flow (perm)	1504	1524	748	1743	1845	1424
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		46				47
Link Speed (k/h)	50			50	50	
Link Distance (m)	218.4			301.9	382.3	
Travel Time (s)	15.7			21.7	27.5	
Confl. Peds. (#/hr)			1			1
Peak Hour Factor	0.87	0.87	0.79	0.79	0.86	0.86
Heavy Vehicles (%)	20%	6%	0%	9%	3%	11%
Adj. Flow (vph)	13	46	73	294	642	47
Shared Lane Traffic (%)						
Lane Group Flow (vph)	13	46	73	294	642	47
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	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
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	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
Detector 1 Queue (s)	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
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	

Lanes, Volumes, Timings  
2: Kanata Avenue & Earl Grey

2022 Total  
AM Peak Hour

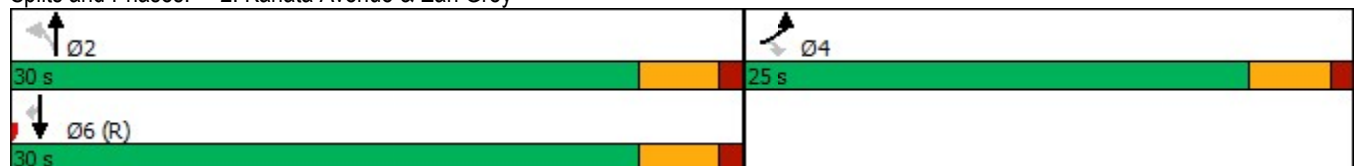


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.3	23.3	27.3	27.3	27.3	27.3
Total Split (s)	25.0	25.0	30.0	30.0	30.0	30.0
Total Split (%)	45.5%	45.5%	54.5%	54.5%	54.5%	54.5%
Maximum Green (s)	20.7	20.7	25.7	25.7	25.7	25.7
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.3	4.3	4.3	4.3	4.3	4.3
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	6.3	6.3	45.8	45.8	45.8	45.8
Actuated g/C Ratio	0.11	0.11	0.83	0.83	0.83	0.83
v/c Ratio	0.08	0.21	0.12	0.20	0.42	0.04
Control Delay	22.2	10.6	2.8	2.5	3.6	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	10.6	2.8	2.5	3.6	1.0
LOS	C	B	A	A	A	A
Approach Delay	13.2			2.6	3.4	
Approach LOS	B			A	A	

Intersection Summary

Area Type: Other  
 Cycle Length: 55  
 Actuated Cycle Length: 55  
 Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green  
 Natural Cycle: 55  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.42  
 Intersection Signal Delay: 3.7  
 Intersection LOS: A  
 Intersection Capacity Utilization 48.1%  
 ICU Level of Service A  
 Analysis Period (min) 15

Splits and Phases: 2: Kanata Avenue & Earl Grey



Queues  
2: Kanata Avenue & Earl Grey

2022 Total  
AM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	13	46	73	294	642	47
v/c Ratio	0.08	0.21	0.12	0.20	0.42	0.04
Control Delay	22.2	10.6	2.8	2.5	3.6	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	10.6	2.8	2.5	3.6	1.0
Queue Length 50th (m)	1.3	0.0	1.5	6.7	18.6	0.0
Queue Length 95th (m)	5.0	6.9	4.3	12.7	36.2	1.8
Internal Link Dist (m)	194.4			277.9	358.3	
Turn Bay Length (m)	70.0		125.0			90.0
Base Capacity (vph)	566	602	622	1451	1535	1193
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.08	0.12	0.20	0.42	0.04
Intersection Summary						



Lanes, Volumes, Timings  
4: Kanata Avenue & Lord Byng/Maritime Way

2022 Total  
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	6	39	108	2	21	92	257	124	19	605	18
Future Volume (vph)	20	6	39	108	2	21	92	257	124	19	605	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	0.0		0.0	75.0		0.0	35.0		0.0
Storage Lanes	1		0	1		0	1		0	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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		1.00	0.98			0.99		1.00	1.00	
Frt		0.870			0.861			0.951			0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1318	1099	0	1687	1603	0	1480	1720	0	1543	1832	0
Flt Permitted	0.740			0.719			0.230			0.494		
Satd. Flow (perm)	1024	1099	0	1272	1603	0	358	1720	0	801	1832	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		51			25			50			2	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		214.1			97.4			218.2			173.6	
Travel Time (s)		15.4			7.0			15.7			12.5	
Confl. Peds. (#/hr)	1		3	3		1	3		1	1		3
Peak Hour Factor	0.77	0.77	0.77	0.83	0.83	0.83	0.81	0.81	0.81	0.91	0.91	0.91
Heavy Vehicles (%)	37%	0%	56%	7%	0%	0%	22%	4%	5%	17%	2%	44%
Adj. Flow (vph)	26	8	51	130	2	25	114	317	153	21	665	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	26	59	0	130	27	0	114	470	0	21	685	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)		3.6			3.6			3.6			3.6	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		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	
Detector 1 Position(m)	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	0.6	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
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	

Lanes, Volumes, Timings  
4: Kanata Avenue & Lord Byng/Maritime Way

2022 Total  
AM Peak Hour

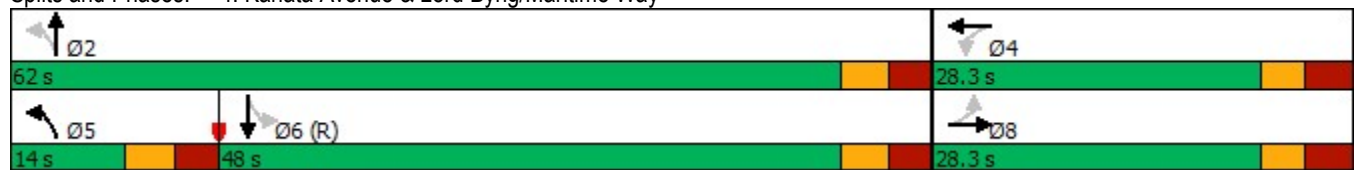


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		5	2				6
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		5	2		6		6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0		5.0
Minimum Split (s)	28.3	28.3		28.3	28.3		11.3	33.3		33.3		33.3
Total Split (s)	28.3	28.3		28.3	28.3		14.0	62.0		48.0		48.0
Total Split (%)	31.3%	31.3%		31.3%	31.3%		15.5%	68.7%		53.2%		53.2%
Maximum Green (s)	22.0	22.0		22.0	22.0		7.7	55.7		41.7		41.7
Yellow Time (s)	3.0	3.0		3.0	3.0		3.3	3.3		3.3		3.3
All-Red Time (s)	3.3	3.3		3.3	3.3		3.0	3.0		3.0		3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	6.3	6.3		6.3	6.3		6.3	6.3		6.3		6.3
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
Recall Mode	None	None		None	None		None	None		C-Max		C-Max
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0		7.0
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0		15.0		15.0
Pedestrian Calls (#/hr)	0	0		0	0			0		0		0
Act Effct Green (s)	14.5	14.5		14.5	14.5		63.2	63.2		51.8		51.8
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.70	0.70		0.57		0.57
v/c Ratio	0.16	0.27		0.64	0.10		0.33	0.39		0.05		0.65
Control Delay	32.5	14.0		48.9	13.0		8.0	6.7		12.5		19.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Delay	32.5	14.0		48.9	13.0		8.0	6.7		12.5		19.7
LOS	C	B		D	B		A	A		B		B
Approach Delay		19.6			42.7			6.9				19.5
Approach LOS		B			D			A				B

Intersection Summary

Area Type: Other  
 Cycle Length: 90.3  
 Actuated Cycle Length: 90.3  
 Offset: 3.4 (4%), Referenced to phase 6:SBTL, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.65  
 Intersection Signal Delay: 17.1  
 Intersection Capacity Utilization 66.6%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service C

Splits and Phases: 4: Kanata Avenue & Lord Byng/Maritime Way

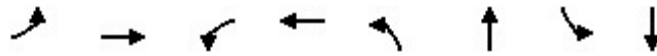


## Queues

2022 Total

## 4: Kanata Avenue &amp; Lord Byng/Maritime Way

AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	26	59	130	27	114	470	21	685
v/c Ratio	0.16	0.27	0.64	0.10	0.33	0.39	0.05	0.65
Control Delay	32.5	14.0	48.9	13.0	8.0	6.7	12.5	19.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.5	14.0	48.9	13.0	8.0	6.7	12.5	19.7
Queue Length 50th (m)	4.2	1.3	22.5	0.3	5.8	26.3	1.7	85.1
Queue Length 95th (m)	9.2	8.4	34.7	6.1	12.7	45.5	6.4	#158.8
Internal Link Dist (m)		190.1		73.4		194.2		149.6
Turn Bay Length (m)	25.0				75.0		35.0	
Base Capacity (vph)	249	306	309	409	352	1219	459	1051
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	0.10	0.19	0.42	0.07	0.32	0.39	0.05	0.65












## Intersection Summary

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

Queue shown is maximum after two cycles.

Lanes, Volumes, Timings  
5: Kanata Avenue & Hwy 417 WB Off Ramp

2022 Total  
AM Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						 
Traffic Volume (vph)	240	194	279	0	0	749
Future Volume (vph)	240	194	279	0	0	749
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Fr <sub>t</sub>		0.850				
Fl <sub>t</sub> Protected	0.950					
Satd. Flow (prot)	1787	1392	1827	0	0	3406
Fl <sub>t</sub> Permitted	0.950					
Satd. Flow (perm)	1787	1392	1827	0	0	3406
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		209				
Link Speed (k/h)	50		50			50
Link Distance (m)	261.6		133.0			218.2
Travel Time (s)	18.8		9.6			15.7
Peak Hour Factor	0.93	0.93	0.87	0.93	0.92	0.74
Heavy Vehicles (%)	1%	16%	4%	2%	2%	6%
Adj. Flow (vph)	258	209	321	0	0	1012
Shared Lane Traffic (%)						
Lane Group Flow (vph)	258	209	321	0	0	1012
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	2.0	2.0	10.0			10.0
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	2.0	2.0	0.6			0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						

Lanes, Volumes, Timings  
 5: Kanata Avenue & Hwy 417 WB Off Ramp

2022 Total  
 AM Peak Hour

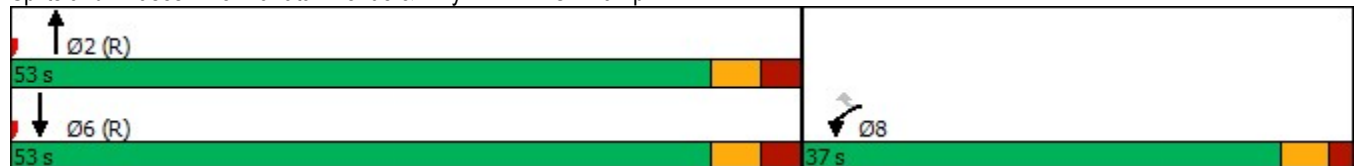


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0			5.0
Minimum Split (s)	23.0	23.0	28.1			28.1
Total Split (s)	37.0	37.0	53.0			53.0
Total Split (%)	41.1%	41.1%	58.9%			58.9%
Maximum Green (s)	32.0	32.0	46.9			46.9
Yellow Time (s)	3.3	3.3	3.3			3.3
All-Red Time (s)	1.7	1.7	2.8			2.8
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	5.0	5.0	6.1			6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	C-Max			C-Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	11.0	11.0	15.0			15.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	18.4	18.4	60.5			60.5
Actuated g/C Ratio	0.20	0.20	0.67			0.67
v/c Ratio	0.71	0.46	0.26			0.44
Control Delay	43.6	7.6	4.0			8.3
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	43.6	7.6	4.0			8.3
LOS	D	A	A			A
Approach Delay	27.5		4.0			8.3
Approach LOS	C		A			A

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 37 (41%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 55  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.71  
 Intersection Signal Delay: 12.5  
 Intersection LOS: B  
 Intersection Capacity Utilization 48.8%  
 ICU Level of Service A  
 Analysis Period (min) 15

Splits and Phases: 5: Kanata Avenue & Hwy 417 WB Off Ramp



Queues  
 5: Kanata Avenue & Hwy 417 WB Off Ramp











2022 Total  
 AM Peak Hour



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	258	209	321	1012
v/c Ratio	0.71	0.46	0.26	0.44
Control Delay	43.6	7.6	4.0	8.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	43.6	7.6	4.0	8.3
Queue Length 50th (m)	44.0	0.0	8.7	39.5
Queue Length 95th (m)	64.0	16.3	12.1	49.3
Internal Link Dist (m)	237.6		109.0	194.2
Turn Bay Length (m)				
Base Capacity (vph)	635	629	1228	2290
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.41	0.33	0.26	0.44
Intersection Summary				

Lanes, Volumes, Timings  
6: Kanata Avenue & Hwy 417 EB On Ramp

2022 Total  
AM Peak Hour

							
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø3
Lane Configurations							
Traffic Volume (vph)	0	0	279	212	439	546	
Future Volume (vph)	0	0	279	212	439	546	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	0.0	0.0		60.0	0.0		
Storage Lanes	0	0		1	1		
Taper Length (m)	7.5				7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor				0.98	1.00		
Frt				0.850			
Flt Protected					0.950		
Satd. Flow (prot)	0	0	1759	1568	1752	1827	
Flt Permitted					0.457		
Satd. Flow (perm)	0	0	1759	1533	842	1827	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)				241			
Link Speed (k/h)	50		50			50	
Link Distance (m)	282.6		139.9			133.0	
Travel Time (s)	20.3		10.1			9.6	
Confl. Peds. (#/hr)	1	1		1	1		
Peak Hour Factor	0.89	0.89	0.88	0.88	0.89	0.89	
Heavy Vehicles (%)	2%	2%	8%	3%	3%	4%	
Adj. Flow (vph)	0	0	317	241	493	613	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	0	317	241	493	613	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(m)	0.0		3.6			3.6	
Link Offset(m)	0.0		0.0			0.0	
Crosswalk Width(m)	4.8		4.8			4.8	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (k/h)	25	15		15	25		
Number of Detectors			2	1	1	2	
Detector Template			Thru	Right	Left	Thru	
Leading Detector (m)			10.0	2.0	2.0	10.0	
Trailing Detector (m)			0.0	0.0	0.0	0.0	
Detector 1 Position(m)			0.0	0.0	0.0	0.0	
Detector 1 Size(m)			0.6	2.0	2.0	0.6	
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)			0.0	0.0	0.0	0.0	
Detector 1 Queue (s)			0.0	0.0	0.0	0.0	
Detector 1 Delay (s)			0.0	0.0	0.0	0.0	
Detector 2 Position(m)			9.4			9.4	
Detector 2 Size(m)			0.6			0.6	
Detector 2 Type			Cl+Ex			Cl+Ex	
Detector 2 Channel							
Detector 2 Extend (s)			0.0			0.0	

Lanes, Volumes, Timings  
6: Kanata Avenue & Hwy 417 EB On Ramp

2022 Total  
AM Peak Hour

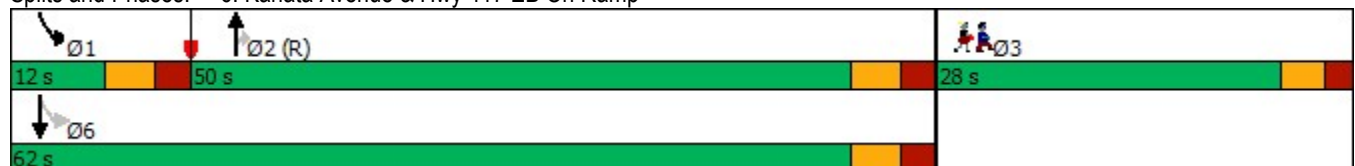


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø3
Turn Type			NA	Perm	pm+pt	NA	
Protected Phases			2		1	6	3
Permitted Phases				2	6		
Detector Phase			2	2	1	6	
Switch Phase							
Minimum Initial (s)			5.0	5.0	5.0	5.0	5.0
Minimum Split (s)			23.7	23.7	10.7	45.5	27.0
Total Split (s)			50.0	50.0	12.0	62.0	28.0
Total Split (%)			55.6%	55.6%	13.3%	68.9%	31%
Maximum Green (s)			44.3	44.3	6.3	56.3	23.0
Yellow Time (s)			3.3	3.3	3.3	3.3	3.0
All-Red Time (s)			2.4	2.4	2.4	2.4	2.0
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	
Total Lost Time (s)			5.7	5.7	5.7	5.7	
Lead/Lag			Lag	Lag	Lead		
Lead-Lag Optimize?			Yes	Yes	Yes		
Vehicle Extension (s)			3.0	3.0	3.0	3.0	3.0
Recall Mode			C-Max	C-Max	None	Max	Ped
Walk Time (s)			7.0	7.0		7.0	7.0
Flash Dont Walk (s)			11.0	11.0		11.0	15.0
Pedestrian Calls (#/hr)			0	0		0	0
Act Effct Green (s)			44.3	44.3	57.3	57.3	
Actuated g/C Ratio			0.49	0.49	0.64	0.64	
v/c Ratio			0.37	0.28	0.81	0.53	
Control Delay			15.7	2.6	20.3	8.1	
Queue Delay			0.0	0.0	0.0	0.2	
Total Delay			15.7	2.6	20.3	8.3	
LOS			B	A	C	A	
Approach Delay			10.1			13.6	
Approach LOS			B			B	

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 42 (47%), Referenced to phase 2:NBT, Start of Green  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.81  
 Intersection Signal Delay: 12.4  
 Intersection LOS: B  
 Intersection Capacity Utilization 48.8%  
 ICU Level of Service A  
 Analysis Period (min) 15

Splits and Phases: 6: Kanata Avenue & Hwy 417 EB On Ramp





## Queues

2022 Total

## 6: Kanata Avenue &amp; Hwy 417 EB On Ramp

AM Peak Hour



Lane Group	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	317	241	493	613
v/c Ratio	0.37	0.28	0.81	0.53
Control Delay	15.7	2.6	20.3	8.1
Queue Delay	0.0	0.0	0.0	0.2
Total Delay	15.7	2.6	20.3	8.3
Queue Length 50th (m)	34.1	0.0	26.4	32.8
Queue Length 95th (m)	52.1	10.9	#41.0	40.9
Internal Link Dist (m)	115.9			109.0
Turn Bay Length (m)		60.0		
Base Capacity (vph)	865	876	609	1163
Starvation Cap Reductn	0	0	0	99
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.37	0.28	0.81	0.58

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	13	1	35	48	4	23	34	254	11	21	557	14
Future Vol, veh/h	13	1	35	48	4	23	34	254	11	21	557	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	92	75	92	92	92	96	96	92	92	81	81
Heavy Vehicles, %	2	2	2	2	2	2	0	5	2	2	2	0
Mvmt Flow	17	1	47	52	4	25	35	265	12	23	688	17























Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1099	1090	697	1108	1092	271	705	0	0	277	0	0
Stage 1	743	743	-	341	341	-	-	-	-	-	-	-
Stage 2	356	347	-	767	751	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.1	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.2	-	-	2.218	-	-
Pot Cap-1 Maneuver	190	215	441	187	215	768	902	-	-	1286	-	-
Stage 1	407	422	-	674	639	-	-	-	-	-	-	-
Stage 2	661	635	-	395	418	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	171	199	441	157	199	768	902	-	-	1286	-	-
Mov Cap-2 Maneuver	171	199	-	157	199	-	-	-	-	-	-	-
Stage 1	388	410	-	643	610	-	-	-	-	-	-	-
Stage 2	606	606	-	342	406	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	19.9		32.4		1		0.2	
HCM LOS	C		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	902	-	-	306	211	1286	-	-
HCM Lane V/C Ratio	0.039	-	-	0.213	0.386	0.018	-	-
HCM Control Delay (s)	9.2	0	-	19.9	32.4	7.8	0	-
HCM Lane LOS	A	A	-	C	D	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.8	1.7	0.1	-	-

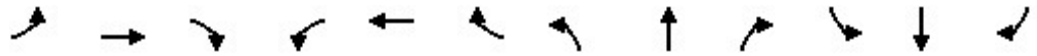
Lanes, Volumes, Timings  
1: Kanata Avenue & Campeau Drive

2022 Total  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	278	278	196	54	232	88	149	461	45	57	325	217
Future Volume (vph)	278	278	196	54	232	88	149	461	45	57	325	217
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0		0.0	30.0		0.0	40.0		40.0	90.0		90.0
Storage Lanes	1		0	1		0	1		0	1		1
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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99		1.00	0.99				0.93	0.98		
Frt		0.938			0.959				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1756	0	1736	1784	0	1770	1881	1468	1805	1881	1583
Flt Permitted	0.261			0.227			0.283			0.461		
Satd. Flow (perm)	480	1756	0	414	1784	0	527	1881	1370	855	1881	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		29			16				85			244
Link Speed (k/h)		50			50			50				50
Link Distance (m)		317.4			209.1			382.3				210.1
Travel Time (s)		22.9			15.1			27.5				15.1
Confl. Peds. (#/hr)	14		3	3		14			19	19		
Peak Hour Factor	0.92	0.92	0.92	0.96	0.96	0.96	0.94	0.94	0.94	0.89	0.89	0.89
Heavy Vehicles (%)	2%	0%	1%	4%	0%	3%	2%	1%	10%	0%	1%	2%
Adj. Flow (vph)	302	302	213	56	242	92	159	490	48	64	365	244
Shared Lane Traffic (%)												
Lane Group Flow (vph)	302	515	0	56	334	0	159	490	48	64	365	244
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)		3.6			3.6			3.6				3.6
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	0.0
Detector 1 Queue (s)	0.0	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	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

Lanes, Volumes, Timings  
1: Kanata Avenue & Campeau Drive

2022 Total  
PM Peak Hour

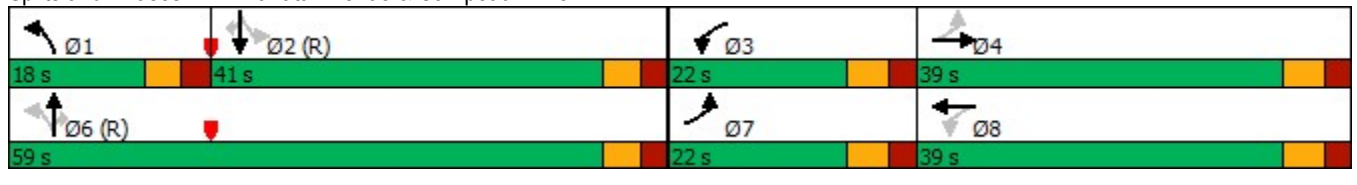


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8		1	6			2	
Permitted Phases	4			8			6		6	2		2
Detector Phase	7	4		3	8		1	6	6	2	2	2
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.2	37.2		11.3	37.2		10.9	29.9	29.9	29.9	29.9	29.9
Total Split (s)	22.0	39.0		22.0	39.0		18.0	59.0	59.0	41.0	41.0	41.0
Total Split (%)	18.3%	32.5%		18.3%	32.5%		15.0%	49.2%	49.2%	34.2%	34.2%	34.2%
Maximum Green (s)	15.8	32.8		15.8	32.8		12.1	53.1	53.1	35.1	35.1	35.1
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.5		2.5	2.5		2.6	2.6	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2		6.2	6.2		5.9	5.9	5.9	5.9	5.9	5.9
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	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	C-Max
Walk Time (s)		9.0			9.0			9.0	9.0	9.0	9.0	9.0
Flash Dont Walk (s)		22.0			22.0			15.0	15.0	15.0	15.0	15.0
Pedestrian Calls (#/hr)		3			0			0	0	3	3	3
Act Effct Green (s)	52.2	40.7		38.1	30.4		55.7	55.7	55.7	38.9	38.9	38.9
Actuated g/C Ratio	0.44	0.34		0.32	0.25		0.46	0.46	0.46	0.32	0.32	0.32
v/c Ratio	0.80	0.84		0.26	0.72		0.45	0.56	0.07	0.23	0.60	0.36
Control Delay	40.2	48.3		22.5	48.0		24.2	27.3	1.1	35.0	40.5	5.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.2	48.3		22.5	48.0		24.2	27.3	1.1	35.0	40.5	5.6
LOS	D	D		C	D		C	C	A	C	D	A
Approach Delay		45.3			44.3			24.8			27.3	
Approach LOS		D			D			C			C	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 85 (71%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.84  
 Intersection Signal Delay: 34.9  
 Intersection LOS: C  
 Intersection Capacity Utilization 84.9%  
 ICU Level of Service E  
 Analysis Period (min) 15

Splits and Phases: 1: Kanata Avenue & Campeau Drive



Queues  
1: Kanata Avenue & Campeau Drive

2022 Total  
PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	302	515	56	334	159	490	48	64	365	244
v/c Ratio	0.80	0.84	0.26	0.72	0.45	0.56	0.07	0.23	0.60	0.36
Control Delay	40.2	48.3	22.5	48.0	24.2	27.3	1.1	35.0	40.5	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.2	48.3	22.5	48.0	24.2	27.3	1.1	35.0	40.5	5.6
Queue Length 50th (m)	48.0	111.0	7.6	70.4	23.7	89.7	0.0	12.1	79.5	0.0
Queue Length 95th (m)	#71.7	#177.5	15.6	104.1	38.6	125.2	1.9	24.7	112.4	18.5
Internal Link Dist (m)		293.4		185.1		358.3			186.1	
Turn Bay Length (m)	90.0		30.0		40.0		40.0	90.0		90.0
Base Capacity (vph)	378	615	333	499	369	872	680	277	609	677
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.84	0.17	0.67	0.43	0.56	0.07	0.23	0.60	0.36

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Lanes, Volumes, Timings  
2: Kanata Avenue & Earl Grey

2022 Total  
PM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	86	204	251	569	485	89
Future Volume (vph)	86	204	251	569	485	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0	0.0	125.0			90.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			1.00			0.98
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1805	1599	1805	1863	1863	1615
Flt Permitted	0.950		0.334			
Satd. Flow (perm)	1805	1599	634	1863	1863	1579
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		229				105
Link Speed (k/h)	50			50	50	
Link Distance (m)	218.4			301.9	382.3	
Travel Time (s)	15.7			21.7	27.5	
Confl. Peds. (#/hr)			1			1
Peak Hour Factor	0.89	0.89	0.91	0.91	0.85	0.85
Heavy Vehicles (%)	0%	1%	0%	2%	2%	0%
Adj. Flow (vph)	97	229	276	625	571	105
Shared Lane Traffic (%)						
Lane Group Flow (vph)	97	229	276	625	571	105
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	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
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	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
Detector 1 Queue (s)	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
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	

Lanes, Volumes, Timings  
2: Kanata Avenue & Earl Grey

2022 Total  
PM Peak Hour

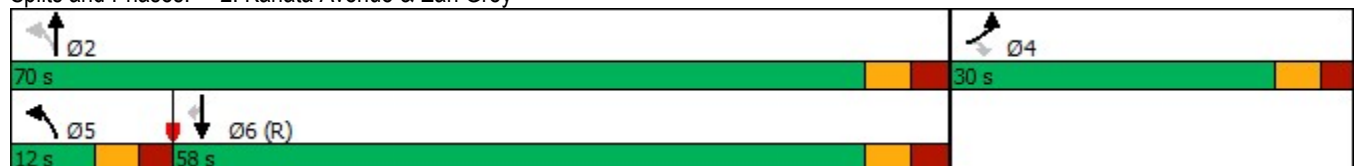


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.9	24.9	10.8	29.4	29.4	29.4
Total Split (s)	30.0	30.0	12.0	70.0	58.0	58.0
Total Split (%)	30.0%	30.0%	12.0%	70.0%	58.0%	58.0%
Maximum Green (s)	24.1	24.1	6.2	63.6	51.6	51.6
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.6	2.6	2.5	3.1	3.1	3.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.9	5.9	5.8	6.4	6.4	6.4
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
Recall Mode	None	None	None	None	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0		0	0	0
Act Effct Green (s)	10.7	10.7	77.6	77.0	61.4	61.4
Actuated g/C Ratio	0.11	0.11	0.78	0.77	0.61	0.61
v/c Ratio	0.50	0.61	0.46	0.44	0.50	0.10
Control Delay	50.4	12.9	5.8	5.5	13.7	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.4	12.9	5.8	5.5	13.7	2.4
LOS	D	B	A	A	B	A
Approach Delay	24.0			5.6	12.0	
Approach LOS	C			A	B	

Intersection Summary

Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 58 (58%), Referenced to phase 6:SBT, Start of Green  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.61  
 Intersection Signal Delay: 11.0  
 Intersection LOS: B  
 Intersection Capacity Utilization 59.3%  
 ICU Level of Service B  
 Analysis Period (min) 15

Splits and Phases: 2: Kanata Avenue & Earl Grey



Queues  
2: Kanata Avenue & Earl Grey

2022 Total  
PM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	97	229	276	625	571	105
v/c Ratio	0.50	0.61	0.46	0.44	0.50	0.10
Control Delay	50.4	12.9	5.8	5.5	13.7	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.4	12.9	5.8	5.5	13.7	2.4
Queue Length 50th (m)	19.0	0.0	11.9	35.6	59.2	0.0
Queue Length 95th (m)	33.7	20.2	23.3	64.1	96.7	6.5
Internal Link Dist (m)	194.4			277.9	358.3	
Turn Bay Length (m)	70.0		125.0			90.0
Base Capacity (vph)	435	559	606	1434	1143	1010
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.41	0.46	0.44	0.50	0.10
<b>Intersection Summary</b>						



Lanes, Volumes, Timings  
4: Kanata Avenue & Lord Byng/Maritime Way

2022 Total  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	3	85	94	10	31	166	805	152	50	616	29
Future Volume (vph)	33	3	85	94	10	31	166	805	152	50	616	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	0.0		0.0	75.0		0.0	35.0		0.0
Storage Lanes	1		0	1		0	1		0	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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98	0.98		1.00	0.97			1.00			1.00	
Frt		0.855			0.885			0.976			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1318	1317	0	1770	1625	0	1570	1847	0	1805	1850	0
Flt Permitted	0.726			0.696			0.087			0.100		
Satd. Flow (perm)	984	1317	0	1291	1625	0	144	1847	0	190	1850	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		91			36			20			3	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		214.1			97.4			218.2			173.6	
Travel Time (s)		15.4			7.0			15.7			12.5	
Confl. Peds. (#/hr)	12		4	4		12	3		3	3		3
Peak Hour Factor	0.93	0.93	0.93	0.87	0.87	0.87	0.88	0.88	0.88	0.82	0.82	0.82
Heavy Vehicles (%)	37%	0%	22%	2%	0%	0%	15%	0%	0%	0%	1%	20%
Adj. Flow (vph)	35	3	91	108	11	36	189	915	173	61	751	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	94	0	108	47	0	189	1088	0	61	786	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)		3.6			3.6			3.6			3.6	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		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	
Detector 1 Position(m)	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	0.6	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
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	

Lanes, Volumes, Timings  
4: Kanata Avenue & Lord Byng/Maritime Way

2022 Total  
PM Peak Hour



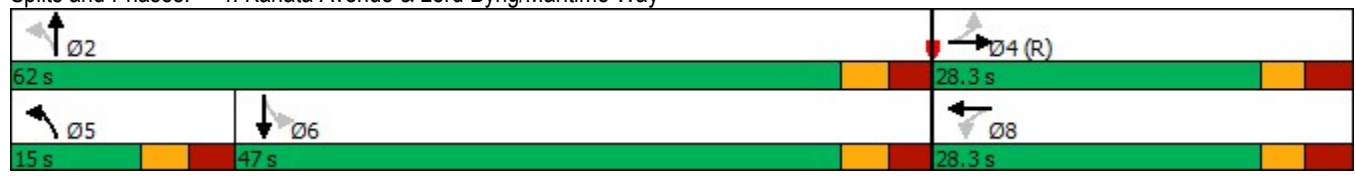
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2				6
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6		6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	28.3	28.3		28.3	28.3		11.3	33.3		33.3	33.3	
Total Split (s)	28.3	28.3		28.3	28.3		15.0	62.0		47.0	47.0	
Total Split (%)	31.3%	31.3%		31.3%	31.3%		16.6%	68.7%		52.0%	52.0%	
Maximum Green (s)	22.0	22.0		22.0	22.0		8.7	55.7		40.7	40.7	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.3	3.3		3.3	3.3		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3		6.3	6.3		6.3	6.3	
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	
Recall Mode	C-Max	C-Max		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			20.0		20.0	20.0	
Pedestrian Calls (#/hr)	14	14		3	3			3		14	14	
Act Effect Green (s)	22.8	22.8		22.8	22.8		54.9	54.9		39.9	39.9	
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.61	0.61		0.44	0.44	
v/c Ratio	0.14	0.24		0.33	0.11		0.84	0.96		0.73	0.96	
Control Delay	28.7	8.3		31.6	12.7		49.6	36.8		70.8	48.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	10.0		0.0	0.0	
Total Delay	28.7	8.3		31.6	12.7		49.6	46.8		70.8	48.6	
LOS	C	A		C	B		D	D		E	D	
Approach Delay		13.8			25.8			47.2			50.2	
Approach LOS		B			C			D			D	

Intersection Summary

Area Type: Other  
 Cycle Length: 90.3  
 Actuated Cycle Length: 90.3  
 Offset: 31 (34%), Referenced to phase 4:EBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.96  
 Intersection Signal Delay: 45.1  
 Intersection Capacity Utilization 89.9%  
 Analysis Period (min) 15

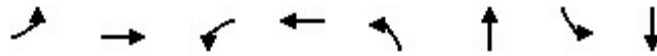
Intersection LOS: D  
 ICU Level of Service E

Splits and Phases: 4: Kanata Avenue & Lord Byng/Maritime Way



Queues  
4: Kanata Avenue & Lord Byng/Maritime Way

2022 Total  
PM Peak Hour














Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	35	94	108	47	189	1088	61	786
v/c Ratio	0.14	0.24	0.33	0.11	0.84	0.96	0.73	0.96
Control Delay	28.7	8.3	31.6	12.7	49.6	36.8	70.8	48.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	10.0	0.0	0.0
Total Delay	28.7	8.3	31.6	12.7	49.6	46.8	70.8	48.6
Queue Length 50th (m)	5.0	0.4	16.3	1.6	19.0	164.7	8.7	132.0
Queue Length 95th (m)	13.0	12.6	30.5	9.7	#54.2	#262.5	#28.1	#178.7
Internal Link Dist (m)		190.1		73.4		194.2		149.6
Turn Bay Length (m)	25.0				75.0		35.0	
Base Capacity (vph)	247	399	325	436	225	1146	85	835
Starvation Cap Reductn	0	0	0	0	0	66	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	0.14	0.24	0.33	0.11	0.84	1.01	0.72	0.94

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Lanes, Volumes, Timings  
5: Kanata Avenue & Hwy 417 WB Off Ramp

2022 Total  
PM Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						 
Traffic Volume (vph)	463	634	489	0	0	794
Future Volume (vph)	463	634	489	0	0	794
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Fr <sub>t</sub>		0.850				
Fl <sub>t</sub> Protected	0.950					
Satd. Flow (prot)	1787	1392	1827	0	0	3406
Fl <sub>t</sub> Permitted	0.950					
Satd. Flow (perm)	1787	1392	1827	0	0	3406
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		211				
Link Speed (k/h)	50		50			50
Link Distance (m)	261.6		133.0			218.2
Travel Time (s)	18.8		9.6			15.7
Peak Hour Factor	0.95	0.95	0.90	0.93	0.92	0.99
Heavy Vehicles (%)	1%	16%	4%	2%	2%	6%
Adj. Flow (vph)	487	667	543	0	0	802
Shared Lane Traffic (%)						
Lane Group Flow (vph)	487	667	543	0	0	802
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	2.0	2.0	10.0			10.0
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	2.0	2.0	0.6			0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						

Lanes, Volumes, Timings  
 5: Kanata Avenue & Hwy 417 WB Off Ramp

2022 Total  
 PM Peak Hour

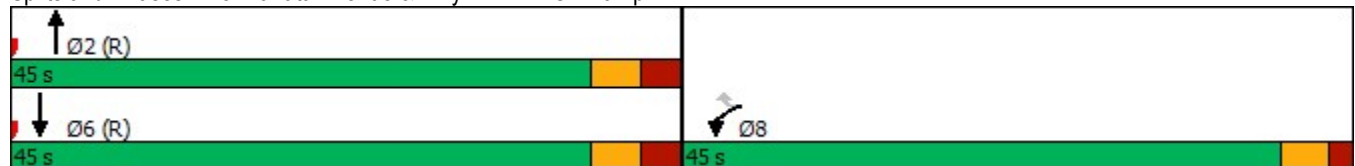


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0			5.0
Minimum Split (s)	23.0	23.0	28.1			28.1
Total Split (s)	45.0	45.0	45.0			45.0
Total Split (%)	50.0%	50.0%	50.0%			50.0%
Maximum Green (s)	40.0	40.0	38.9			38.9
Yellow Time (s)	3.3	3.3	3.3			3.3
All-Red Time (s)	1.7	1.7	2.8			2.8
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	5.0	5.0	6.1			6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	C-Max			C-Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	11.0	11.0	15.0			15.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	37.3	37.3	41.6			41.6
Actuated g/C Ratio	0.41	0.41	0.46			0.46
v/c Ratio	0.66	0.95	0.64			0.51
Control Delay	25.6	42.4	34.3			19.2
Queue Delay	0.0	0.0	8.6			0.0
Total Delay	25.6	42.4	43.0			19.2
LOS	C	D	D			B
Approach Delay	35.3		43.0			19.2
Approach LOS	D		D			B

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 32 (36%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 70  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.95  
 Intersection Signal Delay: 31.8  
 Intersection LOS: C  
 Intersection Capacity Utilization 100.9%  
 ICU Level of Service G  
 Analysis Period (min) 15

Splits and Phases: 5: Kanata Avenue & Hwy 417 WB Off Ramp



## Queues

2022 Total

## 5: Kanata Avenue &amp; Hwy 417 WB Off Ramp

PM Peak Hour













Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	487	667	543	802
v/c Ratio	0.66	0.95	0.64	0.51
Control Delay	25.6	42.4	34.3	19.2
Queue Delay	0.0	0.0	8.6	0.0
Total Delay	25.6	42.4	43.0	19.2
Queue Length 50th (m)	65.5	80.3	104.4	55.4
Queue Length 95th (m)	98.7	#158.8	140.2	73.3
Internal Link Dist (m)	237.6		109.0	194.2
Turn Bay Length (m)				
Base Capacity (vph)	794	735	844	1573
Starvation Cap Reductn	0	0	262	0
Spillback Cap Reductn	0	0	0	40
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.61	0.91	0.93	0.52

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Lanes, Volumes, Timings  
6: Kanata Avenue & Hwy 417 EB On Ramp

2022 Total  
PM Peak Hour

							
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø3
Lane Configurations							
Traffic Volume (vph)	0	0	489	193	365	892	
Future Volume (vph)	0	0	489	193	365	892	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	0.0	0.0		60.0	0.0		
Storage Lanes	0	0		1	1		
Taper Length (m)	7.5				7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor				0.98	1.00		
Flt				0.850			
Flt Protected					0.950		
Satd. Flow (prot)	0	0	1810	1583	1736	1863	
Flt Permitted					0.426		
Satd. Flow (perm)	0	0	1810	1544	777	1863	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)				197			
Link Speed (k/h)	50		50			50	
Link Distance (m)	282.6		139.9			133.0	
Travel Time (s)	20.3		10.1			9.6	
Confl. Peds. (#/hr)				2	2		
Peak Hour Factor	0.89	0.89	0.98	0.98	0.93	0.93	
Heavy Vehicles (%)	2%	2%	5%	2%	4%	2%	
Adj. Flow (vph)	0	0	499	197	392	959	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	0	499	197	392	959	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(m)	0.0		3.6			3.6	
Link Offset(m)	0.0		0.0			0.0	
Crosswalk Width(m)	4.8		4.8			4.8	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (k/h)	25	15		15	25		
Number of Detectors			2	1	1	2	
Detector Template			Thru	Right	Left	Thru	
Leading Detector (m)			10.0	2.0	2.0	10.0	
Trailing Detector (m)			0.0	0.0	0.0	0.0	
Detector 1 Position(m)			0.0	0.0	0.0	0.0	
Detector 1 Size(m)			0.6	2.0	2.0	0.6	
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)			0.0	0.0	0.0	0.0	
Detector 1 Queue (s)			0.0	0.0	0.0	0.0	
Detector 1 Delay (s)			0.0	0.0	0.0	0.0	
Detector 2 Position(m)			9.4			9.4	
Detector 2 Size(m)			0.6			0.6	
Detector 2 Type			Cl+Ex			Cl+Ex	
Detector 2 Channel							
Detector 2 Extend (s)			0.0			0.0	

Lanes, Volumes, Timings  
6: Kanata Avenue & Hwy 417 EB On Ramp

2022 Total  
PM Peak Hour

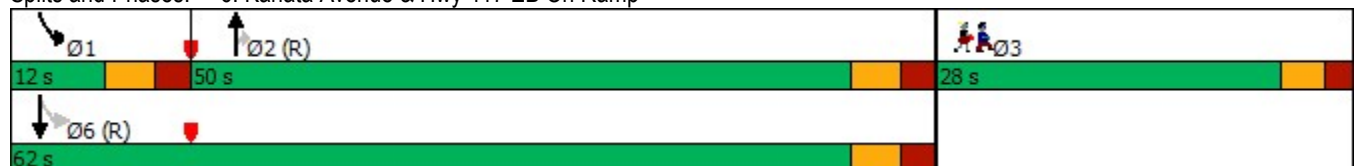


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø3
Turn Type			NA	Perm	pm+pt	NA	
Protected Phases			2		1	6	3
Permitted Phases				2	6		
Detector Phase			2	2	1	6	
Switch Phase							
Minimum Initial (s)			5.0	5.0	5.0	5.0	5.0
Minimum Split (s)			23.9	23.9	10.9	23.9	27.0
Total Split (s)			50.0	50.0	12.0	62.0	28.0
Total Split (%)			55.6%	55.6%	13.3%	68.9%	31%
Maximum Green (s)			44.3	44.3	6.3	56.3	23.0
Yellow Time (s)			3.3	3.3	3.3	3.3	3.0
All-Red Time (s)			2.4	2.4	2.4	2.4	2.0
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	
Total Lost Time (s)			5.7	5.7	5.7	5.7	
Lead/Lag			Lag	Lag	Lead		
Lead-Lag Optimize?			Yes	Yes	Yes		
Vehicle Extension (s)			3.0	3.0	3.0	3.0	3.0
Recall Mode			C-Max	C-Max	None	C-Max	None
Walk Time (s)			7.0	7.0		7.0	7.0
Flash Dont Walk (s)			11.0	11.0		11.0	15.0
Pedestrian Calls (#/hr)			0	0		0	0
Act Effct Green (s)			68.1	68.1	84.3	90.0	
Actuated g/C Ratio			0.76	0.76	0.94	1.00	
v/c Ratio			0.36	0.16	0.47	0.51	
Control Delay			4.7	0.8	2.8	2.2	
Queue Delay			0.1	0.0	0.7	0.0	
Total Delay			4.8	0.8	3.6	2.2	
LOS			A	A	A	A	
Approach Delay			3.7			2.6	
Approach LOS			A			A	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle:	80
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.51
Intersection Signal Delay:	3.0
Intersection LOS:	A
Intersection Capacity Utilization:	100.9%
ICU Level of Service:	G
Analysis Period (min):	15

Splits and Phases: 6: Kanata Avenue & Hwy 417 EB On Ramp





Queues

2022 Total

6: Kanata Avenue & Hwy 417 EB On Ramp

PM Peak Hour



Lane Group	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	499	197	392	959
v/c Ratio	0.36	0.16	0.47	0.51
Control Delay	4.7	0.8	2.8	2.2
Queue Delay	0.1	0.0	0.7	0.0
Total Delay	4.8	0.8	3.6	2.2
Queue Length 50th (m)	23.9	0.0	2.0	0.0
Queue Length 95th (m)	42.0	4.9	3.1	0.0
Internal Link Dist (m)	115.9			109.0
Turn Bay Length (m)		60.0		
Base Capacity (vph)	1368	1215	840	1863
Starvation Cap Reductn	0	0	196	0
Spillback Cap Reductn	198	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.43	0.16	0.61	0.51

Intersection Summary

Intersection												
Int Delay, s/veh	21.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	19	5	56	32	5	40	54	762	54	44	607	41
Future Vol, veh/h	19	5	56	32	5	40	54	762	54	44	607	41
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	69	92	69	92	92	92	84	84	92	92	96	96
Heavy Vehicles, %	0	2	0	2	2	2	0	2	2	2	4	0
Mvmt Flow	28	5	81	35	5	43	64	907	59	48	632	43

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1839	1844	654	1858	1836	937	675	0	0	966	0	0
Stage 1	750	750	-	1065	1065	-	-	-	-	-	-	-
Stage 2	1089	1094	-	793	771	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.52	6.2	7.12	6.52	6.22	4.1	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.018	3.3	3.518	4.018	3.318	2.2	-	-	2.218	-	-
Pot Cap-1 Maneuver	59	75	470	56	76	321	926	-	-	713	-	-
Stage 1	407	419	-	269	299	-	-	-	-	-	-	-
Stage 2	263	290	-	382	410	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	39	57	470	35	57	321	926	-	-	713	-	-
Mov Cap-2 Maneuver	39	57	-	35	57	-	-	-	-	-	-	-
Stage 1	346	373	-	228	254	-	-	-	-	-	-	-
Stage 2	189	246	-	277	365	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	146.6		288.8		0.6		0.7	
HCM LOS	F		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	926	-	-	117	68	713	-	-
HCM Lane V/C Ratio	0.069	-	-	0.975	1.231	0.067	-	-
HCM Control Delay (s)	9.2	0	-	146.6	288.8	10.4	0	-
HCM Lane LOS	A	A	-	F	F	B	A	-
HCM 95th %tile Q(veh)	0.2	-	-	6.4	6.7	0.2	-	-

Lanes, Volumes, Timings  
1: Kanata Avenue & Campeau Drive

2027 Total  
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	176	50	43	205	75	79	145	42	133	559	221
Future Volume (vph)	105	176	50	43	205	75	79	145	42	133	559	221
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0		0.0	30.0		0.0	0.0		40.0	90.0		90.0
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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	0.99				0.97	0.99		
Frt		0.967			0.960				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1656	1776	0	1530	1697	0	1687	1827	1429	1671	1863	1583
Flt Permitted	0.397			0.481			0.088			0.606		
Satd. Flow (perm)	688	1776	0	773	1697	0	156	1827	1388	1059	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			17				93			230
Link Speed (k/h)		50			50			50				50
Link Distance (m)		317.4			209.1			382.3				210.1
Travel Time (s)		22.9			15.1			27.5				15.1
Confl. Peds. (#/hr)	5		3	3		5			4	4		
Peak Hour Factor	0.81	0.81	0.81	0.95	0.95	0.95	0.59	0.59	0.59	0.90	0.90	0.90
Heavy Vehicles (%)	9%	4%	0%	18%	5%	11%	7%	4%	13%	8%	2%	2%
Adj. Flow (vph)	130	217	62	45	216	79	134	246	71	148	621	246
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	279	0	45	295	0	134	246	71	148	621	246
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)		3.6			3.6			3.6				3.6
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	0.0
Detector 1 Queue (s)	0.0	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	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	

Lanes, Volumes, Timings  
1: Kanata Avenue & Campeau Drive

2027 Total  
AM Peak Hour

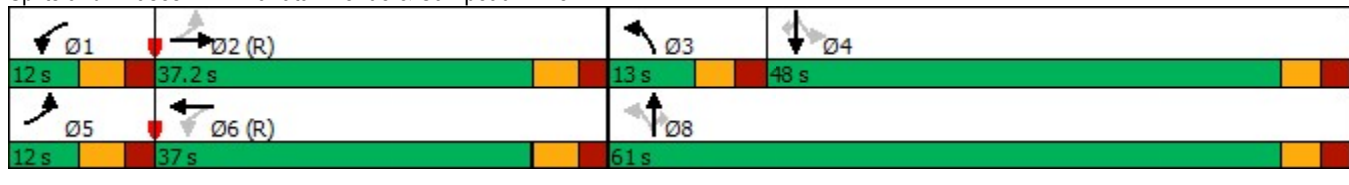


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		1	6		3	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.2	37.2		11.2	30.2		10.9	29.9	29.9	36.9	36.9	36.9
Total Split (s)	12.0	37.2		12.0	37.0		13.0	61.0	61.0	48.0	48.0	48.0
Total Split (%)	10.9%	33.8%		10.9%	33.6%		11.8%	55.4%	55.4%	43.6%	43.6%	43.6%
Maximum Green (s)	5.8	31.0		5.8	30.8		7.1	55.1	55.1	42.1	42.1	42.1
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.5		2.5	2.5		2.6	2.6	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2		6.2	6.2		5.9	5.9	5.9	5.9	5.9	5.9
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	None	None
Walk Time (s)		9.0			9.0			9.0	9.0	9.0	9.0	9.0
Flash Dont Walk (s)		22.0			15.0			15.0	15.0	22.0	22.0	22.0
Pedestrian Calls (#/hr)		0			0			0	0	0	0	0
Act Effct Green (s)	40.7	35.6		38.4	32.5		52.8	52.8	52.8	39.8	39.8	39.8
Actuated g/C Ratio	0.37	0.32		0.35	0.29		0.48	0.48	0.48	0.36	0.36	0.36
v/c Ratio	0.42	0.48		0.15	0.58		0.77	0.28	0.10	0.39	0.92	0.34
Control Delay	27.7	33.7		22.5	36.9		48.5	17.8	2.0	28.9	54.4	5.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.7	33.7		22.5	36.9		48.5	17.8	2.0	28.9	54.4	5.2
LOS	C	C		C	D		D	B	A	C	D	A
Approach Delay		31.8			35.0			24.4			38.8	
Approach LOS		C			D			C			D	

Intersection Summary

Area Type: Other  
 Cycle Length: 110.2  
 Actuated Cycle Length: 110.2  
 Offset: 67 (61%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 100  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.92  
 Intersection Signal Delay: 34.0 Intersection LOS: C  
 Intersection Capacity Utilization 84.0% ICU Level of Service E  
 Analysis Period (min) 15

Splits and Phases: 1: Kanata Avenue & Campeau Drive



Queues  
1: Kanata Avenue & Campeau Drive

2027 Total  
AM Peak Hour



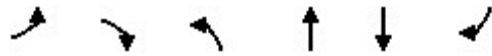
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	130	279	45	295	134	246	71	148	621	246
v/c Ratio	0.42	0.48	0.15	0.58	0.77	0.28	0.10	0.39	0.92	0.34
Control Delay	27.7	33.7	22.5	36.9	48.5	17.8	2.0	28.9	54.4	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.7	33.7	22.5	36.9	48.5	17.8	2.0	28.9	54.4	5.2
Queue Length 50th (m)	19.2	51.1	6.3	54.6	15.9	31.0	0.0	23.7	128.7	2.2
Queue Length 95th (m)	29.6	68.8	14.1	84.0	17.1	29.0	0.0	41.9	#195.6	18.6
Internal Link Dist (m)		293.4		185.1		358.3			186.1	
Turn Bay Length (m)	90.0		30.0				40.0	90.0		90.0
Base Capacity (vph)	311	581	310	512	173	913	740	404	711	746
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.48	0.15	0.58	0.77	0.27	0.10	0.37	0.87	0.33

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Lanes, Volumes, Timings  
2: Kanata Avenue & Earl Grey

2027 Total  
AM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	12	44	64	254	608	44
Future Volume (vph)	12	44	64	254	608	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0	0.0	125.0			90.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor			1.00			0.98
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1504	1524	1805	3312	3505	1455
Flt Permitted	0.950		0.383			
Satd. Flow (perm)	1504	1524	727	3312	3505	1424
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		51				51
Link Speed (k/h)	50			50	50	
Link Distance (m)	218.4			301.9	382.3	
Travel Time (s)	15.7			21.7	27.5	
Confl. Peds. (#/hr)			1			1
Peak Hour Factor	0.87	0.87	0.79	0.79	0.86	0.86
Heavy Vehicles (%)	20%	6%	0%	9%	3%	11%
Adj. Flow (vph)	14	51	81	322	707	51
Shared Lane Traffic (%)						
Lane Group Flow (vph)	14	51	81	322	707	51
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	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
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	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
Detector 1 Queue (s)	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
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	

Lanes, Volumes, Timings  
2: Kanata Avenue & Earl Grey

2027 Total  
AM Peak Hour

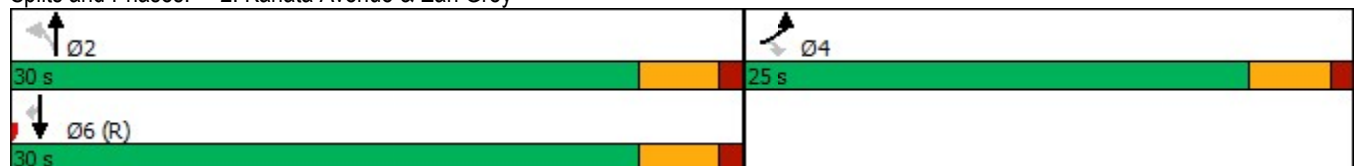


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.3	23.3	27.3	27.3	27.3	27.3
Total Split (s)	25.0	25.0	30.0	30.0	30.0	30.0
Total Split (%)	45.5%	45.5%	54.5%	54.5%	54.5%	54.5%
Maximum Green (s)	20.7	20.7	25.7	25.7	25.7	25.7
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.3	4.3	4.3	4.3	4.3	4.3
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	6.3	6.3	45.7	45.7	45.7	45.7
Actuated g/C Ratio	0.11	0.11	0.83	0.83	0.83	0.83
v/c Ratio	0.08	0.23	0.13	0.12	0.24	0.04
Control Delay	22.2	10.4	3.0	2.0	2.3	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	10.4	3.0	2.0	2.3	1.0
LOS	C	B	A	A	A	A
Approach Delay	12.9			2.2	2.2	
Approach LOS	B			A	A	

Intersection Summary

Area Type: Other  
 Cycle Length: 55  
 Actuated Cycle Length: 55  
 Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green  
 Natural Cycle: 55  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.24  
 Intersection Signal Delay: 2.8  
 Intersection LOS: A  
 Intersection Capacity Utilization 38.3%  
 ICU Level of Service A  
 Analysis Period (min) 15

Splits and Phases: 2: Kanata Avenue & Earl Grey



Queues  
2: Kanata Avenue & Earl Grey

2027 Total  
AM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	14	51	81	322	707	51
v/c Ratio	0.08	0.23	0.13	0.12	0.24	0.04
Control Delay	22.2	10.4	3.0	2.0	2.3	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	10.4	3.0	2.0	2.3	1.0
Queue Length 50th (m)	1.4	0.0	1.8	3.5	8.7	0.0
Queue Length 95th (m)	5.3	7.3	4.9	6.4	15.4	1.9
Internal Link Dist (m)	194.4			277.9	358.3	
Turn Bay Length (m)	70.0		125.0			90.0
Base Capacity (vph)	566	605	604	2754	2914	1193
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.08	0.13	0.12	0.24	0.04
Intersection Summary						



Lanes, Volumes, Timings  
4: Kanata Avenue & Lord Byng/Maritime Way

2027 Total  
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	7	43	119	2	24	101	283	137	20	660	21
Future Volume (vph)	23	7	43	119	2	24	101	283	137	20	660	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	0.0		0.0	0.0		0.0	35.0		0.0
Storage Lanes	1		0	1		0	1		0	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	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor	1.00	0.99		1.00	0.99		1.00	0.99		1.00	1.00	
Frt		0.871			0.860			0.951			0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1318	1101	0	1687	1614	0	1480	1720	0	1543	3475	0
Flt Permitted	0.737			0.715			0.289			0.472		
Satd. Flow (perm)	1021	1101	0	1265	1614	0	449	1720	0	766	3475	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		56			29			50				5
Link Speed (k/h)		50			50			50				50
Link Distance (m)		214.1			97.4			218.2				173.6
Travel Time (s)		15.4			7.0			15.7				12.5
Confl. Peds. (#/hr)	1		3	3		1	3		1	1		3
Peak Hour Factor	0.77	0.77	0.77	0.83	0.83	0.83	0.81	0.81	0.81	0.91	0.91	0.91
Heavy Vehicles (%)	37%	0%	56%	7%	0%	0%	22%	4%	5%	17%	2%	44%
Adj. Flow (vph)	30	9	56	143	2	29	125	349	169	22	725	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	65	0	143	31	0	125	518	0	22	748	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)		3.6			3.6			3.6				3.6
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		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	
Detector 1 Position(m)	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	0.6	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
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	

Lanes, Volumes, Timings  
4: Kanata Avenue & Lord Byng/Maritime Way

2027 Total  
AM Peak Hour

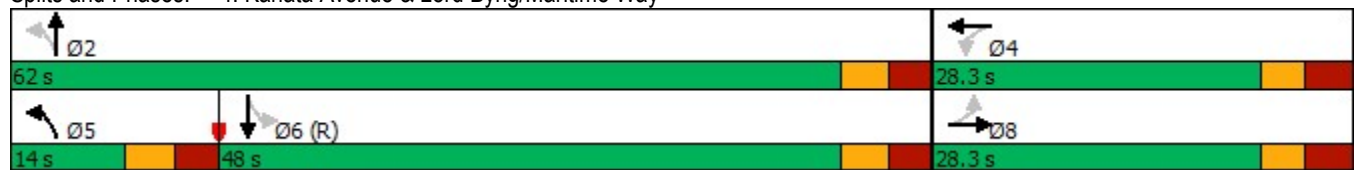


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		5	2				6
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		5	2		6		6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0		5.0
Minimum Split (s)	28.3	28.3		28.3	28.3		11.3	33.3		33.3		33.3
Total Split (s)	28.3	28.3		28.3	28.3		14.0	62.0		48.0		48.0
Total Split (%)	31.3%	31.3%		31.3%	31.3%		15.5%	68.7%		53.2%		53.2%
Maximum Green (s)	22.0	22.0		22.0	22.0		7.7	55.7		41.7		41.7
Yellow Time (s)	3.0	3.0		3.0	3.0		3.3	3.3		3.3		3.3
All-Red Time (s)	3.3	3.3		3.3	3.3		3.0	3.0		3.0		3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	6.3	6.3		6.3	6.3		6.3	6.3		6.3		6.3
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
Recall Mode	None	None		None	None		None	None		C-Max		C-Max
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0		7.0
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0		15.0		15.0
Pedestrian Calls (#/hr)	0	0		0	0			0		0		0
Act Effct Green (s)	15.4	15.4		15.4	15.4		62.3	62.3		48.5		48.5
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.69	0.69		0.54		0.54
v/c Ratio	0.17	0.28		0.67	0.10		0.32	0.43		0.05		0.40
Control Delay	31.9	13.5		49.2	11.9		7.9	7.6		12.9		14.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Delay	31.9	13.5		49.2	11.9		7.9	7.6		12.9		14.1
LOS	C	B		D	B		A	A		B		B
Approach Delay		19.3			42.6			7.7				14.0
Approach LOS		B			D			A				B

Intersection Summary

Area Type: Other  
 Cycle Length: 90.3  
 Actuated Cycle Length: 90.3  
 Offset: 3.4 (4%), Referenced to phase 6:SBTL, Start of Green  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.67  
 Intersection Signal Delay: 14.8  
 Intersection LOS: B  
 Intersection Capacity Utilization 56.6%  
 ICU Level of Service B  
 Analysis Period (min) 15

Splits and Phases: 4: Kanata Avenue & Lord Byng/Maritime Way



Queues  
4: Kanata Avenue & Lord Byng/Maritime Way













2027 Total  
AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	30	65	143	31	125	518	22	748
v/c Ratio	0.17	0.28	0.67	0.10	0.32	0.43	0.05	0.40
Control Delay	31.9	13.5	49.2	11.9	7.9	7.6	12.9	14.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.9	13.5	49.2	11.9	7.9	7.6	12.9	14.1
Queue Length 50th (m)	4.7	1.4	24.7	0.3	6.7	31.8	1.8	40.2
Queue Length 95th (m)	9.9	8.6	37.3	6.4	14.3	54.3	6.6	62.7
Internal Link Dist (m)		190.1		73.4		194.2		149.6
Turn Bay Length (m)	25.0						35.0	
Base Capacity (vph)	248	310	308	415	401	1202	411	1867
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	0.12	0.21	0.46	0.07	0.31	0.43	0.05	0.40
<b>Intersection Summary</b>								

Lanes, Volumes, Timings  
5: Kanata Avenue & Hwy 417 WB Off Ramp

2027 Total  
AM Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (vph)	265	213	308	0	0	822
Future Volume (vph)	265	213	308	0	0	822
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Fr't		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1787	1392	3471	0	0	3406
Flt Permitted	0.950					
Satd. Flow (perm)	1787	1392	3471	0	0	3406
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		229				
Link Speed (k/h)	50		50			50
Link Distance (m)	261.6		133.0			218.2
Travel Time (s)	18.8		9.6			15.7
Peak Hour Factor	0.93	0.93	0.87	0.93	0.92	0.74
Heavy Vehicles (%)	1%	16%	4%	2%	2%	6%
Adj. Flow (vph)	285	229	354	0	0	1111
Shared Lane Traffic (%)						
Lane Group Flow (vph)	285	229	354	0	0	1111
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	2.0	2.0	10.0			10.0
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	2.0	2.0	0.6			0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						

Lanes, Volumes, Timings  
 5: Kanata Avenue & Hwy 417 WB Off Ramp

2027 Total  
 AM Peak Hour

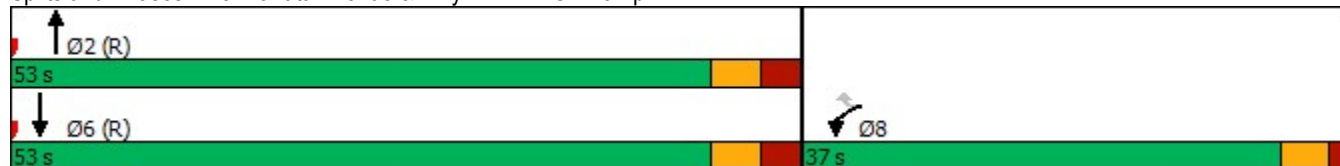


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0			5.0
Minimum Split (s)	23.0	23.0	28.1			28.1
Total Split (s)	37.0	37.0	53.0			53.0
Total Split (%)	41.1%	41.1%	58.9%			58.9%
Maximum Green (s)	32.0	32.0	46.9			46.9
Yellow Time (s)	3.3	3.3	3.3			3.3
All-Red Time (s)	1.7	1.7	2.8			2.8
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	5.0	5.0	6.1			6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	C-Max			C-Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	11.0	11.0	15.0			15.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	19.7	19.7	59.2			59.2
Actuated g/C Ratio	0.22	0.22	0.66			0.66
v/c Ratio	0.73	0.47	0.16			0.50
Control Delay	43.1	7.1	3.8			9.6
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	43.1	7.1	3.8			9.6
LOS	D	A	A			A
Approach Delay	27.1		3.8			9.6
Approach LOS	C		A			A

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	37 (41%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	55
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.73
Intersection Signal Delay:	13.1
Intersection LOS:	B
Intersection Capacity Utilization	52.5%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 5: Kanata Avenue & Hwy 417 WB Off Ramp



Queues  
5: Kanata Avenue & Hwy 417 WB Off Ramp











2027 Total  
AM Peak Hour



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	285	229	354	1111
v/c Ratio	0.73	0.47	0.16	0.50
Control Delay	43.1	7.1	3.8	9.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	43.1	7.1	3.8	9.6
Queue Length 50th (m)	48.4	0.0	5.0	48.0
Queue Length 95th (m)	68.9	16.5	6.8	58.4
Internal Link Dist (m)	237.6		109.0	194.2
Turn Bay Length (m)				
Base Capacity (vph)	635	642	2281	2238
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.45	0.36	0.16	0.50
Intersection Summary				

Lanes, Volumes, Timings  
6: Kanata Avenue & Hwy 417 EB On Ramp

2027 Total  
AM Peak Hour

							
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø3
Lane Configurations							
Traffic Volume (vph)	0	0	308	234	483	601	
Future Volume (vph)	0	0	308	234	483	601	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	0.0	0.0		60.0	0.0		
Storage Lanes	0	0		1	1		
Taper Length (m)	7.5				7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor				0.98	1.00		
Frt				0.850			
Flt Protected					0.950		
Satd. Flow (prot)	0	0	1759	1568	1752	1827	
Flt Permitted					0.430		
Satd. Flow (perm)	0	0	1759	1533	792	1827	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)				266			
Link Speed (k/h)	50		50			50	
Link Distance (m)	282.6		139.9			133.0	
Travel Time (s)	20.3		10.1			9.6	
Confl. Peds. (#/hr)	1	1		1	1		
Peak Hour Factor	0.89	0.89	0.88	0.88	0.89	0.89	
Heavy Vehicles (%)	2%	2%	8%	3%	3%	4%	
Adj. Flow (vph)	0	0	350	266	543	675	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	0	350	266	543	675	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(m)	0.0		3.6			3.6	
Link Offset(m)	0.0		0.0			0.0	
Crosswalk Width(m)	4.8		4.8			4.8	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (k/h)	25	15		15	25		
Number of Detectors			2	1	1	2	
Detector Template			Thru	Right	Left	Thru	
Leading Detector (m)			10.0	2.0	2.0	10.0	
Trailing Detector (m)			0.0	0.0	0.0	0.0	
Detector 1 Position(m)			0.0	0.0	0.0	0.0	
Detector 1 Size(m)			0.6	2.0	2.0	0.6	
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)			0.0	0.0	0.0	0.0	
Detector 1 Queue (s)			0.0	0.0	0.0	0.0	
Detector 1 Delay (s)			0.0	0.0	0.0	0.0	
Detector 2 Position(m)			9.4			9.4	
Detector 2 Size(m)			0.6			0.6	
Detector 2 Type			Cl+Ex			Cl+Ex	
Detector 2 Channel							
Detector 2 Extend (s)			0.0			0.0	

Lanes, Volumes, Timings  
6: Kanata Avenue & Hwy 417 EB On Ramp

2027 Total  
AM Peak Hour

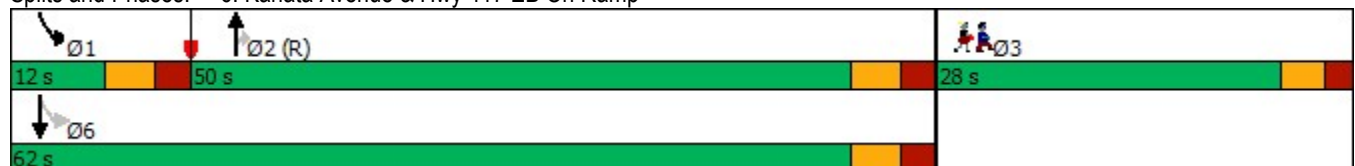


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø3
Turn Type			NA	Perm	pm+pt	NA	
Protected Phases			2		1	6	3
Permitted Phases				2	6		
Detector Phase			2	2	1	6	
Switch Phase							
Minimum Initial (s)			5.0	5.0	5.0	5.0	5.0
Minimum Split (s)			23.7	23.7	10.7	45.5	27.0
Total Split (s)			50.0	50.0	12.0	62.0	28.0
Total Split (%)			55.6%	55.6%	13.3%	68.9%	31%
Maximum Green (s)			44.3	44.3	6.3	56.3	23.0
Yellow Time (s)			3.3	3.3	3.3	3.3	3.0
All-Red Time (s)			2.4	2.4	2.4	2.4	2.0
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	
Total Lost Time (s)			5.7	5.7	5.7	5.7	
Lead/Lag			Lag	Lag	Lead		
Lead-Lag Optimize?			Yes	Yes	Yes		
Vehicle Extension (s)			3.0	3.0	3.0	3.0	3.0
Recall Mode			C-Max	C-Max	None	Max	Ped
Walk Time (s)			7.0	7.0		7.0	7.0
Flash Dont Walk (s)			11.0	11.0		11.0	15.0
Pedestrian Calls (#/hr)			0	0		0	0
Act Effct Green (s)			44.3	44.3	57.3	57.3	
Actuated g/C Ratio			0.49	0.49	0.64	0.64	
v/c Ratio			0.40	0.30	0.93	0.58	
Control Delay			16.3	2.6	35.2	8.3	
Queue Delay			0.0	0.0	0.0	0.1	
Total Delay			16.3	2.6	35.2	8.4	
LOS			B	A	D	A	
Approach Delay			10.4			20.3	
Approach LOS			B			C	

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 42 (47%), Referenced to phase 2:NBT, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.93  
 Intersection Signal Delay: 17.0  
 Intersection LOS: B  
 Intersection Capacity Utilization 52.5%  
 ICU Level of Service A  
 Analysis Period (min) 15

Splits and Phases: 6: Kanata Avenue & Hwy 417 EB On Ramp





Queues  
6: Kanata Avenue & Hwy 417 EB On Ramp

2027 Total  
AM Peak Hour



Lane Group	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	350	266	543	675
v/c Ratio	0.40	0.30	0.93	0.58
Control Delay	16.3	2.6	35.2	8.3
Queue Delay	0.0	0.0	0.0	0.1
Total Delay	16.3	2.6	35.2	8.4
Queue Length 50th (m)	38.6	0.0	29.2	36.2
Queue Length 95th (m)	58.3	11.3	#76.3	44.3
Internal Link Dist (m)	115.9			109.0
Turn Bay Length (m)		60.0		
Base Capacity (vph)	865	889	582	1163
Starvation Cap Reductn	0	0	0	55
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.40	0.30	0.93	0.61

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	1	38	48	4	23	37	280	12	21	615	16
Future Vol, veh/h	15	1	38	48	4	23	37	280	12	21	615	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	92	75	92	92	92	96	96	92	92	81	81
Heavy Vehicles, %	2	2	2	2	2	2	0	5	2	2	2	0
Mvmt Flow	20	1	51	52	4	25	39	292	13	23	759	20

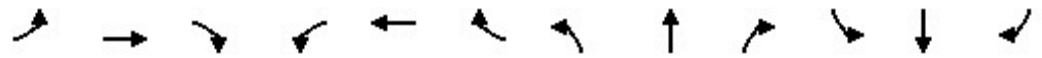
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1041	1198	390	803	1202	153	779	0	0	305	0	0
Stage 1	815	815	-	377	377	-	-	-	-	-	-	-
Stage 2	226	383	-	426	825	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.1	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.2	-	-	2.22	-	-
Pot Cap-1 Maneuver	184	184	609	275	183	866	847	-	-	1253	-	-
Stage 1	338	389	-	616	614	-	-	-	-	-	-	-
Stage 2	756	610	-	577	385	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	164	168	609	234	167	866	847	-	-	1253	-	-
Mov Cap-2 Maneuver	164	168	-	234	167	-	-	-	-	-	-	-
Stage 1	319	377	-	582	580	-	-	-	-	-	-	-
Stage 2	688	576	-	511	373	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	18.4		22		1.2		0.3	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	847	-	-	339	293	1253	-	-
HCM Lane V/C Ratio	0.046	-	-	0.212	0.278	0.018	-	-
HCM Control Delay (s)	9.5	0.2	-	18.4	22	7.9	0.1	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.8	1.1	0.1	-	-

Lanes, Volumes, Timings  
1: Kanata Avenue & Campeau Drive

2027 Total  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	307	307	214	59	256	97	164	507	49	63	357	240
Future Volume (vph)	307	307	214	59	256	97	164	507	49	63	357	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0		0.0	30.0		0.0	0.0		40.0	90.0		90.0
Storage Lanes	1		0	1		0	1		1	1		1
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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99			0.99				0.93	0.98		
Frt		0.938			0.959				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1764	0	1736	1784	0	1770	1881	1468	1805	1881	1583
Flt Permitted	0.244			0.185			0.210			0.382		
Satd. Flow (perm)	449	1764	0	338	1784	0	391	1881	1370	711	1881	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		29			16				85			270
Link Speed (k/h)		50			50			50				50
Link Distance (m)		317.4			209.1			382.3				210.1
Travel Time (s)		22.9			15.1			27.5				15.1
Confl. Peds. (#/hr)	14		3	3		14			19	19		
Peak Hour Factor	0.92	0.92	0.92	0.96	0.96	0.96	0.94	0.94	0.94	0.89	0.89	0.89
Heavy Vehicles (%)	2%	0%	1%	4%	0%	3%	2%	1%	10%	0%	1%	2%
Adj. Flow (vph)	334	334	233	61	267	101	174	539	52	71	401	270
Shared Lane Traffic (%)												
Lane Group Flow (vph)	334	567	0	61	368	0	174	539	52	71	401	270
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)		3.6			3.6			3.6				3.6
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	0.0
Detector 1 Queue (s)	0.0	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	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

Lanes, Volumes, Timings  
1: Kanata Avenue & Campeau Drive

2027 Total  
PM Peak Hour

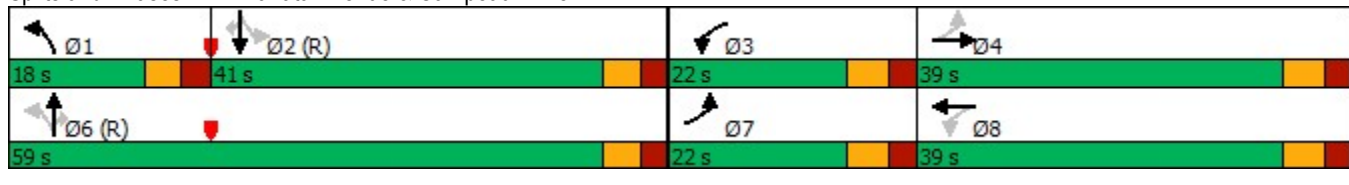


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8		1	6			2	
Permitted Phases	4			8			6		6	2		2
Detector Phase	7	4		3	8		1	6	6	2	2	2
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.2	37.2		11.3	37.2		10.9	29.9	29.9	29.9	29.9	29.9
Total Split (s)	22.0	39.0		22.0	39.0		18.0	59.0	59.0	41.0	41.0	41.0
Total Split (%)	18.3%	32.5%		18.3%	32.5%		15.0%	49.2%	49.2%	34.2%	34.2%	34.2%
Maximum Green (s)	15.8	32.8		15.8	32.8		12.1	53.1	53.1	35.1	35.1	35.1
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.5		2.5	2.5		2.6	2.6	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2		6.2	6.2		5.9	5.9	5.9	5.9	5.9	5.9
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	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	C-Max
Walk Time (s)		9.0			9.0			9.0	9.0	9.0	9.0	9.0
Flash Dont Walk (s)		22.0			22.0			15.0	15.0	15.0	15.0	15.0
Pedestrian Calls (#/hr)		3			0			0	0	3	3	3
Act Effct Green (s)	54.7	43.1		40.6	32.8		53.1	53.1	53.1	36.0	36.0	36.0
Actuated g/C Ratio	0.46	0.36		0.34	0.27		0.44	0.44	0.44	0.30	0.30	0.30
v/c Ratio	0.88	0.87		0.30	0.74		0.58	0.65	0.08	0.33	0.71	0.41
Control Delay	49.1	50.6		23.2	48.0		28.8	30.6	1.6	38.7	45.8	5.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.1	50.6		23.2	48.0		28.8	30.6	1.6	38.7	45.8	5.7
LOS	D	D		C	D		C	C	A	D	D	A
Approach Delay		50.0			44.5			28.3			30.6	
Approach LOS		D			D			C			C	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 85 (71%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.88  
 Intersection Signal Delay: 38.2      Intersection LOS: D  
 Intersection Capacity Utilization 90.1%      ICU Level of Service E  
 Analysis Period (min) 15

Splits and Phases: 1: Kanata Avenue & Campeau Drive



Queues  
1: Kanata Avenue & Campeau Drive

2027 Total  
PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	334	567	61	368	174	539	52	71	401	270
v/c Ratio	0.88	0.87	0.30	0.74	0.58	0.65	0.08	0.33	0.71	0.41
Control Delay	49.1	50.6	23.2	48.0	28.8	30.6	1.6	38.7	45.8	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.1	50.6	23.2	48.0	28.8	30.6	1.6	38.7	45.8	5.7
Queue Length 50th (m)	54.2	128.4	8.3	79.8	26.1	102.2	0.0	13.8	89.4	0.0
Queue Length 95th (m)	#96.6	#207.9	16.7	116.7	42.0	141.9	2.8	28.2	125.0	19.1
Internal Link Dist (m)		293.4		185.1		358.3			186.1	
Turn Bay Length (m)	90.0		30.0				40.0	90.0		90.0
Base Capacity (vph)	378	652	320	499	312	832	653	213	564	664
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.88	0.87	0.19	0.74	0.56	0.65	0.08	0.33	0.71	0.41

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Lanes, Volumes, Timings  
2: Kanata Avenue & Earl Grey

2027 Total  
PM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	95	224	276	625	532	98
Future Volume (vph)	95	224	276	625	532	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0	0.0	125.0			90.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor			1.00			0.98
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1805	1599	1805	3539	3539	1615
Flt Permitted	0.950		0.362			
Satd. Flow (perm)	1805	1599	687	3539	3539	1579
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		252				115
Link Speed (k/h)	50			50	50	
Link Distance (m)	218.4			301.9	382.3	
Travel Time (s)	15.7			21.7	27.5	
Confl. Peds. (#/hr)			1			1
Peak Hour Factor	0.89	0.89	0.91	0.91	0.85	0.85
Heavy Vehicles (%)	0%	1%	0%	2%	2%	0%
Adj. Flow (vph)	107	252	303	687	626	115
Shared Lane Traffic (%)						
Lane Group Flow (vph)	107	252	303	687	626	115
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	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
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	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
Detector 1 Queue (s)	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
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	

Lanes, Volumes, Timings  
2: Kanata Avenue & Earl Grey

2027 Total  
PM Peak Hour

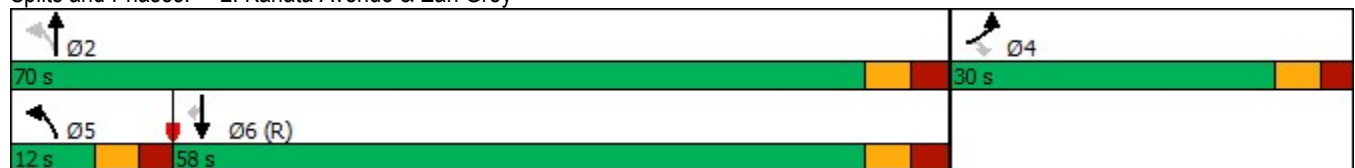


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.9	24.9	10.8	29.4	29.4	29.4
Total Split (s)	30.0	30.0	12.0	70.0	58.0	58.0
Total Split (%)	30.0%	30.0%	12.0%	70.0%	58.0%	58.0%
Maximum Green (s)	24.1	24.1	6.2	63.6	51.6	51.6
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.6	2.6	2.5	3.1	3.1	3.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.9	5.9	5.8	6.4	6.4	6.4
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
Recall Mode	None	None	None	None	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	12.0	12.0		16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0		0	0	0
Act Effct Green (s)	11.3	11.3	77.0	76.4	60.2	60.2
Actuated g/C Ratio	0.11	0.11	0.77	0.76	0.60	0.60
v/c Ratio	0.53	0.63	0.47	0.25	0.29	0.12
Control Delay	50.5	12.5	6.0	4.0	10.9	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.5	12.5	6.0	4.0	10.9	2.5
LOS	D	B	A	A	B	A
Approach Delay	23.8			4.6	9.6	
Approach LOS	C			A	A	

Intersection Summary

Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 58 (58%), Referenced to phase 6:SBT, Start of Green  
 Natural Cycle: 70  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.63  
 Intersection Signal Delay: 9.7  
 Intersection Capacity Utilization 54.8%  
 Analysis Period (min) 15  
 Intersection LOS: A  
 ICU Level of Service A

Splits and Phases: 2: Kanata Avenue & Earl Grey



Queues  
2: Kanata Avenue & Earl Grey

2027 Total  
PM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	107	252	303	687	626	115
v/c Ratio	0.53	0.63	0.47	0.25	0.29	0.12
Control Delay	50.5	12.5	6.0	4.0	10.9	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.5	12.5	6.0	4.0	10.9	2.5
Queue Length 50th (m)	20.9	0.0	13.8	17.5	29.7	0.0
Queue Length 95th (m)	36.1	21.0	26.6	28.7	46.0	7.1
Internal Link Dist (m)	194.4			277.9	358.3	
Turn Bay Length (m)	70.0		125.0			90.0
Base Capacity (vph)	435	576	645	2704	2130	996
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.44	0.47	0.25	0.29	0.12

Intersection Summary



Lanes, Volumes, Timings  
4: Kanata Avenue & Lord Byng/Maritime Way

2027 Total  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	3	93	104	11	34	184	883	168	55	677	31
Future Volume (vph)	36	3	93	104	11	34	184	883	168	55	677	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	0.0		0.0	0.0		0.0	35.0		0.0
Storage Lanes	1		0	1		0	1		0	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	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor	0.98	0.98		0.99	0.98		1.00	1.00			1.00	
Frt		0.854			0.887			0.976			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1318	1313	0	1770	1646	0	1570	1847	0	1805	3516	0
Flt Permitted	0.723			0.690			0.247			0.070		
Satd. Flow (perm)	984	1313	0	1278	1646	0	408	1847	0	133	3516	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		100			39			19			6	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		214.1			97.4			218.2			173.6	
Travel Time (s)		15.4			7.0			15.7			12.5	
Confl. Peds. (#/hr)	12		4	4		12	3		3	3		3
Peak Hour Factor	0.93	0.93	0.93	0.87	0.87	0.87	0.88	0.88	0.88	0.82	0.82	0.82
Heavy Vehicles (%)	37%	0%	22%	2%	0%	0%	15%	0%	0%	0%	1%	20%
Adj. Flow (vph)	39	3	100	120	13	39	209	1003	191	67	826	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	39	103	0	120	52	0	209	1194	0	67	864	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)		3.6			3.6			3.6			3.6	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		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	
Detector 1 Position(m)	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	0.6	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
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	

Lanes, Volumes, Timings  
4: Kanata Avenue & Lord Byng/Maritime Way

2027 Total  
PM Peak Hour

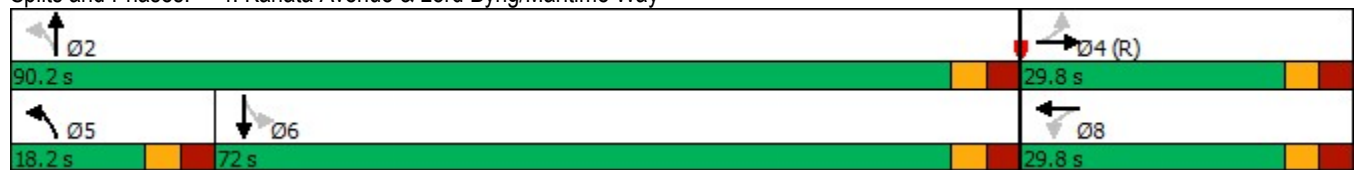


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2				6
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6		6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0		5.0
Minimum Split (s)	28.3	28.3		28.3	28.3		11.3	33.3		33.3		33.3
Total Split (s)	29.8	29.8		29.8	29.8		18.2	90.2		72.0		72.0
Total Split (%)	24.8%	24.8%		24.8%	24.8%		15.2%	75.2%		60.0%		60.0%
Maximum Green (s)	23.5	23.5		23.5	23.5		11.9	83.9		65.7		65.7
Yellow Time (s)	3.0	3.0		3.0	3.0		3.3	3.3		3.3		3.3
All-Red Time (s)	3.3	3.3		3.3	3.3		3.0	3.0		3.0		3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	6.3	6.3		6.3	6.3		6.3	6.3		6.3		6.3
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
Recall Mode	C-Max	C-Max		None	None		None	None		None		None
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0		7.0
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			20.0		20.0		20.0
Pedestrian Calls (#/hr)	14	14		3	3			3		14		14
Act Effect Green (s)	23.7	23.7		23.7	23.7		83.7	83.7		66.6		66.6
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.70	0.70		0.56		0.56
v/c Ratio	0.20	0.30		0.48	0.15		0.54	0.92		0.92		0.44
Control Delay	43.6	10.9		50.0	18.0		11.7	28.6		115.1		16.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	31.8		0.0		0.0
Total Delay	43.6	10.9		50.0	18.0		11.7	60.4		115.1		16.6
LOS	D	B		D	B		B	E		F		B
Approach Delay		19.9			40.3			53.1				23.7
Approach LOS		B			D			D				C

Intersection Summary

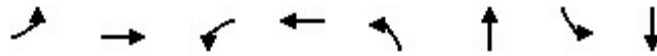
Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 31 (26%), Referenced to phase 4:EBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.92  
 Intersection Signal Delay: 40.2  
 Intersection LOS: D  
 Intersection Capacity Utilization 95.0%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 4: Kanata Avenue & Lord Byng/Maritime Way



Queues  
4: Kanata Avenue & Lord Byng/Maritime Way

2027 Total  
PM Peak Hour













Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	39	103	120	52	209	1194	67	864
v/c Ratio	0.20	0.30	0.48	0.15	0.54	0.92	0.92	0.44
Control Delay	43.6	10.9	50.0	18.0	11.7	28.6	115.1	16.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	31.8	0.0	0.0
Total Delay	43.6	10.9	50.0	18.0	11.7	60.4	115.1	16.6
Queue Length 50th (m)	8.2	0.6	26.7	2.6	16.1	222.0	14.2	63.0
Queue Length 95th (m)	19.0	16.0	45.2	13.2	24.6	#347.1	#41.1	70.5
Internal Link Dist (m)		190.1		73.4		194.2		149.6
Turn Bay Length (m)	25.0						35.0	
Base Capacity (vph)	194	339	252	355	399	1297	73	1955
Starvation Cap Reductn	0	0	0	0	0	177	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	0.20	0.30	0.48	0.15	0.52	1.07	0.92	0.44

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Lanes, Volumes, Timings  
5: Kanata Avenue & Hwy 417 WB Off Ramp

2027 Total  
PM Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	511	697	538	0	0	874
Future Volume (vph)	511	697	538	0	0	874
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Fr <sub>t</sub>		0.850				
Fl <sub>t</sub> Protected	0.950					
Satd. Flow (prot)	1787	1392	3471	0	0	3406
Fl <sub>t</sub> Permitted	0.950					
Satd. Flow (perm)	1787	1392	3471	0	0	3406
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		143				
Link Speed (k/h)	50		50			50
Link Distance (m)	261.6		133.0			218.2
Travel Time (s)	18.8		9.6			15.7
Peak Hour Factor	0.95	0.95	0.90	0.93	0.92	0.99
Heavy Vehicles (%)	1%	16%	4%	2%	2%	6%
Adj. Flow (vph)	538	734	598	0	0	883
Shared Lane Traffic (%)						
Lane Group Flow (vph)	538	734	598	0	0	883
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	2.0	2.0	10.0			10.0
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	2.0	2.0	0.6			0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						

Lanes, Volumes, Timings  
 5: Kanata Avenue & Hwy 417 WB Off Ramp

2027 Total  
 PM Peak Hour

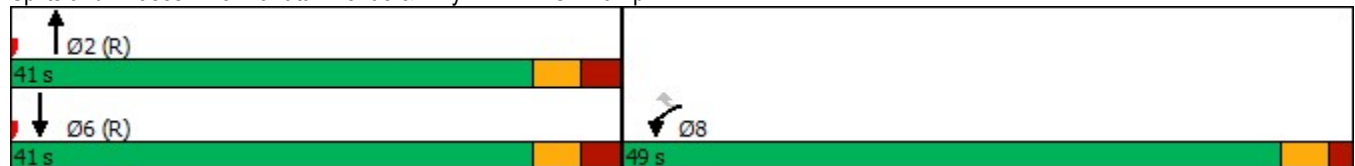


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0			5.0
Minimum Split (s)	23.0	23.0	28.1			28.1
Total Split (s)	49.0	49.0	41.0			41.0
Total Split (%)	54.4%	54.4%	45.6%			45.6%
Maximum Green (s)	44.0	44.0	34.9			34.9
Yellow Time (s)	3.3	3.3	3.3			3.3
All-Red Time (s)	1.7	1.7	2.8			2.8
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	5.0	5.0	6.1			6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	C-Max			C-Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	11.0	11.0	15.0			15.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	43.7	43.7	35.2			35.2
Actuated g/C Ratio	0.49	0.49	0.39			0.39
v/c Ratio	0.62	0.98	0.44			0.66
Control Delay	20.8	48.4	25.4			25.6
Queue Delay	0.0	0.0	0.0			0.2
Total Delay	20.8	48.4	25.4			25.8
LOS	C	D	C			C
Approach Delay	36.7		25.4			25.8
Approach LOS	D		C			C

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 32 (36%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.98  
 Intersection Signal Delay: 30.8  
 Intersection LOS: C  
 Intersection Capacity Utilization 109.6%  
 ICU Level of Service H  
 Analysis Period (min) 15

Splits and Phases: 5: Kanata Avenue & Hwy 417 WB Off Ramp



Queues  
 5: Kanata Avenue & Hwy 417 WB Off Ramp

2027 Total  
 PM Peak Hour













Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	538	734	598	883
v/c Ratio	0.62	0.98	0.44	0.66
Control Delay	20.8	48.4	25.4	25.6
Queue Delay	0.0	0.0	0.0	0.2
Total Delay	20.8	48.4	25.4	25.8
Queue Length 50th (m)	68.6	107.3	51.6	68.4
Queue Length 95th (m)	102.6	#192.2	70.3	90.0
Internal Link Dist (m)	237.6		109.0	194.2
Turn Bay Length (m)				
Base Capacity (vph)	873	753	1355	1330
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	68
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.62	0.97	0.44	0.70

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Lanes, Volumes, Timings  
6: Kanata Avenue & Hwy 417 EB On Ramp

2027 Total  
PM Peak Hour

							Ø3
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations							
Traffic Volume (vph)	0	0	538	213	402	983	
Future Volume (vph)	0	0	538	213	402	983	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	0.0	0.0		60.0	0.0		
Storage Lanes	0	0		1	1		
Taper Length (m)	7.5				7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor				0.98			
Frt				0.850			
Flt Protected					0.950		
Satd. Flow (prot)	0	0	1810	1583	1736	1863	
Flt Permitted					0.371		
Satd. Flow (perm)	0	0	1810	1544	678	1863	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)				217			
Link Speed (k/h)	50		50			50	
Link Distance (m)	282.6		139.9			133.0	
Travel Time (s)	20.3		10.1			9.6	
Confl. Peds. (#/hr)				2	2		
Peak Hour Factor	0.89	0.89	0.98	0.98	0.93	0.93	
Heavy Vehicles (%)	2%	2%	5%	2%	4%	2%	
Adj. Flow (vph)	0	0	549	217	432	1057	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	0	549	217	432	1057	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(m)	0.0		3.6			3.6	
Link Offset(m)	0.0		0.0			0.0	
Crosswalk Width(m)	4.8		4.8			4.8	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (k/h)	25	15		15	25		
Number of Detectors			2	1	1	2	
Detector Template			Thru	Right	Left	Thru	
Leading Detector (m)			10.0	2.0	2.0	10.0	
Trailing Detector (m)			0.0	0.0	0.0	0.0	
Detector 1 Position(m)			0.0	0.0	0.0	0.0	
Detector 1 Size(m)			0.6	2.0	2.0	0.6	
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)			0.0	0.0	0.0	0.0	
Detector 1 Queue (s)			0.0	0.0	0.0	0.0	
Detector 1 Delay (s)			0.0	0.0	0.0	0.0	
Detector 2 Position(m)			9.4			9.4	
Detector 2 Size(m)			0.6			0.6	
Detector 2 Type			Cl+Ex			Cl+Ex	
Detector 2 Channel							
Detector 2 Extend (s)			0.0			0.0	

Lanes, Volumes, Timings  
6: Kanata Avenue & Hwy 417 EB On Ramp

2027 Total  
PM Peak Hour

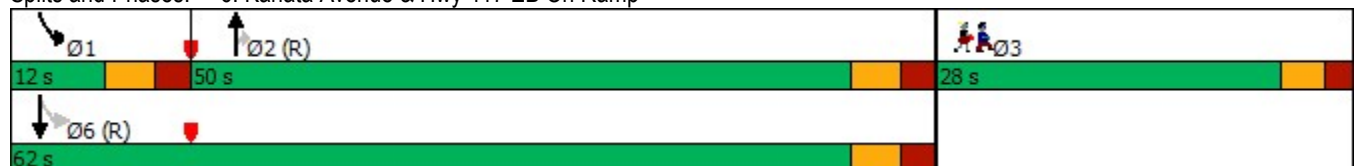


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø3
Turn Type			NA	Perm	pm+pt	NA	
Protected Phases			2		1	6	3
Permitted Phases				2	6		
Detector Phase			2	2	1	6	
Switch Phase							
Minimum Initial (s)			5.0	5.0	5.0	5.0	5.0
Minimum Split (s)			23.9	23.9	10.9	23.9	27.0
Total Split (s)			50.0	50.0	12.0	62.0	28.0
Total Split (%)			55.6%	55.6%	13.3%	68.9%	31%
Maximum Green (s)			44.3	44.3	6.3	56.3	23.0
Yellow Time (s)			3.3	3.3	3.3	3.3	3.0
All-Red Time (s)			2.4	2.4	2.4	2.4	2.0
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	
Total Lost Time (s)			5.7	5.7	5.7	5.7	
Lead/Lag			Lag	Lag	Lead		
Lead-Lag Optimize?			Yes	Yes	Yes		
Vehicle Extension (s)			3.0	3.0	3.0	3.0	3.0
Recall Mode			C-Max	C-Max	None	C-Max	None
Walk Time (s)			7.0	7.0		7.0	7.0
Flash Dont Walk (s)			11.0	11.0		11.0	15.0
Pedestrian Calls (#/hr)			0	0		0	0
Act Effct Green (s)			60.9	60.9	84.3	90.0	
Actuated g/C Ratio			0.68	0.68	0.94	1.00	
v/c Ratio			0.45	0.19	0.51	0.57	
Control Delay			7.8	1.1	3.1	2.9	
Queue Delay			0.0	0.0	0.6	0.0	
Total Delay			7.8	1.1	3.7	2.9	
LOS			A	A	A	A	
Approach Delay			5.9			3.1	
Approach LOS			A			A	

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.57  
 Intersection Signal Delay: 4.1  
 Intersection LOS: A  
 Intersection Capacity Utilization 109.6%  
 ICU Level of Service H  
 Analysis Period (min) 15

Splits and Phases: 6: Kanata Avenue & Hwy 417 EB On Ramp





## Queues

2027 Total

## 6: Kanata Avenue &amp; Hwy 417 EB On Ramp

PM Peak Hour



Lane Group	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	549	217	432	1057
v/c Ratio	0.45	0.19	0.51	0.57
Control Delay	7.8	1.1	3.1	2.9
Queue Delay	0.0	0.0	0.6	0.0
Total Delay	7.8	1.1	3.7	2.9
Queue Length 50th (m)	35.7	0.0	3.5	95.1
Queue Length 95th (m)	55.3	5.9	4.7	130.5
Internal Link Dist (m)	115.9			109.0
Turn Bay Length (m)		60.0		
Base Capacity (vph)	1225	1115	842	1863
Starvation Cap Reductn	0	0	142	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.45	0.19	0.62	0.57
Intersection Summary				

Intersection												
Int Delay, s/veh	15											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	21	5	62	32	5	40	60	841	54	44	670	45
Future Vol, veh/h	21	5	62	32	5	40	60	841	54	44	670	45
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	69	92	69	92	92	92	84	84	92	92	96	96
Heavy Vehicles, %	0	2	0	2	2	2	0	2	2	2	4	0
Mvmt Flow	30	5	90	35	5	43	71	1001	59	48	698	47

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1463	2020	373	1621	2014	530	745	0	0	1060	0	0
Stage 1	818	818	-	1173	1173	-	-	-	-	-	-	-
Stage 2	645	1202	-	448	841	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.54	6.9	7.54	6.54	6.94	4.1	-	-	4.14	-	-
Critical Hdwy Stg 1	6.5	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.02	3.3	3.52	4.02	3.32	2.2	-	-	2.22	-	-
Pot Cap-1 Maneuver	91	58	630	68	58	493	872	-	-	653	-	-
Stage 1	340	388	-	204	264	-	-	-	-	-	-	-
Stage 2	432	256	-	560	379	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	57	40	630	40	40	493	872	-	-	653	-	-
Mov Cap-2 Maneuver	57	40	-	40	40	-	-	-	-	-	-	-
Stage 1	272	339	-	163	211	-	-	-	-	-	-	-
Stage 2	307	205	-	412	331	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	87.1		223.8		1.3		1.2	
HCM LOS	F		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	872	-	-	155	77	653	-	-
HCM Lane V/C Ratio	0.082	-	-	0.811	1.087	0.073	-	-
HCM Control Delay (s)	9.5	0.8	-	87.1	223.8	10.9	0.6	-
HCM Lane LOS	A	A	-	F	F	B	A	-
HCM 95th %tile Q(veh)	0.3	-	-	5.3	6	0.2	-	-

Lanes, Volumes, Timings  
3: Kanata Avenue & Site Access

2022 Total Traffic - Mitigation  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	19	5	56	32	5	40	54	762	54	44	607	41
Future Volume (vph)	19	5	56	32	5	40	54	762	54	44	607	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.97										1.00
Frt		0.904			0.930			0.992			0.992	
Flt Protected		0.988			0.979			0.997			0.997	
Satd. Flow (prot)	0	1651	0	0	1696	0	0	1845	0	0	1811	0
Flt Permitted		0.988			0.811			0.918			0.886	
Satd. Flow (perm)	0	1651	0	0	1405	0	0	1698	0	0	1609	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		81			38			4			5	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		215.9			64.7			173.6			301.9	
Travel Time (s)		15.5			4.7			12.5			21.7	
Confl. Bikes (#/hr)			7									8
Peak Hour Factor	0.69	0.92	0.69	0.92	0.92	0.92	0.84	0.84	0.92	0.92	0.96	0.96
Heavy Vehicles (%)	0%	2%	0%	2%	2%	2%	0%	2%	2%	2%	4%	0%
Adj. Flow (vph)	28	5	81	35	5	43	64	907	59	48	632	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	114	0	0	83	0	0	1030	0	0	723	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)		0.0			0.0			3.6			3.6	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		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	
Detector 1 Position(m)	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	0.6	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
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	Split	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2	2			6			8			4	
Permitted Phases				6			8			4		

Lanes, Volumes, Timings  
3: Kanata Avenue & Site Access

2022 Total Traffic - Mitigation  
PM Peak Hour

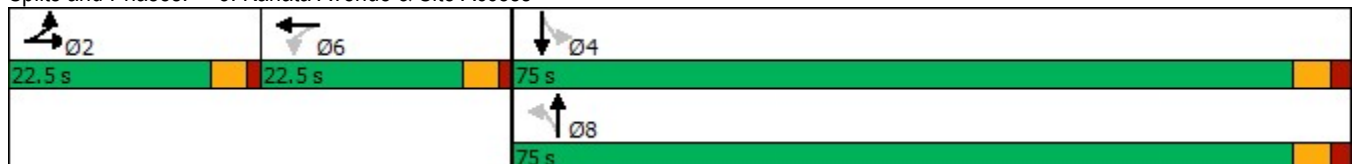


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		23.3	23.3		23.3	23.3	
Total Split (s)	22.5	22.5		22.5	22.5		75.0	75.0		75.0	75.0	
Total Split (%)	18.8%	18.8%		18.8%	18.8%		62.5%	62.5%		62.5%	62.5%	
Maximum Green (s)	18.0	18.0		18.0	18.0		69.7	69.7		69.7	69.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.2	1.2		1.2	1.2		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			5.3			5.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		8.1			8.9			69.9			69.9	
Actuated g/C Ratio		0.08			0.09			0.69			0.69	
v/c Ratio		0.55			0.53			0.88			0.65	
Control Delay		27.3			38.9			24.4			13.4	
Queue Delay		0.0			0.0			23.6			0.0	
Total Delay		27.3			38.9			48.0			13.4	
LOS		C			D			D			B	
Approach Delay		27.3			38.9			48.0			13.4	
Approach LOS		C			D			D			B	

Intersection Summary

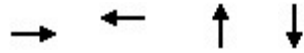
Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	101.3
Natural Cycle:	120
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.88
Intersection Signal Delay:	33.6
Intersection LOS:	C
Intersection Capacity Utilization:	75.3%
ICU Level of Service:	D
Analysis Period (min):	15

Splits and Phases: 3: Kanata Avenue & Site Access



Queues  
3: Kanata Avenue & Site Access

2022 Total Traffic - Mitigation  
PM Peak Hour



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	114	83	1030	723
v/c Ratio	0.55	0.53	0.88	0.65
Control Delay	27.3	38.9	24.4	13.4
Queue Delay	0.0	0.0	23.6	0.0
Total Delay	27.3	38.9	48.0	13.4
Queue Length 50th (m)	6.5	8.9	141.3	70.8
Queue Length 95th (m)	24.7	25.0	#276.5	149.5
Internal Link Dist (m)	191.9	40.7	149.6	277.9
Turn Bay Length (m)				
Base Capacity (vph)	361	281	1173	1112
Starvation Cap Reductn	0	0	181	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.32	0.30	1.04	0.65

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Lanes, Volumes, Timings  
3: Kanata Avenue & Site Access

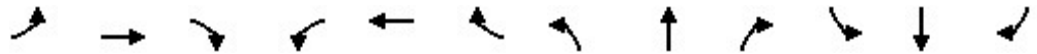
2027 Total Traffic - Mitigation  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	21	5	62	32	5	40	60	841	54	44	670	45
Future Volume (vph)	21	5	62	32	5	40	60	841	54	44	670	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		0.99									1.00	
Frt		0.903			0.930			0.992			0.991	
Flt Protected		0.988			0.979			0.997			0.997	
Satd. Flow (prot)	0	1671	0	0	1696	0	0	3505	0	0	3436	0
Flt Permitted		0.988			0.806			0.845			0.828	
Satd. Flow (perm)	0	1671	0	0	1396	0	0	2970	0	0	2853	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		90			43			7			8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		215.9			64.7			173.6			301.9	
Travel Time (s)		15.5			4.7			12.5			21.7	
Confl. Bikes (#/hr)			7									8
Peak Hour Factor	0.69	0.92	0.69	0.92	0.92	0.92	0.84	0.84	0.92	0.92	0.96	0.96
Heavy Vehicles (%)	0%	2%	0%	2%	2%	2%	0%	2%	2%	2%	4%	0%
Adj. Flow (vph)	30	5	90	35	5	43	71	1001	59	48	698	47
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	125	0	0	83	0	0	1131	0	0	793	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)		0.0			0.0			3.6			3.6	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		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	
Detector 1 Position(m)	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	0.6	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
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	Split	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2	2			6			8			4	
Permitted Phases				6			8			4		

Lanes, Volumes, Timings  
3: Kanata Avenue & Site Access

2027 Total Traffic - Mitigation  
PM Peak Hour

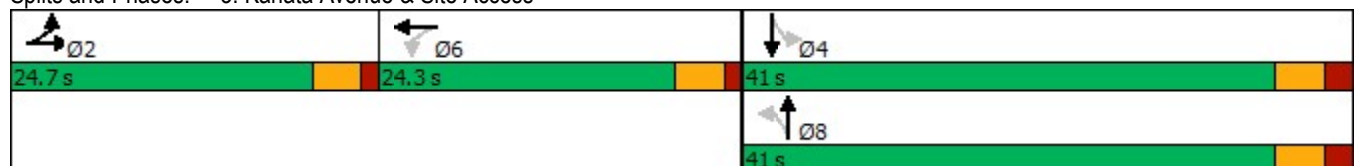


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	24.3	24.3		24.3	24.3		24.3	24.3		24.3	24.3	
Total Split (s)	24.7	24.7		24.3	24.3		41.0	41.0		41.0	41.0	
Total Split (%)	27.4%	27.4%		27.0%	27.0%		45.6%	45.6%		45.6%	45.6%	
Maximum Green (s)	20.2	20.2		19.8	19.8		35.7	35.7		35.7	35.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.2	1.2		1.2	1.2		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			5.3			5.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		7.3			7.6			35.8			35.8	
Actuated g/C Ratio		0.11			0.12			0.55			0.55	
v/c Ratio		0.47			0.42			0.69			0.50	
Control Delay		16.9			22.3			14.2			11.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		16.9			22.3			14.2			11.1	
LOS		B			C			B			B	
Approach Delay		16.9			22.3			14.2			11.1	
Approach LOS		B			C			B			B	

Intersection Summary

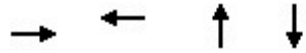
Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	65.1
Natural Cycle:	90
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.69
Intersection Signal Delay:	13.5
Intersection LOS:	B
Intersection Capacity Utilization:	68.2%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 3: Kanata Avenue & Site Access



Queues  
3: Kanata Avenue & Site Access

2027 Total Traffic - Mitigation  
PM Peak Hour



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	125	83	1131	793
v/c Ratio	0.47	0.42	0.69	0.50
Control Delay	16.9	22.3	14.2	11.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	16.9	22.3	14.2	11.1
Queue Length 50th (m)	4.1	4.7	47.3	28.2
Queue Length 95th (m)	18.7	17.1	79.0	54.9
Internal Link Dist (m)	191.9	40.7	149.6	277.9
Turn Bay Length (m)				
Base Capacity (vph)	582	456	1638	1574
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.21	0.18	0.69	0.50
<b>Intersection Summary</b>				





## APPENDIX E – TDM Checklist

## Introduction

The City of Ottawa's *Transportation Impact Assessment (TIA) Guidelines* (specifically Module 4.1—Development Design) requires proponents of qualifying developments to use the City's **TDM-Supportive Development Design and Infrastructure Checklist** to assess the opportunity to implement design elements that are supportive of sustainable modes. The goal of this assessment is to ensure that the development provides safe and efficient access for all users, while creating an environment that encourages walking, cycling and transit use.

The remaining sections of this document are:

- Using the Checklist
- Glossary
- TDM-Supportive Development Design and Infrastructure Checklist: Non-Residential Developments
- TDM-Supportive Development Design and Infrastructure Checklist: Residential Developments

**Readers are encouraged to contact the City of Ottawa's TDM Officer for any guidance and assistance they require to complete this checklist.**

## Using the Checklist

This **TDM-Supportive Development Design and Infrastructure Checklist** document includes two actual checklists, one for non-residential developments (office, institutional, retail or industrial) and one for residential developments (multi-family or condominium only; subdivisions are exempt). Readers may download the applicable checklist in electronic format and complete it electronically, or print it out and complete it by hand. As an alternative, they may create a freestanding document that lists the design and infrastructure measures being proposed and provides additional detail on them.

Each measure in the checklist is numbered for easy reference. Each measure is also flagged as:

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

## Glossary

This glossary defines and describes the following measures that are identified in the **TDM-Supportive Development Design and Infrastructure Checklist**:

### ***Walking & cycling: Routes***

- Building location & access points
- Facilities for walking & cycling
- Amenities for walking & cycling

### ***Walking & cycling: End-of-trip facilities***

- Bicycle parking
- Secure bicycle parking
- Shower & change facilities
- Bicycle repair station

### ***Transit***

- Walking routes to transit
- Customer amenities

### ***Ridesharing***

- Pick-up & drop-off facilities
- Carpool parking

### ***Carsharing & bikesharing***

- Carshare parking spaces
- Bikeshare station location

### ***Parking***

- Number of parking spaces
- Separate long-term & short-term parking areas

### ***Other***

- On-site amenities to minimize off-site trips

In addition to specific references made in this glossary, readers should consult the City of Ottawa's design and planning guidelines for a variety of different land uses and contexts, available on the City's website at [www.ottawa.ca](http://www.ottawa.ca). Readers may also find the following resources to be helpful:

- *Promoting Sustainable Transportation through Site Design*, Institute of Transportation Engineers, 2004 ([www.cite7.org/wpdm-package/iterp-promoting-sustainable-transportation](http://www.cite7.org/wpdm-package/iterp-promoting-sustainable-transportation))
- *Bicycle End-of-Trip Facilities: A Guide for Canadian Municipalities and Employers*, Transport Canada, 2010 ([www.fcm.ca/Documents/tools/GMF/Transport\\_Canada/BikeEndofTrip\\_EN.pdf](http://www.fcm.ca/Documents/tools/GMF/Transport_Canada/BikeEndofTrip_EN.pdf))

► ***Walking & cycling: Routes***

**Building location & access points.** Correctly positioning buildings and their entrances can help make walking convenient, comfortable and safe. Minimizing travel distances and maximizing visibility are key.

**Facilities for walking & cycling.** The Official Plan gives clear direction on the provision and design of walking and cycling facilities for both access and circulation. On larger, busier sites (e.g. multi-building campuses) the inclusion of sidewalks, pathways, marked crossings, stop signs and traffic calming features can create a safer and more supportive environment for active transportation.

**Amenities for walking & cycling.** Lighting, landscaping, benches and wayfinding can make walking and cycling safer and more secure, comfortable and accessible.

► ***Walking & cycling: End-of-trip facilities***

**Bicycle parking.** The Official Plan and Zoning By-law both address the need for adequate bicycle parking at developments. Weather protection and theft prevention are major concerns for commuters who spend hundreds or thousands of dollars on a quality bicycle. Bicycle racks should have a design that enables secure locking while preventing damage to wheels. They should be located within sight of busy areas such as main building entrances or staffed parking kiosks.

**Secure bicycle parking.** Ottawa's Zoning By-law requires a secure area for bicycles at office or residential developments having more than 50 bicycle parking spaces. Lockable outdoor bike cages or indoor storage rooms that limit access to registered users are ideal.

**Shower & change facilities.** Longer-distance cyclists, joggers and even pedestrians can need a place to shower and change at work; the lack of such facilities is a major barrier to active commuting. Lockers and drying racks provide a place to store gear away from workspaces, and showers and grooming stations allow commuters to make themselves presentable for the office.

**Bicycle repair station.** Cycling commuters can experience maintenance issues that make the homeward trip difficult or impossible. A small supply of tools (e.g. air pump, Allen keys, wrenches) and supplies (e.g. inner tube patches, chain lubricant) in the workplace can help.

► ***Transit***

**Customer amenities.** Larger developments that feature an on-site transit stop can make transit use more attractive by providing shelters, lighting and benches. Even better, they could integrate the passenger waiting area into a building entrance.

► **Ridesharing**

**Pick-up & drop-off facilities.** Having a safe place to load or unload passengers (for carpools as well as taxis and ride-hailing services) without obstructing pedestrians, cyclists or other vehicles can help make carpooling work.

**Carpool parking.** At destinations with large parking lots (or lots that regularly fill to capacity), signed priority carpool parking spaces can be an effective ridesharing incentive. Priority spaces are frequently abused by non-carpoolers, so a system to provide registered users with vehicle identification tags is recommended.

► **Carsharing & bikesharing**

**Carshare parking spaces.** For developments where carsharing could be an attractive option for employees, visitors or residents, ensuring an attractive location for future carshare parking spaces can avoid challenges associated with future retrofits.

**Bikeshare station location.** For developments where bikesharing could be an attractive option for employees, visitor or residents, ensuring an attractive location for a future bikeshare station can avoid challenges associated with future retrofits.

► **Parking**

**Number of parking spaces.** Parking capacity is an important variable in development design, as it can either support or subvert the mode share targets set during the transportation impact analysis (TIA). While the Zoning By-law establishes any minimum and/or maximum requirements for parking capacity, it also allows a reduction in any minimum to reflect the existence of on-site shower, change and locker rooms provided for cyclists.

**Separate long-term & short-term parking areas.** Because access to unused parking spaces can be a powerful incentive to drive, developments can better manage their parking supply and travel behaviours by separating long-term from short-term parking through the use of landscaping, gated controls or signs. Doing so makes it difficult for long-term parkers (e.g. commuters) to park in short-term areas (e.g. for visitors) as long as enforcement occurs; it also protects long-term parking capacity for its intended users.

► **Other**

**On-site amenities to minimize off-site trips.** Developments that offer facilities to limit employees' need for a car during their commute (e.g. to drop off children at daycare) or during their workday (e.g. to hit the gym) can free employees to make the commuting decision that otherwise works best for them.

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

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

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

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



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

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

## Introduction

The City of Ottawa's *Transportation Impact Assessment (TIA) Guidelines* (specifically Module 4.3—Transportation Demand Management) requires proponents of qualifying developments to assess the context, need and opportunity for transportation demand management (TDM) measures at their development. The guidelines require that proponents complete the City's **TDM Measures Checklist**, at a minimum, to identify any TDM measures being proposed.

The remaining sections of this document are:

- Using the Checklist
- Glossary
- TDM Measures Checklist: Non-Residential Developments
- TDM Measures Checklist: Residential developments

**Readers are encouraged to contact the City of Ottawa's TDM Officer for any guidance and assistance they require to complete this checklist.**

## Using the Checklist

The City's *TIA Guidelines* are designed so that *Module 3.1—Development-Generated Travel Demand*, *Module 4.1—Development Design*, and *Module 4.2—Parking* are complete before a proponent begins *Module 4.3—Transportation Demand Management*.

Within Module 4.3, *Element 4.3.1—Context for TDM* and *Element 4.3.2—Need and Opportunity* are intended to create an understanding of the need for any TDM measures, and of the results they are expected to achieve or support. Once those two elements are complete, proponents begin *Element 4.3.3—TDM Program* that requires proponents to identify proposed TDM measures using the **TDM Measures Checklist**, at a minimum. The *TIA Guidelines* note that the City may require additional analysis for large or complex development proposals, or those that represent a higher degree of performance risk; as well, proponents proposing TDM measures for a new development must also propose an implementation plan that addresses planning and coordination, funding and human resources, timelines for action, performance targets and monitoring requirements.

This **TDM Measures Checklist** document includes two actual checklists, one for non-residential developments (office, institutional, retail or industrial) and one for residential developments (multi-family, condominium or subdivision). Readers may download the applicable checklist in electronic format and complete it electronically, or print it out and complete it by hand. As an alternative, they may create a freestanding document that lists the TDM measures being proposed and provides additional detail on them, including an implementation plan as required by the City's *TIA Guidelines*.

Each measure in the checklist is numbered for easy reference. Each measure is also flagged as:

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

## **Glossary**

This glossary defines and describes the following measures that are identified in the **TDM Measures Checklist**:

### ***TDM program management***

- Program coordinator
- Travel surveys

### ***Parking***

- Priced parking

### ***Walking & cycling***

- Information on walking/cycling routes & destinations
- Bicycle skills training
- Valet bike parking

### ***Transit***

- Transit information
- Transit fare incentives
- Enhanced public transit service
- Private transit service

### ***Ridesharing***

- Ridematching service
- Carpool parking price incentives
- Vanpool service

### ***Carsharing & bikesharing***

- Bikeshare stations & memberships
- Carshare vehicles & memberships

### ***TDM marketing & communications***

- Multimodal travel information
- Personalized trip planning
- Promotions

### ***Other incentives & amenities***

- Emergency ride home
- Alternative work arrangements
- Local business travel options
- Commuter incentives
- On-site amenities

For further information on selecting and implementing TDM measures (particularly as they apply to non-residential developments, with a focus on workplaces), readers may find it helpful to consult Transport Canada's *Workplace Travel Plans: Guidance for Canadian Employers*, which can be downloaded in English and French from the ACT Canada website at [www.actcanada.com/resources/act-resources](http://www.actcanada.com/resources/act-resources).

► ***TDM program management***

While some TDM measures can be implemented with a minimum of effort through routine channels (e.g. parking or human resources), more complex measures or a larger development site may warrant assigning responsibility for TDM program coordination to a designated person either inside or outside the implementing organization. Similarly, some TDM measures are more effective if they are targeted or customized for specific audiences, and would benefit from the collection of related information.

**Program coordinator.** This person is charged with day-to-day TDM program development and implementation. Only in very large employers with thousands of workers is this likely to be a full-time, dedicated position. Usually, it is added to an existing role in parking, real estate, human resources or environmental management. In practice, this role may be called TDM coordinator, commute trip reduction coordinator or employee transportation coordinator. The City of Ottawa can identify external resources (e.g. non-profit organizations or consultants) that could provide these services.

**Travel surveys.** Travel surveys are most commonly conducted at workplaces, but can be helpful in other settings. They identify how and why people travel the way they do, and what barriers and opportunities exist for different behaviours. They usually capture the following information:

- *Personal data* including home address or postal code, destination, job type or function, employment status (full-time, part-time and/or teleworker), gender, age and hours of work
- *Commute information* including distance or time for the trip between home and work, usual methods of commuting, and reasons for choosing them
- *Barriers and opportunities* including why other commuting methods are unattractive, willingness to consider other options, and what improvements to other options could make them more attractive

► ***Parking***

**Priced parking.** Charging for parking is typically among the most effective ways of getting drivers to consider other travel options. While drivers may not support parking fees, they can be more accepting if the revenues are used to improve other travel options (e.g. new showers and change rooms, improved bicycle parking or subsidized transit passes). At workplaces or daytime destinations, parking discounts (e.g. early bird specials, daily passes that cost significantly less than the equivalent hourly charge, monthly passes that cost significantly less than the equivalent daily charge) encourage long-term parking and discourage the use of other travel options. For residential uses, unbundling parking costs from dwelling purchase, lease or rental costs provides an incentive for residents to own fewer cars, and can reduce car use and the costs of parking provision.

► **Walking & cycling**

Active transportation options like cycling and walking are particularly attractive for short trips (typically up to 5 km and 2 km, respectively). Other supportive factors include an active, health-conscious audience, and development proximity to high-quality walking and cycling networks. Common challenges to active transportation include rain, darkness, snowy or icy conditions, personal safety concerns, the potential for bicycle theft, and a lack of shower and change facilities for those making longer trips.

**Information on walking/cycling routes & destinations.** Ottawa, Gatineau and the National Capital Commission all publish maps to help people identify the most convenient and comfortable walking or cycling routes.

**Bicycle skills training.** Potential cyclists can be intimidated by the need to ride on roads shared with motor vehicles. This barrier can be reduced or eliminated by offering cycling skills training to interested cyclists (e.g. CAN-BIKE certification courses).

**Valet bike parking.** For large events, temporary “valet parking” areas can be easily set up to maximize convenience and security for cyclists. Experienced local non-profit groups can help.

► **Transit**

**Transit information.** Difficulty in finding or understanding basic information on transit fares, routes and schedules can prevent people from trying transit. Employers can help by providing online links to OC Transpo and STO websites. Transit users also appreciate visible maps and schedules of transit routes that serve the site; even better, a screen that shows real-time transit arrival information is particularly useful at sites with many transit users and an adjacent transit stop or station.

**Transit fare incentives.** Free or subsidized transit fares are an attractive incentive for non-transit riders to try transit. Many non-users are unsure of how to pay a fare, and providing tickets or a preloaded PRESTO card (or, for special events, pre-arranging with OC Transpo that transit fares are included with event tickets) overcome that barrier.

**Enhanced public transit service.** OC Transpo may adjust transit routes, stop locations, service hours or frequencies for an agreed fee under contract, or at no cost where warranted by the potential ridership increase. Information provided by a survey of people who travel to a given development can support these decisions.

**Private transit service.** At remote suburban or rural workplaces, a poor transit connection to the nearest rapid transit station can be an obstacle for potential transit users, and an employer in this situation could initiate a private shuttle service to make transit use more feasible or attractive. Other circumstances where a shuttle makes sense include large special events, or a residential development for people with limited independent mobility who still require regular access to shops and services.

► **Ridesharing**

Ridesharing's potential is greatest in situations where transit ridership is low, where parking costs are high, and/or where large numbers of car commuters (e.g. employees or full-time students) live reasonably far from the workplace.

**Ridematching service.** Potential carpoolers in Ottawa are served by [www.OttawaRideMatch.com](http://www.OttawaRideMatch.com), an online service to help people find carpool partners. Employers can arrange for a dedicated portal where their employees can search for potential carpool partners only among their colleagues, if they desire. Some very large employers may establish internal ridematching services, to maximize employee uptake and corporate control. Ridematching service providers typically include a waiver to relieve employers of liability when their employees start carpooling through a ridematching service. Ridesharing with co-workers also tends to eliminate security concerns.

**Carpool parking price incentives.** Discounted parking fees for carpools can be an extra incentive to rideshare.

**Vanpool service.** Vanpools operate in the Toronto and Vancouver metropolitan areas, where vans that carry up to about ten occupants are driven by one of the vanpool members. Vanpools tend to operate on a cost-recovery basis, and are most practical for long-distance commutes where transit is not an option. Current legislation in Ontario does not permit third-party (i.e. private or non-profit) vanpool services, but does permit employers to operate internal vanpools.

► **Carsharing & bikesharing**

**Bikeshare station & memberships.** VeloGO Bike Share and Right Bike both operate bikesharing services in Ottawa. Developments that would benefit from having a bikeshare station installed at or near their development may negotiate directly with either service provider.

**Carshare vehicles & memberships.** VRTUCAR and Zipcar both operate carsharing services in Ottawa, for use by the general public or by businesses as an alternative to corporate fleets. Carsharing services offer 24-hour access, self-serve reservation systems, itemized monthly billings, and outsourcing of all financing, insurance, maintenance and administrative responsibilities.

► **TDM marketing & communications**

**Multimodal travel information.** Aside from mode-specific information discussed elsewhere in this document, multimodal information that identifies and explains the full range of travel options available to people can be very influential—especially when provided at times and locations where individuals are actively choosing among those options. Examples include: employees when their employer is relocating, or when they are joining a new employer; students when they are starting a program at a new institution; visitors or customers travelling to an unfamiliar destination, or when faced with new options (e.g. shuttle services or parking restrictions); and residents when they purchase or occupy a residence that is new to them.

**Personalized trip planning.** As an extension to the simple provision of information, this technique (also known as *individualized marketing*) is effective in helping people make more sustainable travel choices. The approach involves identifying who is most likely to change their travel choices (notably relocating employees, students or residents) giving them customized information, training and incentives to support them in making that change. It may be conducted with assistance from an external service provider with the necessary skills, and delivered in a variety of settings including workplaces and homes.

**Promotions.** Special events and incentives can raise awareness and encourage individuals to examine and try new travel options.

- *Special events* can help attract attention, build participation and celebrate successes. Events that have been held in Ottawa include Earth Day (in April) Bike to Work Month (in May), Environment Week (early June), International Car Free Day (September 22), and Canadian Ridesharing Week (October). At workplaces or educational institutions, similarly effective internal events could include workshops, lunch-and-learns, inter-departmental challenges, pancake breakfasts, and so on.
- *Incentives* can encourage trial of sustainable modes, and might include loyalty rewards for duration or consistency of activity (e.g. 1,000 km commuted by bicycle), participation prizes (e.g. for completing a survey or joining a special event), or personal recognition that highlights individual accomplishments.

#### ► **Other incentives & amenities**

**Emergency ride home.** This measure assures non-driving commuters that they will be able to get home quickly and conveniently in case of family emergency (or in some workplaces, in case of unexpected overtime, severe weather conditions, or the early departure of a carpool driver) by offering a chit or reimbursement for taxi, carshare or rental car usage. Limits on annual usage or cost per employee may be set, although across North America the actual rates of usage are typically very low.

**Alternative work arrangements.** A number of alternatives to the standard 9-to-5, Monday-to-Friday workweek can support sustainable commuting (and work-life balance) at workplaces:

- *Flexible working hours* allow transit commuters to take advantage of the fastest and most convenient transit services, and allow potential carpoolers to include people who work slightly different schedules in their search for carpool partners. They also allow active commuters to travel at least one direction in daylight, either in the morning or the afternoon, during the winter.
- *Compressed workweeks* allow employees to work their required hours over fewer days (e.g. five days in four, or ten days in nine), eliminating the need to commute on certain days. For employees, this can promote work-life balance and gives flexibility for appointments. For employers, this can permit extended service hours as well as reduced parking demands if employees stagger their days off.
- *Telework* is a normal part of many workplaces. It helps reduce commuting activity, and can lead to significant cost savings through workspace sharing. Telework initiatives involve many stakeholders, and may face as much resistance as support within an organization. Consultation, education and training are helpful.



**Local business travel options.** A common obstacle for people who might prefer to not drive to work is that their employer requires them to bring a car to work so they can make business trips during the day. Giving employees convenient alternatives to private cars for local business travel during the workday makes walking, cycling, transit or carpooling in someone else's car more practical.

- *Walking and cycling*—Active transportation can be a convenient and enjoyable way to make short business trips. They can also reduce employer expenses, although they may require extra travel time. Providing a fleet of shared bikes, or reimbursing cyclists for the kilometres they ride, are inexpensive ways to validate their choice.
- *Public transit*—Transit can be convenient and inexpensive compared to driving. OC Transpo's PRESTO cards are transferable among employees and automatically reloadable, making them the perfect tool for enabling transit use during the day.
- *Ridesharing*—When multiple employees attend the same off-site meeting or event, they can be reminded to carpool whenever possible.
- *Taxis or ride-hailing*—Taxis and ride-hailing can eliminate parking costs, save time and eliminate collision liability concerns. Taxi chits eliminate cash transactions and minimize paperwork.
  - *Fleet vehicles or carsharing*—Fleet vehicles can be cost-effective for high travel volumes, while carsharing is a great option for less frequent trips.
  - *Interoffice shuttles*—Employers with multiple worksites in the region could use a shuttle service to move people as well as mail or supplies.
  - *Videoconferencing*—New technologies mean that staying in the office to hold meetings electronically is more viable, affordable and productive than ever.

**Commuter incentives.** Financial incentives can help create a level playing field and support commuting by sustainable modes. A "commuting allowance" given to all employees as a taxable benefit is one such incentive; employees who choose to drive could then be charged for parking, while other employees could use the allowance for transit fares or cycling equipment, or for spending or saving. (Note that in the United States this practice is known as "parking cash-out," and is popular because commuting allowances are not taxable up to a certain limit). Alternatively, a monthly commuting allowance for non-driving employees would give drivers an incentive to choose a different commuting mode. Another practical incentive for active commuters or transit users is to offer them discounted "rainy day" parking passes for a small number of days each month.

**On-site amenities.** Developments that offer services to limit employees' need for a car during their commute (e.g. to drop off clothing at the dry cleaners) or during their workday (e.g. to buy lunch) can free employees to make the commuting decision that otherwise works best for them.

**TDM Measures Checklist:**  
*Residential Developments (multi-family, condominium or subdivision)*

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

<b>TDM measures: Residential developments</b>		<b>Check if proposed &amp; add descriptions</b>
<b>1. TDM PROGRAM MANAGEMENT</b>		
<b>1.1 Program coordinator</b>		
<b>BASIC</b>	★ 1.1.1 Designate an internal coordinator, or contract with an external coordinator	<input type="checkbox"/>
<b>1.2 Travel surveys</b>		
<b>BETTER</b>	1.2.1 Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress	<input checked="" type="checkbox"/>
<b>2. WALKING AND CYCLING</b>		
<b>2.1 Information on walking/cycling routes &amp; destinations</b>		
<b>BASIC</b>	2.1.1 Display local area maps with walking/cycling access routes and key destinations at major entrances ( <i>multi-family, condominium</i> )	<input type="checkbox"/>
<b>2.2 Bicycle skills training</b>		
<b>BETTER</b>	2.2.1 Offer on-site cycling courses for residents, or subsidize off-site courses	<input type="checkbox"/>

TDM measures: <i>Residential developments</i>		Check if proposed & add descriptions
<b>3. TRANSIT</b>		
<b>3.1 Transit information</b>		
BASIC	3.1.1 Display relevant transit schedules and route maps at entrances ( <i>multi-family, condominium</i> )	<input type="checkbox"/>
BETTER	3.1.2 Provide real-time arrival information display at entrances ( <i>multi-family, condominium</i> )	<input type="checkbox"/>
<b>3.2 Transit fare incentives</b>		
BASIC ★	3.2.1 Offer PRESTO cards preloaded with one monthly transit pass on residence purchase/move-in, to encourage residents to use transit	<input type="checkbox"/>
BETTER	3.2.2 Offer at least one year of free monthly transit passes on residence purchase/move-in	<input type="checkbox"/>
<b>3.3 Enhanced public transit service</b>		
BETTER ★	3.3.1 Contract with OC Transpo to provide early transit services until regular services are warranted by occupancy levels ( <i>subdivision</i> )	<input type="checkbox"/>
<b>3.4 Private transit service</b>		
BETTER	3.4.1 Provide shuttle service for seniors homes or lifestyle communities (e.g. scheduled mall or supermarket runs)	<input type="checkbox"/>
<b>4. CARSHARING &amp; BIKESHARING</b>		
<b>4.1 Bikeshare stations &amp; memberships</b>		
BETTER	4.1.1 Contract with provider to install on-site bikeshare station ( <i>multi-family</i> )	<input type="checkbox"/>
BETTER	4.1.2 Provide residents with bikeshare memberships, either free or subsidized ( <i>multi-family</i> )	<input type="checkbox"/>
<b>4.2 Carshare vehicles &amp; memberships</b>		
BETTER	4.2.1 Contract with provider to install on-site carshare vehicles and promote their use by residents	<input type="checkbox"/>
BETTER	4.2.2 Provide residents with carshare memberships, either free or subsidized	<input type="checkbox"/>
<b>5. PARKING</b>		
<b>5.1 Priced parking</b>		
BASIC ★	5.1.1 Unbundle parking cost from purchase price ( <i>condominium</i> )	<input checked="" type="checkbox"/>
BASIC ★	5.1.2 Unbundle parking cost from monthly rent ( <i>multi-family</i> )	<input checked="" type="checkbox"/>

TDM measures: <i>Residential developments</i>		Check if proposed & add descriptions
<b>6. TDM MARKETING &amp; COMMUNICATIONS</b>		
<b>6.1 Multimodal travel information</b>		
<b>BASIC</b> ★	6.1.1 Provide a multimodal travel option information package to new residents	<input checked="" type="checkbox"/>
<b>6.2 Personalized trip planning</b>		
<b>BETTER</b> ★	6.2.1 Offer personalized trip planning to new residents	<input type="checkbox"/>

**APPENDIX F – City of Ottawa By-Law 2008-250**

## Section 104 - Shared Parking Provisions

1. Where more than one of the uses listed in Table 104 are located on the same lot, parking spaces may be shared between the uses, and the cumulative total of parking spaces required for all the uses on the lot may be reduced from that required in Section 101 to the amount calculated using Table 104.
2. The number of parking spaces required for the lot under this section is calculated as follows:
  1. multiply the number of parking spaces required for the land use in Section 101 by the percentages shown in Table 104 for that use in each of the eight time periods;
  2. repeat (a) for each of the uses on the lot;
  3. for each time period add the parking space calculations for all the uses to arrive at a cumulative total; and
  4. the largest cumulative total for all the uses in any time period is the number of parking spaces required for the lot.
3. Despite Subsection (1), this section does not apply to a shopping centre.

Table 104 - Percentage of required parking permitted to be shared

Land Use	II	III	IV	V	VI	VII	VIII	IX
	Weekday - Morning	Weekday - Noon	Weekday - Afternoon	Weekday - Evening	Saturday <sup>1</sup> - Morning	Saturday <sup>1</sup> - Noon	Saturday <sup>1</sup> - Afternoon	Saturday <sup>1</sup> - Evening
(a) office; medical facility; research and development centre	100%	90%	100%	15%	20%	20%	10%	5%
(b) bank	80%	100%	100%	10%	80%	100%	60%	10%
(c) retail store; retail food store; personal service business; convenience store	75%	80%	85%	75%	60%	90%	100%	50%
(d) restaurant; bar	30%	90%	60%	100%	30%	80%	50%	100%
(e) cinema; theatre; amusement centre	40%	40%	60%	85%	40%	70%	80%	100%
(f) visitor parking required for residential uses in Section 102	50%	50%	75%	100%	100%	100%	100%	100%

## APPENDIX G – WARRANT CALCULATIONS

# Signal Warrant Calculation

MAJOR STREET: Kanata Avenue

MINOR STREET: Kanata on the Woods Site Access

COMMENT: 2027 Total Traffic

NUMBER OF APPROACH LANES: 1  2

TEE INTERSECTION CONFIGURATION: YES  NO

FLOW CONDITIONS: FREE FLOW (RURAL)   
RESTRICTED FLOW (URBAN)

VOLUME	AM	PM	FACTOR *	
1A - All	1,110	1,879	n/a	1,375
1B - Minor	129	165	92%	135
2A - Major	981	1,714	92%	1,240
2B - Cross	81	80	93%	75

\* This factor relates average of the "peak eight hours" to the average of the "am and pm peak hours"

<b>OVERALL WARRANT</b>	150% SATISFIED:	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	Warrant for new intersection with forecast traffic
	120% SATISFIED:	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	Warrant for existing intersection with forecast traffic
	100% SATISFIED:	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	Warrant for existing intersection with existing traffic *
	COMBO 80% SATISFIED:	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	Warrant for existing intersection with existing traffic
	80% SATISFIED:	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	

\* Consider full underground provisions if 100% for forecast traf

## WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
FLOW CONDITION				X	
ALL APPROACHES	480	720	600	900	1375
	% FULFILLED				153%

150% SATISFIED: YES  NO   
 120% SATISFIED: YES  NO   
 100% SATISFIED: YES  NO   
 80% SATISFIED: YES  NO

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
FLOW CONDITION				X	
MINOR STREET APPROACHES	120	170	120	170	135
	% FULFILLED				80%

## WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
FLOW CONDITION				X	
MAJOR STREET APPROACHES	480	720	600	900	1240
	% FULFILLED				138%

150% SATISFIED: YES  NO   
 120% SATISFIED: YES  NO   
 100% SATISFIED: YES  NO   
 80% SATISFIED: YES  NO

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
FLOW CONDITION				X	
TRAFFIC CROSSING MAJOR STREET	50	75	50	75	75
	% FULFILLED				100%

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.



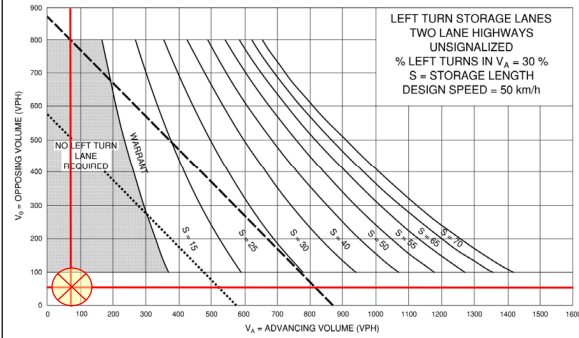
**LEFT TURN LANE  
 WARRANTS**

**GENERAL INFORMATION**

<b>Project Title</b>	Kanata on The Woods TIA
<b>Project #</b>	CCO-21-3853
<b>Agency or Company</b>	McIntosh Perry
<b>Intersection</b>	Kanata Avenue and Site Access
<b>LT Movement Approach</b>	Westbound (Site Access)
<b>Design Speed</b>	50 km/hr
<b>Scenario and Year</b>	2027 Total Traffic

AM Peak Hour		PM Peak Hour	
$V_L$ =	23	$V_L$ =	40
$V_A$ =	75	$V_A$ =	77
$V_D$ =	54	$V_D$ =	88
LT % =	31%	LT % =	52%

AM Peak Hour - Exhibit 9A-4



1

PM Peak Hour - Exhibit 9A-5

