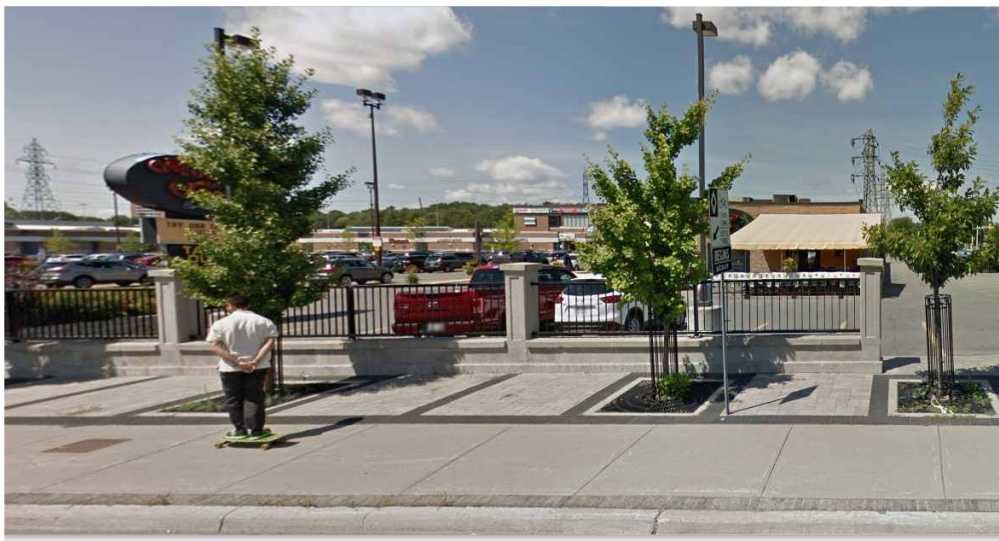
RIOCAN
REAL ESTATE INVESTMENT TRUST

1309 Carling Avenue

Transportation Impact Assessment Strategy Report - Rev 3



May 2019

PARSONS

TIA Plan Reports

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

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

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

CERTIFICATION

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

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

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Dated at Ottawa this 28 day of August, 2019.
(City)

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

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Westgate Shopping Centre – Phase 1
1309 Carling Avenue

Transportation Impact Assessment Report, Revision 3

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Table of Contents

List of Figures

List of Tables

List of Appendices

Transportation Impact Assessment Report

1. SCREENING FORM

The Screening Form was completed to confirm the need for a Transportation Impact Assessment (TIA) for Phase 1 of the Westgate Shopping Centre development. The Trip Generation, Location, and Safety triggers were met based on the proposed unit count, collisions along Carling, location within Carling Arterial Mainstreet Design Priority Area (DPA) and proximity to the Carling Avenue/Merivale Road intersection. The Screening Form and Correspondence are provided in Appendix A.

2. DESCRIPTION OF PROPOSED DEVELOPMENT

2.1. PROPOSED DEVELOPMENT

This study has been prepared by Parsons in support of Site Plan Application for the proposed development, located at 1309 Carling Avenue, Ottawa. The proposed development corresponds to Phase I of the Westgate redevelopment subdivision. As part of the application process, an Official Plan Amendment and Zoning By-Law Amendment were submitted to the City and approved on May 2017. The site is located in Ward 15 and the local context is illustrated in Figure 1.

The Phase 1 development will include 203 apartment units, 17,758 sq. ft of commercial retail and 2,381 sq. ft of commercial restaurant. The estimated date of occupancy is 2020. Site access will occur via at the existing Westgate Shopping Centre driveways: one on Merivale Road and the east entrance on Carling Avenue. The proposed development will replace an existing restaurant. The Site Plan is illustrated in Figure 2.

Figure 1: Local Context

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Figure 2: Proposed Site Plan

3. EXISTING CONDITIONS

3.1. AREA ROAD NETWORK

Carling Avenue is an east-west arterial roadway with a six-lane cross-section and a 44.5 m right-of-way (ROW) protection within the study area. It extends from March Road in the west and Bronson Avenue in the east. The posted speed limit is 60 km/h. It is also identified as a Transit Priority Corridor.

Merivale Road is a north-south arterial roadway with a two-lane cross-section with a 30 m ROW protection. It extends from Island Park Drive in the north and Prince of Wales Drive in the south. Within the study area, the posted speed limit is 50 km/h. It is also identified as a Transit Priority Corridor.

Kirkwood Avenue is a north-south arterial roadway with a four-lane cross-section and a 26 m ROW protection within the study area. It extends from Wilber Avenue in the north and Merivale Road in the south. Within the study area, the posted speed limit is 50 km/h.

Highway 417 is an east-west Provincial Freeway with a six-lane cross-section within the study area. This highway is part of the Trans-Canada Highway and extends beyond the borders of Ottawa in both the west and east ends. The posted speed limit is 100 km/h. Access/egress to/from HWY 417 is provided via multiple on/off ramps on Carling Avenue within the vicinity of the Carling/Kirkwood intersections.

3.2. PEDESTRIAN AND CYCLING NETWORK

Regarding pedestrian connectivity, sidewalks exist along both sides of Carling Avenue and Merivale Road. A sidewalk is provided on the north side of Carling Avenue at the Queensway underpass. Pedestrian crossings are provided at all study area signalized intersections, providing good connectivity to adjacent residential neighbourhoods to the south and to the east. Connectivity to commercial and residential areas to the west is less convenient due to the presence of highway ramps. Currently, pedestrian crossing at the eastbound ramp is not demarcated. Pedestrian crossing at the westbound ramp is yield controlled and is announced approximately 60 meters before the point of conflict.

With regard to cycling, bike lanes currently exist along both sides of Carling Avenue and Merivale Road adjacent to the site. The westbound bike lane on Carling Avenue currently merges with traffic at the Queensway underpass, after which it intersects with the westbound highway off-ramp. No signage or elements announcing the presence of cyclists on Carling Avenue at this location and at the underpass have been identified at this moment. The 2013 City of Ottawa Transportation Master Plan identifies Carling Avenue, Merivale Road and Island Park Drive as Spine Routes and a multi-use pathway along the south side of Island Park Drive, providing connections to the communities north of the subject site. The City's Cycling Plan identifies "neighbourhood bikeways" proposed as a Phase 1 (2014-2019) City project, north of Highway 417.

3.3. TRANSIT NETWORK

Local transit service consists of local routes #81 and #85, frequent route #80 and peak routes # 101 and #103. Facilities on-site include a bus stop for local routes located within the site's internal roadway network, serving neighbourhoods to the north and south of the subject site. Bus stops for frequent and peak routes are also available along Carling Avenue adjacent to the subject site at Merivale Road and at the westernmost site-access, serving neighbourhoods to the west and the east of the subject site. The existing transit network is illustrated in Figure 3 and existing transit stops is illustrated as Figure 4.

Figure 3: Area Transit Network

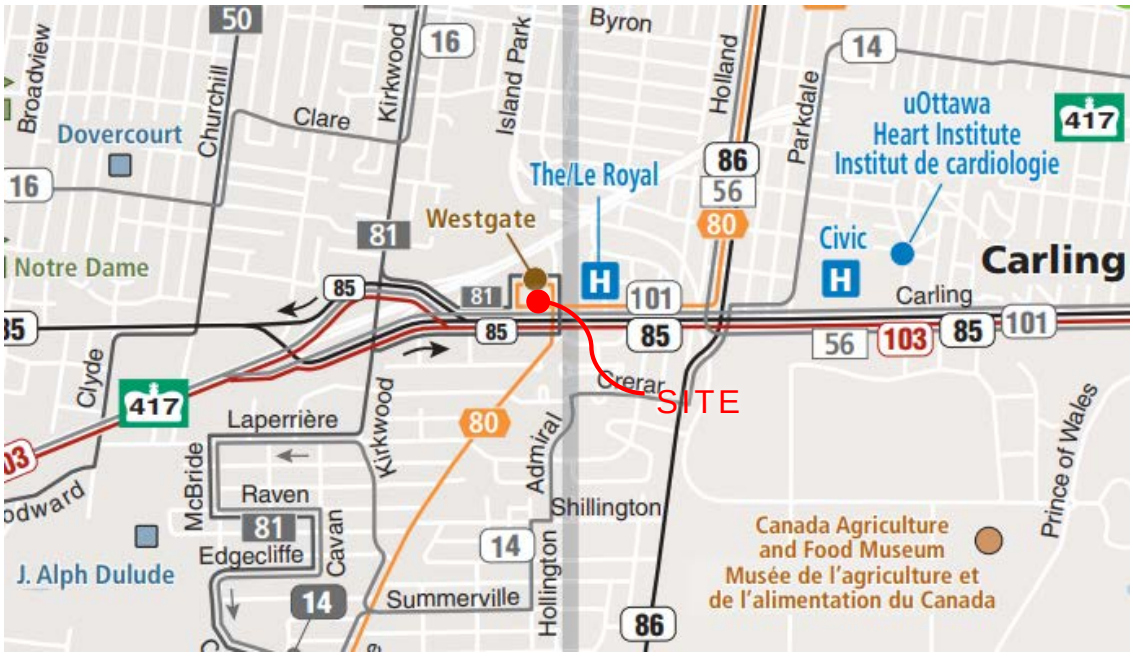
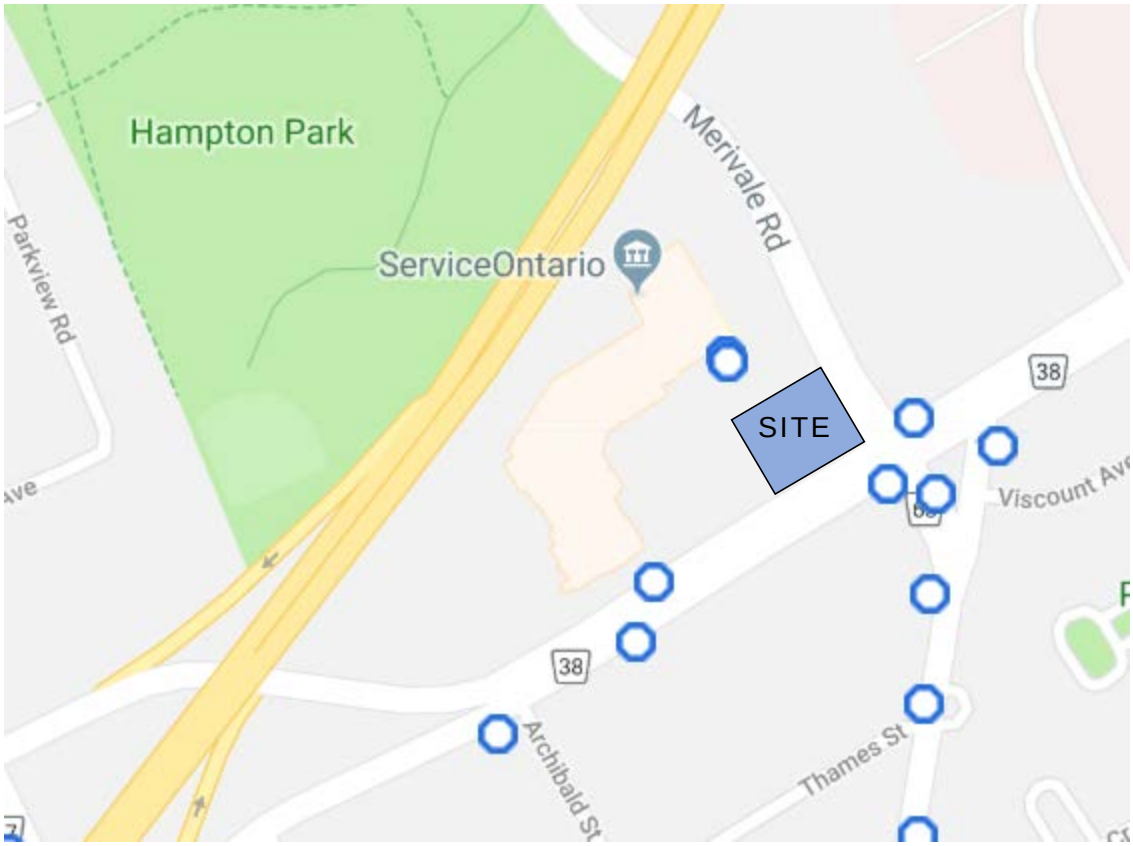


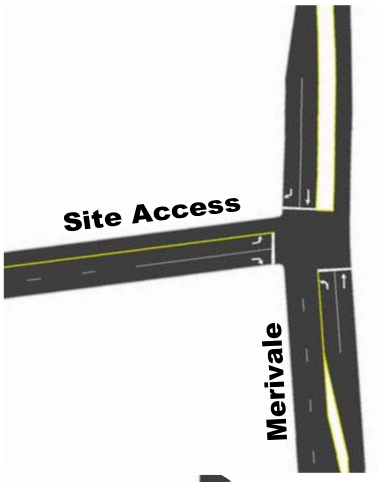
Figure 4: Existing Transit Stops



3.4. EXISTING STUDY AREA INTERSECTION

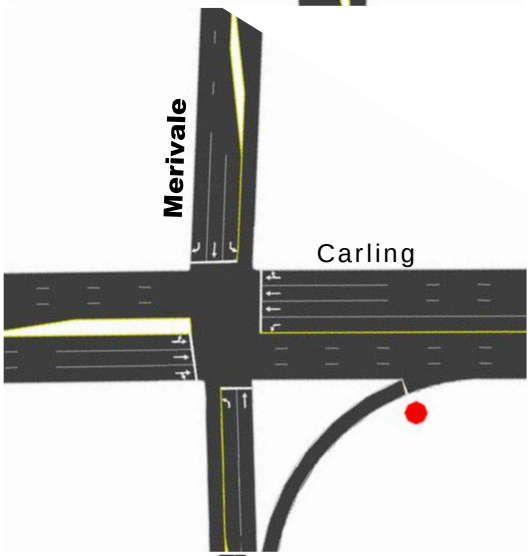
Merivale/Westgate SC

The Merivale/Westgate SC intersection is a signalized 'T' intersection. The eastbound approach consists of a single right-turn lane and a single left-turn lane. The southbound approach consists of one shared right-turn/ through lane and a single through lane. The northbound approach consists of a single left-turn lane, a single through lane and a curbside bike lane. At this location, the only restricted movement is the banned eastbound left-turn for trucks.



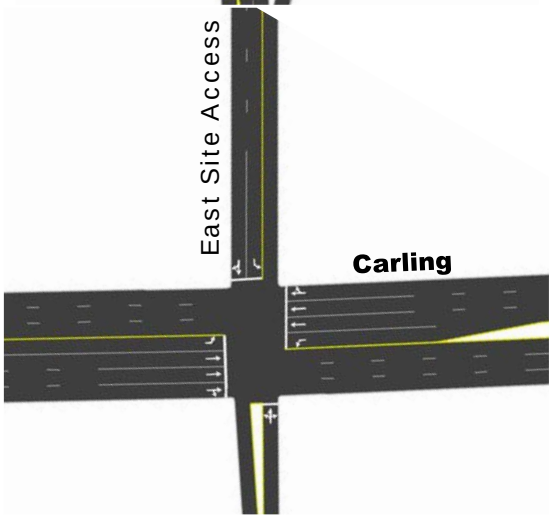
Merivale/Carling

The Merivale/Carling intersection is a signalized four-legged intersection. The westbound approach consists of a single left-turn lane, two through lanes and a single shared through/right-turn lane. The southbound approach consists of a single left-turn lane, a single through lane, a pocket bike-lane and a single right-turn lane. The northbound approach consists of a single left-turn lane, a single through lane, a curbside bike lane and a single channelized right-turn lane. Bus stops exist on Merivale Road at both sides of this approach. At this intersection, there are no restricted or banned movements.



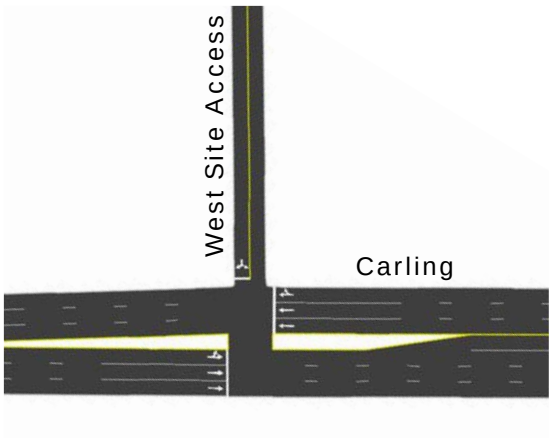
Carling/Westgate Shopping Centre

The Carling/Westgate SC intersection is a signalized four-legged intersection. The east and westbound approaches both consist of a single left-turn lane, two through lanes, a single shared through/right-turn lane and a curbside bike lane. The southbound approach consists of a single left-turn lane and a single shared through/right-turn lane. The northbound approach consists of a single all-movement lane. At this location, there are no restricted or banned movements.



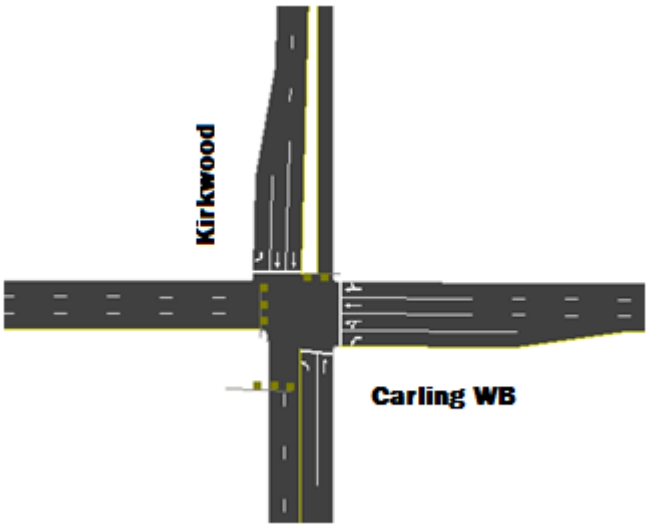
Carling/West Site Access

The Carling/West Site Access intersection is a signalized 'T' intersection. The westbound approach consists of a curbside bike lane, a single shared through/right-turn lane and two through lanes. The eastbound approach consists of a single shared through/left-turn lane, two through lanes and a curbside bike lane. The southbound approach consists of a single shared left/right-turn lane. At this location, east and westbound U-turns are not permitted, and eastbound left-turns are restricted to permit trucks only.



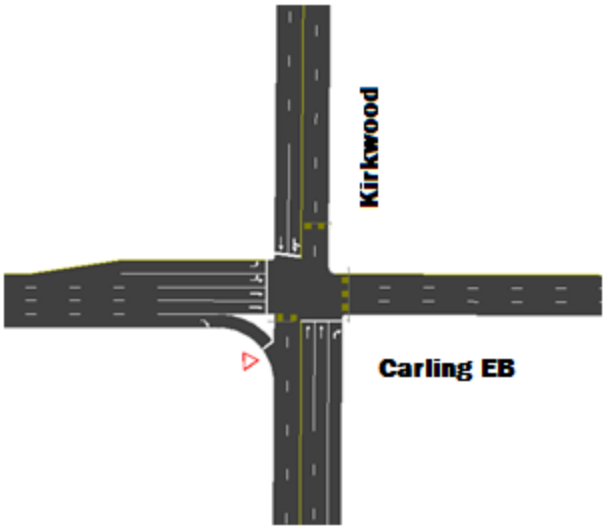
Carling WB/Kirkwood N

The Carling WB/Kirkwood N intersection is a signalized four-legged intersection. The westbound approach consists of a shared through/right-turn lane, a through lane, a shared through/left-turn lane and a left-turn lane. The southbound approach consists of a single right-turn lane and two through lanes. The northbound approach consists of a single through lane and a single left-turn lane. At this location, there are no restricted or banned movements; however, Carling Avenue operates in the westbound direction only.



Carling EB/Kirkwood S

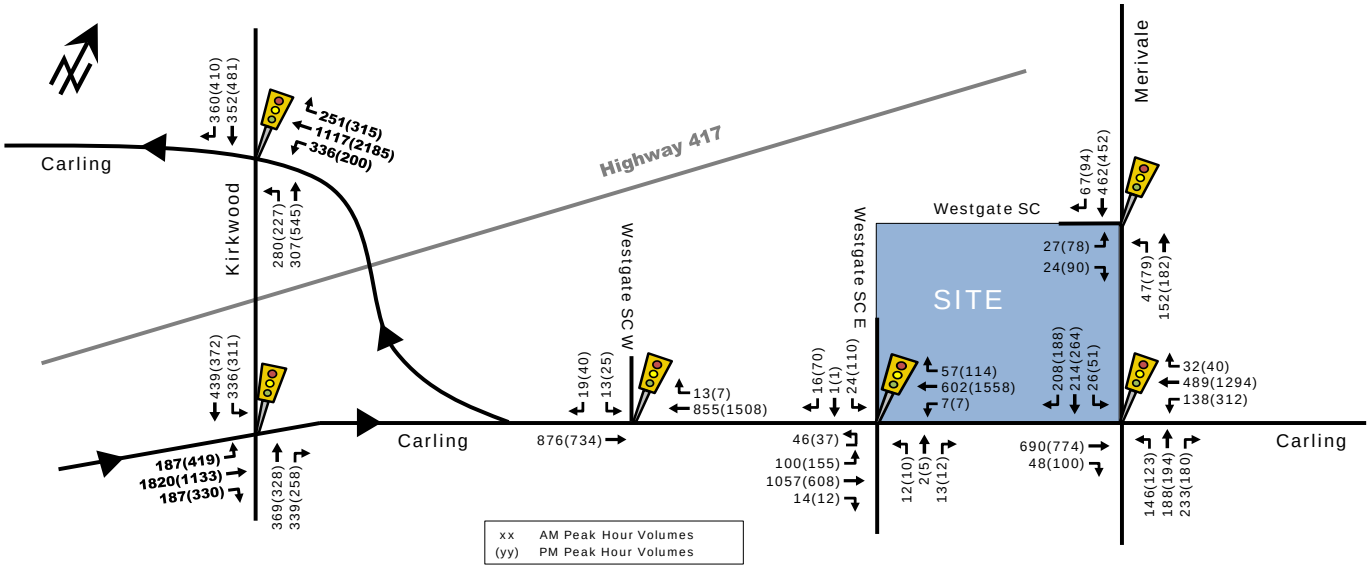
The Carling EB/Kirkwood S intersection is a signalized four-legged intersection. The eastbound approach consists of a single channelized right-turn lane, two through lanes, a shared through/left-turn lane and a left-turn lane. The southbound approach consists of a shared through/left-turn lane and a single through lane. The northbound approach consists of two through lanes and a single right-turn lane. At this location, the only restricted movement is the 'no right-turn on red' in the northbound direction. Also, Carling Avenue operates in the eastbound direction only at this location.



3.5. EXISTING INTERSECTION VOLUMES

The existing peak hour traffic volumes (Figure 5) were collected by the City of Ottawa between 2014 and 2016. The resulting peak hour and full traffic volume counts are included as Appendix B.

Figure 5: Existing Peak Hour Traffic Volumes



During the pre-consultation with City of Ottawa Staff, it was requested that additional counts be conducted to assess the changes in travel patterns due to the Highway 417 widening and closure of the eastbound on-ramp from Carling Avenue westbound. A new count for the Carling/Westgate E intersection was conducted on March 19th, 2019 to better understand the change in traffic patterns with the closure of the 417 ON-Ramp west of this location. A new count was only completed at this location as there is a queue storage concern with the eastbound left-turn movement at this location.

3.6. EXISTING ROAD SAFETY CONDITIONS

Collision history for study area (2012 to 2016, inclusive) was obtained from the City of Ottawa. A total of 103 collisions have been reported within the study area. The majority (80%, or 82) of collisions involved property damage while the remaining (20%, or 20) collisions involved non-fatal injuries.

Regarding the type of collision, turning movement accounted for 31% (or 32 collisions) of collisions, rear end accounted for 28% (or 29 collisions) of collisions, sideswipe accounted for 20% (or 20 collisions) of collisions, angle accounted for 17% (or 17 collisions) of collisions, single vehicle other accounted for 3% (or 3 collisions) of collisions and other accounted for 2% (or 2 collisions) of collisions.

A standard unit of measure for assessing collisions at an intersection is based on the number collisions per million entering vehicles (MEV). The reported collision rate for the study area intersections are as follows:

- Carling Avenue at Merivale Road – 1.09 MEV;
- Carling Avenue at Westgate SC E – 0.31 MEV;
- Carling Avenue at Westgate SC W – 0.08 MEV;
- Merivale Road at Westgate SC – 0.09 MEV;
- Carling Avenue, between Highway 417 Ramps 76 and 65 – 0.23 MEV;
- Carling Avenue, between Highway 417 to Westgate SC W – 0.02 MEV;
- Carling Avenue, between Meath Street to Archibald Street – 0.04 MEV;
- Carling Avenue, between Archibald Street to Westgate SC W – 0.04 MEV;
- Carling Avenue, between Westgate SC W to Westgate SC E – 0.04 MEV; and
- Merivale Road, between Island Park Drive to Westgate SC – 0.11 MEV.

It is noteworthy that in 2012 there was a fatal accident involving a cyclist and a passenger vehicle at the Carling/Archibald intersection.

With regard to U-turning vehicles in the area, 4 collisions were noted to involve U-turn movements (1 westbound on Carling at Westgate SC W, 2 eastbound on Carling at Merivale, and 1 westbound on the Westgate SC Access at Merivale).

Overall, there does not appear to be any prevailing safety issues within the study area. The source of the collision data is provided by the City of Ottawa and related analysis is provided within Appendix C.

4. PLANNED CONDITIONS

4.1. PLANNED STUDY AREA TRANSPORTATION NETWORK CHANGES

Within the study area, notable transportation network changes within the study area are described as follows.

Merivale Road
Identified on the Affordable Network are peak period bus lanes in the peak direction only. Transit signal priority would be provided between Carling Avenue and Baseline Road by reallocating existing traffic lanes.

Identified on the Network Concept is road widening to provide exclusive bus lanes and transit signal priority between Carling Avenue and Slack Road.

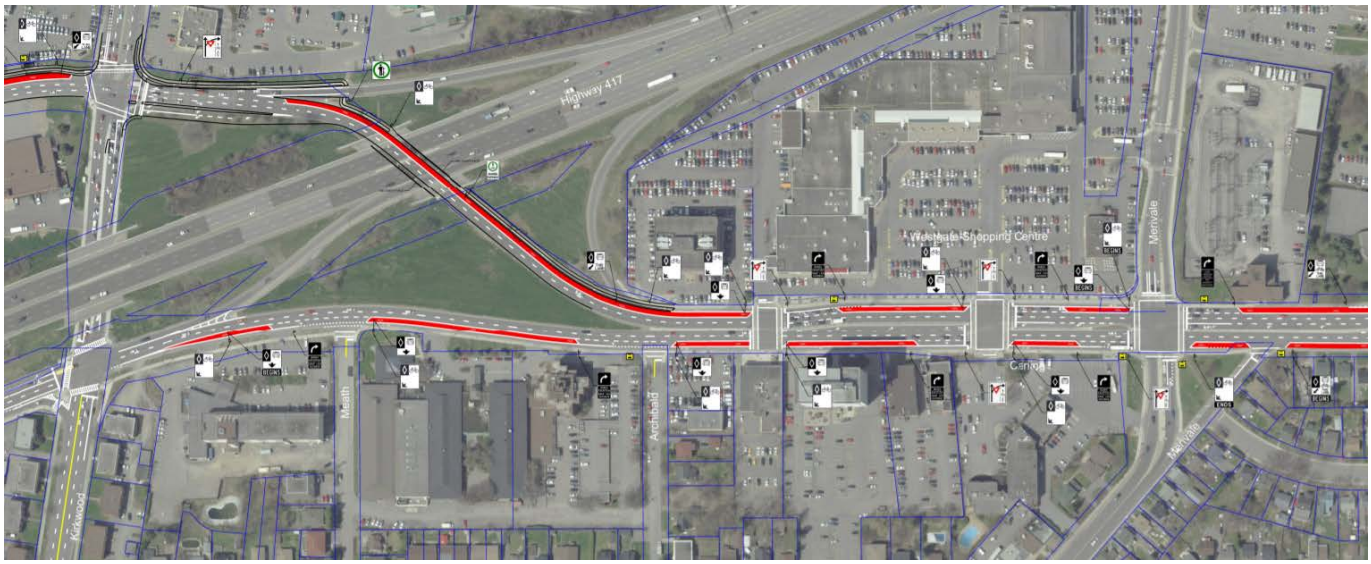
Carling Avenue
Identified on the Affordable Network are exclusive bus lanes and transit signal priority between Lincoln Fields Station and the Carling O-Train Station. The existing curbside traffic lanes would be converted to bus lanes in lieu of widening the corridor, which reduces the number of travel lanes for general traffic from 6 to 4.

Identified on the City's 2031 Network Concept Plan are further improvements to transit within the study area beyond 2031. Carling Avenue is identified as a future Light Rail Transit (LRT) corridor with a station planned at Merivale Road

Carling Transit Priority Study
In February 2017, the City of Ottawa initiated a study to develop a Recommended Functional Design Plan to provide for the introduction of Transit Priority Measures along Carling Avenue from Lincoln Fields to Bronson Avenue. Key elements of the design include transit priority measures, provisions for widened sidewalks and cycling facilities in key areas and intersection modifications and/or traffic control signal adjustments.

The current plan within the vicinity of the site is shown as Figure 6. The timing of the planned modifications is unknown at this time however, it is understood that implementation would ideally occur in the next five years.

Figure 6: Carling Avenue Transit Priority Plan



Source: https://ottawa.ca/en/carling-avenue-transit-priority-measures, Accessed 2018-11-05

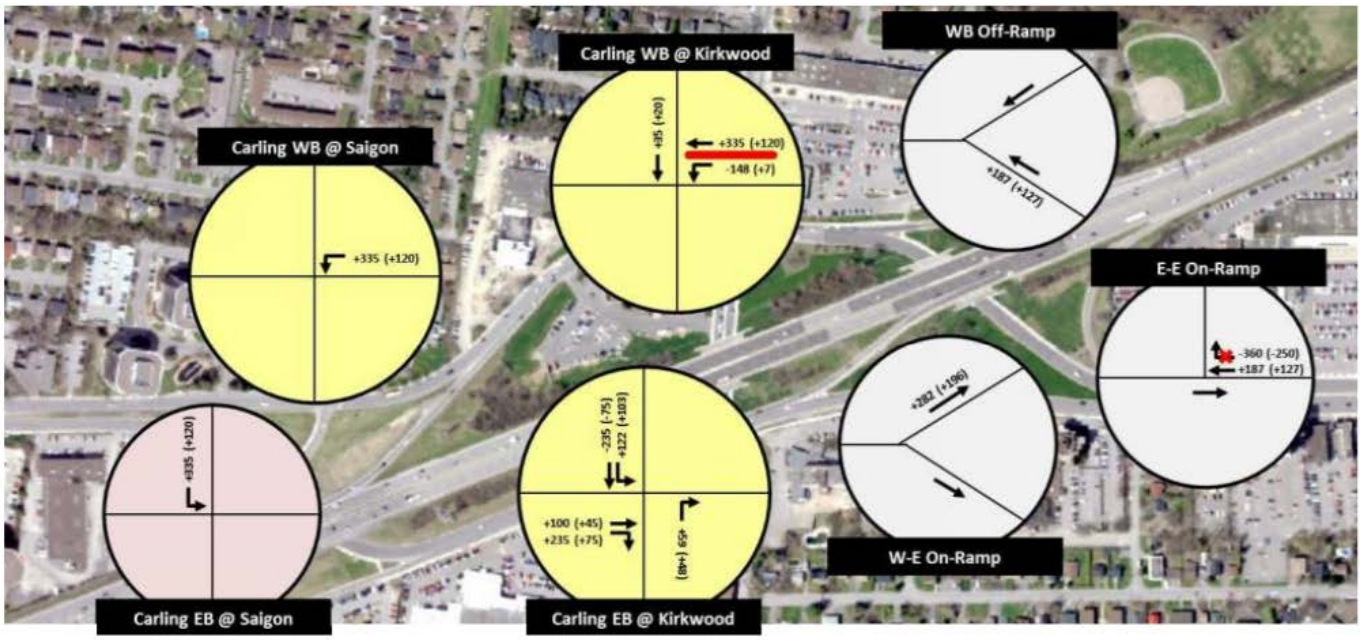
Closure of the Highway 417 E-E On-Ramp at Carling Avenue:

In March 2018 the Ministry of Transportation closed the westbound Carling Avenue eastbound on-ramp to Highway 417 coming from the Westgate Mall. As indicated in the Queensway Expansion East project webpage, this closure is part of the Queensway Expansion from Maitland Avenue to Island Park Drive, which will add one lane in each direction. Construction is expected to conclude on 2020 and mitigation for redirected traffic is planned to be implemented at the Carling Avenue westbound/Kirkwood Avenue and Carling Avenue/Saigon Court intersections. Mitigation measures include:

- Two dedicated left-turn lanes on Carling Avenue westbound at Kirkwood Avenue to accommodate left-turning traffic, including redirected traffic from the closed E-E (eastbound) on-ramp;
- A raised concrete median island constructed between the through lanes and the left-turn lanes on Carling Avenue westbound at Kirkwood Avenue to prevent E-W off-ramp traffic from weaving across Carling Avenue westbound to turn left on to Kirkwood Avenue southbound;
- A dedicated left turn lane on Carling Avenue westbound at Saigon Court to accommodate traffic turning left on to Saigon, including redirected traffic from the E-W off-ramp seeking access to Carling Avenue eastbound/Kirkwood Avenue south;
- Widening of Saigon Court by one lane to provide additional capacity;
- New traffic signals at the Carling Avenue eastbound/Saigon Court intersection;
- New sidewalks and a segregated bike lane on Carling Avenue westbound; and
- Speed humps and other improvements on Coldrey Avenue.

The Traffic Assessment Report Summary for the Proposed Closure of Highway 417 E-E On-Ramp at Carling Avenue Interchange, produced by MMM Group in December 2016, identified a total of 360 vehicles during the AM peak and 250 vehicles during the PM peak would be displaced by this closure. Figure 7 illustrates the proposed traffic impacts of the updated traffic counts and proposed changes listed above.

Figure 7: Net Traffic Impacts – Carling E-E On-Ramp Closure and Modifications (MMM Group, 2016)



4.2. OTHER AREA DEVELOPMENTS

1400 Carling Avenue

Sharon Enterprise (the Owner) has submitted a Zoning By-Law Application to increase in height from 10 storeys to 13 storeys for the addition of two towers onto the existing five storey Embassy West retirement home. A total of 83 new units in the west tower and 280 new units in the east tower are proposed. No Transportation Impact Study was prepared for this application.

1354 - 1376 Carling Avenue

Holloway Lodging has submitted a Zoning By-Law Application for a new residential development consisting of four buildings on the properties municipally known as 1376 and 1354 Carling Avenue. Two buildings front Carling Avenue and are both proposed with 20 storeys and two 9 storey buildings are proposed further south on the site. The total number of residential units is 914 within the four buildings. Approximately 2,440 m^2 (26,200 ft^2) of commercial is proposed as part of buildings fronting Carling Avenue. The Community Transportation Study projects an increase in two-way vehicle traffic of 186 to 253 veh/h during the weekday commuter peak hours.

900 Merivale Road

An expansion of the existing Community Health Centre is planned at the above-noted location, which is located approximately 250 m southeast of the subject development. The Transportation Overview (prepared by Parsons) projects an increase in two-way vehicle traffic of 40 to 50 veh/h during the weekday commuter peak hours.

5. STUDY AREA

5.1. TRANSIT

Transit has been discussed in Section 3.3.

5.2. NETWORK CONCEPT

No screenlines are present in the immediate vicinity of the proposed site, and the impact of the development is anticipated to be minimal.

5.3. INTERSECTION DESIGN

The proposed site will use existing accesses to the Westgate Shopping Centre. The Strategy Report will review and document any changes to the existing accesses, if required.

6. TIME PERIODS

The weekday morning and afternoon peak hours are considered the appropriate time periods for operational analysis for this development.

7. HORIZON YEARS

The expected build-out date for Phase I of the proposed development is assumed to be 2020. Considering the new Merivale Road (North) Community Design Plan and the construction of the new Civic Hospital Campus at Sir John Carling Site, a 5-years beyond full build-out will be analyzed for year 2025.

8. EXEMPTIONS REVIEW

Based on the foregoing analysis and review of the existing conditions in Step 2, the Scoping Report, it is recommended that, if required, any future work within the context of this TIA excludes the following modules and elements summarized in Table 1.

Table 1: Exemptions Review Summary

Module	Element	Exemption Consideration
4.1 Development Design	4.1.3 New Street Networks	Not required for Site Plan Applications.
4.2 Parking	4.2.2 Spillover Parking	According to Part 4 of Zoning By-Law 2008-250 (Table 101-R15-N83), the development will require a total of 104 parking spaces. The proposed development includes 138 above grade and below grade parking spaces and is therefore meeting Zoning By-Law requirements. As such, no parking spillover is anticipated.
4.6 Neighbourhood Traffic Management	4.6.1 Adjacent Neighbourhoods	The proposed development relies on the existing Carling Avenue and Merivale Road access. Carling Avenue and Merivale Road are classified as arterial roads, as such, no development-related traffic is anticipated to impact area collector and local roads.
4.8 Network Concept	All Elements	As part of the application process, an Official Plan Amendment and Zoning By-Law Amendment have been previously approved for the proposed development.

In addition to the above recommendations of the Exemptions Review, the following exemptions are also proposed and summarized in Table 2.

Table 2: Additional Recommended Exemptions Summary

Module	Element	Exemption Consideration
4.2 Parking	4.2.1 Parking Supply	The proposed development meets the minimum parking space requirements. As such, no parking supply issues are anticipated.

9. DEVELOPMENT GENERATED TRAVEL DEMAND

9.1. TRIP GENERATION AND MODE SHARES

The proposed redevelopment includes 203 apartment units, 17,758 ft^2 of commercial retail, and 2,381 ft^2 of commercial restaurant and will replace the existing Monkey Joe's Bar & Grill (approximately 4,200 ft^2). Traffic from the new retail land use and the existing restaurant land use will be generated using the ITE Trip Generation Manual 10th Edition and the TRANS Trip Generation Study for the residential use. Vehicle trip generation rates are summarized in Table 3.

Table 3: Vehicle Trip Generation Rates for Retail and Residential Uses

Land Use	Data Source	Trip Rate	
		AM Peak	PM Peak
High Rise Apartment	TRANS	T = 0.24(du)	T = 0.27(du)
Shopping Centre	ITE 820	-	T = 3.81(X)
High Turnover Restaurant	ITE 932	-	T = 9.77(X)

Notes: *T = Average Vehicle Trip Ends*; *X = 1000 ft^2 Gross Floor Area*; *du = Dwelling unit*

Commercial Trip Generation

As ITE trip generation surveys only record vehicle trips and typically reflect highly suburban locations (with little to no access by travel modes other than private automobiles), adjustment factors appropriate to the Ottawa study area context were applied to attain estimates of person trips for the proposed Phase 1 development. To convert ITE vehicle trip rates to person trips, an auto occupancy factor and a non-auto trip factor were applied to the ITE vehicle trip rates. Our review of available literature suggests that a combined factor of approximately 1.3 is considered reasonable to account for typical North American auto occupancy values of approximately 1.15 and combined transit and non-motorized modal shares of less than 10%. The person trip generation for the proposed office and retail developments is summarized in Table 2.

Table 4: Modified Person Trip Generation – Retail and Restaurant

Land Use	Data Source	Area	PM Peak (Person Trips/hr)		
			In	Out	Total
Shopping Centre	ITE 820	17,758 ft^2	42	46	88
High Turnover Restaurant (proposed)	ITE 932	2,381 ft^2	18	12	30
High Turnover Restaurant (existing)	ITE 932	4,200 ft^2	-32	-21	-53
Total 'Net' Person Trips Increase			**28**	**37**	**65**

The person trips shown in Table 2 for the proposed commercial developments were then reduced by modal share values. Given the development's location in the Merivale area and the site's close proximity to transit facilities available on Carling Avenue, the active and transit modal splits are expected to be higher than outlined in the TRANS OD Survey. Table 5 outlines the mode shares for the Merivale area and selected mode splits. The resulting mode shares for the proposed retail and restaurant and existing restaurant development are summarized in Table 6, Table 7, and Table 8 respectively.

Table 5: Merivale Mode Shares

	24 hrs			AM Peak			PM Peak			Average	Selected Split
	From District	To District	Within District	From District	To District	Within District	From District	To District	Within District		
Auto	61	61	55	53	60	43	64	59	52	56	45
Passenger	15	15	15	11	12	15	14	14	15	14	10
Transit	18	18	7	26	22	11	17	19	9	16	30
Bicycle/Walk	4	4	19	5	3	20	3	6	20	9	15
Other	2	2	4	5	3	11	2	3	5	4	

Table 6: Proposed Retail Modal Site Trip Generation

Travel Mode	Mode Share	PM Peak (Person Trips/h)		
		In	Out	Total
Auto Driver	45%	19	21	40
Auto Passenger	10%	5	5	10
Transit	30%	12	14	26
Non-motorized	15%	6	6	12
Total Person Trips	100%	42	46	88
Less Pass-by (10%)		-2	-2	-4
Total 'New' Auto Trips		**17**	**19**	**36**

Table 7: Proposed Restaurant Modal Site Trip Generation

Travel Mode	Mode Share	PM Peak (Person Trips/h)		
		In	Out	Total
Auto Driver	45%	9	6	15
Auto Passenger	10%	2	2	4
Transit	30%	5	3	8
Non-motorized	15%	2	1	3
Total Person Trips	100%	18	12	30
Total 'Existing' Auto Trips		**9**	**6**	**15**

Table 8: Existing Restaurant Modal Site Trip Generation

Travel Mode	Mode Share	PM Peak (Person Trips/h)		
		In	Out	Total
Auto Driver	45%	15	10	25
Auto Passenger	10%	4	2	6
Transit	30%	9	6	15
Non-motorized	15%	4	3	7
Total Person Trips	100%	32	21	53
Total 'Existing' Auto Trips		**15**	**10**	**25**

Residential Tip Generation

Using the TRANS Trip Generation rates outlined in Table 3 and the TRANS Trip Generation mode splits for the residential component of the site, the total amount of person trips generated by the proposed 215 residential units is summarized in Table 9.

Table 9: Residential Person Trip Generation

Land Use	Data Source	Units	AM Peak (Person Trips/hr)			PM Peak (Person Trips/hr)		
			In	Out	Total	In	Out	Total
High Rise Apartment	TRANS	203 du	30	102	132	85	52	137

As shown in Table 9, a total of 132 and 137 person-trips per hour are projected to travel to/from the proposed residential development during the weekday morning and afternoon commuter peak hours. Using the model splits from the TRANS Trip Generation report, these person trips were broken down by modal shares as outlined in Table 10.

Table 10: TRANS Model Site Trip Generation - Residential

Travel Mode	Mode Share		AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
	AM	PM	In	Out	Total	In	Out	Total
Auto Driver	37%	40%	11	38	49	34	21	55
Auto Passenger	8%	9%	3	8	11	8	4	12
Transit	41%	37%	12	42	54	31	20	51
Non-motorized	14%	14%	4	14	18	11	8	19
Total Person Trips	**100%**		30	102	132	85	52	137
Total 'New' Auto Trips			**11**	**38**	**49**	**34**	**21**	**55**

To determine the net increase in site trips, the existing restaurant generated trips were removed from the total proposed retail and residential generated trips. As such, Table 11 outlines the net increase in trips generated by the proposed development.

Table 11: Net Total Site Person-Trip Generation

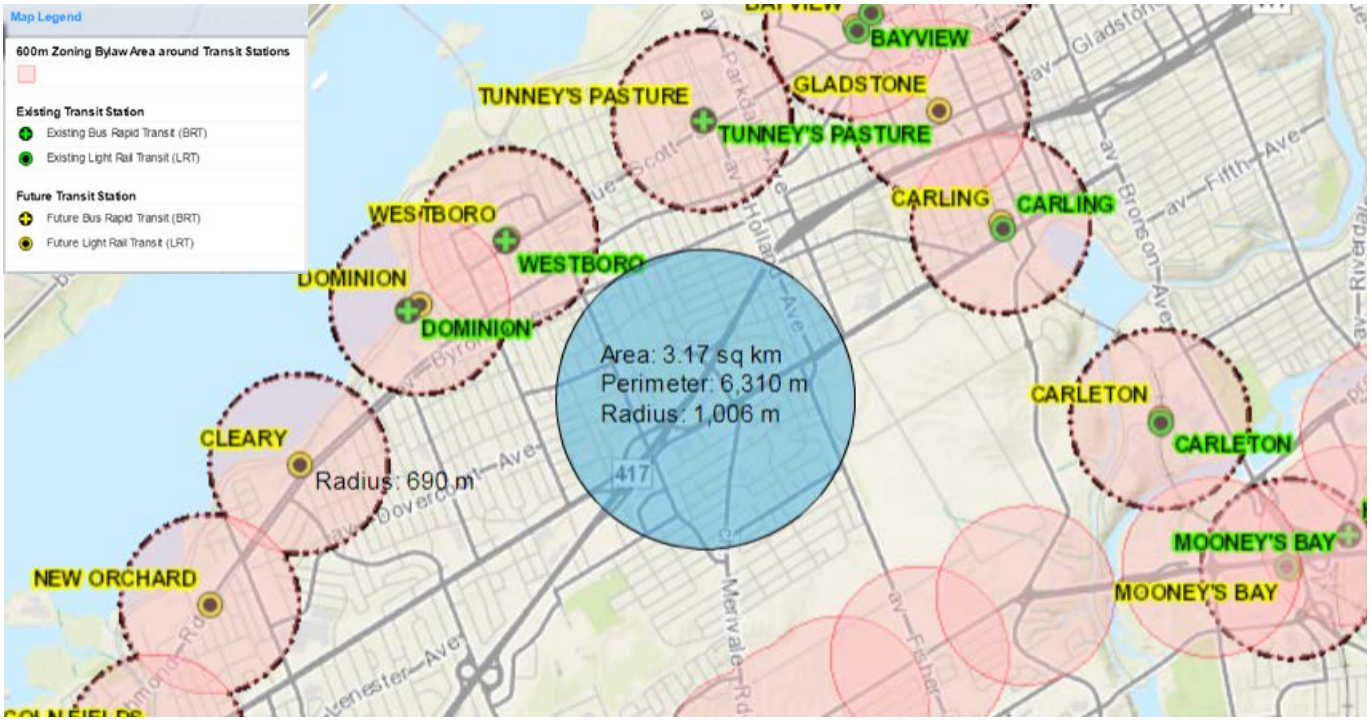
Travel Mode	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
	In	Out	Total	In	Out	Total
Auto Driver	11	38	49	47	38	85
Auto Passenger	3	8	11	11	9	20
Transit	12	42	54	39	31	70
Non-motorized	4	14	18	15	12	27
Total Person Trips	30	102	132	113	89	202
Less Retail Pass-By (30%)	0	0	0	-2	-2	-4
Total 'New' Auto Trips	**11**	**38**	**49**	**45**	**36**	**81**

As shown in Table 11, the resulting number of potential 'new' two-way vehicle trips for the proposed developments is approximately 49 and 81 veh/h during the weekday morning and afternoon peak hours, respectively. Transit trips in the area are expected to increase by approximately 54 to 70 persons per hour and active mode trips are expected to increase by approximately 18 to 27 persons per hour.

9.1.1. MODE SHARES

As shown in Table 5, the chosen transit and non-motorized mode shares for the development are already twice that identified for the rest of the Merivale area. As there are no future transit stations planned within a kilometer of the site (Figure 8) and the site is not within a TOD zone, it is unlikely the future transit and active modes to/from this retail site will increase significantly. As such, the future mode shares are assumed to be the same as existing for the 2020 and 2025 horizon years.

Figure 8: Transit Stations Located Close to Site



9.2. TRIP DISTRIBUTION

Traffic distribution was based on the 2011 NCR Household Origin – Destination Survey, existing volume splits at study area intersections and our knowledge of the surrounding area. The resultant distribution is outlined as follows.

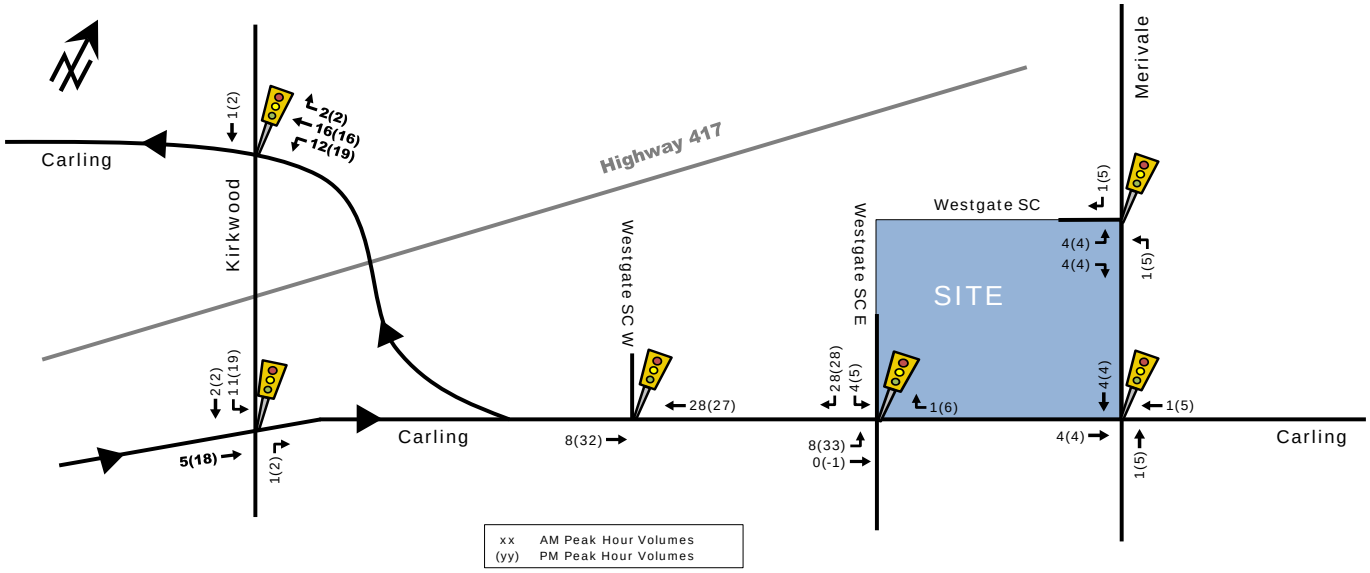
- 30% to/from the west via HWY 417;
- 20% to/from the east via HWY 417;
- 10% to/from the west via Carling Avenue;
- 10% to/from the east via Carling Avenue;
- 10% to/from the north via Merivale Road;
- 10% to/from the south via Merivale Road;
- 5% to/from the north via Kirkwood Avenue; and
- 5% to/from the south via Kirkwood Avenue.

100%

9.3. TRIP ASSIGNMENT

New site generated trips were assigned to the study area intersections using the foregoing distribution. Figure 9 illustrates the resulting volume assignment of the new and pass-by site generated vehicle trips used in this analysis.

Figure 9: New and Pass-by Site Generated Traffic



10. BACKGROUND NETWORK TRAVEL DEMAND

10.1. TRANSPORTATION NETWORK PLANS

The transportation network changes have been discussed within Section 4.1 and have been considered within the horizon analysis. It is noted that the future Carling Avenue Light Rail Transit (LRT) corridor falls outside the scope of the foregoing study, as is identified in the Transportation Master Plan as a post 2031 measure.

10.2. BACKGROUND GROWTH

The historical traffic count data for the Carling Avenue and Merivale Road intersection (years 2010, 2014, 2015 and 2016) was reviewed to determine the background growth along Carling Avenue. In general, Carling Avenue has experienced a 2.5% to 3% growth and Merivale Road has experienced a -0.5% to a 2% growth. Therefore, 2.5% growth was applied to Carling Avenue, 2% to Kirkwood Avenue, and 1.5% to Merivale Road.

10.2.1. BACKGROUND 2020 OPERATIONS

The background 2020 traffic volumes were derived by superimposing the other study area developments and the background growth rate on the existing traffic volumes. The resulting background 2020 traffic volumes are illustrated in Figure 10. Table 12 provides a summary of the background 2020 operations at the study area intersections. The SYNCHRO model output of background 2020 conditions is provided within Appendix D.

Figure 10: Projected Background 2020 Traffic Volumes

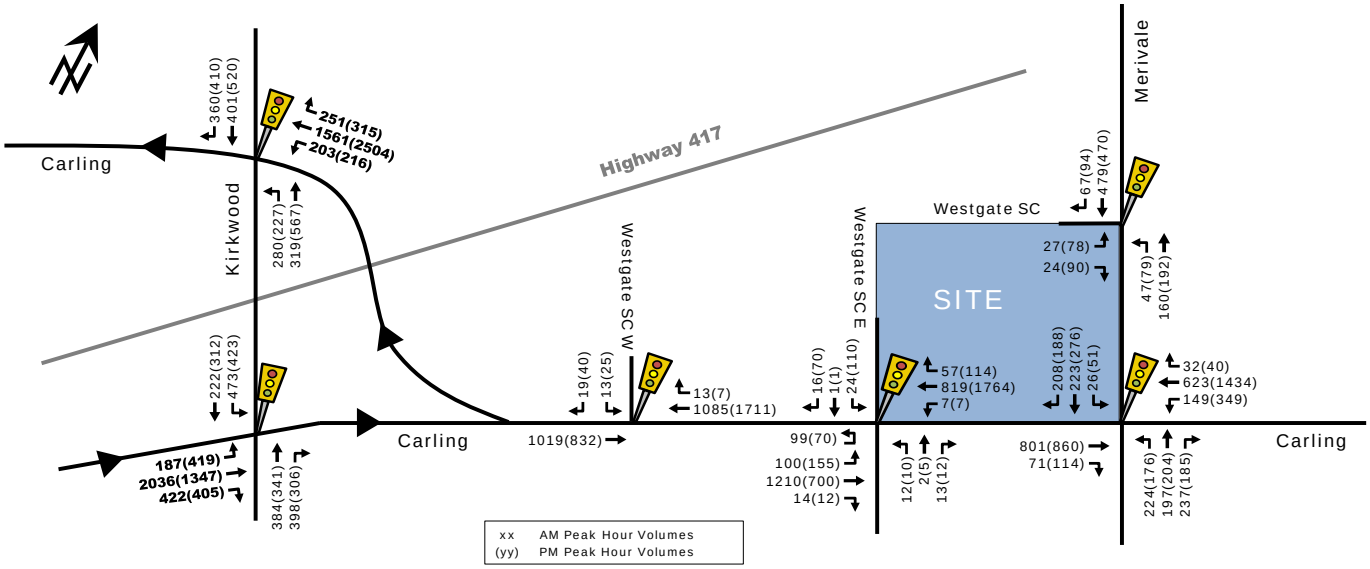


Table 12: Projected Background 2020 Performance at Study Area Intersection

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'as a whole'		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Carling/Westgate SC E	A(D)	0.47(0.81)	EBT(EBT)	4.6(14.6)	A(C)	0.42(0.75)
Merivale/Westgate SC	A(A)	0.36(0.48)	SBT(EBL)	4.4(6.3)	A(A)	0.32(0.39)
Carling/Merivale	E(E)	0.98(0.93)	NBL(WBL)	28.6(33.0)	A(C)	0.56(0.75)
Carling/Westgate SC W	A(A)	0.27(0.44)	WBT(WBT)	1.7(2.2)	A(A)	0.27(0.44)
Carling/Kirkwood N	D(F)	0.85(1.05)	SBR	31.5(87.9)	D(F)	0.84(1.17)
	D(F)	0.84(1.27)	WBT			
Carling/Kirkwood S	F(B)	1.04(0.73)	EBT	56.1(31.6)	E(C)	0.96(0.73)
	F(E)	1.03(0.93)	SBL			
	E(F)	0.98(1.03)	NBR			
Note: Analysis of intersections assumes a PHF of 0.95 and a saturation flow rate of 1800 veh/h/lane.						

As shown in Table 12, the study area intersections "as a whole" will operate at an acceptable LoS 'D' or better during peak hours with the exception of the Carling/Kirkwood S intersection which operates at an LoS 'E' during the morning peak hour and the Carling/Kirkwood N intersection which operates at an LoS 'F' during the afternoon peak hour.

The following critical movements at study area intersection are operating close to or above capacity (LoS 'E' or 'F') during peak hours:

Morning peak hour:

- NBL at the Carling/Merivale intersection
- EBT at the Carling/Kirkwood S intersection
- NBR at the Carling/Kirkwood S intersection
- SBL at the Carling/Kirkwood S intersection

Afternoon peak hour:

- WBL at the Carling/Merivale intersection
- SBR at the Carling/Kirkwood N intersection
- WBT at the Carling/Kirkwood N intersection
- NBR at the Carling/Kirkwood S intersection
- SBL at the Carling/Kirkwood S intersection

The eastbound left-turn queue for background 2020 conditions at the Carling/Westgate E intersection is summarized in Table 13. It should be noted that a new count for this location was conducted on March 19th, 2019 to better understand the change in traffic patterns with the closure of the 417 ON-Ramp west of this location.

Table 13: EBLT Queueing at Carling/Westgate E, Background 2020 Conditions

Intersection	Eastbound Left-Turn Queue (m) AM Peak (PM Peak)		
	Available Storage	Average Queue	95th Percentile Queue
Carling/Westgate E	80	10(35)	55(#75)
Note: # and ~ symbols indicate the queue is operating above capacity and queues may not clear intersection during one signal cycle.			

As shown in Table 13, the average 95th percentile EBLT queue is projected to fall within existing storage capacity in both morning and afternoon peak hours. However, it is understood from discussions with the City's Traffic Services Department (Signal Operations) that there are times of day currently when the EBLT queue extends beyond available storage.

10.2.2. BACKGROUND 2025 OPERATIONS

The background 2025 traffic volumes were derived by superimposing the other study area developments and the background growth rate on the existing traffic volumes. The resulting background 2025 traffic volumes are illustrated in Figure 11. Table 14 provides a summary of the background 2025 operations at the study area intersections. The SYNCHRO model output of projected background 2025 conditions is provided within Appendix E.

Figure 11: Projected Background 2025 Traffic Volumes

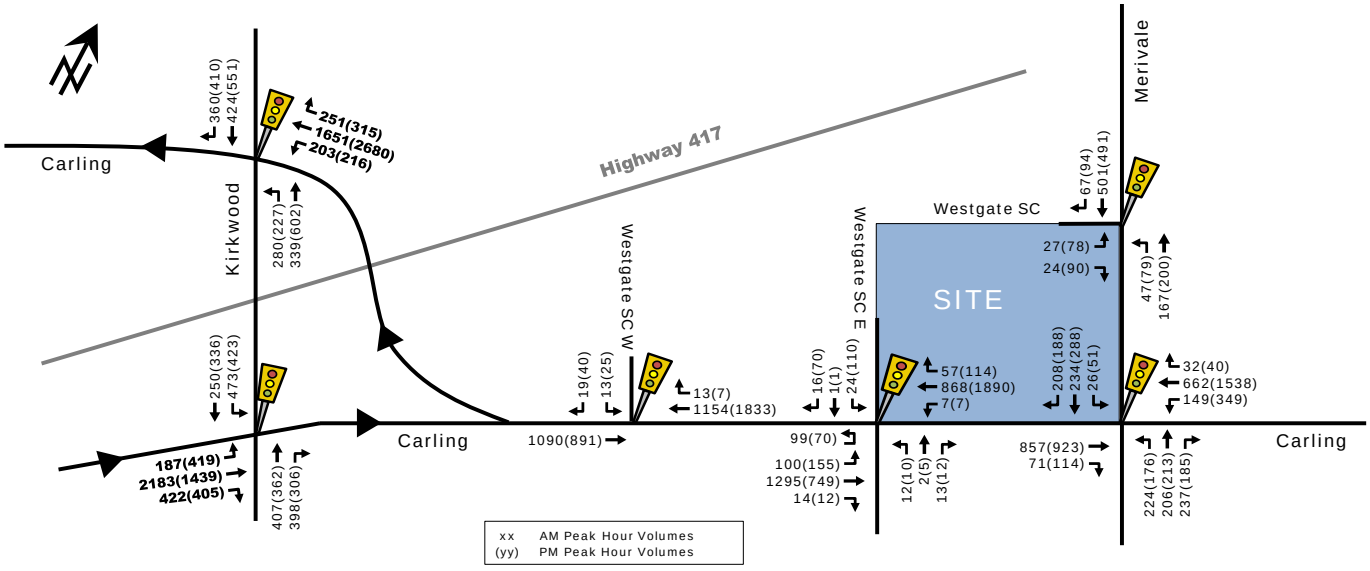


Table 14: Projected Background 2025 Performance at Study Area Intersection

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'as a whole'		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Carling/Westgate SC E	A(E)	0.47(1.00)	EBT(WBT)	5.1(25.5)	A(E)	0.47(1.00)
Merivale/Westgate SC	A(A)	0.38(0.48)	SBT(EBL)	4.4(6.4)	A(A)	0.34(0.40)
Carling/Merivale	E(D)	0.98(0.83)	NBL	29.7(58.3)	B(D)	0.68(0.89)
	A(E)	0.55(0.98)	WBL			
	B(E)	0.63(0.91)	EBT			
Carling/Westgate SC W	A(B)	0.40(0.67)	WBT(WBT)	2.2(5.5)	A(B)	0.40(0.66)
Carling/Kirkwood N	D(F)	0.88(1.26)	WBT	32.8(109.4)	D(F)	0.88(1.23)
	D(F)	0.85(1.05)	SBR			
Carling/Kirkwood S	F(C)	1.12(0.72)	EBT	71.2(32.6)	F(C)	1.02(0.77)
	E(F)	0.98(1.02)	NBR			
	F(D)	1.06(0.90)	SBL			
Note: Analysis of intersections assumes a PHF of 0.95 and a saturation flow rate of 1800 veh/h/lane.						

The implementation of the transit priority lanes on Carling Avenue reduces the capacity of Carling Avenue as general-purpose lanes are repurposed for transit only. As such, there is an overall reduction in level of service at major intersections along the corridor which results in the increase overall intersection delays and v/c ratios compared to background 2020 conditions.

As shown in Table 14, the study area intersections "as a whole" will operate similar to background 2020 conditions with the exception of the Carling/Kirkwood S intersection which is projected to decrease in level of service from an 'E' to an 'F' in the morning peak hour and a 'C' to an 'E' in the afternoon peak hour. The Carling/Westgate E intersection is also projected to decrease in overall level of service from a 'C' to an 'E'.

The critical movements at study area intersections will also operate similar to background 2020 conditions. The following critical movements at study area intersection are operating close to or above capacity (LoS 'E' or 'F') during peak hours:

Morning peak hour:

- NBL at the Carling/Merivale intersection
- EBT at the Carling/Kirkwood S intersection
- NBR at the Carling/Kirkwood S intersection
- SBL at the Carling/Kirkwood S intersection

Afternoon peak hour:

- WBT at the Carling/Westgate E intersection
- WBL at the Carling/Merivale intersection
- EBT at the Carling/Merivale intersection
- SBR at the Carling/Kirkwood N intersection
- WBT at the Carling/Kirkwood N intersection
- NBR at the Carling/Kirkwood S intersection

The eastbound left-turn queue for 2025 background conditions at the Carling/Westgate E intersection are projected to be similar to 2020 background conditions. The eastbound left-turn queue for background 2025 conditions at the Carling/Westgate E intersection is summarized in Table 15.

Table 15: EBLT Queueing at Carling/Westgate E, Background 2025 Conditions

Intersection	Eastbound Left-Turn Queue (m) AM Peak (PM Peak)		
	Available Storage	Average Queue	95th Percentile Queue
Carling/Westgate E	80	10(35)	55(#75)
Note: # and ~ symbols indicate the queue is operating above capacity and queues may not clear intersection during one signal cycle.			

As shown in Table 15, the 95th percentile EBLT queue is projected to fall within existing storage capacity in both morning and afternoon peak hours. However, it is understood from discussions with the City's Traffic Services Department (Signal Operations) that there are times of day currently when the EBLT queue extends beyond available storage.

10.3. OTHER DEVELOPMENTS

The City of Ottawa's Development Applications webtool has been used to determine if there are proposed developments within the area of influence of the proposed development. These developments have been discussed in greater detail in Section 4.2 and 2 will have an impact on the study area intersections. Figure 12 and Figure 13 illustrate for the 1354-1376 Carling Avenue and 900 Merivale Road developments. These have been included in the background analysis.

Figure 12: 1354 Carling Avenue Site-Generated Traffic

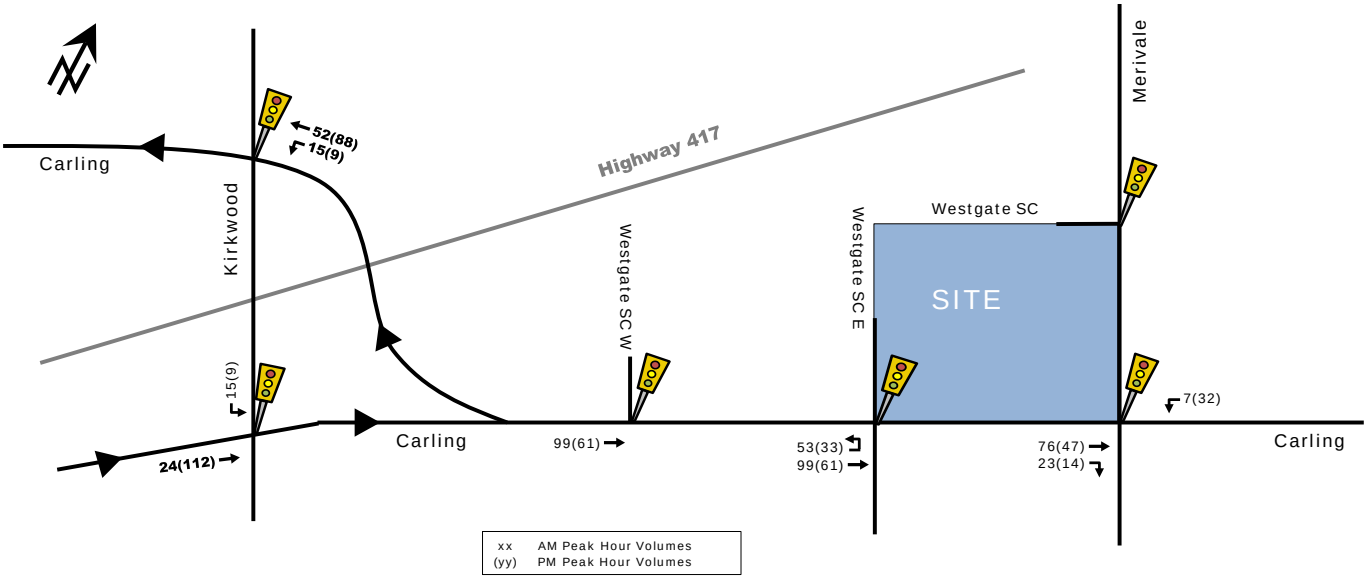
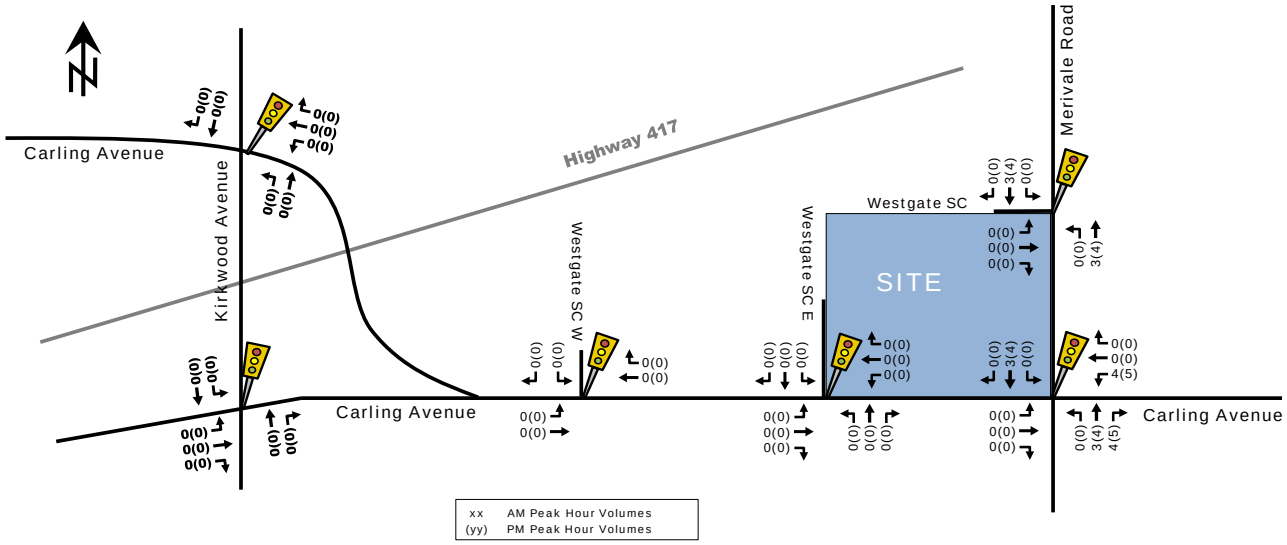


Figure 13: 900 Merivale Road Site-Generated Traffic



11. DEMAND RATIONALIZATION

The analysis herein has noted that there are performance issues at the Carling Avenue and Kirkwood intersections due in part to existing conditions, background traffic growth and these intersections providing access/egress to adjacent Highway 417 ramps. As the Phase 1 site-generated traffic volumes are extremely low compared to the existing and projected background traffic, no changes to the site trip generation or distribution analysis is proposed as traffic operations will not be affected. What could help to reduce vehicle travel demand in the Carling and Merivale Corridors is the current Highway 417 widening (reallocation of east-west commuter traffic) and implementation of transit priority along Carling and Merivale (i.e., better transit service would attract more transit users).

12. DEVELOPMENT DESIGN

12.1. DESIGN FOR SUSTAINABLE MODES

The proposed development falls within the Area X – Inner Urban for the City's Zoning By-Law. Vehicle parking is proposed in both underground parking and a surface parking lot. A total of 215 parking spaces will be provided, meeting the minimum of 136 spaces required (96 for residential, 19 for visitors, 21 for shopping centre). With regard to bicycle parking, 137 spaces will be provided which meets the City's Bylaw Requirements (102 for residential and 10 for shopping centre).

Sidewalk facilities are provided along the Carling Avenue and Merivale Road frontage and include pedestrian access within the existing Westgate Shopping Centre.

Transit service is provided in the Westgate Shopping Centre by OC Transpo. No additional service or stop locations are proposed/required.

12.2. CIRCULATION AND ACCESS

The existing driveway accesses will be used for the proposed development and they currently support delivery vehicles and OC Transpo vehicles. No circulation or operational issues are noted with the proposed 29 space surface parking lot or the loading bay adjacent to Merivale Road.

13. BOUNDARY STREET DESIGN

The boundary streets for the development are Carling Avenue and Merivale Road. It is assumed that Carling Avenue has undergone a complete street exercise during the latest renewal, and Merivale Road has not had one completed.

The multi-modal level of service analysis for the road segments along the boundary streets adjacent to the site is summarized in Table 16, with detailed analysis provided in Appendix F. The existing MMLoS targets for the Arterial Main Streets were used for this site.

Table 16: MMLOS – Boundary Street Segments

Road Segment	Level of Service							
	Pedestrian (PLoS)		Bicycle (BLoS)		Transit (TLoS)		Truck (TkLoS)	
	PLoS	Target	BLoS	Target	TLoS	Target	TLoS	Target
Carling Avenue	E	C	D	C	D	D	C	D
Merivale Road	C	C	C	C	D	D	D	E

As shown in Table 16, the pedestrian and bicycle target level of service is not currently met on Carling Avenue. The travel speeds, assumed to be above the posted 60km/h, govern the pedestrian LoS, and the 3 travel lanes govern the bicycle

LoS. Carling Avenue would need to be reduced to an operating speed of 30-50 km/h and narrowed to 2 lanes per direction to meet the MMLOS targets. If the bike lanes were physically separated, the BLoS will achieve an 'A'. This measure could be implemented in conjunction with the Carling Transit Priority Study measures.

14. ACCESS INTERSECTIONS DESIGN

14.1. LOCATION AND DESIGN OF ACCESS

The proposed development will use the existing Westgate Shopping Centre accesses. No changes or modifications are proposed as part of this development.

14.2. INTERSECTION CONTROL

The proposed development will use the existing Westgate Shopping Centre accesses. No changes or modifications are proposed as part of this development.

15. TRANSPORTATION DEMAND MANAGEMENT

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

- Direct and safe access to public sidewalks along Merivale Road and Carling Avenue;
- Direct and safe access to transit stops;
- Provide more than minimum bicycle requirements than are outlined in the City By-law;
- Unbundle parking cost from monthly rent; and,
- Provide multi-modal travel options information package to new residents.

16. TRANSIT

16.1. ROUTE CAPACITY

As outlined within Section 9.1.1, the forecasted 'new' two-way transit trips are estimated to be 54 trips (12 in, 42 out) during the AM peak and 70 trips (39 in, 31 out) during the PM peak. During the PM peak, the in/outbound trips represent approximately 75% of a single bus (55 passengers), approximately 55% of an articulated bus (75 passengers), or approximately 46% of a double decker bus (90 passengers).

Westgate Shopping Centre is serviced by five routes (see Section 3.3) with over 11 stops during the peak hour. The impact on the buses, depending on origins and destinations, could translate to 5 to 6 passengers per bus during the AM peak and 6 to 7 passengers during the PM peak, with some trips at popular times attracting even more. For routes that are already well used in peak periods, such as Routes 80 and 85, this may be enough new demand to warrant an increased level of service.

16.2. TRANSIT PRIORITY

No transit priority is noted or recommended during the area during the study horizons.

17. INTERSECTION DESIGN

17.1. PROJECTED TOTAL 2020 OPERATIONS

The total projected 2020 traffic volumes were derived by superimposing the site-generated traffic volumes onto 2020 background traffic volumes. The resulting total projected 2020 traffic volumes are illustrated in Figure 14

Figure 14: Projected Total 2020 Traffic Volumes

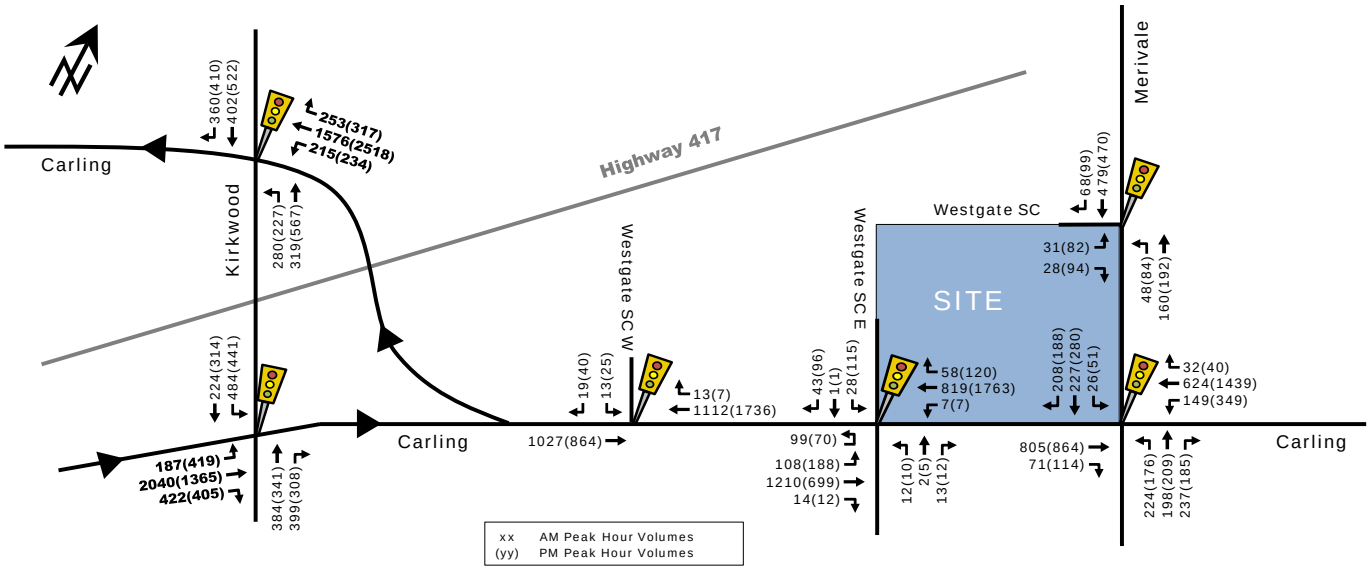


Table 17 provides a summary of the total projected operations at the study area boundary intersection based on the SYNCHRO (V10) traffic analysis software for Phase 1 build-out year 2020. The SYNCHRO model output of 2020 projected conditions is provided within Appendix H.

Table 17: Projected Total 2020 Performance at Study Area Boundary Intersections

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'as a whole'		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Carling/Westgate SC E	A(D)	0.58(0.81)	EBT(WBR)	8.7(16.2)	A(D)	0.53(0.81)
Merivale/Westgate SC	A(B)	0.34(0.69)	SBT(EBL)	4.6(10.9)	A(A)	0.32(0.42)
Carling/Merivale	B(E)	0.70(0.91)	NBL(NBL)	22.6(30.5)	A(C)	0.59(0.76)
Carling/Westgate SC W	A(A)	0.28(0.45)	WBT(WBT)	1.5(2.7)	A(A)	0.28(0.45)
Carling/Kirkwood N	D(F)	0.80(1.08)	WBT	20.2(57.6)	C(F)	0.80(1.02)
	D(F)	0.81(1.06)	SBR			
	C(F)	0.75(1.08)	NBL			
	A(E)	0.46(0.97)	NBT			
Carling/Kirkwood S	F(B)	1.05(0.76)	EBT	54.0(27.7)	F(C)	1.05(0.77)
	F(C)	1.07(0.80)	SBL			
	E(D)	0.99(0.81)	NBR			
Notes: Analysis of intersections assumes a PHF of 0.95 and a saturation flow rate of 1800 veh/h/lane. Future horizon year timing plans were optimized to account for the changes in traffic demand.						

As shown in Table 17, the study area intersections "as a whole" will operate with similar levels of service as projected in the 2020 background conditions. Slight increases in delays and capacity ratios at the site accesses, due to the addition of proposed development traffic. The following critical movements at study area intersection are operating close to or above capacity (LoS 'E' or 'F') during peak hours:

Morning peak hour:

- EBT at the Carling/Kirkwood S intersection
- NBR at the Carling/Kirkwood S intersection
- SBL at the Carling/Kirkwood S intersection

Afternoon peak hour:

- NBL at the Carling/Merivale intersection
- SBR at the Carling/Kirkwood N intersection
- WBT at the Carling/Kirkwood N intersection
- NBL at the Carling/Kirkwood N intersection
- NBT at the Carling/Kirkwood N intersection

The eastbound left-turn queue for total projected 2020 conditions at the Carling/Westgate E intersection is summarized in Table 18.

Table 18: EBLT Queueing at Carling/Westgate E, Projected Total 2020 Conditions

Intersection	Eastbound Left-Turn Queue (m) AM Peak (PM Peak)		
	Available Storage	Average Queue	95th Percentile Queue
Carling/Westgate E	80	30(45)	80(#75)
Note: # and ~ symbols indicate the queue is operating above capacity and queues may not clear intersection during one signal cycle.			

As shown in Table 18, the average and 95th percentile EBLT queue is projected to fall within existing storage capacity in both morning and afternoon peak hours. However, it is understood from discussions with the City's Traffic Services Department (Signal Operations) that there are times of day currently when the EBLT queue extends beyond available storage. It should be noted that implementing the permissive-protected eastbound left-turn phase in the morning peak will reduce projected queues.

Mitigative Measures

With no changes to the existing six (6) general purpose lanes on Carling along the site's frontage, the projected EBL queue can be mitigated by providing the movement with additional green time (i.e. optimize signal timing).

17.2. MMLOS ANALYSIS – 2020 CONDITIONS

The MMLoS analysis for the study area signalized intersections is summarized in Table 19. The detailed MMLoS analysis is provided as Appendix F. The existing lane configuration is assumed for the 2020 horizon year.

Table 19: MMLoS – Signalized Study Area Intersections, 2020 Horizon Year

Intersection	Level of Service							
	Pedestrian (PLoS)		Bicycle (BLoS)		Transit (TLoS)		Truck (TkLoS)	
	PLoS	Target	BLoS	Target	TLoS	Target	TkLoS	Target
Carling/Westgate SC E	F	C	F	C	E	D	C	D
Carling/Westgate SC W	E	C	D	C	C	D	F	D
Merivale/Westgate SC	C	C	D	C	B	D	C	E
Carling/Merivale	F	C	F	C	F	D	C	D
Carling/Kirkwood N	F	C	E	C	F	D	D	D
Carling/Kirkwood S	E	C	F	C	F	D	D	D

The letters identified in red text in Table 19 do not meet the MMLoS Targets for their designated area (general urban area). At study area intersections, the pedestrian and bicycle target levels of service are not met. The following discussion regarding these modes is provided:

- Pedestrian – High pedestrian level of service is difficult to achieve (PLoS 'A' is impossible to achieve) at signalized intersections. At study area intersections, pedestrians cross 4 to 7 lanes of traffic on Carling Avenue. Prohibiting

right-turn on red or providing advance pedestrian walk phases will also help to improve the PLoS, but will decrease the transit and vehicle levels of service;

- Bicycles – While curb-side bike lanes are provided east and westbound along Carling Avenue adjacent to the site, there are no left-turn facilities which results in poor BLoS. Providing left-turn boxes would improve the BLoS to 'A' at intersections along Carling Avenue. However, with the implementation of bike boxes, the right-turn-on-red will need to be prohibited. Another measure could be implementing cross-rides. This measure can be implemented in conjunction with the Carling Transit Priority Study;
- Transit – The TLoS is not met at the Carling/Westgate SC E, Carling/Merivale, Carling/Kirkwood N, and Carling/Kirkwood S intersections due to high delays experienced by transit; and,
- Truck – The TkLoS is not met at the Carling/Westgate SC W intersection due to only having one receiving lane on the north leg.

17.3. PROJECTED TOTAL 2025 OPERATIONS

The total projected 2025 traffic volumes were derived by superimposing the site-generated traffic volumes onto 2025 background traffic volumes. The resulting total projected 2025 traffic volumes are illustrated in Figure 15.

Figure 15: Projected Total 2025 Traffic Volumes

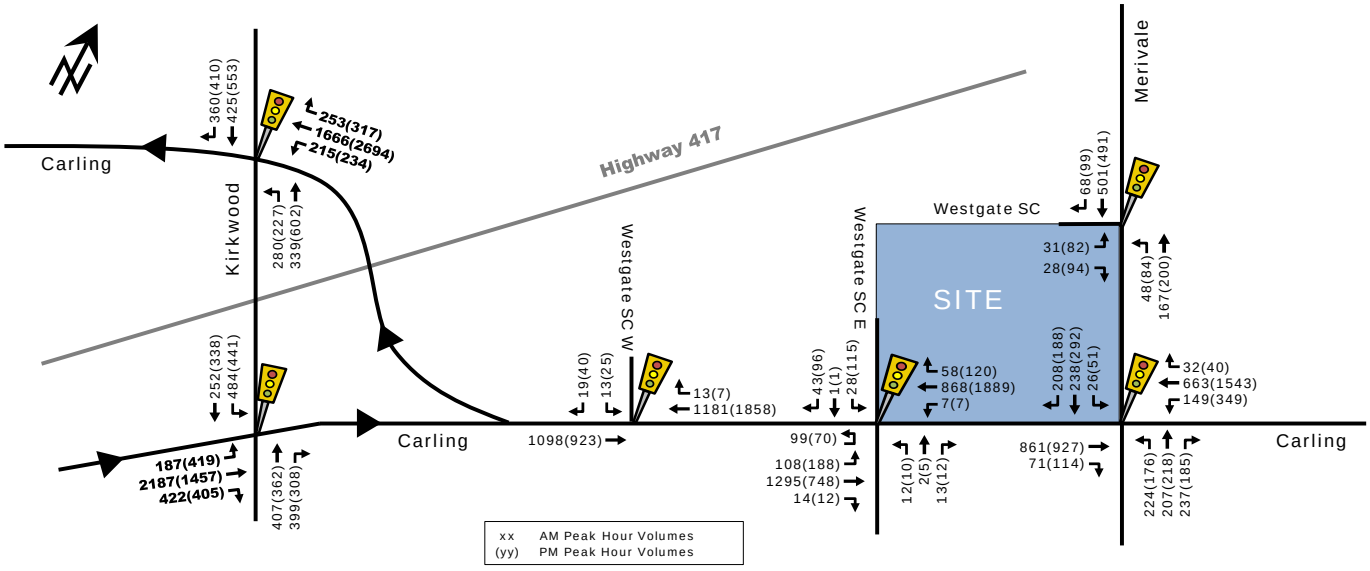


Table 20 provides a summary of the total projected operations at the study area boundary intersections based on the SYNCHRO (V10) traffic analysis software For Phase 1 build out plus 5-year horizon. The SYNCHRO model output of 2025 projected conditions are provided within Appendix I.

Table 20: Projected Total 2025 Performance at Study Area Boundary Intersections

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'as a whole'		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Carling/Westgate SC E	A(F)	0.50(1.06)	EBL(WBT)	5.1(38.3)	A(F)	0.47(1.06)
Merivale/Westgate SC	A(B)	0.38(0.69)	SBT(EBL)	4.4(10.9)	A(A)	0.34(0.43)
Carling/Merivale	E(D)	0.98(1.01)	NBL	29.6(45.2)	B(D)	0.68(0.89)
	A(E)	0.56(1.07)	WBL			
Carling/Westgate SC W	A(B)	0.41(0.69)	WBT(WBT)	2.1(4.4)	A(B)	0.40(0.68)
Carling/Kirkwood N	D(F)	0.81(1.11)	WBT	32.0(74.8)	D(F)	0.82(1.07)
	D(F)	0.85(1.10)	SBR			
	D(F)	0.78(1.27)	NBL			
	A(F)	0.49(1.09)	NBT			
Carling/Kirkwood S	F(C)	1.12(0.79)	EBT	71.0(28.2)	F(C)	1.03(0.80)
	E(D)	0.98(0.84)	NBR			
	F(D)	1.08(0.83)	SBL			

Notes: Analysis of intersections assumes a PHF of 0.95 and a saturation flow rate of 1800 veh/h/lane.
Future horizon year timing plans were optimized to account for the changes in traffic demand.

As shown in Table 20, the study area intersections are projected to operate similar to the background 2025 conditions, with slight increase in delay and capacity ratios due to site traffic. The exception is the westbound through movement at the Carling/Westgate E intersection which is projected to decrease from LoS 'E' to LoS 'F'. It should be noted that to improve WBT operations at the Carling/Merivale intersection, additional through time would be required, which would result in less time for the EBL turn movement. This would degrade the EBL performance and increase potential queues to the extent that the median through lanes could be blocked at times. Mitigative measures for the EBL queueing issues are discussed below.

As mentioned above, the implementation of the transit priority lanes on Carling Avenue reduces the capacity of Carling Avenue as general-purpose lanes are repurposed for transit only. As such, there is an overall reduction in level of service at major intersections along the corridor which results in the increase overall intersection delays and v/c ratios compared to total projected 2020 conditions.

The following critical movements at study area intersection are operating close to or above capacity (LoS 'E' or 'F') during peak hours:

Morning peak hour:

- NBL at the Carling/Merivale intersection
- EBT at the Carling/Kirkwood S intersection
- NBR at the Carling/Kirkwood S intersection
- SBL at the Carling/Kirkwood S intersection

Afternoon peak hour:

- WBT at the Carling/Westgate E intersection
- WBL at the Carling/Merivale intersection
- EBT at the Carling/Merivale intersection
- SBR at the Carling/Kirkwood N intersection
- WBT at the Carling/Kirkwood N intersection
- NBL at the Carling/Kirkwood N intersection
- NBT at the Carling/Kirkwood N intersection

The eastbound left-turn queue for future 2025 conditions at the Carling/Westgate E intersection is summarized in Table 21.

Table 21: EBLT Queueing at Carling/Westgate E, Projected Total 2025 Conditions

Intersection	Eastbound Left-Turn Queue (m) AM Peak (PM Peak)		
	Available Storage	Average Queue	95th Percentile Queue
Carling/Westgate E	80	10(~50)	40(#105)
Note: # and ~ symbols indicate the queue is operating above capacity and queues may not clear intersection during one signal cycle.			

As shown in Table 21, the 95th percentile EBLT queue is projected to exceed existing storage capacity in the afternoon peak hour. However, a reduction in the EBLT volume by approximately 10% would result in a projected 95th percentile queue length that would consistently fit within the available storage lane. Additionally, should the 6-lane cross section be maintained along the site frontage and the signal timing optimized, the 95th percentile projected eastbound left-turn queue at this location would be approximately 80m, which would not exceed storage capacity.

It is important to consider that future network changes, such as Stage 2 LRT and the Carling Avenue transit priority measures will significantly alter travel patterns in the surrounding region and reduce Carling Avenue vehicle capacity. Projecting future traffic volumes under these conditions is challenging due to the uncertainty of cumulative downstream effects, but the impacts to regional/background traffic should still be considered. In this case, peak hour traffic along Carling Avenue should be expected to decrease over time, with adoption of transit and the reduction of lane capacity, which incentivises people to choose alternative routes. This transit mode share increase is expected to occur beyond the 2025 horizon year of this report.

Mitigative Measures

The cumulative effect of site-generated traffic from the proposed development and other developments in the area will impact operations at the Carling/Westgate E signalized intersection and along Carling Avenue eastbound. With planned transit priority measures in place, should the EBL queue extend beyond the existing storage lane, one eastbound through lane would be blocked leaving a single through lane for general traffic. This would severely impact operations along Carling Avenue eastbound and may result in increased rear-end collisions and general traffic usage of the bus lane.

Once the City has introduced the transit lanes and assuming that taking green time away from the east-west movement along Carling Avenue is not feasible, then possible mitigation measures to be explored by the City at that time could include:

- Option 1: Introduce a new EBLT lane at the Carling/Merivale intersection;
  - This provides an additional access to the site for vehicles travelling from the west;
  - Implementation only requires modifying the existing median on the west leg and removing the EBLT prohibition;
    - It should be noted the EBLT prohibition is in place as historically the NCC had concerns over Island Park Drive being used by drivers attempting to by-pass congestion along Carling Avenue or HWY 417;
  - The EBLT movement at this location would likely need to be fully protected;
  - Consideration could be given to providing additional storage length for the EBLT at this location by reducing the length of the existing WBLT storage serving the Best Western (i.e., Carling/Westgate E intersection) on the premise this auxiliary lane is currently underutilized;

- Option 2: Provide dual EBLT lanes at the Carling/Westgate E intersection;
  - As the EBLT volume is approaching 300 veh/h, dual EBLT lanes would be warranted based on TAC standards;
  - Implementation would require significant geometric design changes along Carling Avenue (e.g. modifying curbs, removal of the bike lanes, need to provide two on-site receiving lanes, removal of on-site lay-by, etc.);

- Option 3: Introduce a new EBLT lane at the Carling/Westgate W intersection;
    - This provides an additional access to the site for vehicles travelling from the west;
    - Implementation would require significant geometric design changes (e.g. modifying curbs, removal of the bike lanes, etc.).

Based on the foregoing, implementing an EBLT lane at the Carling/Merivale intersection is considered the most practical and cost effective mitigative measure, although engagement with the NCC would be necessary. It is recommended that prior to detailed design of the Carling Avenue Transit Priority Plan, the Carling Avenue Corridor west of Merivale Road be reassessed by the City, with updated traffic data, to determine the appropriate lane arrangements.

17.4. MMLOS ANALYSIS – 2025 CONDITIONS

Given the proposed changes to Carling Avenue are solely reassignment of existing lane uses and the lane geometry does not change, the multi-model level of service for these intersections remains the same as total 2020 conditions (Table 19). The projected MMLoS analysis is provided as Appendix F.

18. SUMMARY OF IMPROVEMENTS INDICATED AND MODIFICATION OPTIONS

Based on the results summarized herein, the following findings and conclusions are provided:

Proposed Site

- The proposed development is located within the Westgate Shopping centre at 1309 Carling Avenue and will redevelop the existing restaurant (4,200 ft^2) and parking area in the southeast corner by the Carling Avenue and Merivale Road intersection;
- In total, the development will include 203 residential units and approximately 15,940 ft^2 net increase of retail and restaurant space on the ground floor; and
- The development will be accessed through the existing Westgate Shopping Centre signalized driveway intersections on Carling Avenue and Merivale Road.

Existing and Background Conditions

- A desktop review identified background growth rates of 2.5% for Carling Avenue, 2% for Kirkwood Avenue, and 1.5% for Merivale Road;
- The study area intersections will experience a travel pattern shift due to the closure of the Carling E-E on-ramp to Highway 417 and median modifications at the Carling Avenue and Kirkwood Avenue N intersection; and,
- Overall, the study area intersections 'as-a-whole', are projected to operate acceptably during the peak hours during the 2020 and 2025 background horizon years. Exceptions include the Carling/Kirkwood N and Carling/Kirkwood S intersections during both horizon years and the Carling/Westgate SC E in during the background 2025 horizon year.

Projected Conditions

- Overall, the study area intersections are projected to operate similar to the background conditions during the 2020 and 2025 total horizons;
- With regard to MMLoS street segment targets, the boundary streets meet targets with exception of the pedestrian, cyclist, and transit targets. Improving the BLoS can be done in conjunction to the Carling Transit Priority Study by implementing separated cycle lanes. It would be difficult and expensive to meet the PLoS target as Carling Avenue is a six-lane arterial; and,

- Storage capacity issues are forecasted at the 2025-time horizon year for the eastbound left-turn lane at the Carling/Westgate SC E intersection (if the Carling Transit Priority Plan is implemented and existing travel lanes on Carling Avenue are converted to bus lanes);
    - The preferred measure to mitigative potential EBLT queues would be to provide an opportunity for the EBLT movement at the Merivale/Carling intersection (assuming sufficient storage length can be provided);
    - At detailed design of the Carling Transit Priority Plan, it is recommended that the Carling Avenue Corridor west of Merivale Road be reassessed, with updated traffic data, to determine the appropriate lane arrangements.

Site Plan

- The number of vehicle and bicycle parking spaces meets the City's minimum By-Law requirement;
- No issues are noted with respect to on-site circulation or truck turning movements; and,
- There are no issues with the existing transit service capacity for the existing or projected total site-generated transit riders.

Based on the foregoing, approval of the proposed Site Plan is recommended from a transportation perspective. However, it is recommended that the eastbound left-turn capacity issue at the site, identified herein, be resolved prior to the start of subsequent phases of development.

Prepared By:

Rani Nahas, E.I.T.
Transportation Analyst

Reviewed by:

Mark Baker, P.Eng.
Senior Transportation Project Manager

Appendix A

Screening Form and Correspondence

PARSONS

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City of Ottawa 2017 TIA Guidelines

TIA Screening Form

Date	8/27/2018
Project	Riocan - Westgate
Project Number	476755

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

Module 1.1 - Description of Proposed Development	
Municipal Address	1309 Carling Avenue
Description of location	CON 1 OF PT TWP LOT 33 R O W;EASE CARLING W RP5R14579;PARTS 1 5 & 7
Land Use	Residential; Commercial
Development Size	203 aparment units; 21,150 s.f. retail and restaurant
Number of Accesses and Locations	Two existing accesses on Carling Avenue and one existing access on Merivale Road
Development Phasing	N/A
Buildout Year	2020
Sketch Plan / Site Plan	See attached

Module 1.2 - Trip Generation Trigger		
Land Use Type	Townhomes or Apartments	
Development Size	203	Units
Trip Generation Trigger Met?	Yes	

Module 1.3 - Location Triggers	
Development Proposes a new driveway to a boundary street that is designated as part of the City's Transit Priority, Rapid Transit, or Spine Bicycle Networks (See Sheet 3)	No
Development is in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone. (See Sheet 3)	Yes
Location Trigger Met?	Yes

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

TRANSPORTATION COMMENTS (July 9, 2019)	PARSONS RESPONSE
Transportation Engineering	
Given the impact of site vehicle traffic on the boundary streets and intersections with future phases, the applicant should review more closely Transportation Demand Management strategies and submit a TDM Measures Checklist along with the submitted TDM supportive development design and infrastructure checklist. Early inclusion of TDM strategies to support a shift in modal shares is encouraged.	TDM Measures Checklist included in Appendix G.
We concur that the applicant should explore the removal of the EB LT restriction on Carling Avenue at Merivale Road with the NCC.	Noted.
Traffic Signal Operations	
The posted speed limit along Carling Avenue is 60 km/hr.	This has been corrected in the text.
It is understood that Phase 1 of this project does not generate too much traffic and that the eastbound left turn into Westgate will have minimal impact from this phase of the development. Future phases will add more impact to the eastbound left turn into the site at Westgate and without any other eastbound left turn access, it will be very difficult from a signal timing perspective to provide more green time at this only entrance.	Noted.
Traffic Signal Design	
If there are any future proposed changes in the existing roadway geometry for the purpose of construction of a new TCS(s) or modifications to existing TCS(s) the City of Ottawa Traffic Signal Design and Specification Unit is required to complete a review for traffic signal plant re-design and provide the actual re-design. If the proposed traffic signals are warranted/approved for installation or modifications to existing TCS are approved, and RMA approved, please forward an approved geometry detail design drawings (dwg digital format in NAD 83 coordinates) including base mapping, existing and new underground utilities/sewers, new/existing catch basins locations, Turn-Radius Modeling and approved pavement markings drawings in separate files for detail traffic plant design lay out. Please send all digital (CADD) design files to Peter.Grajcar@ottawa.ca 613 580 2424 ext. 23035.	Noted.
Transit Services	
Bus Routes 80 and 81 currently service Westgate Mall on-site. There are no short-term plans to modify the routing for this service, but a review will likely be done within the scope of Phase 2 LRT network review. In the advent of detours related to construction on-site, please coordinate with OC Transpo for detours. No further comments on TIA.	Noted.

TRANSPORTATION COMMENTS (May 14, 2019)	PARSONS RESPONSE
Transportation Engineering	
As per the Westgate Secondary Plan, the developer is required to: - Construct a cycle track along the entire north side of 1309 Carling Avenue frontage in phase two (2) of the development of the Westgate Lands to the satisfaction of the General Manager of Planning, Infrastructure and Economic Development Department. - Construct a cycle track along the west side of Merivale Road between Carling Avenue and Highway 417 underpass in the final phase of the development of the Westgate Lands to the satisfaction of the General Manager of Planning, Infrastructure and Economic Development Department.	Noted, proponent to be informed.
Traffic Signal Operations	
The previous comments below have not been adequately addressed in the analysis:	
The cumulative effect of site generated traffic from proposed developments in the area will impact operations at the Carling Avenue/Westgate E signalized intersection and along Carling Avenue Eastbound. With planned Transit Priority measures in place, queues extending beyond the existing storage lane will block one eastbound through lane, leaving a single lane for general traffic. This will severely impact operations along Carling Avenue EB and may result in increased rear end collisions and general traffic usage of the bus lane.	This comment has been included in Section 17.3 of the TIA based on discussions with Traffic Signals (Leng Ha) 17 May 2019
A detailed review of expected EBL queues at the Carling Avenue/Westgate SC E intersection relative to the existing available storage is required. Reference the Carling Transit Priority Corridor functional design, which includes an eastbound bus lane through the intersection of Carling Avenue and Westgate SC W. EBL queues at Carling Avenue/Westgate SC E spilling out of existing storage will block one of the two remaining eastbound general traffic lanes. Mitigating measures should be discussed in the report.	Mitigative measures have been included in both Sections 17.1 and 17.3 of the TIA. Follow-up discussion with Traffic Services (Phil Edens) 23 May 2019 regarding historical NCC influence at Carling/Merivale intersection.
Carling Avenue and Westgate SC E:	
It is difficult to expect reductions in EBL volumes at Carling Avenue and Westgate SC E. The TIA report comments on page 26 contradict comments on page 14 regarding mode shares.	The comment on page 26 of the TIA has been clarified within the report. Transit mode shares are expected to increase with the construction of the Carling Transit Priority Measures over time. However these changes in transit mode shares are expected to be realized beyond the horizon years of this development.
The analysis presented in the updated TIA does not consider or discuss, in the 2025 total projected conditions, WB through traffic conditions in the pm (v/c = 1.06, LOS F). In terms of signal timing, additional WB through time would be required (taken away from the EBL turn movements) to address poor WB operations affecting the corridor and in particular the signal at Carling Avenue and Merivale Road. This will degrade EBL performance, increase queues and result in the issues identified in the first TIA circulation comments.	Consideration to the WBT movement has been included in the 2025 Total Projected Conditions within the TIA.
Consultant should clarify the “10%” reduction stated on page 26. Does this refer to queue length? It should be stated as a required percentage reduction in volumes.	This has been clarified within the report. The "10%" refers to a reduction in volumes.

Traffic Engineering	
10. Eastbound left turn volumes at Carling Avenue and Westgate E are underestimated as mentioned in the previous circulation. Even if U-turns volumes are removed, the site generated left turn volumes (from 1354 Carling Avenue) shown in Figure 11 (allocated to Carling Avenue and Westgate W and Carling Avenue and Merivale Road) should be allocated to Carling Avenue and Westgate E. This results in an eastbound left volume increase of 76 AM (47 PM). Queues will extend beyond existing storage and into the adjacent signal at Carling Avenue and Westgate W.	Figure depicting 1354 Carling Site Generated Trips updated to reflect existing turn prohibitions and correct turning movements projected in the CTS Study. (Figure numbers changed so this image is no longer Figure 11).
11. The proposed mitigation measure of banning U-turns would likely force the movement to occur onsite and not reduce the volumes using the eastbound left turn lane.	This comment has been revised.
12. The cumulative effect of site generated traffic from proposed developments in the area will impact operations at Carling Avenue and Westgate E and along Carling Avenue Eastbound. With planned Transit Priority measures in place, queues extending beyond the existing storage lane will block one eastbound through lane, leaving a single lane for general traffic. This will severely impact operations along Carling Avenue EB and may result in increased rear end collisions and general traffic usage of the bus lane.	Synchro and queueing analysis results have been revised to address this issue.
13. There is an error in Table 17, PM – WBR v/c=1.05 for Carling Avenue and Westgate E.	Revised.
14. For projected scenarios, if it is assumed transit priority measures are in place on Carling Avenue, Synchro files and analysis should be revised to reflect the 2-lane general traffic configuration.	Carling Transit Priority Measures included in background 2025 and total future 2025 horizon years.

TRANSPORTATION COMMENTS (January 24, 2019)	PARSONS RESPONSE
General	
1. Carling Avenue is designated as an Arterial road within the City's Official Plan with a ROW protection of 44.5 metres. The ROW limits are to be shown on all the drawings and the offset distance (22.25 metres) is to be dimensioned from the existing centerline of pavement.	Noted. Architect to be advised.
2. A 5.0 metres x 5.0 metres sight triangle would be required at the intersection of Carling Avenue and Merivale Road and is to be dimensioned from the new ROW protection limits.	Noted. Architect to be advised.
Transit Services	
TIA Section 3.3	
3. In addition to the figure showing the area transit network, a diagram illustrating the locations of nearby bus stops should also be included.	Included as Figure 4.
TIA Section 16	
4. Where did the forecasted 'new' two-way transit trips reported in Section 16.1 come from? These do not match the figures reported in Section 9.1 (Table 10: Net Total Site Person-Trip Generation).	Section 16.1 was not updated for the Step 5 submission. It has been revised for this current submission.
5. Table 10 reports 60 (AM) and 86 (PM) new transit trips per hour. Peak period service is planned to operate eleven trips per hour across three different routes. This could translate to six or seven additional customers per bus, with some trips at popular times attracting even more. For routes that are already well used in peak periods, such as Routes 80 and 85, this may be enough new demand to warrant an increased level of service.	Acknowledged in TIA, Section 16.1
6. For future reference, while the real full capacity of a bus may be higher, OC Transpo currently employs the following Council-approved capacity standards:	Noted.
7. During peak periods, during the busiest hour and point along the route, frequency of service is planned so that there are, on average, 45 customers on board standard 40-foot buses, 70 customers on board articulated buses, and 90 customers on board double-decker buses.	Noted.
Site Plan	
8. In conjunction with the implementation of the Carling Avenue Transit Priority Measures project, targeted for completion by the end of 2019, the existing bus stop for Carling westbound at Merivale Road may be relocated to the west side of the intersection, adjacent to this development. OC Transpo may require the owner to construct a concrete bus shelter pad in the City right-of-way.	Noted. Architect to be advised.
9. In the northeast portion of the site, OC Transpo requests that the existing concrete sidewalk at the southwest corner of the Merivale Road / Shopping Centre roadway intersection be extended westward to provide a continuous sidewalk connection between Merivale Road and the OC Transpo stop.	Noted. Architect to be advised.

The updated TIA report implies that the congestion issues should be resolved as part of the Carling Transit Priority project. However, this was raised as part of the Transit Priority Project and the response from Transit Planning is below for your reference. Carling Avenue and Westgate East Entrance Traffic Engineering concern: 8. Recent development circulations show expected eastbound left turn volumes in the range of approximately 237-365 veh/hr during peaks with 100-150 m queues beyond existing storage. The proposed design should be reviewed in relation to the development of Westgate Mall. With a curbside bus lane, Carling Avenue will effectively be reduced to 1 eastbound through lane. Transit Planning response: 9. Any road modifications approved through the Development Review process can be incorporated into the bus lane design, if the timeframes are suitable. The bus lane project itself does not include any physical modifications, but modifications by others can be incorporated if known in time. 10. Please include Signals Design (Peter Grajcar) and Traffic Signal Operations (Leng Ha) in any further design discussions related to bike facilities through the 4 signals in the area (one signal was either missed or tie-in to existing not considered in the proposed designs).	Noted.
Traffic Signal Design	
Traffic Signal Design and Implementation Unit provided comments on March 13, 2019 to Development Review Branch.	
The following summary is provided: - Existing underground utilities at the corner quadrants of this intersection are rather saturated. - Signal pole locations must be AODA compliant. - The submitted design will require modifications (TWSI placement and surface treatment changes) to meet City design requirements.	Noted, proponent to be informed.

Appendix B

Traffic Data

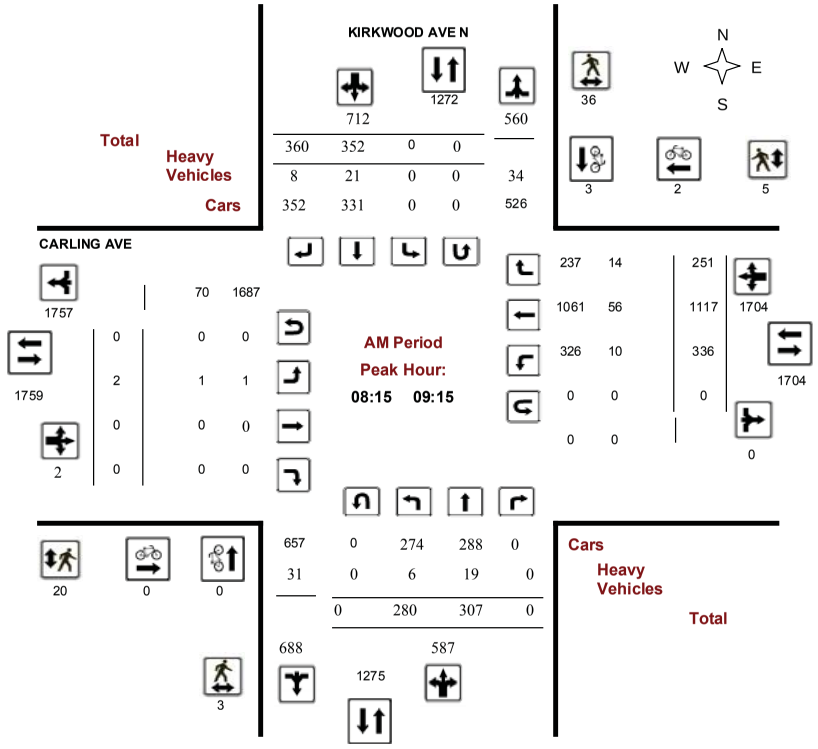
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

KIRKWOOD AVE N @ CARLING AVE

Survey Date: Wednesday, May 04, 2016 **WO No:** 35895

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



Comments

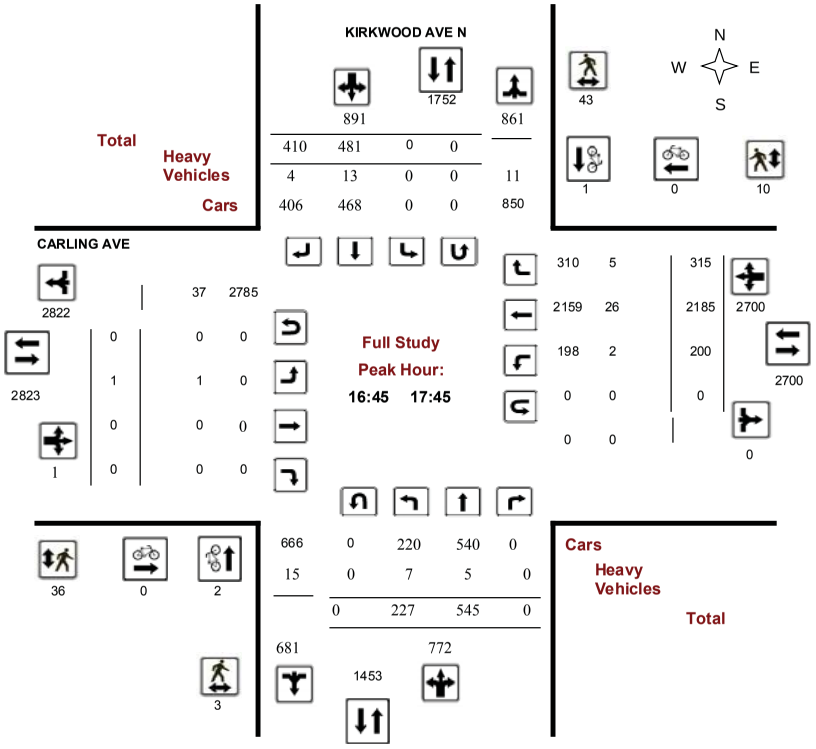
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

KIRKWOOD AVE N @ CARLING AVE

Survey Date: Wednesday, May 04, 2016 **WO No:** 35895

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



Comments

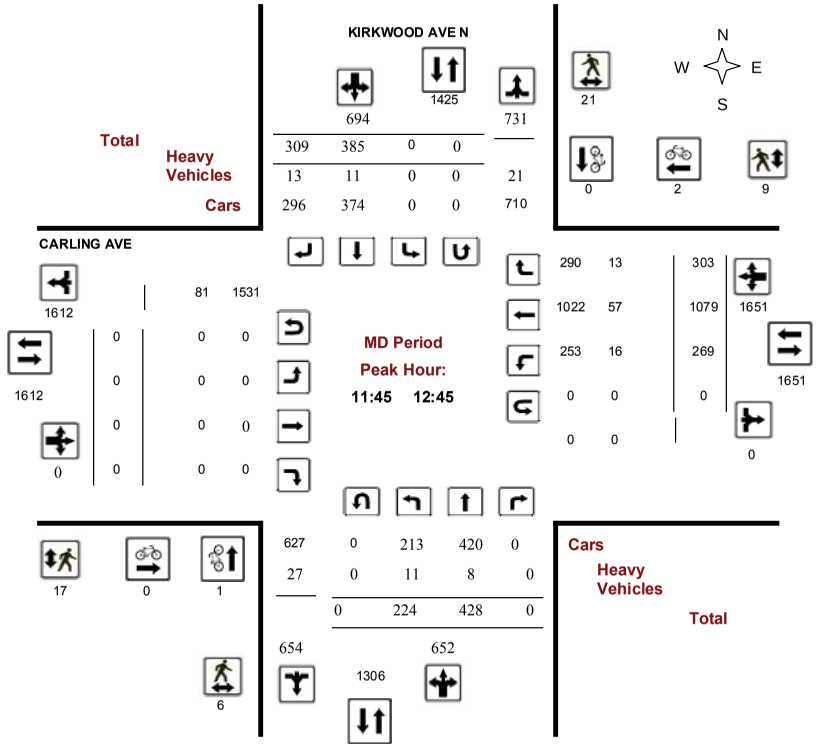
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

KIRKWOOD AVE N @ CARLING AVE

Survey Date: Wednesday, May 04, 2016 **WO No:** 35895

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



Comments

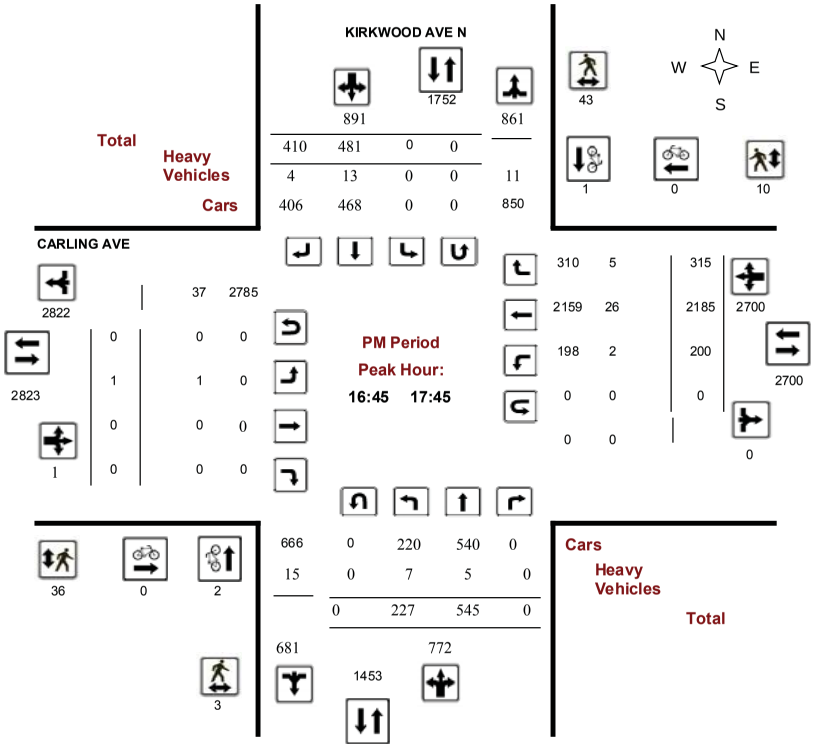
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

KIRKWOOD AVE N @ CARLING AVE

Survey Date: Wednesday, May 04, 2016 **WO No:** 35895

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



Comments

Transportation Services - Traffic Services

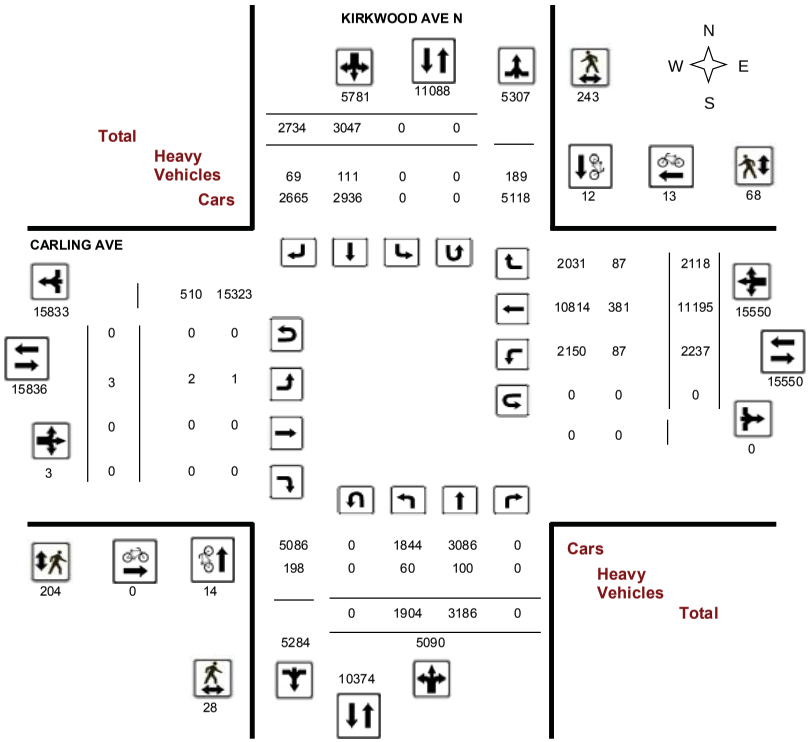
Turning Movement Count - Full Study Diagram

KIRKWOOD AVE N @ CARLING AVE

Survey Date: Wednesday, May 04, 2016

WO#: 35895

Device: Miovision



Comments

Transportation Services - Traffic Services

Work Order 35895

Turning Movement Count - Full Study Summary Report

KIRKWOOD AVE N @ CARLING AVE

Survey Date: Wednesday, May 04, 2016

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 0

AADT Factor .90

Full Study

	KIRKWOOD AVE N								CARLING AVE									
	Northbound				Southbound				Eastbound				Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	244	254	0	**498**	0	278	254	**532**	**1030**	0	0	0	**0**	374	744	156	**1274**	**1274**	**2304**
08:00 09:00	288	288	0	**576**	0	403	397	**800**	**1376**	2	0	0	**2**	343	1038	231	**1612**	**1614**	**2990**
09:00 10:00	232	368	0	**600**	0	292	298	**590**	**1190**	0	0	0	**0**	317	984	210	**1511**	**1511**	**2701**
11:30 12:30	223	431	0	**654**	0	363	307	**670**	**1324**	0	0	0	**0**	268	1108	290	**1666**	**1666**	**2990**
12:30 13:30	226	406	0	**632**	0	391	320	**711**	**1343**	0	0	0	**0**	308	1034	286	**1628**	**1628**	**2971**
15:00 16:00	247	440	0	**687**	0	421	373	**794**	**1481**	0	0	0	**0**	204	1993	290	**2487**	**2487**	**3968**
16:00 17:00	228	491	0	**719**	0	408	394	**802**	**1521**	0	0	0	**0**	189	2286	326	**2801**	**2801**	**4322**
17:00 18:00	216	508	0	**724**	0	491	391	**882**	**1606**	1	0	0	**1**	234	2008	329	**2571**	**2572**	**4178**
Sub Total	1904	3186	0	**5090**	0	3047	2734	**5781**	**10871**	3	0	0	**3**	2237	11195	2118	**15550**	**15553**	**26424**
U Turns				**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total	1904	3186	0	**5090**	0	3047	2734	**5781**	**10871**	3	0	0	**3**	2237	11195	2118	**15550**	**15553**	**26424**
EQ 12Hr	2647	4429	0	**7075**	0	4235	3800	**8036**	**15111**	4	0	0	**4**	3109	15561	2944	**21614**	**21618**	**36729**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													**1.39**						
AVG 12Hr	2382	3986	0	**6368**	0	3812	3420	**7232**	**13600**	4	0	0	**4**	2798	14005	2650	**19453**	**19457**	**33057**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													**.90**						
AVG 24Hr	3120	5221	0	**8342**	0	4993	4481	**9474**	**17816**	5	0	0	**5**	3666	18346	3471	**25483**	**25488**	**43304**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													**1.31**						

Comments:

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

Transportation Services - Traffic Services

W.O. 35895

Turning Movement Count - 15 Minute Summary Report

KIRKWOOD AVE N @ CARLING AVE

Survey Date: Wednesday, May 04, 2016

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 0

		KIRKWOOD AVE N									CARLING AVE									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	54	50	0	**104**	0	52	40	**92**	**196**	0	0	0	**0**	67	142	29	**238**	**238**	**434**
07:15	07:30	64	54	0	**118**	0	76	64	**140**	**258**	0	0	0	**0**	85	188	33	**306**	**306**	**564**
07:30	07:45	59	69	0	**128**	0	68	65	**133**	**261**	0	0	0	**0**	89	170	33	**292**	**292**	**553**
07:45	08:00	67	81	0	**148**	0	82	85	**167**	**315**	0	0	0	**0**	133	244	61	**438**	**438**	**753**
08:00	08:15	72	70	0	**142**	0	126	109	**235**	**377**	0	0	0	**0**	80	180	41	**301**	**301**	**678**
08:15	08:30	63	69	0	**132**	0	84	93	**177**	**309**	2	0	0	**2**	88	295	61	**444**	**446**	**755**
08:30	08:45	81	65	0	**146**	0	130	119	**249**	**395**	0	0	0	**0**	72	273	62	**407**	**407**	**802**
08:45	09:00	72	84	0	**156**	0	63	76	**139**	**295**	0	0	0	**0**	103	290	67	**460**	**460**	**755**
09:00	09:15	64	89	0	**153**	0	75	72	**147**	**300**	0	0	0	**0**	73	259	61	**393**	**393**	**693**
09:15	09:30	54	81	0	**135**	0	68	67	**135**	**270**	0	0	0	**0**	92	226	56	**374**	**374**	**644**
09:30	09:45	66	108	0	**174**	0	72	72	**144**	**318**	0	0	0	**0**	79	258	55	**392**	**392**	**710**
09:45	10:00	48	90	0	**138**	0	77	87	**164**	**302**	0	0	0	**0**	73	241	38	**352**	**352**	**654**
11:30	11:45	62	109	0	**171**	0	83	77	**160**	**331**	0	0	0	**0**	65	275	56	**396**	**396**	**727**
11:45	12:00	63	120	0	**183**	0	86	70	**156**	**339**	0	0	0	**0**	59	301	72	**432**	**432**	**771**
12:00	12:15	51	97	0	**148**	0	82	79	**161**	**309**	0	0	0	**0**	85	285	90	**460**	**460**	**769**
12:15	12:30	47	105	0	**152**	0	112	81	**193**	**345**	0	0	0	**0**	59	247	72	**378**	**378**	**723**
12:30	12:45	63	106	0	**169**	0	105	79	**184**	**353**	0	0	0	**0**	66	246	69	**381**	**381**	**734**
12:45	13:00	49	99	0	**148**	0	92	76	**168**	**316**	0	0	0	**0**	86	250	76	**412**	**412**	**728**
13:00	13:15	60	113	0	**173**	0	109	87	**196**	**369**	0	0	0	**0**	70	284	68	**422**	**422**	**791**
13:15	13:30	54	88	0	**142**	0	85	78	**163**	**305**	0	0	0	**0**	86	254	73	**413**	**413**	**718**
15:00	15:15	66	113	0	**179**	0	110	102	**212**	**391**	0	0	0	**0**	59	429	88	**576**	**576**	**967**
15:15	15:30	77	109	0	**186**	0	100	96	**196**	**382**	0	0	0	**0**	58	494	68	**620**	**620**	**1002**
15:30	15:45	49	108	0	**157**	0	128	110	**238**	**395**	0	0	0	**0**	44	523	54	**621**	**621**	**1016**
15:45	16:00	55	110	0	**165**	0	83	65	**148**	**313**	0	0	0	**0**	43	547	80	**670**	**670**	**983**
16:00	16:15	53	112	0	**165**	0	105	111	**216**	**381**	0	0	0	**0**	55	571	69	**695**	**695**	**1076**
16:15	16:30	68	121	0	**189**	0	99	87	**186**	**375**	0	0	0	**0**	48	558	91	**697**	**697**	**1072**
16:30	16:45	42	104	0	**146**	0	98	88	**186**	**332**	0	0	0	**0**	42	585	94	**721**	**721**	**1053**
16:45	17:00	65	154	0	**219**	0	106	108	**214**	**433**	0	0	0	**0**	44	572	72	**688**	**688**	**1121**
17:00	17:15	50	134	0	**184**	0	106	100	**206**	**390**	1	0	0	**1**	39	540	82	**661**	**662**	**1052**
17:15	17:30	55	121	0	**176**	0	130	90	**220**	**396**	0	0	0	**0**	51	590	89	**730**	**730**	**1126**
17:30	17:45	57	136	0	**193**	0	139	112	**251**	**444**	0	0	0	**0**	66	483	72	**621**	**621**	**1065**
17:45	18:00	54	117	0	**171**	0	116	89	**205**	**376**	0	0	0	**0**	78	395	86	**559**	**559**	**935**
TOTAL:		1904	3186	0	**5090**	0	3047	2734	**5781**	**10871**	3	0	0	**3**	2237	11195	2118	**15550**	**15553**	**26424**

Note: U-Turns are included in Totals.

Comment:

Transportation Services - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order 35895

KIRKWOOD AVE N @ CARLING AVE

Count Date: Wednesday, May 04, 2016 **Start Time:** 07:00

		KIRKWOOD AVE N			CARLING AVE			
Time Period		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	08:00	2	0	**2**	0	1	**1**	**3**
08:00	09:00	0	2	**2**	0	1	**1**	**3**
09:00	10:00	0	3	**3**	0	1	**1**	**4**
11:30	12:30	3	0	**3**	0	1	**1**	**4**
12:30	13:30	1	1	**2**	0	1	**1**	**3**
15:00	16:00	3	3	**6**	0	5	**5**	**11**
16:00	17:00	1	2	**3**	0	2	**2**	**5**
17:00	18:00	4	1	**5**	0	1	**1**	**6**
Total	.....	14	12	**26**	0	13	**13**	**39**

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. 35895

Turning Movement Count - Heavy Vehicle Report

KIRKWOOD AVE N @ CARLING AVE

Survey Date: Wednesday, May 04, 2016

		KIRKWOOD AVE N									CARLING AVE									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	08:00	9	19	0	**28**	0	9	9	**18**	**46**	0	0	0	**0**	16	57	12	**85**	**85**	**131**
08:00	09:00	10	17	0	**27**	0	21	9	**30**	**57**	1	0	0	**1**	11	49	10	**70**	**71**	**128**
09:00	10:00	4	17	0	**21**	0	23	10	**33**	**54**	0	0	0	**0**	13	68	13	**94**	**94**	**148**
11:30	12:30	11	12	0	**23**	0	11	14	**25**	**48**	0	0	0	**0**	16	52	14	**82**	**82**	**130**
12:30	13:30	8	5	0	**13**	0	13	11	**24**	**37**	0	0	0	**0**	16	53	8	**77**	**77**	**114**
15:00	16:00	6	17	0	**23**	0	12	9	**21**	**44**	0	0	0	**0**	8	43	15	**66**	**66**	**110**
16:00	17:00	7	7	0	**14**	0	12	4	**16**	**30**	0	0	0	**0**	6	35	11	**52**	**52**	**82**
17:00	18:00	5	6	0	**11**	0	10	3	**13**	**24**	1	0	0	**1**	1	24	4	**29**	**30**	**54**
Sub Total		60	100	0	**160**	0	111	69	**180**	**340**	2	0	0	**2**	87	381	87	**555**	**557**	**897**
U-Turns (Heavy Vehicles)					**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total		60	100	0	**0**	0	111	69	**180**	**340**	2	0	0	**2**	87	381	87	**555**	**557**	**897**

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 35895

Turning Movement Count - Pedestrian Volume Report

KIRKWOOD AVE N @ CARLING AVE

Count Date: Wednesday, May 04, 2016 **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	0	**1**	**1**
07:15	07:30	1	1	**2**	5	1	**6**	**8**
07:30	07:45	0	2	**2**	4	2	**6**	**8**
07:45	08:00	1	12	**13**	7	1	**8**	**21**
07:00	08:00	2	15	**17**	17	4	**21**	**38**
08:00	08:15	1	11	**12**	7	3	**10**	**22**
08:15	08:30	0	10	**10**	4	0	**4**	**14**
08:30	08:45	2	5	**7**	4	2	**6**	**13**
08:45	09:00	1	11	**12**	8	2	**10**	**22**
08:00	09:00	4	37	**41**	23	7	**30**	**71**
09:00	09:15	0	10	**10**	4	1	**5**	**15**
09:15	09:30	0	4	**4**	3	1	**4**	**8**
09:30	09:45	0	16	**16**	8	0	**8**	**24**
09:45	10:00	1	8	**9**	9	3	**12**	**21**
09:00	10:00	1	38	**39**	24	5	**29**	**68**
11:30	11:45	1	8	**9**	4	1	**5**	**14**
11:45	12:00	5	9	**14**	5	6	**11**	**25**
12:00	12:15	0	3	**3**	3	2	**5**	**8**
12:15	12:30	0	4	**4**	2	0	**2**	**6**
11:30	12:30	6	24	**30**	14	9	**23**	**53**
12:30	12:45	1	5	**6**	7	1	**8**	**14**
12:45	13:00	1	8	**9**	3	3	**6**	**15**
13:00	13:15	0	9	**9**	7	1	**8**	**17**
13:15	13:30	1	9	**10**	10	4	**14**	**24**
12:30	13:30	3	31	**34**	27	9	**36**	**70**
15:00	15:15	0	6	**6**	8	5	**13**	**19**
15:15	15:30	1	6	**7**	9	1	**10**	**17**
15:30	15:45	1	8	**9**	9	4	**13**	**22**
15:45	16:00	1	7	**8**	12	3	**15**	**23**
15:00	16:00	3	27	**30**	38	13	**51**	**81**
16:00	16:15	0	2	**2**	4	2	**6**	**8**
16:15	16:30	3	12	**15**	11	4	**15**	**30**
16:30	16:45	3	8	**11**	6	2	**8**	**19**
16:45	17:00	0	11	**11**	5	1	**6**	**17**
16:00	17:00	6	33	**39**	26	9	**35**	**74**
17:00	17:15	1	14	**15**	8	3	**11**	**26**
17:15	17:30	0	8	**8**	9	0	**9**	**17**
17:30	17:45	2	10	**12**	14	6	**20**	**32**
17:45	18:00	0	6	**6**	4	3	**7**	**13**
17:00	18:00	3	38	**41**	35	12	**47**	**88**
Total	.....	28	243	**271**	204	68	**272**	**543**

Comment:

Transportation Services - Traffic Services

Work Order
35895

Turning Movement Count - Pedestrian Volume Report

KIRKWOOD AVE N @ CARLING AVE

Count Date: Wednesday, May 04, 2016 **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	0	**1**	**1**
07:15 07:30	1	1	**2**	5	1	**6**	**8**
07:30 07:45	0	2	**2**	4	2	**6**	**8**
07:45 08:00	1	12	**13**	7	1	**8**	**21**
07:00 08:00	2	15	**17**	17	4	**21**	**38**
08:00 08:15	1	11	**12**	7	3	**10**	**22**
08:15 08:30	0	10	**10**	4	0	**4**	**14**
08:30 08:45	2	5	**7**	4	2	**6**	**13**
08:45 09:00	1	11	**12**	8	2	**10**	**22**
08:00 09:00	4	37	**41**	23	7	**30**	**71**
09:00 09:15	0	10	**10**	4	1	**5**	**15**
09:15 09:30	0	4	**4**	3	1	**4**	**8**
09:30 09:45	0	16	**16**	8	0	**8**	**24**
09:45 10:00	1	8	**9**	9	3	**12**	**21**
09:00 10:00	1	38	**39**	24	5	**29**	**68**
11:30 11:45	1	8	**9**	4	1	**5**	**14**
11:45 12:00	5	9	**14**	5	6	**11**	**25**
12:00 12:15	0	3	**3**	3	2	**5**	**8**
12:15 12:30	0	4	**4**	2	0	**2**	**6**
11:30 12:30	6	24	**30**	14	9	**23**	**53**
12:30 12:45	1	5	**6**	7	1	**8**	**14**
12:45 13:00	1	8	**9**	3	3	**6**	**15**
13:00 13:15	0	9	**9**	7	1	**8**	**17**
13:15 13:30	1	9	**10**	10	4	**14**	**24**
12:30 13:30	3	31	**34**	27	9	**36**	**70**
15:00 15:15	0	6	**6**	8	5	**13**	**19**
15:15 15:30	1	6	**7**	9	1	**10**	**17**
15:30 15:45	1	8	**9**	9	4	**13**	**22**
15:45 16:00	1	7	**8**	12	3	**15**	**23**
15:00 16:00	3	27	**30**	38	13	**51**	**81**
16:00 16:15	0	2	**2**	4	2	**6**	**8**
16:15 16:30	3	12	**15**	11	4	**15**	**30**
16:30 16:45	3	8	**11**	6	2	**8**	**19**
16:45 17:00	0	11	**11**	5	1	**6**	**17**
16:00 17:00	6	33	**39**	26	9	**35**	**74**
17:00 17:15	1	14	**15**	8	3	**11**	**26**
17:15 17:30	0	8	**8**	9	0	**9**	**17**
17:30 17:45	2	10	**12**	14	6	**20**	**32**
17:45 18:00	0	6	**6**	4	3	**7**	**13**
17:00 18:00	3	38	**41**	35	12	**47**	**88**
Total	28	243	**271**	204	68	**272**	**543**

Comment:

Transportation Services - Traffic Services

Work Order
35895

Turning Movement Count - 15 Min U-Turn Total Report

KIRKWOOD AVE N @ CARLING AVE

Survey Date: Wednesday, May 04, 2016

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

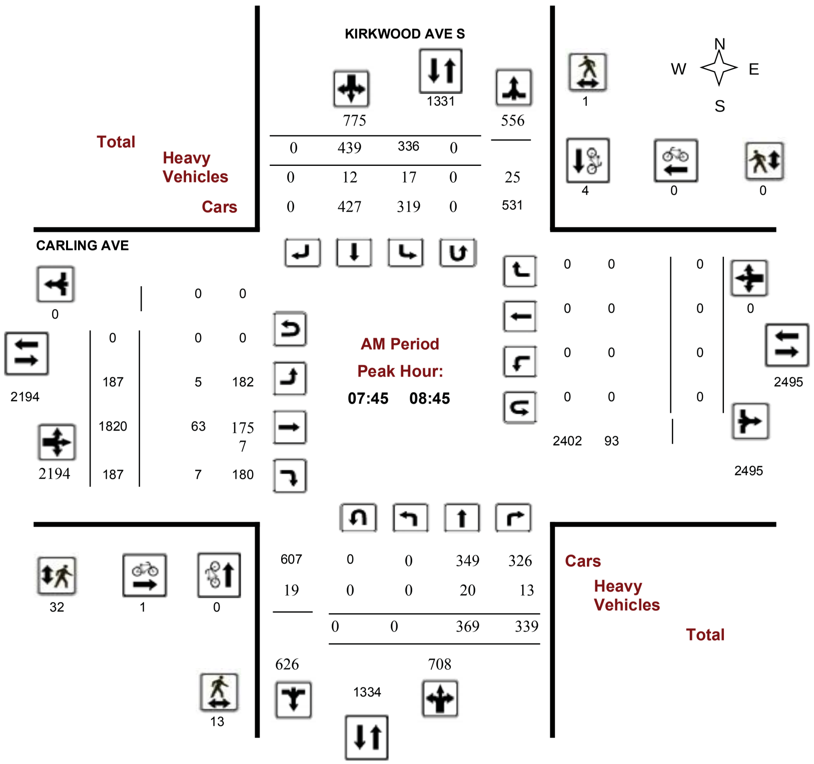
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

CARLING AVE @ KIRKWOOD AVE S

Survey Date: Wednesday, May 04, 2016 **WO No:** 35894

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



Comments

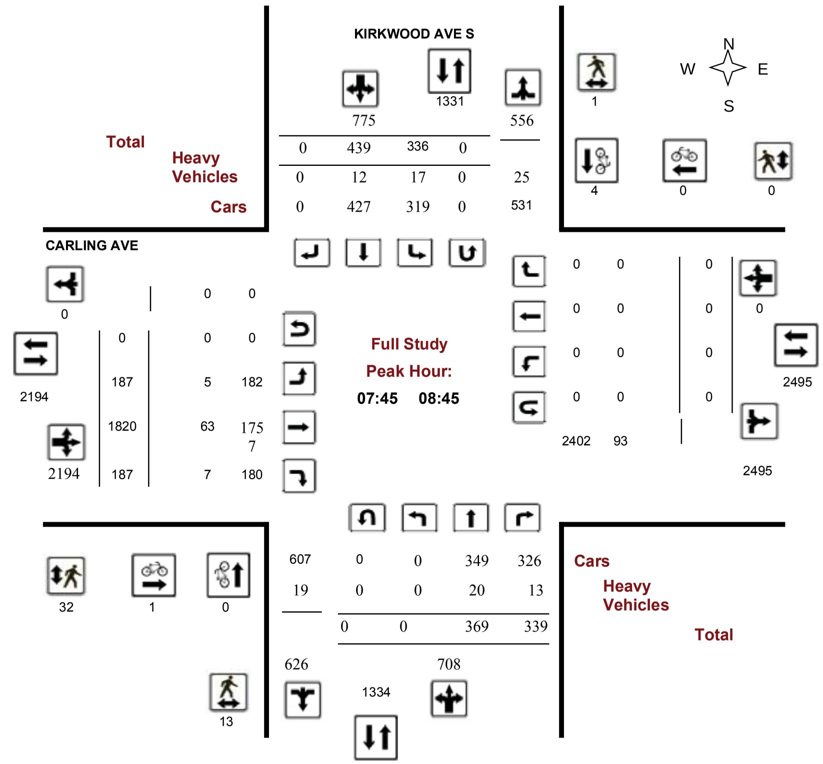
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

CARLING AVE @ KIRKWOOD AVE S

Survey Date: Wednesday, May 04, 2016 **WO No:** 35894

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



Comments

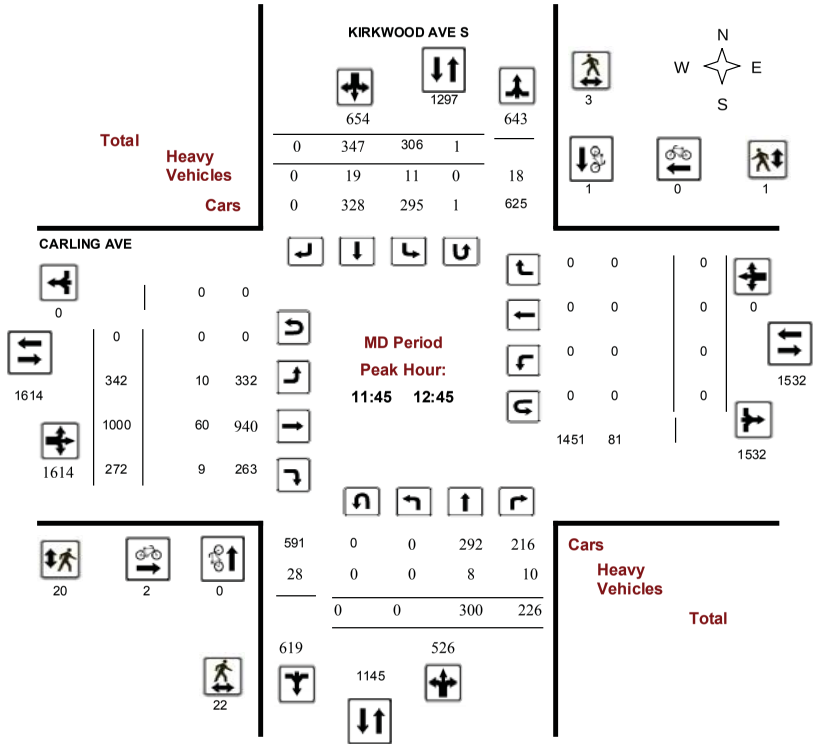
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

CARLING AVE @ KIRKWOOD AVE S

Survey Date: Wednesday, May 04, 2016 **WO No:** 35894

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



Comments

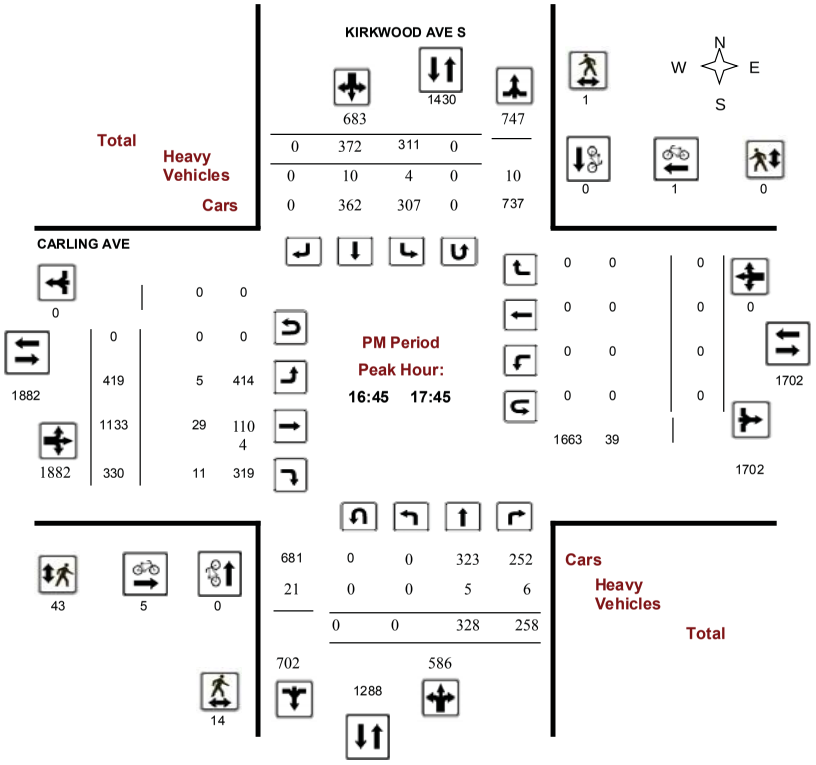
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

CARLING AVE @ KIRKWOOD AVE S

Survey Date: Wednesday, May 04, 2016 **WO No:** 35894

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



Comments

Transportation Services - Traffic Services

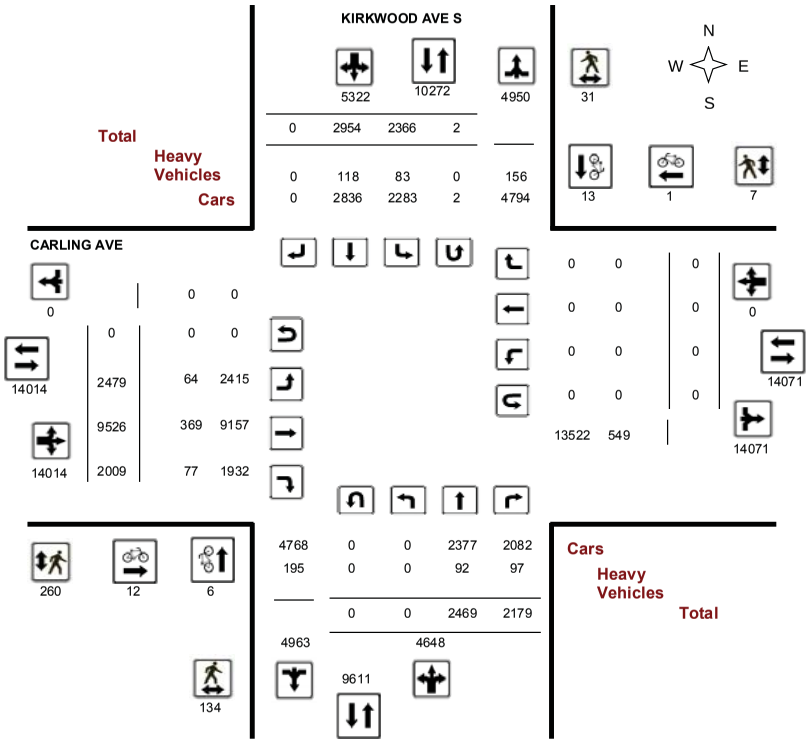
Turning Movement Count - Full Study Diagram

CARLING AVE @ KIRKWOOD AVE S

Survey Date: Wednesday, May 04, 2016

WO#: 35894

Device: Miovision



Comments

Transportation Services - Traffic Services

Work Order 35894

Turning Movement Count - Full Study Summary Report

CARLING AVE @ KIRKWOOD AVE S

Survey Date: Wednesday, May 04, 2016

Total Observed U-Turns

Northbound: 0 Southbound: 2

Eastbound: 0 Westbound: 0

AADT Factor .90

Full Study

	KIRKWOOD AVE S								CARLING AVE									
	Northbound				Southbound				Eastbound				Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	0	296	279	**575**	250	414	0	**664**	**1239**	202	1435	181	**1818**	0	0	0	**0**	**1818**	**3057**
08:00 09:00	0	358	338	**696**	333	407	0	**740**	**1436**	214	1767	186	**2167**	0	0	0	**0**	**2167**	**3603**
09:00 10:00	0	281	241	**522**	274	336	0	**610**	**1132**	288	1086	190	**1564**	0	0	0	**0**	**1564**	**2696**
11:30 12:30	0	288	234	**522**	292	330	0	**622**	**1144**	350	1018	274	**1642**	0	0	0	**0**	**1642**	**2786**
12:30 13:30	0	270	210	**480**	310	393	0	**703**	**1183**	354	997	223	**1574**	0	0	0	**0**	**1574**	**2757**
15:00 16:00	0	332	296	**628**	325	325	0	**650**	**1278**	350	1102	264	**1716**	0	0	0	**0**	**1716**	**2994**
16:00 17:00	0	350	338	**688**	265	338	0	**603**	**1291**	307	1045	359	**1711**	0	0	0	**0**	**1711**	**3002**
17:00 18:00	0	294	243	**537**	317	411	0	**728**	**1265**	414	1076	332	**1822**	0	0	0	**0**	**1822**	**3087**
Sub Total	0	2469	2179	**4648**	2366	2954	0	**5320**	**9968**	2479	9526	2009	**14014**	0	0	0	**0**	**14014**	**23982**
U Turns				**0**				**2**	**2**				**0**				**0**	**0**	**2**
Total	0	2469	2179	**4648**	2366	2954	0	**5322**	**9970**	2479	9526	2009	**14014**	0	0	0	**0**	**14014**	**23984**
EQ 12Hr	0	3432	3029	**6461**	3289	4106	0	**7398**	**13859**	3446	13241	2793	**19479**	0	0	0	**0**	**19479**	**33338**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor. **1.39**																			
AVG 12Hr	0	3089	2726	**5815**	2960	3695	0	**6658**	**12473**	3101	11917	2513	**17532**	0	0	0	**0**	**17532**	**30005**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor. **.90**																			
AVG 24Hr	0	4046	3571	**7617**	3877	4841	0	**8722**	**16339**	4063	15611	3292	**22966**	0	0	0	**0**	**22966**	**39305**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor. **1.31**																			

Comments:

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

Transportation Services - Traffic Services

W.O. 35894

Turning Movement Count - 15 Minute Summary Report

CARLING AVE @ KIRKWOOD AVE S

Survey Date: Wednesday, May 04, 2016

Total Observed U-Turns

Northbound: 0 Southbound: 2

Eastbound: 0 Westbound: 0

		KIRKWOOD AVE S									CARLING AVE									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	58	50	**108**	48	82	0	**130**	**238**	45	252	31	**328**	0	0	0	**0**	**328**	**566**
07:15	07:30	0	62	57	**119**	56	93	0	**149**	**268**	63	346	48	**457**	0	0	0	**0**	**457**	**725**
07:30	07:45	0	73	84	**157**	71	111	0	**182**	**339**	43	404	46	**493**	0	0	0	**0**	**493**	**832**
07:45	08:00	0	103	88	**191**	75	128	0	**203**	**394**	51	433	56	**540**	0	0	0	**0**	**540**	**934**
08:00	08:15	0	87	80	**167**	93	118	0	**211**	**378**	40	486	37	**563**	0	0	0	**0**	**563**	**941**
08:15	08:30	0	96	83	**179**	71	83	0	**154**	**333**	48	443	37	**528**	0	0	0	**0**	**528**	**861**
08:30	08:45	0	83	88	**171**	97	110	0	**207**	**378**	48	458	57	**563**	0	0	0	**0**	**563**	**941**
08:45	09:00	0	92	87	**179**	72	96	0	**169**	**348**	78	380	55	**513**	0	0	0	**0**	**513**	**861**
09:00	09:15	0	68	64	**132**	68	90	0	**158**	**290**	66	304	45	**415**	0	0	0	**0**	**415**	**705**
09:15	09:30	0	71	49	**120**	64	86	0	**150**	**270**	62	294	54	**410**	0	0	0	**0**	**410**	**680**
09:30	09:45	0	79	69	**148**	75	80	0	**155**	**303**	92	256	37	**385**	0	0	0	**0**	**385**	**688**
09:45	10:00	0	63	59	**122**	67	80	0	**147**	**269**	68	232	54	**354**	0	0	0	**0**	**354**	**623**
11:30	11:45	0	64	61	**125**	64	80	0	**144**	**269**	102	274	54	**430**	0	0	0	**0**	**430**	**699**
11:45	12:00	0	75	53	**128**	72	76	0	**149**	**277**	96	255	71	**422**	0	0	0	**0**	**422**	**699**
12:00	12:15	0	64	68	**132**	75	86	0	**161**	**293**	77	255	78	**410**	0	0	0	**0**	**410**	**703**
12:15	12:30	0	85	52	**137**	81	88	0	**169**	**306**	75	234	71	**380**	0	0	0	**0**	**380**	**686**
12:30	12:45	0	76	53	**129**	78	97	0	**175**	**304**	94	256	52	**402**	0	0	0	**0**	**402**	**706**
12:45	13:00	0	58	52	**110**	74	107	0	**181**	**291**	88	245	59	**392**	0	0	0	**0**	**392**	**683**
13:00	13:15	0	68	59	**127**	87	91	0	**178**	**305**	97	246	55	**398**	0	0	0	**0**	**398**	**703**
13:15	13:30	0	68	46	**114**	71	98	0	**169**	**283**	75	250	57	**382**	0	0	0	**0**	**382**	**665**
15:00	15:15	0	84	80	**164**	89	87	0	**176**	**340**	102	292	59	**453**	0	0	0	**0**	**453**	**793**
15:15	15:30	0	90	60	**150**	85	83	0	**168**	**318**	85	282	63	**430**	0	0	0	**0**	**430**	**748**
15:30	15:45	0	87	82	**169**	85	81	0	**166**	**335**	74	288	66	**428**	0	0	0	**0**	**428**	**763**
15:45	16:00	0	71	74	**145**	66	74	0	**140**	**285**	89	240	76	**405**	0	0	0	**0**	**405**	**690**
16:00	16:15	0	84	107	**191**	67	81	0	**148**	**339**	76	258	92	**426**	0	0	0	**0**	**426**	**765**
16:15	16:30	0	87	70	**157**	63	95	0	**158**	**315**	81	266	88	**435**	0	0	0	**0**	**435**	**750**
16:30	16:45	0	89	92	**181**	57	76	0	**133**	**314**	50	241	110	**401**	0	0	0	**0**	**401**	**715**
16:45	17:00	0	90	69	**159**	78	86	0	**164**	**323**	100	280	69	**449**	0	0	0	**0**	**449**	**772**
17:00	17:15	0	80	84	**164**	64	68	0	**132**	**296**	106	328	93	**527**	0	0	0	**0**	**527**	**823**
17:15	17:30	0	78	48	**126**	94	106	0	**200**	**326**	90	271	106	**467**	0	0	0	**0**	**467**	**793**
17:30	17:45	0	80	57	**137**	75	112	0	**187**	**324**	123	254	62	**439**	0	0	0	**0**	**439**	**763**
17:45	18:00	0	56	54	**110**	84	125	0	**209**	**319**	95	223	71	**389**	0	0	0	**0**	**389**	**708**
TOTAL:		0	2469	2179	**4648**	2366	2954	0	**5322**	**9970**	2479	9526	2009	**14014**	0	0	0	**0**	**14014**	**23984**

Note: U-Turns are included in Totals.

Comment:

Transportation Services - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order 35894

CARLING AVE @ KIRKWOOD AVE S

Count Date: Wednesday, May 04, 2016 **Start Time:** 07:00

	KIRKWOOD AVE S			CARLING AVE			
Time Period	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00 08:00	1	3	**4**	0	0	**0**	**4**
08:00 09:00	0	2	**2**	2	0	**2**	**4**
09:00 10:00	0	1	**1**	0	0	**0**	**1**
11:30 12:30	2	1	**3**	2	0	**2**	**5**
12:30 13:30	1	0	**1**	1	0	**1**	**2**
15:00 16:00	2	4	**6**	1	0	**1**	**7**
16:00 17:00	0	2	**2**	0	0	**0**	**2**
17:00 18:00	0	0	**0**	6	1	**7**	**7**
Total	6	13	**19**	12	1	**13**	**32**

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. 35894

Turning Movement Count - Heavy Vehicle Report

CARLING AVE @ KIRKWOOD AVE S

Survey Date: Wednesday, May 04, 2016

		KIRKWOOD AVE S									CARLING AVE									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	08:00	0	18	14	**32**	11	14	0	**25**	**57**	10	36	4	**50**	0	0	0	**0**	**50**	**107**
08:00	09:00	0	22	11	**33**	16	14	0	**30**	**63**	7	73	7	**87**	0	0	0	**0**	**87**	**150**
09:00	10:00	0	8	16	**24**	18	18	0	**36**	**60**	11	43	13	**67**	0	0	0	**0**	**67**	**127**
11:30	12:30	0	9	12	**21**	13	17	0	**30**	**51**	12	51	12	**75**	0	0	0	**0**	**75**	**126**
12:30	13:30	0	6	14	**20**	9	20	0	**29**	**49**	7	51	7	**65**	0	0	0	**0**	**65**	**114**
15:00	16:00	0	15	14	**29**	9	13	0	**22**	**51**	10	49	11	**70**	0	0	0	**0**	**70**	**121**
16:00	17:00	0	10	9	**19**	4	15	0	**19**	**38**	1	41	16	**58**	0	0	0	**0**	**58**	**96**
17:00	18:00	0	4	7	**11**	3	7	0	**10**	**21**	6	25	7	**38**	0	0	0	**0**	**38**	**59**
Sub Total		0	92	97	**189**	83	118	0	**201**	**390**	64	369	77	**510**	0	0	0	**0**	**510**	**900**
U-Turns (Heavy Vehicles)					**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total		0	92	97	**0**	83	118	0	**201**	**390**	64	369	77	**510**	0	0	0	**0**	**510**	**900**

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 35894

Turning Movement Count - Pedestrian Volume Report

CARLING AVE @ KIRKWOOD AVE S

Count Date: Wednesday, May 04, 2016 **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	3	0	**3**	2	0	**2**	**5**
07:15	07:30	3	0	**3**	3	0	**3**	**6**
07:30	07:45	4	2	**6**	6	0	**6**	**12**
07:45	08:00	3	0	**3**	9	0	**9**	**12**
07:00	08:00	13	2	**15**	20	0	**20**	**35**
08:00	08:15	7	1	**8**	10	0	**10**	**18**
08:15	08:30	2	0	**2**	4	0	**4**	**6**
08:30	08:45	1	0	**1**	9	0	**9**	**10**
08:45	09:00	7	0	**7**	5	0	**5**	**12**
08:00	09:00	17	1	**18**	28	0	**28**	**46**
09:00	09:15	2	0	**2**	5	0	**5**	**7**
09:15	09:30	4	2	**6**	3	1	**4**	**10**
09:30	09:45	7	0	**7**	14	0	**14**	**21**
09:45	10:00	2	2	**4**	5	0	**5**	**9**
09:00	10:00	15	4	**19**	27	1	**28**	**47**
11:30	11:45	3	0	**3**	6	0	**6**	**9**
11:45	12:00	6	2	**8**	6	1	**7**	**15**
12:00	12:15	4	1	**5**	4	0	**4**	**9**
12:15	12:30	2	0	**2**	2	0	**2**	**4**
11:30	12:30	15	3	**18**	18	1	**19**	**37**
12:30	12:45	10	0	**10**	8	0	**8**	**18**
12:45	13:00	2	2	**4**	5	0	**5**	**9**
13:00	13:15	4	2	**6**	8	0	**8**	**14**
13:15	13:30	3	4	**7**	11	0	**11**	**18**
12:30	13:30	19	8	**27**	32	0	**32**	**59**
15:00	15:15	3	1	**4**	15	0	**15**	**19**
15:15	15:30	5	2	**7**	14	1	**15**	**22**
15:30	15:45	12	3	**15**	12	2	**14**	**29**
15:45	16:00	2	4	**6**	12	1	**13**	**19**
15:00	16:00	22	10	**32**	53	4	**57**	**89**
16:00	16:15	4	2	**6**	7	0	**7**	**13**
16:15	16:30	4	0	**4**	18	0	**18**	**22**
16:30	16:45	7	0	**7**	7	0	**7**	**14**
16:45	17:00	6	0	**6**	8	0	**8**	**14**
16:00	17:00	21	2	**23**	40	0	**40**	**63**
17:00	17:15	3	0	**3**	5	0	**5**	**8**
17:15	17:30	2	0	**2**	14	0	**14**	**16**
17:30	17:45	3	1	**4**	16	0	**16**	**20**
17:45	18:00	4	0	**4**	7	1	**8**	**12**
17:00	18:00	12	1	**13**	42	1	**43**	**56**
Total	.....	134	31	**165**	260	7	**267**	**432**

Comment:

Transportation Services - Traffic Services

Work Order 35894

Turning Movement Count - 15 Min U-Turn Total Report

CARLING AVE @ KIRKWOOD AVE S

Survey Date: Wednesday, May 04, 2016

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	1	0	0	1
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	1	0	0	1
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	2	0	0	2

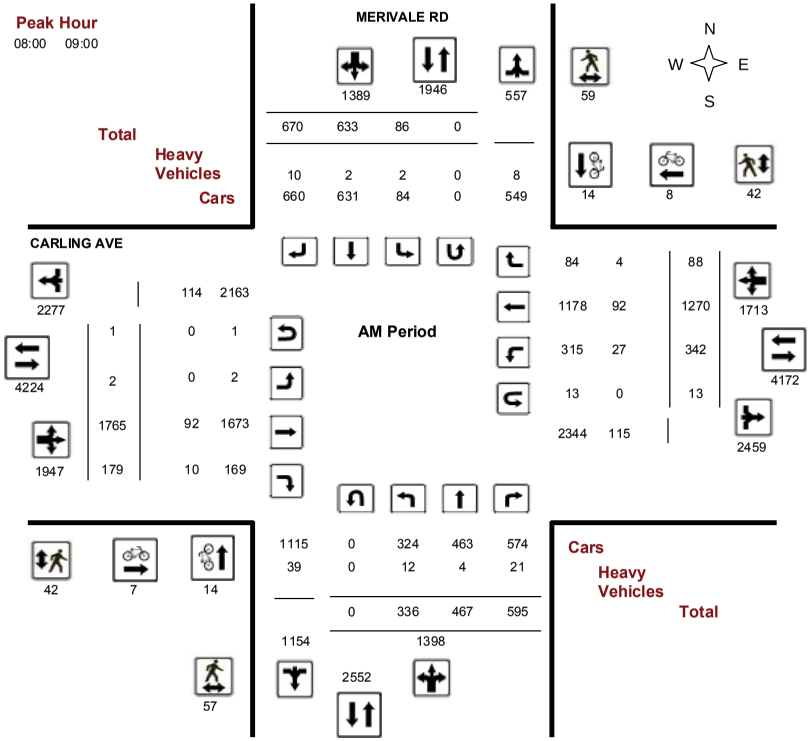
Transportation Services - Traffic Services

Turning Movement Count - AM Period Diagram

CARLING AVE @ MERIVALE RD

Survey Date: Thursday, August 04, 2016 **WO#:** 36124

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



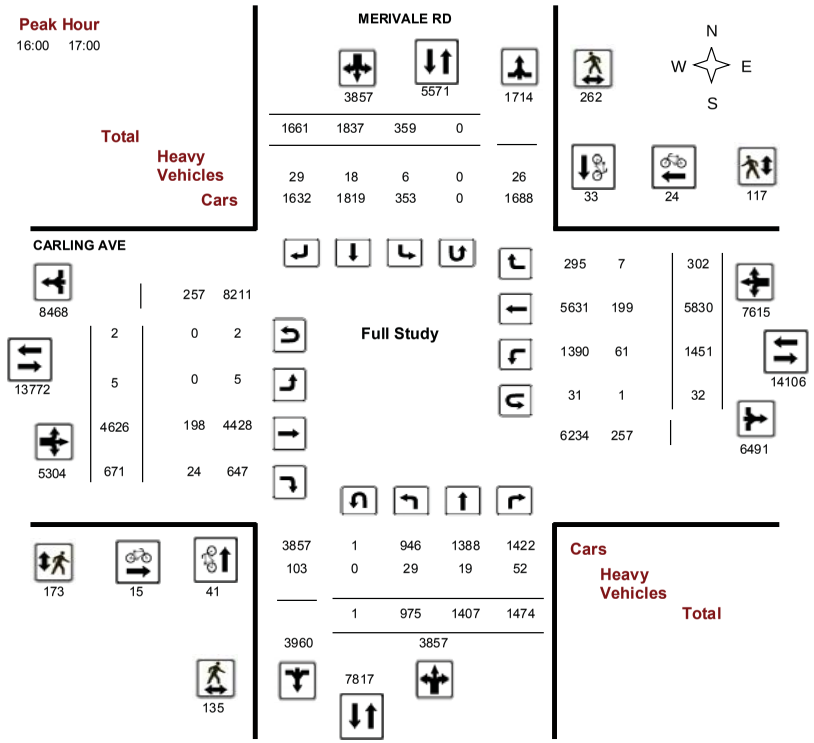
Comments :

Transportation Services - Traffic Services

Turning Movement Count - Full Study Diagram

CARLING AVE @ MERIVALE RD

Survey Date: Thursday, August 04, 2016 **WO#:** 36124
Start Time: 07:00 **Device:** Miovision



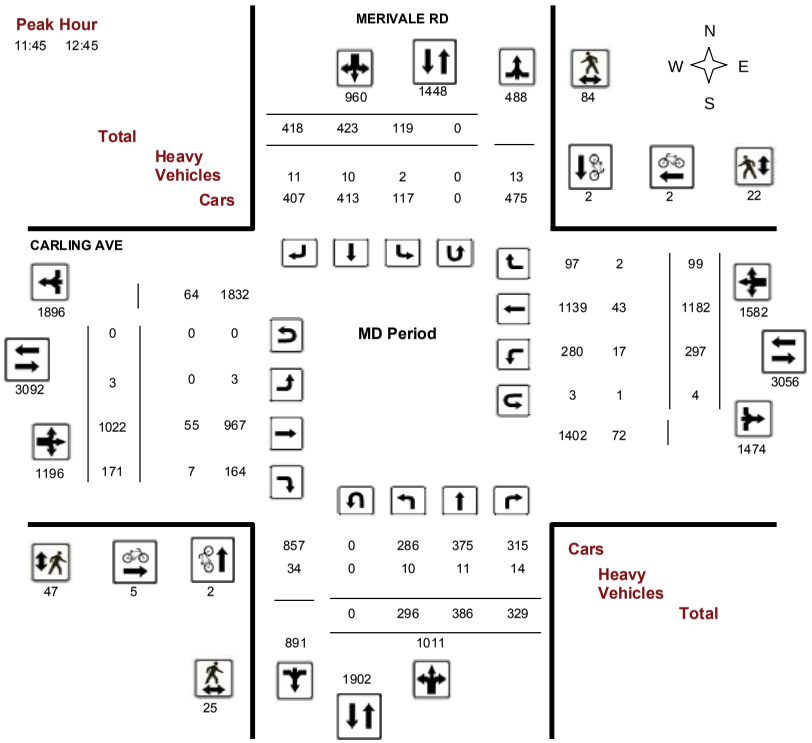
Comments :

Transportation Services - Traffic Services

Turning Movement Count - MD Period Diagram

CARLING AVE @ MERIVALE RD

Survey Date: Thursday, August 04, 2016 **WO#:** 36124
Start Time: 07:00 **Device:** Miovision



Comments :

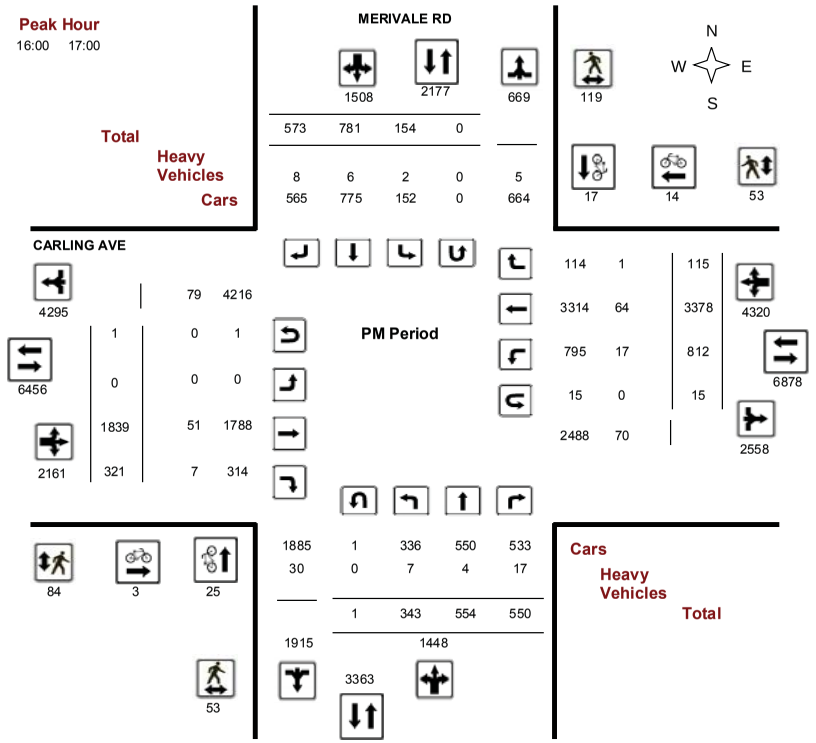
Transportation Services - Traffic Services

Turning Movement Count - PM Period Diagram

CARLING AVE @ MERIVALE RD

Survey Date: Thursday, August 04, 2016 **WO#:** 36124

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



Comments :

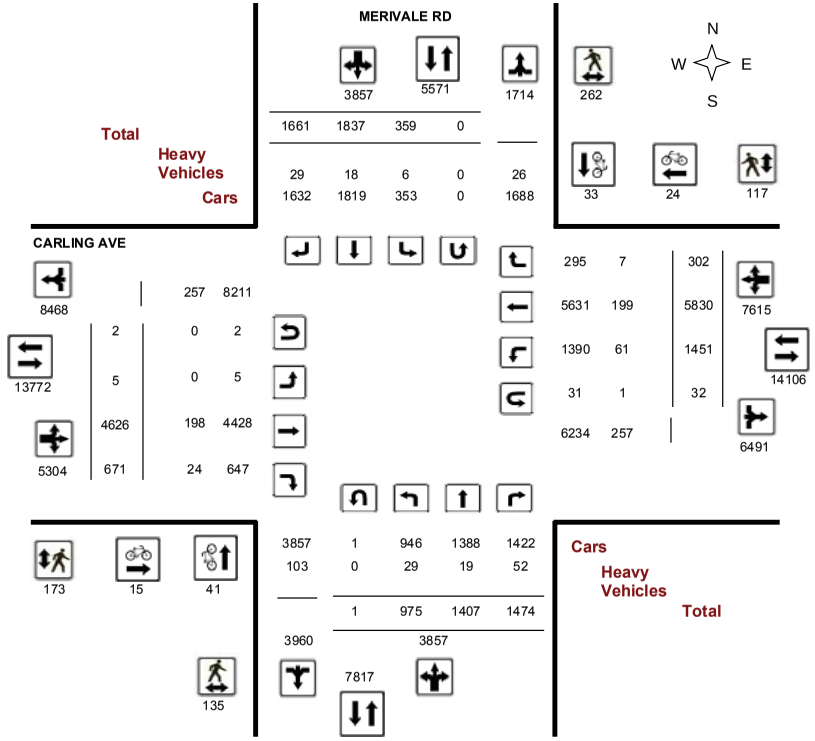
Transportation Services - Traffic Services

Turning Movement Count - Full Study Diagram

CARLING AVE @ MERIVALE RD

Survey Date: Thursday, August 04, 2016 **WO#:** 36124

Device: Miovision



Comments

Transportation Services - Traffic Services

Work Order 36124

Turning Movement Count - Full Study Summary Report

CARLING AVE @ MERIVALE RD

Survey Date: Thursday, August 04, 2016

Total Observed U-Turns

Northbound: 1 Southbound: 0

Eastbound: 2 Westbound: 32

AADT Factor .90

Full Study

	MERIVALE RD									CARLING AVE									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	87	148	203	**438**	22	208	212	**442**	**880**	1	544	43	**588**	92	305	20	**417**	**1005**	**1885**
08:00 09:00	148	188	233	**569**	26	214	208	**448**	**1017**	1	690	48	**739**	138	489	32	**659**	**1398**	**2415**
09:00 10:00	101	131	159	**391**	38	211	250	**499**	**890**	0	531	88	**619**	112	476	36	**624**	**1243**	**2133**
11:30 12:30	148	202	171	**521**	56	234	227	**517**	**1038**	3	483	80	**566**	143	604	42	**789**	**1355**	**2393**
12:30 13:30	148	184	158	**490**	63	189	191	**443**	**933**	0	539	91	**630**	154	578	57	**789**	**1419**	**2352**
15:00 16:00	107	200	174	**481**	57	280	218	**555**	**1036**	0	525	115	**640**	227	1105	43	**1375**	**2015**	**3051**
16:00 17:00	123	194	180	**497**	51	264	188	**503**	**1000**	0	774	100	**874**	312	1294	40	**1646**	**2520**	**3520**
17:00 18:00	113	160	196	**469**	46	237	167	**450**	**919**	0	540	106	**646**	273	979	32	**1284**	**1930**	**2849**
Sub Total	975	1407	1474	**3856**	359	1837	1661	**3857**	**7713**	5	4626	671	**5302**	1451	5830	302	**7583**	**12885**	**20598**
U Turns				**1**				**0**	**1**				**2**				**32**	**34**	**35**
Total	975	1407	1474	**3857**	359	1837	1661	**3857**	**7714**	5	4626	671	**5304**	1451	5830	302	**7615**	**12919**	**20633**
EQ 12Hr	1355	1956	2049	**5361**	499	2553	2309	**5361**	**10722**	7	6430	933	**7373**	2017	8104	420	**10585**	**17958**	**28680**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													**1.39**						
AVG 12Hr	1220	1760	1844	**4825**	449	2298	2078	**4825**	**9650**	6	5787	839	**6635**	1815	7293	378	**9526**	**16161**	**25811**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													**.90**						
AVG 24Hr	1598	2306	2416	**6321**	588	3010	2722	**6321**	**12642**	8	7581	1100	**8692**	2378	9554	495	**12480**	**21172**	**33814**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													**1.31**						

Comments:

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

Transportation Services - Traffic Services

W.O. 36124

Turning Movement Count - 15 Minute Summary Report

CARLING AVE @ MERIVALE RD

Survey Date: Thursday, August 04, 2016

Total Observed U-Turns

Northbound: 1 Southbound: 0

Eastbound: 2 Westbound: 32

	MERIVALE RD									CARLING AVE									
	Northbound				Southbound					Eastbound				Westbound					
Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00 07:15	16	26	36	**78**	6	49	56	**111**	**189**	0	107	9	**116**	21	58	6	**86**	**202**	**391**
07:15 07:30	26	29	43	**98**	4	55	48	**107**	**205**	0	117	9	**126**	15	62	3	**80**	**206**	**411**
07:30 07:45	22	38	57	**117**	8	53	46	**107**	**224**	1	151	15	**167**	23	91	6	**120**	**287**	**511**
07:45 08:00	23	55	67	**145**	4	51	62	**117**	**262**	0	169	10	**179**	33	94	5	**134**	**313**	**575**
08:00 08:15	34	39	51	**124**	3	52	62	**117**	**241**	0	198	11	**209**	30	102	8	**140**	**349**	**590**
08:15 08:30	42	53	69	**164**	9	53	51	**113**	**277**	0	164	17	**181**	26	109	9	**145**	**326**	**603**
08:30 08:45	30	56	56	**142**	5	52	48	**105**	**247**	1	183	12	**196**	50	132	2	**184**	**380**	**627**
08:45 09:00	42	40	57	**139**	9	57	47	**113**	**252**	0	145	8	**153**	32	146	13	**191**	**344**	**596**
09:00 09:15	17	27	53	**97**	9	53	59	**121**	**218**	0	149	12	**161**	30	117	6	**155**	**316**	**534**
09:15 09:30	36	34	33	**103**	7	60	64	**131**	**234**	0	136	24	**161**	32	126	10	**172**	**333**	**567**
09:30 09:45	21	38	38	**97**	11	46	60	**117**	**214**	0	141	20	**161**	24	119	12	**157**	**318**	**532**
09:45 10:00	27	32	35	**94**	11	52	67	**130**	**224**	0	105	32	**137**	26	114	8	**149**	**286**	**510**
11:30 11:45	38	55	32	**125**	21	67	62	**150**	**275**	2	101	25	**128**	36	145	10	**191**	**319**	**594**
11:45 12:00	40	46	49	**135**	12	55	53	**120**	**255**	0	123	20	**143**	39	143	12	**194**	**337**	**592**
12:00 12:15	34	52	46	**132**	8	62	61	**131**	**263**	0	117	17	**134**	31	169	13	**213**	**347**	**610**
12:15 12:30	36	49	44	**129**	15	50	51	**116**	**245**	1	142	18	**161**	37	147	7	**191**	**352**	**597**
12:30 12:45	34	56	40	**130**	15	43	58	**116**	**246**	0	140	26	**166**	44	147	8	**200**	**366**	**612**
12:45 13:00	40	41	39	**120**	18	45	37	**100**	**220**	0	139	18	**157**	42	150	16	**209**	**366**	**586**
13:00 13:15	33	38	38	**109**	10	47	48	**105**	**214**	0	150	27	**177**	33	147	14	**194**	**371**	**585**
13:15 13:30	41	49	41	**131**	20	54	48	**122**	**253**	0	110	20	**130**	35	134	19	**190**	**320**	**573**
15:00 15:15	27	67	46	**140**	5	76	65	**146**	**286**	0	117	22	**139**	51	222	14	**291**	**430**	**716**
15:15 15:30	15	47	37	**99**	7	63	52	**122**	**221**	0	138	32	**170**	62	276	10	**349**	**519**	**740**
15:30 15:45	42	52	48	**142**	25	80	55	**160**	**302**	0	112	31	**143**	50	294	12	**359**	**502**	**804**
15:45 16:00	23	34	43	**100**	20	61	46	**127**	**227**	0	158	30	**188**	64	313	7	**386**	**574**	**801**
16:00 16:15	35	54	43	**133**	18	68	66	**152**	**285**	0	270	16	**286**	75	321	7	**403**	**689**	**974**
16:15 16:30	25	39	45	**109**	11	67	30	**108**	**217**	0	203	30	**233**	82	341	10	**433**	**666**	**883**
16:30 16:45	25	53	43	**121**	12	71	44	**127**	**248**	0	150	25	**175**	74	279	9	**363**	**538**	**786**
16:45 17:00	38	48	49	**135**	10	58	48	**116**	**251**	0	151	29	**180**	81	353	14	**448**	**628**	**879**
17:00 17:15	31	50	52	**133**	19	69	49	**137**	**270**	0	147	28	**176**	78	314	11	**404**	**580**	**850**
17:15 17:30	21	40	54	**115**	11	58	49	**118**	**233**	0	157	27	**184**	73	312	9	**395**	**579**	**812**
17:30 17:45	38	38	37	**113**	9	61	30	**100**	**213**	0	114	27	**141**	62	174	7	**244**	**385**	**598**
17:45 18:00	23	32	53	**108**	7	49	39	**95**	**203**	0	122	24	**146**	60	179	5	**245**	**391**	**594**
TOTAL:	975	1407	1474	**3857**	359	1837	1661	**3857**	**7714**	5	4626	671	**5304**	1451	5830	302	**7615**	**12919**	**20633**

Note: U-Turns are included in Totals.

Comment:

Transportation Services - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order 36124

CARLING AVE @ MERIVALE RD

Count Date: Thursday, August 04, 2016 **Start Time:** 07:00

	MERIVALE RD			CARLING AVE			
Time Period	Northbound	Southbound	**Street Total**	Eastbound	Westbound	**Street Total**	**Grand Total**
07:00 08:00	7	5	**12**	5	1	**6**	**18**
08:00 09:00	5	6	**11**	0	5	**5**	**16**
09:00 10:00	2	3	**5**	2	2	**4**	**9**
11:30 12:30	0	1	**1**	0	2	**2**	**3**
12:30 13:30	2	1	**3**	5	0	**5**	**8**
15:00 16:00	8	5	**13**	1	3	**4**	**17**
16:00 17:00	5	3	**8**	1	4	**5**	**13**
17:00 18:00	12	9	**21**	1	7	**8**	**29**
Total	41	33	**74**	15	24	**39**	**113**

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. 36124

Turning Movement Count - Heavy Vehicle Report

CARLING AVE @ MERIVALE RD

Survey Date: Thursday, August 04, 2016

	MERIVALE RD								CARLING AVE										
	Northbound				Southbound				Eastbound				Westbound						
Time Period	LT	ST	RT	**N TOT**	LT	ST	RT	**S TOT**	**STR TOT**	LT	ST	RT	**E TOT**	LT	ST	RT	**W TOT**	**STR TOT**	**Grand Total**
07:00 08:00	2	1	7	**10**	1	0	2	**3**	**13**	0	21	5	**26**	8	31	2	**41**	**67**	**80**
08:00 09:00	5	1	11	**17**	0	0	3	**3**	**20**	0	36	1	**37**	13	28	1	**42**	**79**	**99**
09:00 10:00	5	2	3	**10**	1	2	5	**8**	**18**	0	35	4	**39**	6	33	1	**40**	**79**	**97**
11:30 12:30	7	5	8	**20**	1	5	7	**13**	**33**	0	26	4	**30**	9	26	2	**37**	**67**	**100**
12:30 13:30	3	6	6	**15**	1	5	4	**10**	**25**	0	29	3	**32**	8	17	0	**26**	**58**	**83**
15:00 16:00	2	2	3	**7**	0	4	3	**7**	**14**	0	16	3	**19**	5	24	1	**30**	**49**	**63**
16:00 17:00	4	1	8	**13**	0	1	2	**3**	**16**	0	22	2	**24**	7	18	0	**25**	**49**	**65**
17:00 18:00	1	1	6	**8**	2	1	3	**6**	**14**	0	13	2	**15**	5	22	0	**27**	**42**	**56**
Sub Total	29	19	52	**100**	6	18	29	**53**	**153**	0	198	24	**222**	61	199	7	**268**	**490**	**643**
U-Turns (Heavy Vehicles)				**0**				**0**	**0**				**0**				**1**	**1**	**1**
Total	29	19	52	**0**	6	18	29	**53**	**153**	0	198	24	**222**	61	199	7	**269**	**491**	**644**

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 36124

Turning Movement Count - Pedestrian Volume Report

CARLING AVE @ MERIVALE RD

Count Date: Thursday, August 04, 2016 **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	3	5	8	3	2	5	13
07:15 07:30	1	5	6	4	4	8	14
07:30 07:45	5	3	8	3	1	4	12
07:45 08:00	9	4	13	8	6	14	27
07:00 08:00	18	17	35	18	13	31	66
08:00 08:15	6	3	9	3	2	5	14
08:15 08:30	8	7	15	1	8	9	24
08:30 08:45	10	3	13	3	0	3	16
08:45 09:00	3	3	6	8	7	15	21
08:00 09:00	27	16	43	15	17	32	75
09:00 09:15	1	10	11	2	0	2	13
09:15 09:30	3	3	6	1	0	1	7
09:30 09:45	4	7	11	2	7	9	20
09:45 10:00	4	6	10	4	5	9	19
09:00 10:00	12	26	38	9	12	21	59
11:30 11:45	4	11	15	4	4	8	23
11:45 12:00	3	11	14	7	4	11	25
12:00 12:15	1	19	20	9	0	9	29
12:15 12:30	1	14	15	2	4	6	21
11:30 12:30	9	55	64	22	12	34	98
12:30 12:45	7	8	15	9	5	14	29
12:45 13:00	1	7	8	4	1	5	13
13:00 13:15	5	12	17	7	3	10	27
13:15 13:30	3	2	5	5	1	6	11
12:30 13:30	16	29	45	25	10	35	80
15:00 15:15	9	7	16	4	3	7	23
15:15 15:30	11	13	24	10	3	13	37
15:30 15:45	2	12	14	7	5	12	26
15:45 16:00	2	13	15	10	8	18	33
15:00 16:00	24	45	69	31	19	50	119
16:00 16:15	3	17	20	7	7	14	34
16:15 16:30	3	5	8	10	2	12	20
16:30 16:45	6	14	20	5	8	13	33
16:45 17:00	4	6	10	6	2	8	18
16:00 17:00	16	42	58	28	19	47	105
17:00 17:15	0	7	7	5	2	7	14
17:15 17:30	5	7	12	7	6	13	25
17:30 17:45	5	6	11	4	4	8	19
17:45 18:00	3	12	15	9	3	12	27
17:00 18:00	13	32	45	25	15	40	85
Total	135	262	397	173	117	290	687

Comment:

Transportation Services - Traffic Services

Work Order 36124

Turning Movement Count - 15 Min U-Turn Total Report

CARLING AVE @ MERIVALE RD

Survey Date: Thursday, August 04, 2016

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	1	1
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	2	2
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	1	1
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	2	2
09:15	09:30	0	0	1	4	5
09:30	09:45	0	0	0	2	2
09:45	10:00	0	0	0	1	1
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	1	1
12:45	13:00	0	0	0	1	1
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	2	2
15:00	15:15	0	0	0	4	4
15:15	15:30	0	0	0	1	1
15:30	15:45	0	0	0	3	3
15:45	16:00	0	0	0	2	2
16:00	16:15	1	0	0	0	1
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	1	1
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	1	1	2
17:15	17:30	0	0	0	1	1
17:30	17:45	0	0	0	1	1
17:45	18:00	0	0	0	1	1
Total		1	0	2	32	35

Transportation Services - Traffic Services

W.O. 37476

Turning Movement Count - 15 Minute Summary Report

CARLING AVE @ 73 E OF ARCHIBALD ST/WESTGATE SC

Survey Date: Wednesday, January 31, 2018

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 14 Westbound: 2

		73 E OF ARCHIBALD ST/WESTGATE SC W									CARLING AVE									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	0	0	**0**	0	0	1	**1**	**1**	0	177	0	**177**	0	144	0	**144**	**321**	**322**
07:15	07:30	0	0	0	**0**	1	0	2	**3**	**3**	0	237	0	**237**	0	162	2	**164**	**401**	**404**
07:30	07:45	0	0	0	**0**	1	0	1	**2**	**2**	0	247	0	**247**	0	183	7	**190**	**437**	**439**
07:45	08:00	0	0	0	**0**	1	0	3	**4**	**4**	1	256	0	**258**	0	206	4	**210**	**468**	**472**
08:00	08:15	0	0	0	**0**	1	0	2	**3**	**3**	1	238	0	**240**	0	207	2	**209**	**449**	**452**
08:15	08:30	0	0	0	**0**	1	0	7	**8**	**8**	0	249	0	**249**	0	223	3	**226**	**475**	**483**
08:30	08:45	0	0	0	**0**	3	0	7	**10**	**10**	1	256	0	**257**	0	265	9	**274**	**531**	**541**
08:45	09:00	0	0	0	**0**	3	0	1	**4**	**4**	2	215	0	**220**	0	244	3	**247**	**467**	**471**
09:00	09:15	0	0	0	**0**	3	0	8	**11**	**11**	0	213	0	**214**	0	261	4	**265**	**479**	**490**
09:15	09:30	0	0	0	**0**	3	0	10	**13**	**13**	0	193	0	**194**	0	199	5	**204**	**398**	**411**
09:30	09:45	0	0	0	**0**	2	0	11	**13**	**13**	0	202	0	**202**	0	214	4	**219**	**421**	**434**
09:45	10:00	0	0	0	**0**	6	0	19	**25**	**25**	0	207	0	**207**	0	201	7	**208**	**415**	**440**
11:30	11:45	0	0	0	**0**	4	0	10	**14**	**14**	0	147	0	**147**	0	241	4	**245**	**392**	**406**
11:45	12:00	0	0	0	**0**	7	0	20	**27**	**27**	2	194	0	**197**	0	234	3	**237**	**434**	**461**
12:00	12:15	0	0	0	**0**	5	0	16	**21**	**21**	0	148	0	**148**	0	210	1	**211**	**359**	**380**
12:15	12:30	0	0	0	**0**	5	0	15	**20**	**20**	0	203	0	**204**	0	232	3	**235**	**439**	**459**
12:30	12:45	0	0	0	**0**	5	0	12	**17**	**17**	1	176	0	**179**	0	241	1	**242**	**421**	**438**
12:45	13:00	0	0	0	**0**	8	0	11	**19**	**19**	1	201	0	**202**	0	227	1	**228**	**430**	**449**
13:00	13:15	0	0	0	**0**	2	0	13	**15**	**15**	0	165	0	**165**	0	227	1	**228**	**393**	**408**
13:15	13:30	0	0	0	**0**	2	0	19	**21**	**21**	1	160	0	**162**	0	233	1	**234**	**396**	**417**
15:00	15:15	0	0	0	**0**	9	0	17	**26**	**26**	1	172	0	**173**	0	409	2	**411**	**584**	**610**
15:15	15:30	0	0	0	**0**	1	0	8	**9**	**9**	0	154	0	**154**	0	386	0	**386**	**540**	**549**
15:30	15:45	0	0	0	**0**	2	0	8	**10**	**10**	0	167	0	**168**	0	439	1	**440**	**608**	**618**
15:45	16:00	0	0	0	**0**	6	0	12	**18**	**18**	0	165	0	**165**	0	367	2	**369**	**534**	**552**
16:00	16:15	0	0	0	**0**	11	0	17	**28**	**28**	0	223	0	**223**	0	426	0	**427**	**650**	**678**
16:15	16:30	0	0	0	**0**	7	0	5	**12**	**12**	1	230	0	**231**	0	372	1	**373**	**604**	**616**
16:30	16:45	0	0	0	**0**	4	0	7	**11**	**11**	0	253	0	**253**	0	363	3	**366**	**619**	**630**
16:45	17:00	0	0	0	**0**	9	0	9	**18**	**18**	2	263	0	**265**	0	342	0	**342**	**607**	**625**
17:00	17:15	0	0	0	**0**	7	0	11	**18**	**18**	0	267	0	**267**	0	375	2	**377**	**644**	**662**
17:15	17:30	0	0	0	**0**	2	0	12	**14**	**14**	1	255	0	**257**	0	336	1	**337**	**594**	**608**
17:30	17:45	0	0	0	**0**	5	0	5	**10**	**10**	0	231	0	**231**	0	323	1	**324**	**555**	**565**
17:45	18:00	0	0	0	**0**	5	0	5	**10**	**10**	0	209	0	**209**	0	336	1	**337**	**546**	**556**
TOTAL:		0	0	0	**0**	131	0	304	**435**	**435**	15	6673	0	**6702**	0	8828	79	**8909**	**15611**	**16046**

Note: U-Turns are included in Totals.

Comment:

Transportation Services - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order 37476

CARLING AVE @ 73 E OF ARCHIBALD ST/WESTGATE SC

Count Date: Wednesday, January 31, 2018

Start Time: 07:00

	73 E OF ARCHIBALD ST/WESTGATE SC W			CARLING AVE			
Time Period	Northbound	Southbound	**Street Total**	Eastbound	Westbound	**Street Total**	**Grand Total**
07:00 08:00	0	0	**0**	0	1	**1**	**1**
08:00 09:00	0	0	**0**	0	0	**0**	**0**
09:00 10:00	0	0	**0**	1	0	**1**	**1**
11:30 12:30	0	0	**0**	0	0	**0**	**0**
12:30 13:30	0	1	**1**	0	0	**0**	**1**
15:00 16:00	0	0	**0**	0	0	**0**	**0**
16:00 17:00	0	0	**0**	0	3	**3**	**3**
17:00 18:00	0	0	**0**	0	1	**1**	**1**
Total	0	1	**1**	1	5	**6**	**7**

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

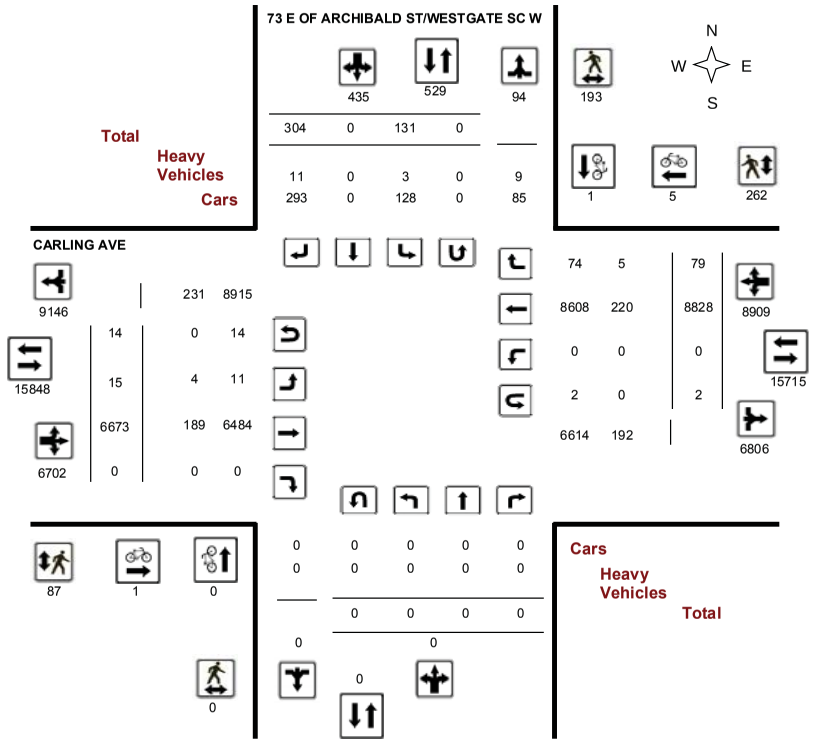
Turning Movement Count - Full Study Diagram

CARLING AVE @ 73 E OF ARCHIBALD ST/WESTGATE SC

Survey Date: Wednesday, January 31, 2018

WO#: 37476

Device: Miovision



Comments

Transportation Services - Traffic Services

W.O. 37476

Turning Movement Count - Heavy Vehicle Report

CARLING AVE @ 73 E OF ARCHIBALD ST/WESTGATE SC

Survey Date: Wednesday, January 31, 2018

		73 E OF ARCHIBALD ST/WESTGATE SC W									CARLING AVE									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	08:00	0	0	0	**0**	0	0	1	**1**	**1**	0	22	0	**22**	0	24	1	**25**	**47**	**48**
08:00	09:00	0	0	0	**0**	0	0	0	**0**	**0**	1	28	0	**29**	0	30	2	**32**	**61**	**61**
09:00	10:00	0	0	0	**0**	1	0	7	**8**	**8**	0	26	0	**26**	0	44	0	**44**	**70**	**78**
11:30	12:30	0	0	0	**0**	0	0	2	**2**	**2**	1	27	0	**28**	0	35	1	**36**	**64**	**66**
12:30	13:30	0	0	0	**0**	1	0	1	**2**	**2**	1	24	0	**25**	0	26	1	**27**	**52**	**54**
15:00	16:00	0	0	0	**0**	0	0	0	**0**	**0**	0	25	0	**25**	0	30	0	**30**	**55**	**55**
16:00	17:00	0	0	0	**0**	0	0	0	**0**	**0**	1	23	0	**24**	0	19	0	**19**	**43**	**43**
17:00	18:00	0	0	0	**0**	1	0	0	**1**	**1**	0	14	0	**14**	0	12	0	**12**	**26**	**27**
Sub Total		0	0	0	**0**	3	0	11	**14**	**14**	4	189	0	**193**	0	220	5	**225**	**418**	**432**
U-Turns (Heavy Vehicles)					**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total		0	0	0	**0**	3	0	11	**14**	**14**	4	189	0	**193**	0	220	5	**225**	**418**	**432**

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 37476

Turning Movement Count - Pedestrian Volume Report

CARLING AVE @ 73 E OF ARCHIBALD ST/WESTGATE SC

Count Date: Wednesday, January 31, 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	4	**4**	1	3	**4**	**8**
07:15 07:30	0	4	**4**	1	5	**6**	**10**
07:30 07:45	0	2	**2**	2	2	**4**	**6**
07:45 08:00	0	3	**3**	2	11	**13**	**16**
07:00 08:00	0	13	**13**	6	21	**27**	**40**
08:00 08:15	0	1	**1**	1	11	**12**	**13**
08:15 08:30	0	4	**4**	1	5	**6**	**10**
08:30 08:45	0	4	**4**	2	10	**12**	**16**
08:45 09:00	0	6	**6**	6	6	**12**	**18**
08:00 09:00	0	15	**15**	10	32	**42**	**57**
09:00 09:15	0	8	**8**	3	9	**12**	**20**
09:15 09:30	0	1	**1**	0	5	**5**	**6**
09:30 09:45	0	7	**7**	3	7	**10**	**17**
09:45 10:00	0	7	**7**	5	19	**24**	**31**
09:00 10:00	0	23	**23**	11	40	**51**	**74**
11:30 11:45	0	4	**4**	3	7	**10**	**14**
11:45 12:00	0	11	**11**	7	14	**21**	**32**
12:00 12:15	0	13	**13**	4	7	**11**	**24**
12:15 12:30	0	7	**7**	2	11	**13**	**20**
11:30 12:30	0	35	**35**	16	39	**55**	**90**
12:30 12:45	0	9	**9**	9	7	**16**	**25**
12:45 13:00	0	11	**11**	3	6	**9**	**20**
13:00 13:15	0	3	**3**	2	9	**11**	**14**
13:15 13:30	0	8	**8**	4	10	**14**	**22**
12:30 13:30	0	31	**31**	18	32	**50**	**81**
15:00 15:15	0	8	**8**	2	6	**8**	**16**
15:15 15:30	0	4	**4**	1	6	**7**	**11**
15:30 15:45	0	7	**7**	0	8	**8**	**15**
15:45 16:00	0	8	**8**	1	13	**14**	**22**
15:00 16:00	0	27	**27**	4	33	**37**	**64**
16:00 16:15	0	2	**2**	2	7	**9**	**11**
16:15 16:30	0	11	**11**	1	9	**10**	**21**
16:30 16:45	0	7	**7**	4	8	**12**	**19**
16:45 17:00	0	7	**7**	3	10	**13**	**20**
16:00 17:00	0	27	**27**	10	34	**44**	**71**
17:00 17:15	0	9	**9**	5	7	**12**	**21**
17:15 17:30	0	6	**6**	4	8	**12**	**18**
17:30 17:45	0	3	**3**	3	6	**9**	**12**
17:45 18:00	0	4	**4**	0	10	**10**	**14**
17:00 18:00	0	22	**22**	12	31	**43**	**65**
Total	0	193	**193**	87	262	**349**	**542**

Comment:

Transportation Services - Traffic Services

Work Order 37476

Turning Movement Count - Full Study Summary Report

CARLING AVE @ 73 E OF ARCHIBALD ST/WESTGATE SC

Survey Date: Wednesday, January 31, 2018

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 14 Westbound: 2

AADT Factor 1.00

Full Study

	73 E OF ARCHIBALD ST/WESTGATE SC W									CARLING AVE									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	**NB TOT**	LT	ST	RT	**SB TOT**	**STR TOT**	LT	ST	RT	**EB TOT**	LT	ST	RT	**WB TOT**	**STR TOT**	**Grand Total**
07:00 08:00	0	0	0	**0**	3	0	7	**10**	**10**	1	917	0	**918**	0	695	13	**708**	**1626**	**1636**
08:00 09:00	0	0	0	**0**	8	0	17	**25**	**25**	4	958	0	**962**	0	939	17	**956**	**1918**	**1943**
09:00 10:00	0	0	0	**0**	14	0	48	**62**	**62**	0	815	0	**815**	0	875	20	**895**	**1710**	**1772**
11:30 12:30	0	0	0	**0**	21	0	61	**82**	**82**	2	692	0	**694**	0	917	11	**928**	**1622**	**1704**
12:30 13:30	0	0	0	**0**	17	0	55	**72**	**72**	3	702	0	**705**	0	928	4	**932**	**1637**	**1709**
15:00 16:00	0	0	0	**0**	18	0	45	**63**	**63**	1	658	0	**659**	0	1601	5	**1606**	**2265**	**2328**
16:00 17:00	0	0	0	**0**	31	0	38	**69**	**69**	3	969	0	**972**	0	1503	4	**1507**	**2479**	**2548**
17:00 18:00	0	0	0	**0**	19	0	33	**52**	**52**	1	962	0	**963**	0	1370	5	**1375**	**2338**	**2390**
Sub Total	0	0	0	**0**	131	0	304	**435**	**435**	15	6673	0	**6688**	0	8828	79	**8907**	**15595**	**16030**
U Turns				**0**				**0**	**0**				**14**				**2**	**16**	**16**
Total	0	0	0	**0**	131	0	304	**435**	**435**	15	6673	0	**6702**	0	8828	79	**8909**	**15611**	**16046**
EQ 12Hr	0	0	0	**0**	182	0	423	**605**	**605**	21	9275	0	**9316**	0	12271	110	**12384**	**21700**	**22305**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													**1.39**						
AVG 12Hr	0	0	0	**0**	182	0	423	**605**	**605**	21	9275	0	**9316**	0	12271	110	**12384**	**21700**	**22305**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													**1.00**						
AVG 24Hr	0	0	0	**0**	239	0	554	**792**	**792**	27	12151	0	**12204**	0	16075	144	**16222**	**28426**	**29218**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													**1.31**						

Comments:

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

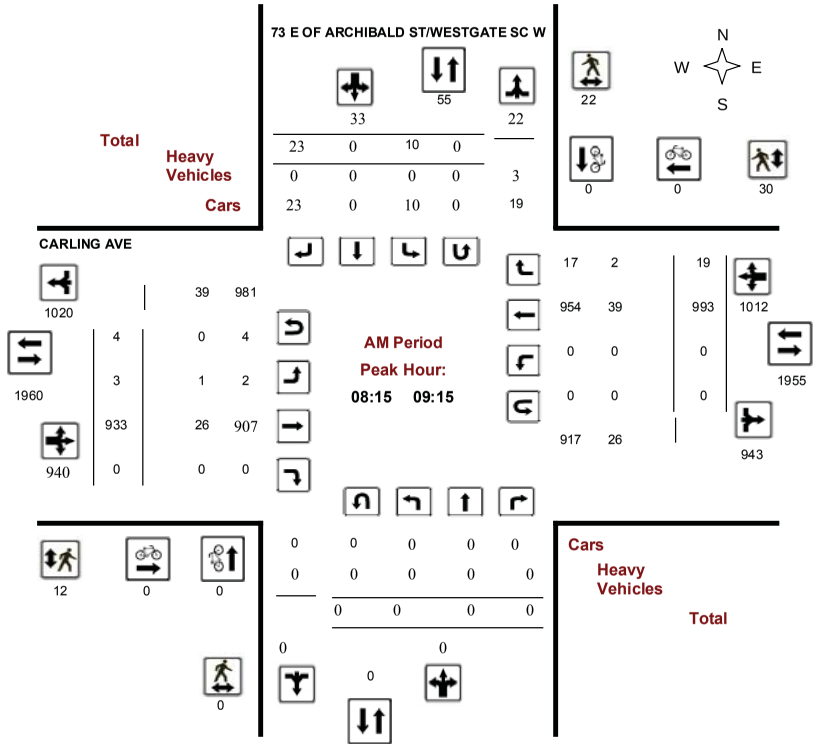
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

CARLING AVE @ 73 E OF ARCHIBALD ST/WESTGATE SC

Survey Date: Wednesday, January 31, 2018 **WO No:** 37476

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



Comments

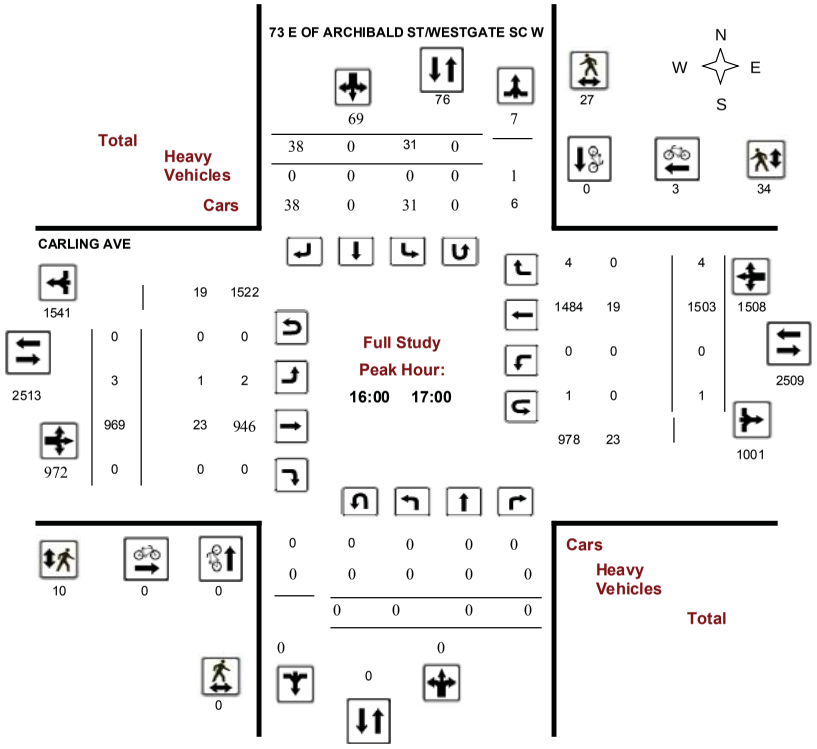
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

CARLING AVE @ 73 E OF ARCHIBALD ST/WESTGATE SC

Survey Date: Wednesday, January 31, 2018 **WO No:** 37476

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



Comments

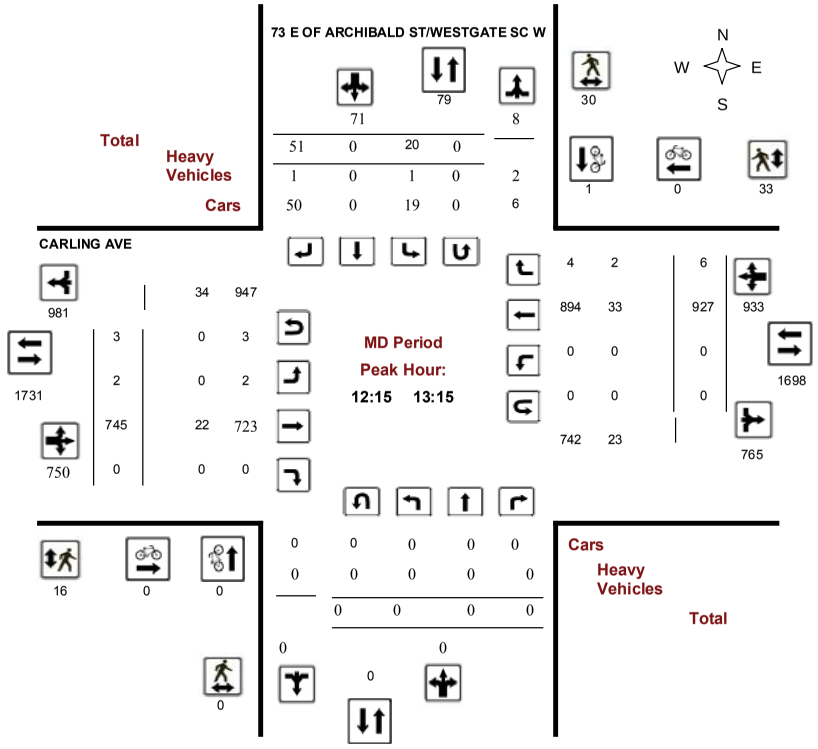
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

CARLING AVE @ 73 E OF ARCHIBALD ST/WESTGATE SC

Survey Date: Wednesday, January 31, 2018 **WO No:** 37476

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



Comments

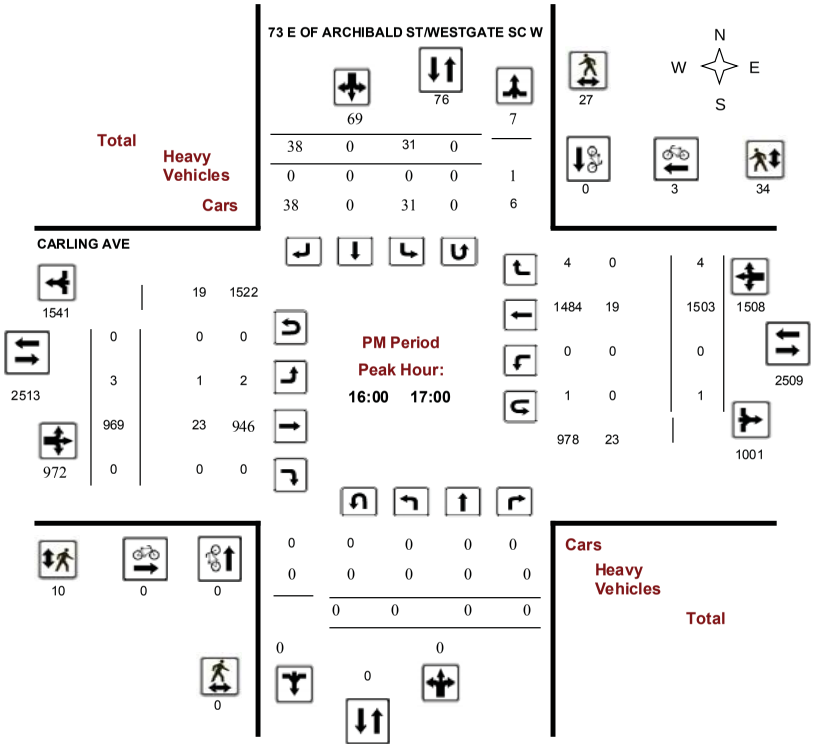
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

CARLING AVE @ 73 E OF ARCHIBALD ST/WESTGATE SC

Survey Date: Wednesday, January 31, 2018 **WO No:** 37476

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



Comments

Transportation Services - Traffic Services

Work Order 37476

Turning Movement Count - 15 Min U-Turn Total Report

CARLING AVE @ 73 E OF ARCHIBALD ST/WESTGATE SC

Survey Date: Wednesday, January 31, 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	1	0	1
08:00	08:15	0	0	1	0	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	3	0	3
09:00	09:15	0	0	1	0	1
09:15	09:30	0	0	1	0	1
09:30	09:45	0	0	0	1	1
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	1	0	1
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	1	0	1
12:30	12:45	0	0	2	0	2
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	1	0	1
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	1	0	1
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	1	1
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	1	0	1
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
Total		0	0	14	2	16

Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

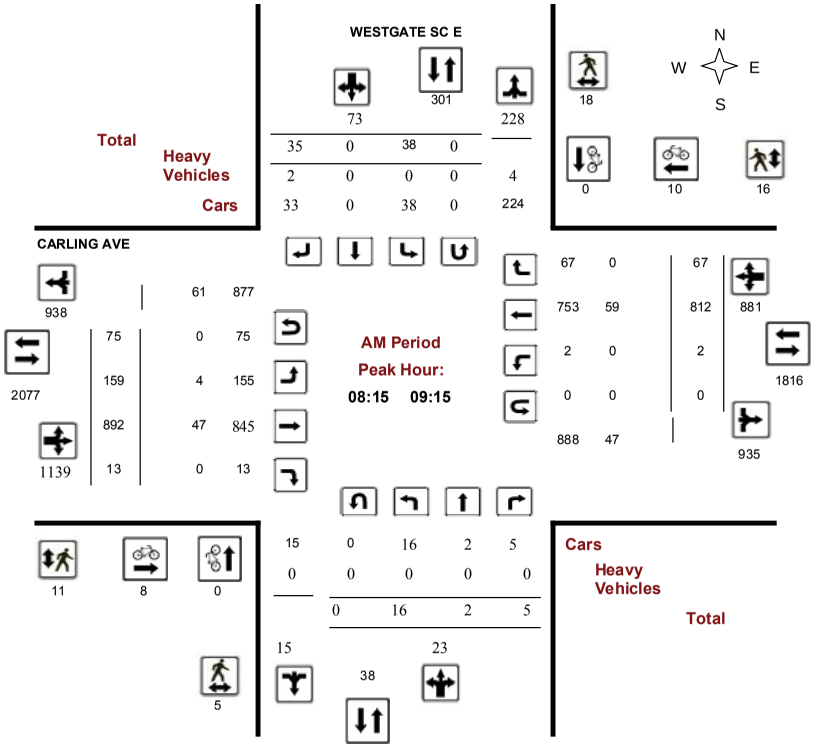
CARLING AVE @ WESTGATE SC E

Survey Date: Wednesday, June 17, 2015

Start Time: 07:00

WO No: 34721

Device: Jamar Technologies, Inc



Comments

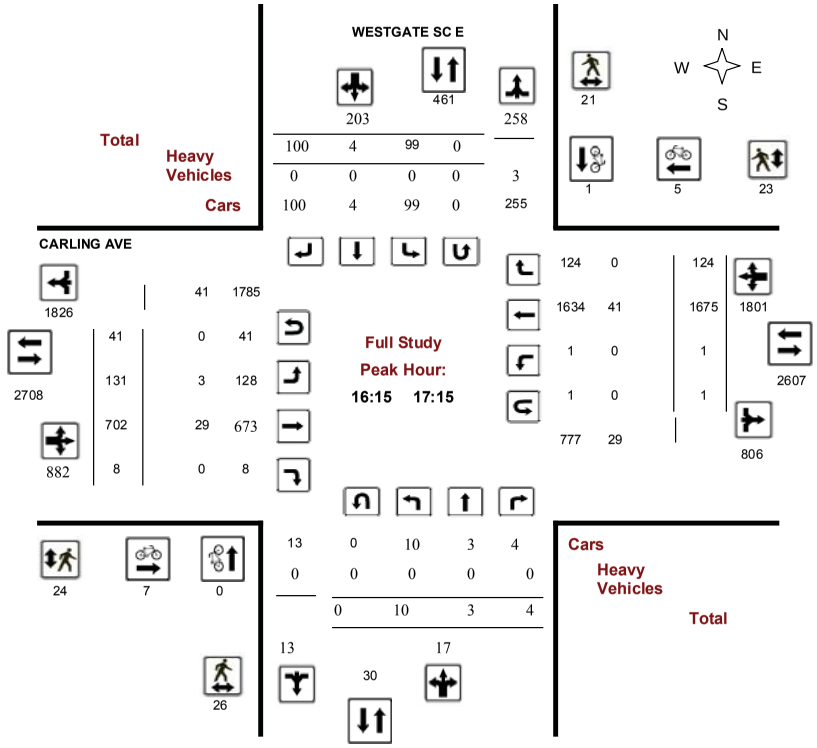
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

CARLING AVE @ WESTGATE SC E

Survey Date: Wednesday, June 17, 2015
Start Time: 07:00

WO No: 34721
Device: Jamar Technologies, Inc



Comments

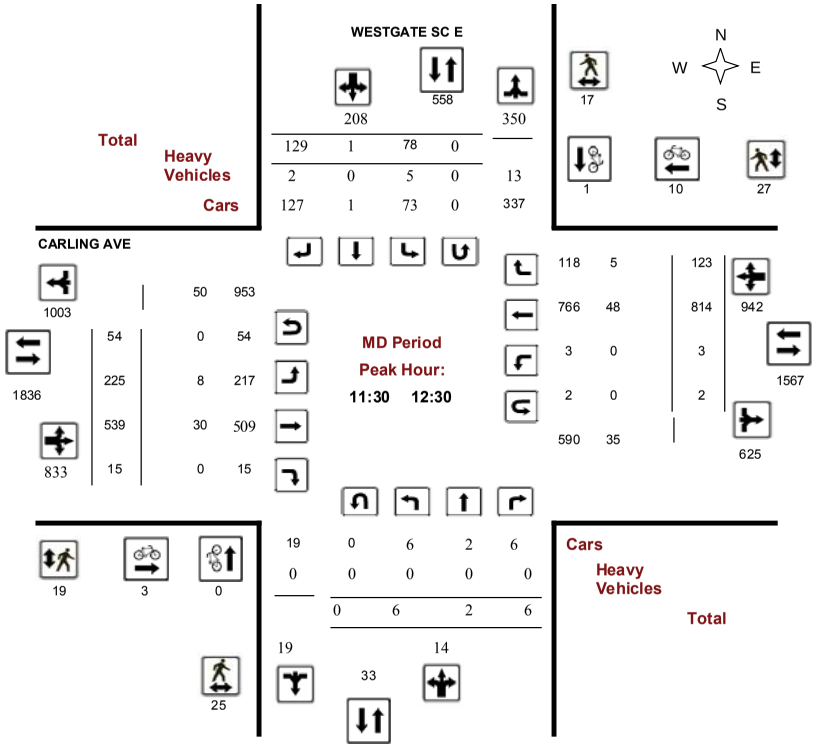
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

CARLING AVE @ WESTGATE SC E

Survey Date: Wednesday, June 17, 2015
Start Time: 07:00

WO No: 34721
Device: Jamar Technologies, Inc



Comments

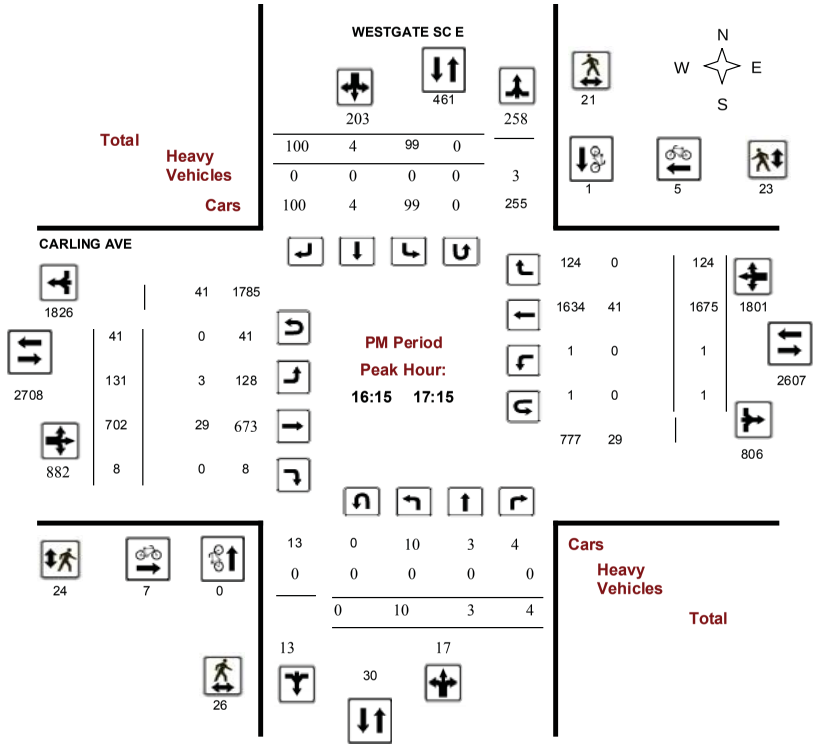
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

CARLING AVE @ WESTGATE SC E

Survey Date: Wednesday, June 17, 2015
Start Time: 07:00

WO No: 34721
Device: Jamar Technologies, Inc



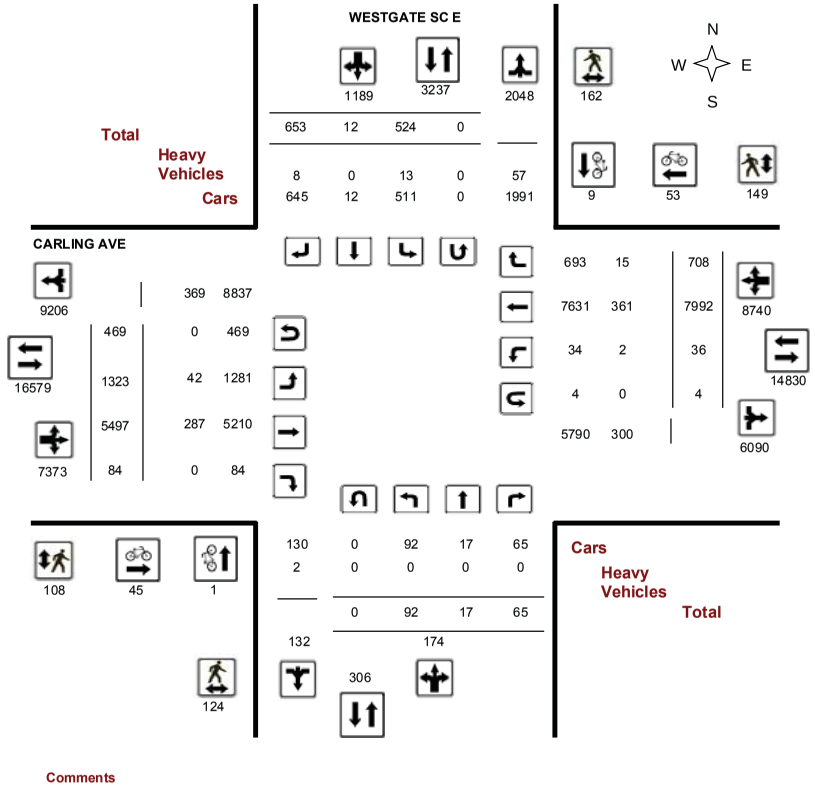
Transportation Services - Traffic Services

Turning Movement Count - Full Study Diagram

CARLING AVE @ WESTGATE SC E

Survey Date: Wednesday, June 17, 2015

WO#: 34721
Device: Jamar Technologies, Inc



Transportation Services - Traffic Services

Work Order 34721

Turning Movement Count - Full Study Summary Report

CARLING AVE @ WESTGATE SC E

Survey Date: Wednesday, June 17, 2015

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 469 Westbound: 4

AADT Factor .90

Full Study

	WESTGATE SC E									CARLING AVE									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	12	1	3	**16**	22	0	15	**37**	**53**	82	821	7	**910**	5	533	29	**567**	**1477**	**1530**
08:00 09:00	19	2	9	**30**	27	0	38	**65**	**95**	141	915	12	**1068**	2	784	52	**838**	**1906**	**2001**
09:00 10:00	15	1	12	**28**	62	1	72	**135**	**163**	235	663	9	**907**	9	764	93	**866**	**1773**	**1936**
11:30 12:30	6	2	6	**14**	78	1	129	**208**	**222**	225	539	15	**779**	3	814	123	**940**	**1719**	**1941**
12:30 13:30	7	3	7	**17**	80	3	99	**182**	**199**	204	603	4	**811**	4	707	97	**808**	**1619**	**1818**
15:00 16:00	11	0	13	**24**	77	1	109	**187**	**211**	172	667	15	**854**	7	1266	95	**1368**	**2222**	**2433**
16:00 17:00	8	4	7	**19**	99	4	94	**197**	**216**	142	671	8	**821**	1	1681	125	**1807**	**2628**	**2844**
17:00 18:00	14	4	8	**26**	79	2	97	**178**	**204**	122	618	14	**754**	5	1443	94	**1542**	**2296**	**2500**
Sub Total	92	17	65	**174**	524	12	653	**1189**	**1363**	1323	5497	84	**6904**	36	7992	708	**8736**	**15640**	**17003**
U Turns				**0**				**0**	**0**				**469**				**4**	**473**	**473**
Total	92	17	65	**174**	524	12	653	**1189**	**1363**	1323	5497	84	**7373**	36	7992	708	**8740**	**16113**	**17476**
EQ 12Hr	128	24	90	**242**	728	17	908	**1653**	**1895**	1839	7641	117	**10248**	50	11109	984	**12149**	**22397**	**24292**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													**1.39**						
AVG 12Hr	115	21	81	**218**	656	15	817	**1487**	**1705**	1655	6877	105	**9224**	45	9998	886	**10934**	**20158**	**21863**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													**.90**						
AVG 24Hr	151	28	107	**285**	859	20	1070	**1949**	**2234**	2168	9009	138	**12083**	59	13097	1160	**14323**	**26406**	**28640**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													**1.31**						

Comments:

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

Transportation Services - Traffic Services

W.O. 34721

Turning Movement Count - 15 Minute Summary Report

CARLING AVE @ WESTGATE SC E

Survey Date: Wednesday, June 17, 2015

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 469 Westbound: 4

	WESTGATE SC E									CARLING AVE									
	Northbound				Southbound					Eastbound				Westbound					
Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00 07:15	2	0	1	**3**	5	0	3	**8**	**11**	12	163	1	**182**	1	102	7	**110**	**292**	**303**
07:15 07:30	5	0	1	**6**	4	0	5	**9**	**15**	14	197	3	**237**	1	117	5	**123**	**360**	**375**
07:30 07:45	3	1	0	**4**	4	0	2	**6**	**10**	23	224	2	**266**	3	140	10	**153**	**419**	**429**
07:45 08:00	2	0	1	**3**	9	0	5	**14**	**17**	33	237	1	**287**	0	174	7	**181**	**468**	**485**
08:00 08:15	8	0	4	**12**	5	0	12	**17**	**29**	29	220	2	**262**	1	183	7	**191**	**453**	**482**
08:15 08:30	6	2	1	**9**	8	0	11	**19**	**28**	36	237	1	**290**	0	184	11	**195**	**485**	**513**
08:30 08:45	3	0	3	**6**	7	0	9	**16**	**22**	30	224	7	**283**	1	189	13	**203**	**486**	**508**
08:45 09:00	2	0	1	**3**	7	0	6	**13**	**16**	46	234	2	**302**	0	228	21	**249**	**551**	**567**
09:00 09:15	5	0	0	**5**	16	0	9	**25**	**30**	47	197	3	**264**	1	211	22	**234**	**498**	**528**
09:15 09:30	3	1	5	**9**	21	1	17	**39**	**48**	61	165	0	**246**	4	170	23	**197**	**443**	**491**
09:30 09:45	1	0	5	**6**	10	0	20	**30**	**36**	64	162	2	**239**	0	179	23	**202**	**441**	**477**
09:45 10:00	6	0	2	**8**	15	0	26	**41**	**49**	63	139	4	**223**	4	204	25	**233**	**456**	**505**
11:30 11:45	3	0	2	**5**	20	0	31	**51**	**56**	58	132	1	**200**	2	206	26	**234**	**434**	**490**
11:45 12:00	1	0	3	**4**	26	0	31	**57**	**61**	57	130	5	**207**	1	193	29	**223**	**430**	**491**
12:00 12:15	0	0	0	**0**	10	1	27	**38**	**38**	64	135	7	**218**	0	209	39	**249**	**467**	**505**
12:15 12:30	2	2	1	**5**	22	0	40	**62**	**67**	46	142	2	**208**	0	206	29	**236**	**444**	**511**
12:30 12:45	2	1	2	**5**	17	1	32	**50**	**55**	45	169	1	**237**	1	166	26	**193**	**430**	**485**
12:45 13:00	3	2	0	**5**	15	2	20	**37**	**42**	57	138	3	**214**	1	160	25	**186**	**400**	**442**
13:00 13:15	1	0	0	**1**	25	0	24	**49**	**50**	51	145	0	**207**	0	186	19	**205**	**412**	**462**
13:15 13:30	1	0	5	**6**	23	0	23	**46**	**52**	51	151	0	**217**	2	195	27	**224**	**441**	**493**
15:00 15:15	3	0	3	**6**	19	0	31	**50**	**56**	42	160	7	**222**	0	261	24	**285**	**507**	**563**
15:15 15:30	2	0	4	**6**	14	0	30	**44**	**50**	46	178	1	**233**	4	316	19	**339**	**572**	**622**
15:30 15:45	4	0	2	**6**	25	1	23	**49**	**55**	44	154	4	**215**	1	325	22	**348**	**563**	**618**
15:45 16:00	2	0	4	**6**	19	0	25	**44**	**50**	40	175	3	**235**	2	364	30	**396**	**631**	**681**
16:00 16:15	3	2	3	**8**	22	0	25	**47**	**55**	44	154	2	**212**	1	376	30	**407**	**619**	**674**
16:15 16:30	2	0	2	**4**	29	0	23	**52**	**56**	31	174	0	**216**	0	451	32	**483**	**699**	**755**
16:30 16:45	2	1	1	**4**	24	1	22	**47**	**51**	31	162	1	**206**	0	444	33	**477**	**683**	**734**
16:45 17:00	1	1	1	**3**	24	3	24	**51**	**54**	36	181	5	**232**	0	410	30	**440**	**672**	**726**
17:00 17:15	5	1	0	**6**	22	0	31	**53**	**59**	33	185	2	**228**	1	370	29	**401**	**629**	**688**
17:15 17:30	2	2	1	**5**	19	0	24	**43**	**48**	33	138	3	**188**	1	405	23	**429**	**617**	**665**
17:30 17:45	3	1	4	**8**	19	1	18	**38**	**46**	26	152	3	**203**	2	360	17	**380**	**583**	**629**
17:45 18:00	4	0	3	**7**	19	1	24	**44**	**51**	30	143	6	**194**	1	308	25	**334**	**528**	**579**
TOTAL:	92	17	65	**174**	524	12	653	**1189**	**1363**	1323	5497	84	**7373**	36	7992	708	**8740**	**16113**	**17476**

Note: U-Turns are included in Totals.

Comment:

Transportation Services - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order 34721

CARLING AVE @ WESTGATE SC E

Count Date: Wednesday, June 17, 2015 **Start Time:** 07:00

	WESTGATE SC E			CARLING AVE			
Time Period	Northbound	Southbound	**Street Total**	Eastbound	Westbound	**Street Total**	**Grand Total**
07:00 08:00	0	0	**0**	7	3	**10**	**10**
08:00 09:00	0	1	**1**	9	8	**17**	**18**
09:00 10:00	0	0	**0**	6	5	**11**	**11**
11:30 12:30	0	1	**1**	3	10	**13**	**14**
12:30 13:30	0	4	**4**	5	6	**11**	**15**
15:00 16:00	0	1	**1**	3	4	**7**	**8**
16:00 17:00	0	0	**0**	4	5	**9**	**9**
17:00 18:00	1	2	**3**	8	12	**20**	**23**
Total	1	9	**10**	45	53	**98**	**108**

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. 34721

Turning Movement Count - Heavy Vehicle Report

CARLING AVE @ WESTGATE SC E

Survey Date: Wednesday, June 17, 2015

	WESTGATE SC E									CARLING AVE										
	Northbound				Southbound					Eastbound				Westbound						
Time Period	LT	ST	RT	**N TOT**	LT	ST	RT	**S TOT**	**STR TOT**	LT	ST	RT	**E TOT**	LT	ST	RT	**W TOT**	**STR TOT**	**Grand Total**
07:00 08:00	0	0	0	**0**	0	0	0	**0**	**0**	3	27	0	**30**	1	40	0	**41**	**71**	**71**
08:00 09:00	0	0	0	**0**	0	0	2	**2**	**2**	4	46	0	**50**	0	63	0	**63**	**113**	**115**
09:00 10:00	0	0	0	**0**	1	0	1	**2**	**2**	7	47	0	**54**	0	66	2	**68**	**122**	**124**
11:30 12:30	0	0	0	**0**	5	0	2	**7**	**7**	8	30	0	**38**	0	48	5	**53**	**91**	**98**
12:30 13:30	0	0	0	**0**	4	0	3	**7**	**7**	5	39	0	**44**	1	39	4	**44**	**88**	**95**
15:00 16:00	0	0	0	**0**	2	0	0	**2**	**2**	7	45	0	**52**	0	44	3	**47**	**99**	**101**
16:00 17:00	0	0	0	**0**	1	0	0	**1**	**1**	3	32	0	**35**	0	38	0	**38**	**73**	**74**
17:00 18:00	0	0	0	**0**	0	0	0	**0**	**0**	5	21	0	**26**	0	23	1	**24**	**50**	**50**
Sub Total	0	0	0	**0**	13	0	8	**21**	**21**	42	287	0	**329**	2	361	15	**378**	**707**	**728**
U-Turns (Heavy Vehicles)				**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total	0	0	0	**0**	13	0	8	**21**	**21**	42	287	0	**329**	2	361	15	**378**	**707**	**728**

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 34721

Turning Movement Count - Pedestrian Volume Report

CARLING AVE @ WESTGATE SC E

Count Date: Wednesday, June 17, 2015 **Start Time:** 07:00

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	1	1	**2**	1	0	**1**	**3**
07:15 07:30	0	1	**1**	1	4	**5**	**6**
07:30 07:45	0	2	**2**	1	4	**5**	**7**
07:45 08:00	5	2	**7**	1	1	**2**	**9**
07:00 08:00	6	6	**12**	4	9	**13**	**25**
08:00 08:15	5	5	**10**	2	3	**5**	**15**
08:15 08:30	1	3	**4**	3	3	**6**	**10**
08:30 08:45	2	8	**10**	2	5	**7**	**17**
08:45 09:00	1	3	**4**	4	2	**6**	**10**
08:00 09:00	9	19	**28**	11	13	**24**	**52**
09:00 09:15	1	4	**5**	2	6	**8**	**13**
09:15 09:30	2	0	**2**	1	0	**1**	**3**
09:30 09:45	3	4	**7**	1	4	**5**	**12**
09:45 10:00	5	2	**7**	2	5	**7**	**14**
09:00 10:00	11	10	**21**	6	15	**21**	**42**
11:30 11:45	3	4	**7**	4	2	**6**	**13**
11:45 12:00	5	1	**6**	4	5	**9**	**15**
12:00 12:15	8	9	**17**	4	10	**14**	**31**
12:15 12:30	9	3	**12**	7	10	**17**	**29**
11:30 12:30	25	17	**42**	19	27	**46**	**88**
12:30 12:45	1	10	**11**	0	7	**7**	**18**
12:45 13:00	7	7	**14**	6	8	**14**	**28**
13:00 13:15	3	5	**8**	3	2	**5**	**13**
13:15 13:30	1	14	**15**	4	1	**5**	**20**
12:30 13:30	12	36	**48**	13	18	**31**	**79**
15:00 15:15	2	4	**6**	2	5	**7**	**13**
15:15 15:30	6	9	**15**	2	4	**6**	**21**
15:30 15:45	2	9	**11**	2	8	**10**	**21**
15:45 16:00	3	4	**7**	4	7	**11**	**18**
15:00 16:00	13	26	**39**	10	24	**34**	**73**
16:00 16:15	2	6	**8**	1	8	**9**	**17**
16:15 16:30	5	4	**9**	5	8	**13**	**22**
16:30 16:45	5	7	**12**	5	5	**10**	**22**
16:45 17:00	8	4	**12**	4	4	**8**	**20**
16:00 17:00	20	21	**41**	15	25	**40**	**81**
17:00 17:15	8	6	**14**	10	6	**16**	**30**
17:15 17:30	8	10	**18**	3	7	**10**	**28**
17:30 17:45	8	8	**16**	9	2	**11**	**27**
17:45 18:00	4	3	**7**	8	3	**11**	**18**
17:00 18:00	28	27	**55**	30	18	**48**	**103**
Total	124	162	**286**	108	149	**257**	**543**

Comment:

Transportation Services - Traffic Services

Work Order 34721

Turning Movement Count - 15 Min U-Turn Total Report

CARLING AVE @ WESTGATE SC E

Survey Date: Wednesday, June 17, 2015

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	6	0	6
07:15	07:30	0	0	23	0	23
07:30	07:45	0	0	17	0	17
07:45	08:00	0	0	16	0	16
08:00	08:15	0	0	11	0	11
08:15	08:30	0	0	16	0	16
08:30	08:45	0	0	22	0	22
08:45	09:00	0	0	20	0	20
09:00	09:15	0	0	17	0	17
09:15	09:30	0	0	20	0	20
09:30	09:45	0	0	11	0	11
09:45	10:00	0	0	17	0	17
11:30	11:45	0	0	9	0	9
11:45	12:00	0	0	15	0	15
12:00	12:15	0	0	12	1	13
12:15	12:30	0	0	18	1	19
12:30	12:45	0	0	22	0	22
12:45	13:00	0	0	16	0	16
13:00	13:15	0	0	11	0	11
13:15	13:30	0	0	15	0	15
15:00	15:15	0	0	13	0	13
15:15	15:30	0	0	8	0	8
15:30	15:45	0	0	13	0	13
15:45	16:00	0	0	17	0	17
16:00	16:15	0	0	12	0	12
16:15	16:30	0	0	11	0	11
16:30	16:45	0	0	12	0	12
16:45	17:00	0	0	10	0	10
17:00	17:15	0	0	8	1	9
17:15	17:30	0	0	14	0	14
17:30	17:45	0	0	22	1	23
17:45	18:00	0	0	15	0	15
Total		0	0	469	4	473

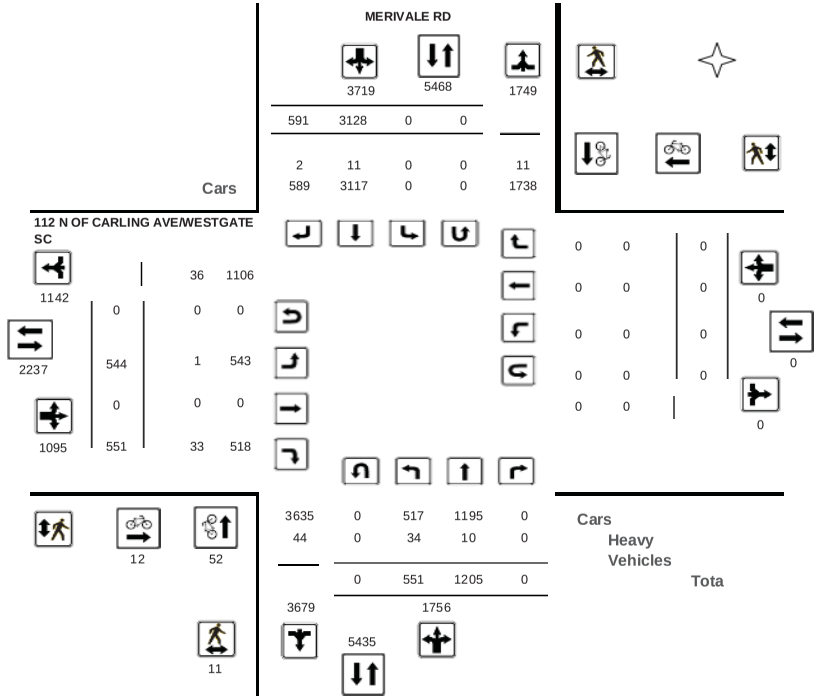
Public Works - Traffic Services

Turning Movement Count - Full Study Diagram

MERIVALE RD @ 112 N OF CARLING AVE/WESTGATE SC

Survey Date: 26-Jul-10 WO#: 27568

Device:



Comments

2015-Jul-06

Page 1 of 1

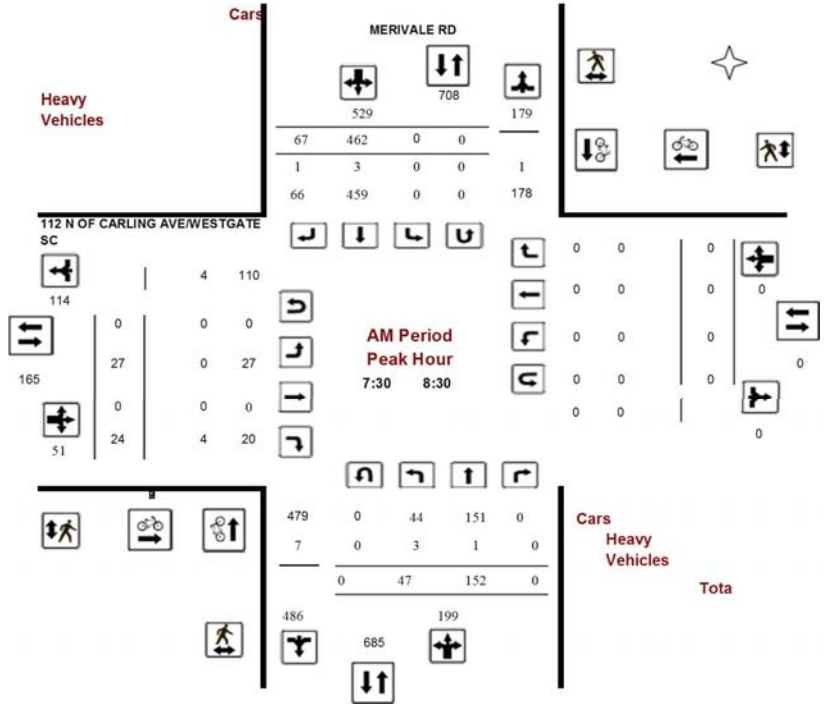
Public Works - Traffic Services

Turning Movement Count - Peak Hour Diagram

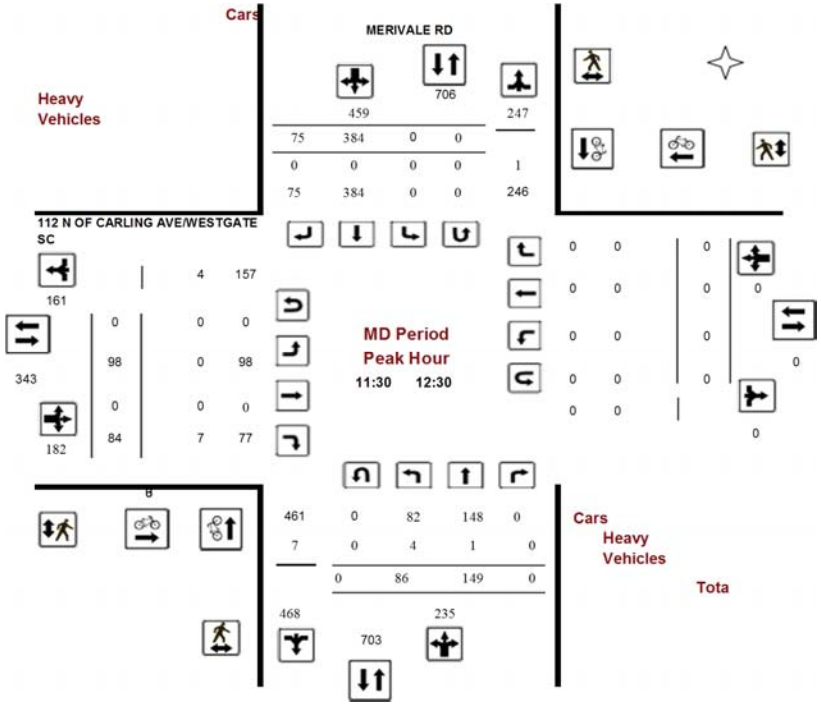
MERIVALE RD @ 112 N OF CARLING AVE/WESTGATE SC

Survey Date: 26-Jul-10 WO No: 27568

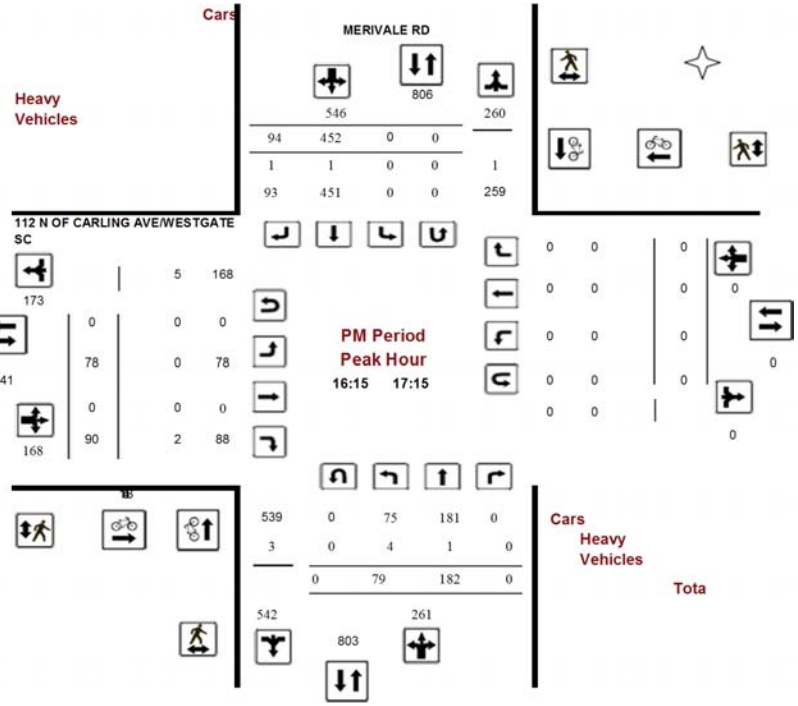
Start Time: 7:00 Device:



Comments



Comments



Comments

Public Works - Traffic Services

Work Order 27568

Turning Movement Count - Full Study Summary Report

MERIVALE RD @ 112 N OF CARLING AVE/WESTGATE SC

Survey Date: 26-Jul-10

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

AADT Factor 1.00

Full Study

		MERIVALE RD									112 N OF CARLING AVE/WESTGATE SC									
		Northbound				Southbound					Eastbound				Westbound					
Period		LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TO	STR TOT	Grand Total
7:00	8:00	41	117	0	**158**	0	473	58	**531**	**689**	16	0	14	**30**	0	0	0	**0**	**30**	**719**
8:00	9:00	68	156	0	**224**	0	420	49	**469**	**693**	40	0	33	**73**	0	0	0	**0**	**73**	**766**
9:00	10:00	73	113	0	**186**	0	334	74	**408**	**594**	54	0	45	**99**	0	0	0	**0**	**99**	**693**
11:30	12:30	86	149	0	**235**	0	384	75	**459**	**694**	98	0	84	**182**	0	0	0	**0**	**182**	**876**
12:30	13:30	81	135	0	**216**	0	294	105	**399**	**615**	93	0	98	**191**	0	0	0	**0**	**191**	**806**
15:00	16:00	77	172	0	**249**	0	401	96	**497**	**746**	72	0	95	**167**	0	0	0	**0**	**167**	**913**
16:00	17:00	70	183	0	**253**	0	452	80	**532**	**785**	95	0	92	**187**	0	0	0	**0**	**187**	**972**
17:00	18:00	55	180	0	**235**	0	370	54	**424**	**659**	76	0	90	**166**	0	0	0	**0**	**166**	**825**
Total		551	1205	0	**1756**	0	3128	591	**3719**	**5475**	544	0	551	**1095**	0	0	0	**0**	**1095**	**6570**
Equ 12Hr		765	1674	0	**2439**	0	4347	821	**5168**	**7607**	756	0	765	**1521**	0	0	0	**0**	**1521**	**9128**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.															**1.39**					
Avg 12Hr		765	1674	0	**2439**	0	4347	821	**5168**	**7607**	756	0	765	**1521**	0	0	0	**0**	**1521**	**9128**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.															**1.00**					
Avg 24Hr		1002	2192	0	**3195**	0	5694	1075	**6770**	**9965**	990	0	1002	**1992**	0	0	0	**0**	**1992**	**11957**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.															**1.31**					

Comments:

Note: U-Turns are included in Totals.

Public Works - Traffic Services

W.O. 27568

Turning Movement Count - 15 Minute Summary Report

MERIVALE RD @ 112 N OF CARLING AVE/WESTGATE SC

Survey Date: 26-Jul-10

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

MERIVALE RD — **112 N OF CARLING AVE/WESTGATE SC**

		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
7:00	7:15	9	18	0	**27**	0	106	7	**113**	**140**	3	0	2	**5**	0	0	0	**0**	**5**	**145**
7:15	7:30	10	29	0	**39**	0	121	11	**132**	**171**	4	0	2	**6**	0	0	0	**0**	**6**	**177**
7:30	7:45	11	31	0	**42**	0	116	20	**136**	**178**	6	0	7	**13**	0	0	0	**0**	**13**	**191**
7:45	8:00	11	39	0	**50**	0	130	20	**150**	**200**	3	0	3	**6**	0	0	0	**0**	**6**	**206**
8:00	8:15	12	35	0	**47**	0	108	13	**121**	**168**	8	0	8	**16**	0	0	0	**0**	**16**	**184**
8:15	8:30	13	47	0	**60**	0	108	14	**122**	**182**	10	0	6	**16**	0	0	0	**0**	**16**	**198**
8:30	8:45	16	39	0	**55**	0	104	11	**115**	**170**	5	0	12	**17**	0	0	0	**0**	**17**	**187**
8:45	9:00	27	35	0	**62**	0	100	11	**111**	**173**	17	0	7	**24**	0	0	0	**0**	**24**	**197**
9:00	9:15	18	27	0	**45**	0	74	14	**88**	**133**	7	0	9	**16**	0	0	0	**0**	**16**	**149**
9:15	9:30	16	36	0	**52**	0	91	19	**110**	**162**	19	0	8	**27**	0	0	0	**0**	**27**	**189**
9:30	9:45	13	24	0	**37**	0	84	22	**106**	**143**	11	0	13	**24**	0	0	0	**0**	**24**	**167**
9:45	10:00	26	26	0	**52**	0	85	19	**104**	**156**	17	0	15	**32**	0	0	0	**0**	**32**	**188**
11:30	11:45	18	41	0	**59**	0	106	21	**127**	**186**	24	0	18	**42**	0	0	0	**0**	**42**	**228**
11:45	12:00	28	45	0	**73**	0	97	19	**116**	**189**	22	0	24	**46**	0	0	0	**0**	**46**	**235**
12:00	12:15	16	29	0	**45**	0	94	19	**113**	**158**	25	0	19	**44**	0	0	0	**0**	**44**	**202**
12:15	12:30	24	34	0	**58**	0	87	16	**103**	**161**	27	0	23	**50**	0	0	0	**0**	**50**	**211**
12:30	12:45	29	32	0	**61**	0	87	34	**121**	**182**	14	0	30	**44**	0	0	0	**0**	**44**	**226**
12:45	13:00	16	34	0	**50**	0	80	13	**93**	**143**	31	0	26	**57**	0	0	0	**0**	**57**	**200**
13:00	13:15	17	37	0	**54**	0	68	27	**95**	**149**	21	0	18	**39**	0	0	0	**0**	**39**	**188**
13:15	13:30	19	32	0	**51**	0	59	31	**90**	**141**	27	0	24	**51**	0	0	0	**0**	**51**	**192**
15:00	15:15	24	40	0	**64**	0	89	16	**105**	**169**	18	0	26	**44**	0	0	0	**0**	**44**	**213**
15:15	15:30	19	41	0	**60**	0	119	35	**154**	**214**	26	0	20	**46**	0	0	0	**0**	**46**	**260**
15:30	15:45	19	42	0	**61**	0	88	28	**116**	**177**	17	0	23	**40**	0	0	0	**0**	**40**	**217**
15:45	16:00	15	49	0	**64**	0	105	17	**122**	**186**	11	0	26	**37**	0	0	0	**0**	**37**	**223**
16:00	16:15	12	44	0	**56**	0	101	5	**106**	**162**	26	0	24	**50**	0	0	0	**0**	**50**	**212**
16:15	16:30	18	50	0	**68**	0	140	27	**167**	**235**	19	0	31	**50**	0	0	0	**0**	**50**	**285**
16:30	16:45	21	52	0	**73**	0	104	23	**127**	**200**	28	0	19	**47**	0	0	0	**0**	**47**	**247**
16:45	17:00	19	37	0	**56**	0	107	25	**132**	**188**	22	0	18	**40**	0	0	0	**0**	**40**	**228**
17:00	17:15	21	43	0	**64**	0	101	19	**120**	**184**	9	0	22	**31**	0	0	0	**0**	**31**	**215**
17:15	17:30	13	32	0	**45**	0	101	11	**112**	**157**	21	0	25	**46**	0	0	0	**0**	**46**	**203**
17:30	17:45	10	53	0	**63**	0	82	15	**97**	**160**	28	0	22	**50**	0	0	0	**0**	**50**	**210**
17:45	18:00	11	52	0	**63**	0	86	9	**95**	**158**	18	0	21	**39**	0	0	0	**0**	**39**	**197**
TOTAL:		551	1205	0	**1756**	0	3128	591	**3719**	**5475**	544	0	551	**1095**	0	0	0	**0**	**1095**	**6570**

Note: U-Turns are included in Totals.

Comment:

Public Works - Traffic Services

W.O. 27568

Turning Movement Count - Heavy Vehicle Report

MERIVALE RD @ 112 N OF CARLING AVE/WESTGATE SC

Survey Date: 26-Jul-10

		MERIVALE RD								112 N OF CARLING AVE/WESTGATE SC									
		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
7:00	8:00	2	1	0	**3**	0	2	0	**2**	**5**	0	0	4	**4**	0	0	0	**0**	**4**	**9**
8:00	9:00	3	2	0	**5**	0	2	1	**3**	**8**	0	0	5	**5**	0	0	0	**0**	**5**	**13**
9:00	10:00	6	1	0	**7**	0	3	0	**3**	**10**	1	0	4	**5**	0	0	0	**0**	**5**	**15**
11:30	12:30	4	1	0	**5**	0	0	0	**0**	**5**	0	0	7	**7**	0	0	0	**0**	**7**	**12**
12:30	13:30	7	0	0	**7**	0	0	0	**0**	**7**	0	0	6	**6**	0	0	0	**0**	**6**	**13**
15:00	16:00	4	1	0	**5**	0	1	0	**1**	**6**	0	0	2	**2**	0	0	0	**0**	**2**	**8**
16:00	17:00	6	2	0	**8**	0	2	0	**2**	**10**	0	0	2	**2**	0	0	0	**0**	**2**	**12**
17:00	18:00	2	2	0	**4**	0	1	1	**2**	**6**	0	0	3	**3**	0	0	0	**0**	**3**	**9**
Total	:	34	10	0	**44**	0	11	2	**13**	**57**	1	0	33	**34**	0	0	0	**0**	**34**	**91**

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

Printed on: 2015-Jul-06

Public Works - Traffic Services

Work Order 27568

Turning Movement Count - Cyclist Volume Report

MERIVALE RD @ 112 N OF CARLING AVE/WESTGATE SC

Count Date: 26-Jul-10 **Start Time:** 7:00

		MERIVALE RD			112 N OF CARLING AVE/WESTGATE SC			
Time Period		Northbound	Southbound	**Street Total**	Eastbound	Westbound	**Street Total**	**Grand Total**
7:00	8:00	8	6	**14**	0	0	**0**	**14**
8:00	9:00	7	13	**20**	1	0	**1**	**21**
9:00	10:00	2	3	**5**	1	0	**1**	**6**
11:30	12:30	6	4	**10**	3	1	**4**	**14**
12:30	13:30	1	7	**8**	3	0	**3**	**11**
15:00	16:00	6	3	**9**	0	1	**1**	**10**
16:00	17:00	13	9	**22**	3	3	**6**	**28**
17:00	18:00	9	9	**18**	1	0	**1**	**19**
Total	.....	52	54	**106**	12	5	**17**	**123**

Comment:

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

2015-Jul-06

Public Works - Traffic Services

Work Order
27568

Turning Movement Count - Pedestrian Volume Report

MERIVALE RD @ 112 N OF CARLING AVE/WESTGATE SC

Count Date: 26-Jul-10 **Start Time:** 7:00

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
7:00	7:15	0	0	**0**	1	0	**1**	**1**
7:15	7:30	0	0	**0**	1	0	**1**	**1**
7:30	7:45	1	0	**1**	0	0	**0**	**1**
7:45	8:00	0	0	**0**	0	0	**0**	**0**
7:00	8:00	1	0	1	2	0	2	3
8:00	8:15	0	0	**0**	0	0	**0**	**0**
8:15	8:30	1	2	**3**	0	0	**0**	**3**
8:30	8:45	0	1	**1**	3	0	**3**	**4**
8:45	9:00	0	0	**0**	0	0	**0**	**0**
8:00	9:00	1	3	4	3	0	3	7
9:00	9:15	0	3	**3**	3	0	**3**	**6**
9:15	9:30	1	1	**2**	0	0	**0**	**2**
9:30	9:45	0	2	**2**	0	0	**0**	**2**
9:45	10:00	0	0	**0**	2	0	**2**	**2**
9:00	10:00	1	6	7	5	0	5	12
11:30	11:45	0	1	**1**	0	0	**0**	**1**
11:45	12:00	0	0	**0**	0	0	**0**	**0**
12:00	12:15	0	2	**2**	0	0	**0**	**2**
12:15	12:30	0	6	**6**	0	0	**0**	**6**
11:30	12:30	0	9	9	0	0	0	9
12:30	12:45	0	3	**3**	1	0	**1**	**4**
12:45	13:00	0	5	**5**	0	0	**0**	**5**
13:00	13:15	0	3	**3**	2	0	**2**	**5**
13:15	13:30	0	2	**2**	0	0	**0**	**2**
12:30	13:30	0	13	13	3	0	3	16
15:00	15:15	0	2	**2**	1	0	**1**	**3**
15:15	15:30	1	3	**4**	1	0	**1**	**5**
15:30	15:45	1	1	**2**	1	0	**1**	**3**
15:45	16:00	0	1	**1**	0	0	**0**	**1**
15:00	16:00	2	7	9	3	0	3	12
16:00	16:15	2	2	**4**	1	0	**1**	**5**
16:15	16:30	0	3	**3**	0	2	**2**	**5**
16:30	16:45	0	2	**2**	0	0	**0**	**2**
16:45	17:00	3	0	**3**	0	0	**0**	**3**
16:00	17:00	5	7	12	1	2	3	15
17:00	17:15	1	0	**1**	0	0	**0**	**1**
17:15	17:30	0	2	**2**	0	0	**0**	**2**
17:30	17:45	0	0	**0**	1	0	**1**	**1**
17:45	18:00	0	0	**0**	0	0	**0**	**0**
17:00	18:00	1	2	3	1	0	1	4
Total	.....	11	47	58	18	2	20	78

Comment:

Appendix C

City of Ottawa Collision Data

Total Area

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	21	23	19	15	0	2	0	2	82	80%
Non-fatal injury	7	9	1	2	0	1	0	0	20	19%
Non reportable	1	0	0	0	0	0	0	0	1	1%
Total	**29**	**32**	**20**	**17**	**0**	**3**	**0**	**2**	**103**	100%
	#2 or 28%	#1 or 31%	#3 or 19%	#4 or 17%	#7 or 0%	#5 or 3%	#7 or 0%	#6 or 2%		

CARLING AVE / MERIVALE RD

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	67	33,820	1825	**1.09**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	14	15	12	12	0	0	0	0	53	79%
Non-fatal injury	4	7	1	1	0	0	0	0	13	19%
Non reportable	1	0	0	0	0	0	0	0	1	2%
Total	**19**	**22**	**13**	**13**	**0**	**0**	**0**	**0**	**67**	100%
	28%	33%	19%	19%	0%	0%	0%	0%		

CARLING AVE / WESTGATE SC W

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	4	29,220	1825	**0.08**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	1	2	1	0	0	0	0	0	4	100%
Non-fatal injury	0	0	0	0	0	0	0	0	0	0%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**1**	**2**	**1**	**0**	**0**	**0**	**0**	**0**	**4**	100%
	25%	50%	25%	0%	0%	0%	0%	0%		

CARLING AVE / WESTGATE SC E

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	16	28,650	1825	**0.31**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	2	5	1	3	0	1	0	1	13	81%
Non-fatal injury	1	1	0	0	0	1	0	0	3	19%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**3**	**6**	**1**	**3**	**0**	**2**	**0**	**1**	**16**	100%
	19%	38%	6%	19%	0%	13%	0%	6%		

MERIVALE RD / WESTGATE SC

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	2	12,000	1825	**0.09**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	1	0	0	0	0	0	0	0	1	50%
Non-fatal injury	0	1	0	0	0	0	0	0	1	50%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	100%
	50%	50%	0%	0%	0%	0%	0%	0%		

CARLING AVE, MEATH ST to ARCHIBALD ST

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	1	12,210	1825	**0.04**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	0	0	0	0	0	0	0	1	1	100%
Non-fatal injury	0	0	0	0	0	0	0	0	0	0%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	100%
	0%	0%	0%	0%	0%	0%	0%	100%		

CARLING AVE, ARCHIBALD ST to WESTGATE SC W

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	1	12,210	1825	**0.04**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	0	0	0	0	0	0	0	0	0	0%
Non-fatal injury	1	0	0	0	0	0	0	0	1	100%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	100%
	100%	0%	0%	0%	0%	0%	0%	0%		

CARLING AVE, WESTGATE SC E to WESTGATE SC W

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	2	26,410	1825	**0.04**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	0	0	0	0	0	0	0	0	0	0%
Non-fatal injury	1	0	0	1	0	0	0	0	2	100%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	100%
	50%	0%	0%	50%	0%	0%	0%	0%		

CARLING AVE, HWY417 IC124 RAMP67 to HWY417 IC124 RAMP65

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	7	16,630	1825	**0.23**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	1	1	5	0	0	0	0	0	7	100%
Non-fatal injury	0	0	0	0	0	0	0	0	0	0%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**1**	**1**	**5**	**0**	**0**	**0**	**0**	**0**	**7**	100%
	14%	14%	71%	0%	0%	0%	0%	0%		

MERIVALE RD, ISLAND PARK DR to WESTGATE SC

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	2	9,960	1825	**0.11**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	1	0	0	0	0	1	0	0	2	100%
Non-fatal injury	0	0	0	0	0	0	0	0	0	0%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	100%
	50%	0%	0%	0%	0%	50%	0%	0%		

CARLING AVE, HWY417 IC124 RAMP65 to WESTGATE SC W

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	1	28,790	1825	**0.02**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	1	0	0	0	0	0	0	0	1	100%
Non-fatal injury	0	0	0	0	0	0	0	0	0	0%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	100%
	100%	0%	0%	0%	0%	0%	0%	0%		

City Operations - Transportation Services

Collision Details Report - Public Version

From: January 1, 2012 **To:** December 31, 2016

Location: CARLING AVE @ 73 E OF ARCHIBALD ST/WESTGATE SC

Traffic Control: Traffic signal **Total Collisions:** 4

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Oct-20, Thu,20:17	Rain	Turning movement	P.D. only	Wet	West	Making "U" turn	Passenger van	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Nov-27, Sun,10:24	Clear	Turning movement	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2013-Jan-07, Mon,13:05	Clear	Rear end	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2012-Jun-19, Tue,16:52	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Pick-up truck	Other motor vehicle	
					West	Going ahead	Pick-up truck	Other motor vehicle	

Location: CARLING AVE @ MERIVALE RD

Traffic Control: Traffic signal **Total Collisions:** 67

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Jan-15, Wed,07:31	Clear	Turning movement	Non-fatal injury	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	

2014-Feb-14, Fri,10:23	Clear	Turning movement	P.D. only	Loose snow	West	Turning left	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Passenger van	Other motor vehicle
2014-Feb-13, Thu,09:15	Clear	Rear end	P.D. only	Dry	East	Going ahead	Passenger van	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2014-Apr-06, Sun,16:04	Clear	Angle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Feb-28, Fri,16:57	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2014-May-14, Wed,16:15	Clear	Rear end	P.D. only	Dry	South	Turning right	Pick-up truck	Other motor vehicle
					South	Turning right	Automobile, station wagon	Other motor vehicle
2014-Aug-05, Tue,15:39	Clear	Angle	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Passenger van	Other motor vehicle
2014-Oct-03, Fri,13:08	Clear	Rear end	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Turning right	Truck - closed	Other motor vehicle

2014-Nov-20, Thu,17:31	Clear	Rear end	P.D. only	Wet	South	Going ahead	Pick-up truck	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2014-Oct-08, Wed,10:51	Clear	Turning movement	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle
					West	Turning left	Automobile, station wagon	Other motor vehicle
2014-Aug-14, Thu,15:00	Rain	Turning movement	P.D. only	Wet	West	Turning right	Automobile, station wagon	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle
2015-Apr-24, Fri,22:09	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Pick-up truck	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2015-Feb-20, Fri,13:24	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle
2015-Jan-05, Mon,14:09	Clear	Rear end	P.D. only	Dry	East	Unknown	Unknown	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2015-Mar-02, Mon,17:53	Clear	Turning movement	Non-fatal injury	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Jul-19, Sun,17:10	Clear	Turning movement	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle

					West	Turning left	Automobile, station wagon	Other motor vehicle
2015-Feb-03, Tue,16:12	Snow	Angle	P.D. only	Loose snow	East	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Turning left	Automobile, station wagon	Other motor vehicle
2015-Apr-07, Tue,13:30	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Turning left	Passenger van	Other motor vehicle
2015-Apr-04, Sat,23:40	Clear	Angle	P.D. only	Dry	North	Going ahead	Police vehicle	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2015-May-27, Wed,16:41	Clear	Angle	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Feb-17, Tue,13:36	Clear	Sideswipe	Non-fatal injury	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Passenger van	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2016-Feb-16, Tue,07:45	Snow	Rear end	P.D. only	Loose snow	North	Turning right	Automobile, station wagon	Other motor vehicle
					North	Turning right	Pick-up truck	Other motor vehicle
2016-Oct-06, Thu,11:45	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Truck and trailer	Other motor vehicle

					East	Stopped	Automobile, station wagon	Other motor vehicle
2016-Sep-23, Fri,08:04	Clear	Angle	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Truck - closed	Other motor vehicle
2015-May-26, Tue,15:00	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Jan-04, Mon,17:40	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2015-Dec-09, Wed,20:15	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Jan-17, Sun,18:01	Clear	Turning movement	Non-fatal injury	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Aug-23, Tue,13:33	Clear	Turning movement	P.D. only	Dry	West	Turning left	Pick-up truck	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Sep-08, Thu,23:07	Clear	Rear end	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle

2016-Sep-09, Fri,13:35	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Turning right	Automobile, station wagon	Other motor vehicle
2016-Jun-03, Fri,23:03	Clear	Angle	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Dec-08, Thu,09:41	Clear	Turning movement	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Nov-30, Wed,19:00	Rain	Sideswipe	P.D. only	Wet	East	Changing lanes	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Dec-06, Tue,13:40	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Dec-06, Tue,20:39	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Pick-up truck	Other motor vehicle
2013-Jan-02, Wed,17:06	Snow	Turning movement	Non-fatal injury	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Turning left	Passenger van	Other motor vehicle

2013-Mar-04, Mon,09:14	Clear	Turning movement	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Making "U" turn	Ambulance	Other motor vehicle
2013-Jun-22, Sat,15:58	Rain	Rear end	Non-fatal injury	Wet	North	Turning right	Automobile, station wagon	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
2013-Jun-24, Mon,13:53	Clear	Turning movement	Non-fatal injury	Dry	West	Turning left	Bicycle	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Cyclist
2013-Jul-09, Tue,06:44	Clear	Angle	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle
2013-Jul-10, Wed,17:15	Clear	Rear end	Non-reportable	Dry	North	Going ahead	Passenger van	Other motor vehicle
					North	Stopped	Pick-up truck	Other motor vehicle
2013-Aug-27, Tue,16:30	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2013-Oct-09, Wed,08:06	Clear	Sideswipe	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle
					East	Stopped	Municipal transit bus	Other motor vehicle
2013-Oct-09, Wed,17:28	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle

					East	Stopped	Pick-up truck	Other motor vehicle
2013-Dec-16, Mon,15:00	Clear	Sideswipe	P.D. only	Loose snow	North	Turning left	Unknown	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2013-Dec-12, Thu,13:10	Clear	Turning movement	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle
					West	Turning left	Automobile, station wagon	Other motor vehicle
2013-Dec-24, Tue,14:30	Clear	Turning movement	P.D. only	Slush	East	Turning left	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2013-Dec-19, Thu,13:30	Clear	Turning movement	P.D. only	Slush	East	Making "U" turn	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2012-Jan-05, Thu,13:44	Clear	Angle	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2012-Jan-06, Fri,11:33	Clear	Sideswipe	P.D. only	Wet	West	Turning left	Municipal transit bus	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2012-Feb-09, Thu,14:00	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Pick-up truck	Other motor vehicle
					South	Slowing or stopping	Pick-up truck	Other motor vehicle

2012-Feb-29, Wed,11:30	Clear	Angle	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Turning left	Passenger van	Other motor vehicle
2012-Jan-27, Fri,17:20	Freezing Rain	Rear end	P.D. only	Slush	West	Slowing or stopping	Pick-up truck	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2012-Aug-02, Thu,16:45	Clear	Turning movement	P.D. only	Dry	East	Turning left	Pick-up truck	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2012-Aug-22, Wed,07:15	Clear	Turning movement	P.D. only	Dry	West	Turning left	Pick-up truck	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2012-Aug-26, Sun,13:15	Clear	Turning movement	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2012-Aug-17, Fri,08:45	Clear	Sideswipe	P.D. only	Wet	West	Going ahead	Pick-up truck	Other motor vehicle
					West	Going ahead	Municipal transit bus	Other motor vehicle
2012-Jul-11, Wed,10:25	Clear	Rear end	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle
					North	Slowing or stopping	Pick-up truck	Other motor vehicle
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle

					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2012-Jul-10, Tue,12:30	Clear	Angle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle
2012-Sep-08, Sat,21:35	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2012-Aug-10, Fri,16:19	Clear	Rear end	Non-fatal injury	Dry	West	Going ahead	Pick-up truck	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2012-Oct-30, Tue,19:05	Clear	Turning movement	Non-fatal injury	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2012-Nov-21, Wed,17:45	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2012-Nov-30, Fri,17:47	Clear	Turning movement	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
2012-Dec-21, Fri,23:32	Snow	Angle	P.D. only	Slush	West	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle

2012-Dec-30, Sun,15:54	Clear	Angle	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: CARLING AVE @ WESTGATE SC E

Traffic Control: Traffic signal

Total Collisions: 16

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Jun-02, Mon,09:21	Clear	Rear end	Non-fatal injury	Dry	East	Turning left	Pick-up truck	Other motor vehicle	
					East	Turning left	Automobile, station wagon	Other motor vehicle	
					East	Turning left	Pick-up truck	Other motor vehicle	
2015-Feb-04, Wed,15:15	Snow	Angle	P.D. only	Loose snow	West	Going ahead	Automobile, station wagon	Skidding/sliding	
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2015-May-12, Tue,10:09	Clear	Angle	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Municipal transit bus	Other motor vehicle	
2015-Sep-24, Thu,16:40	Clear	Angle	P.D. only	Dry	East	Going ahead	Passenger van	Other motor vehicle	
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2015-May-20, Wed,10:08	Clear	Turning movement	P.D. only	Dry	East	Turning left	Passenger van	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

2015-Jan-03, Sat,19:34	Snow	Sideswipe	P.D. only	Packed snow	South	Turning right	Municipal transit bus	Other motor vehicle
					South	Turning right	Pick-up truck	Other motor vehicle
2016-Jul-22, Fri,12:53	Clear	SMV other	Non-fatal injury	Dry	West	Going ahead	Motorcycle	Skidding/sliding
2016-Oct-31, Mon,12:53	Clear	Other	P.D. only	Dry	East	Reversing	Automobile, station wagon	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2016-Sep-23, Fri,09:15	Clear	Turning movement	P.D. only	Wet	East	Turning left	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
2016-Jul-05, Tue,12:34	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2013-Jan-11, Fri,12:12	Rain	Turning movement	P.D. only	Wet	East	Turning left	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2013-May-22, Wed,21:37	Clear	Turning movement	Non-fatal injury	Dry	East	Turning left	Automobile, station wagon	Cyclist
					West	Slowing or stopping	Bicycle	Other motor vehicle
2013-Aug-04, Sun,18:37	Clear	SMV other	P.D. only	Wet	West	Turning right	Truck and trailer	Pole (utility, power)

2013-Jun-25, Tue,16:30	Clear	Rear end	P.D. only	Wet	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Pick-up truck	Other motor vehicle	
2013-Aug-20, Tue,18:02	Clear	Turning movement	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2012-Aug-28, Tue,08:16	Clear	Turning movement	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: CARLING AVE btwn ARCHIBALD ST & 73 E OF ARCHIBALD ST/WESTGATE SC W

Traffic Control: No control

Total Collisions: 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Feb-16, Tue,19:01	Snow	Rear end	Non-fatal injury	Loose snow	East	Going ahead	Pick-up truck	Other motor vehicle	
					East	Turning right	Automobile, station wagon	Other motor vehicle	

Location: CARLING AVE EB btwn MEATH ST & ARCHIBALD ST

Traffic Control: No control

Total Collisions: 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2012-Jan-07, Sat,19:59	Clear	Other	P.D. only	Dry	East	Going ahead	Pick-up truck	Other	
					East	Going ahead	Pick-up truck	Other motor vehicle	

Location: CARLING AVE EB btwn WESTGATE SC E & 73 E OF ARCHIBALD ST/WESTGATE SC W

Traffic Control: No control

Total Collisions: 2

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped

2014-Oct-23, Thu,11:46	Clear	Rear end	Non-fatal injury	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2012-Aug-06, Mon,08:30	Clear	Angle	Non-fatal injury	Dry	West	Going ahead	Bicycle	Other motor vehicle	
					North	Turning right	Automobile, station wagon	Cyclist	

Location: CARLING AVE WB btwn HWY417 IC124 RAMP65 & 73 E OF ARCHIBALD ST/WESTGAT

Traffic Control: No control

Total Collisions: 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2012-Nov-07, Wed,19:18	Clear	Rear end	P.D. only	Dry	West	Merging	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Pick-up truck	Other motor vehicle	

Location: CARLING AVE WB btwn HWY417 IC124 RAMP67 & HWY417 IC124 RAMP65

Traffic Control: No control

Total Collisions: 7

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Apr-28, Mon,12:43	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Pick-up truck	Other motor vehicle	
2014-Sep-16, Tue,10:00	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Unknown	Other motor vehicle	
					West	Stopped	Passenger van	Other motor vehicle	
2016-Feb-01, Mon,08:50	Clear	Sideswipe	P.D. only	Wet	East	Changing lanes	Truck - closed	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	

2013-Apr-17, Wed,17:18	Clear	Sideswipe	P.D. only	Dry	West	Merging	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Municipal transit bus	Other motor vehicle	
2013-Jul-19, Fri,15:15	Rain	Sideswipe	P.D. only	Wet	West	Changing lanes	Automobile, station wagon	Other motor vehicle	
					West	Changing lanes	Automobile, station wagon	Other motor vehicle	
2012-May-23, Wed,18:15	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2012-Sep-11, Tue,17:06	Clear	Sideswipe	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Truck and trailer	Other motor vehicle	

Location: MERIVALE RD @ 112 N OF CARLING AVE/WESTGATE SC

Traffic Control: Traffic signal **Total Collisions:** 2

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Sep-04, Fri,15:11	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Pick-up truck	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2012-Aug-10, Fri,17:58	Clear	Turning movement	Non-fatal injury	Dry	West	Making "U" turn	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: MERIVALE RD btwn ISLAND PARK DR & WESTGATE SC

Traffic Control: No control

Total Collisions: 2

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Nov-20, Sun,21:25	Snow	Rear end	P.D. only	Loose sand or gravel	South	Slowing or stopping	Pick-up truck	Other motor vehicle	
					South	Slowing or stopping	Pick-up truck	Other motor vehicle	
2013-Jan-22, Tue,19:00	Clear	SMV other	P.D. only	Ice	South	Going ahead	Automobile, station wagon	Skidding/sliding	

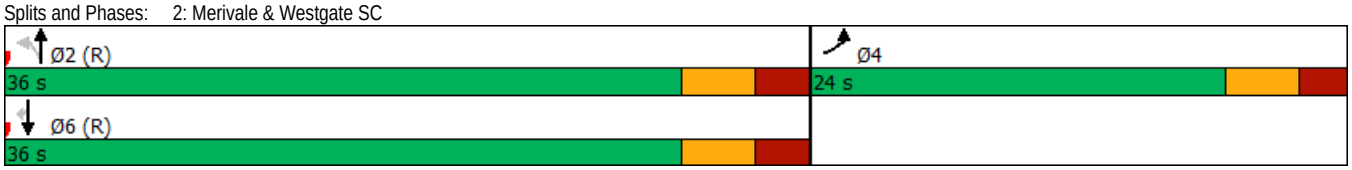
Appendix D

SYNCHRO 2020 Background Traffic Analysis

Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Configurations					
Traffic Volume (vph)	27	47	160	479	67
Future Volume (vph)	27	47	160	479	67
Lane Group Flow (vph)	53	49	168	504	71
Turn Type	Prot	Perm	NA	NA	Perm
Protected Phases	4		2	6	
Permitted Phases		2			6
Detector Phase	4	2	2	6	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	23.5	23.8	23.8	35.8	35.8
Total Split (s)	24.0	36.0	36.0	36.0	36.0
Total Split (%)	40.0%	60.0%	60.0%	60.0%	60.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.8	5.8	5.8	5.8
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	10.0	47.2	47.2	47.2	47.2
Actuated g/C Ratio	0.17	0.79	0.79	0.79	0.79
v/c Ratio	0.18	0.07	0.12	0.36	0.06
Control Delay	15.7	1.5	1.2	4.9	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	15.7	1.5	1.2	4.9	1.4
LOS	B	A	A	A	A
Approach Delay	15.7		1.3	4.5	
Approach LOS	B		A	A	
Queue Length 50th (m)	2.7	1.0	3.3	22.7	0.0
Queue Length 95th (m)	10.5	2.2	5.8	38.4	3.1
Internal Link Dist (m)	40.8		88.4	58.0	
Turn Bay Length (m)		40.0			40.0
Base Capacity (vph)	518	657	1404	1404	1209
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.10	0.07	0.12	0.36	0.06

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 60	
Offset: 8 (13%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.36	
Intersection Signal Delay: 4.4	Intersection LOS: A
Intersection Capacity Utilization 57.5%	ICU Level of Service B
Analysis Period (min) 15	

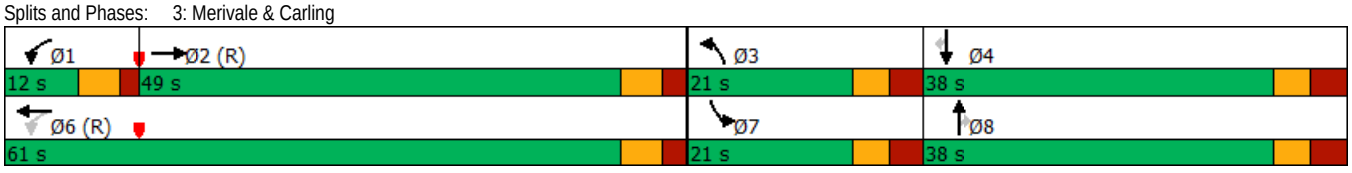
Splits and Phases: 2: Merivale & Westgate SC



Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	801	149	623	224	197	237	26	223	208
Future Volume (vph)	801	149	623	224	197	237	26	223	208
Lane Group Flow (vph)	918	157	690	236	207	249	27	235	219
Turn Type	NA	pm+pt	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	2	1	6	3	8		7	4	
Permitted Phases		6				8			4
Detector Phase	2	1	6	3	8	8	7	4	4
Switch Phase									
Minimum Initial (s)	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	29.0	10.4	29.0	11.3	37.7	37.7	11.3	37.7	37.7
Total Split (s)	49.0	12.0	61.0	21.0	38.0	38.0	21.0	38.0	38.0
Total Split (%)	40.8%	10.0%	50.8%	17.5%	31.7%	31.7%	17.5%	31.7%	31.7%
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	1.7	2.3	3.0	3.4	3.4	3.0	3.4	3.4
Lost Time Adjust (s)	-2.0	-1.4	-2.0	-2.3	-2.7	-2.7	-2.3	-2.7	-2.7
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lead		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	None	C-Max	None	None	None	None	None	None
Act Effct Green (s)	51.7	66.5	66.5	17.0	36.6	36.6	9.8	24.5	24.5
Actuated g/C Ratio	0.43	0.55	0.55	0.14	0.30	0.30	0.08	0.20	0.20
v/c Ratio	0.44	0.49	0.26	0.98	0.38	0.40	0.20	0.65	0.53
Control Delay	22.1	20.5	14.8	105.8	35.6	5.8	55.2	47.2	16.6
Queue Delay	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2
Total Delay	22.4	20.5	14.8	105.8	35.6	5.8	55.2	47.5	16.8
LOS	C	C	B	F	D	A	E	D	B
Approach Delay	22.4		15.9		48.8			33.9	
Approach LOS	C		B		D			C	
Queue Length 50th (m)	55.3	17.1	28.7	56.1	40.9	0.0	6.4	43.0	14.7
Queue Length 95th (m)	73.5	34.0	43.6	#106.3	58.1	17.7	16.1	61.5	26.6
Internal Link Dist (m)	89.4		139.3		131.8			88.4	
Turn Bay Length (m)		90.0		40.0			40.0		70.0
Base Capacity (vph)	2064	321	2673	240	553	624	240	505	513
Starvation Cap Reductn	490	0	0	0	0	0	0	41	42
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.49	0.26	0.98	0.37	0.40	0.11	0.51	0.46

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 54 (45%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.98	
Intersection Signal Delay: 28.6	Intersection LOS: C
Intersection Capacity Utilization 75.0%	ICU Level of Service D
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 3: Merivale & Carling



Lane Group	EBU	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	99	100	1210	7	819	12	2	24	1	16
Future Volume (vph)	99	100	1210	7	819	12	2	24	1	16
Lane Group Flow (vph)	0	209	1289	7	922	0	29	0	26	17
Turn Type	Perm	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases			2		6		8		4	
Permitted Phases	2	2		6		8		4		4
Detector Phase	2	2	2	6	6	8	8	4	4	4
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	23.6	23.6	23.6	23.6	23.6	37.0	37.0	37.0	37.0	37.0
Total Split (s)	83.0	83.0	83.0	83.0	83.0	37.0	37.0	37.0	37.0	37.0
Total Split (%)	69.2%	69.2%	69.2%	69.2%	69.2%	30.8%	30.8%	30.8%	30.8%	30.8%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.9	1.9	1.9	1.9	1.9	4.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)		-1.6	-1.6	-1.6	-1.6		-3.0		-3.0	-3.0
Total Lost Time (s)		4.0	4.0	4.0	4.0		4.0		4.0	4.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)		103.4	103.4	103.4	103.4		17.0		17.0	17.0
Actuated g/C Ratio		0.86	0.86	0.86	0.86		0.14		0.14	0.14
v/c Ratio		0.47	0.31	0.02	0.22		0.14		0.14	0.07
Control Delay		9.5	3.2	5.4	3.4		26.8		43.6	10.4
Queue Delay		0.0	0.1	0.0	0.1		0.0		0.0	0.0
Total Delay		9.5	3.2	5.4	3.5		26.8		43.6	10.4
LOS		A	A	A	A		C		D	B
Approach Delay			4.1		3.5		26.8		30.5	
Approach LOS			A		A		C		C	
Queue Length 50th (m)		9.4	20.3	0.3	17.2		3.2		5.7	0.0
Queue Length 95th (m)		55.0	55.9	m1.7	m33.8		10.0		11.7	4.4
Internal Link Dist (m)			112.0		89.4		10.8		48.4	
Turn Bay Length (m)		80.0		36.0						
Base Capacity (vph)		447	4187	300	4137		400		350	424
Starvation Cap Reductn		0	1140	0	1572		0		0	0
Spillback Cap Reductn		0	0	0	0		0		0	0
Storage Cap Reductn		0	0	0	0		0		0	0
Reduced v/c Ratio		0.47	0.42	0.02	0.36		0.07		0.07	0.04

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 26 (22%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.47	
Intersection Signal Delay: 4.6	Intersection LOS: A
Intersection Capacity Utilization 71.8%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 4: Carling & Westgate SC E

Lane Group	EBT	WBT	SBL
Lane Configurations			
Traffic Volume (vph)	1019	1085	13
Future Volume (vph)	1019	1085	13
Lane Group Flow (vph)	1073	1156	34
Turn Type	NA	NA	Prot
Protected Phases	2	6	4
Permitted Phases			
Detector Phase	2	6	4
Switch Phase			
Minimum Initial (s)	10.0	10.0	10.0
Minimum Split (s)	24.0	48.3	37.1
Total Split (s)	83.0	83.0	37.0
Total Split (%)	69.2%	69.2%	30.8%
Yellow Time (s)	3.7	3.7	3.0
All-Red Time (s)	1.6	1.6	3.1
Lost Time Adjust (s)	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.3	6.1
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	C-Max	C-Max	None
Act Effct Green (s)	107.2	107.2	10.0
Actuated g/C Ratio	0.89	0.89	0.08
v/c Ratio	0.25	0.27	0.22
Control Delay	1.8	0.7	32.6
Queue Delay	0.0	0.1	0.0
Total Delay	1.8	0.8	32.6
LOS	A	A	C
Approach Delay	1.8	0.8	32.6
Approach LOS	A	A	C
Queue Length 50th (m)	16.4	3.1	3.1
Queue Length 95th (m)	19.6	4.2	13.2
Internal Link Dist (m)	32.6	112.0	92.7
Turn Bay Length (m)			
Base Capacity (vph)	4350	4341	429
Starvation Cap Reductn	0	1256	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.25	0.37	0.08

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 38 (32%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.27	
Intersection Signal Delay: 1.7	Intersection LOS: A
Intersection Capacity Utilization 40.3%	ICU Level of Service A
Analysis Period (min) 15	

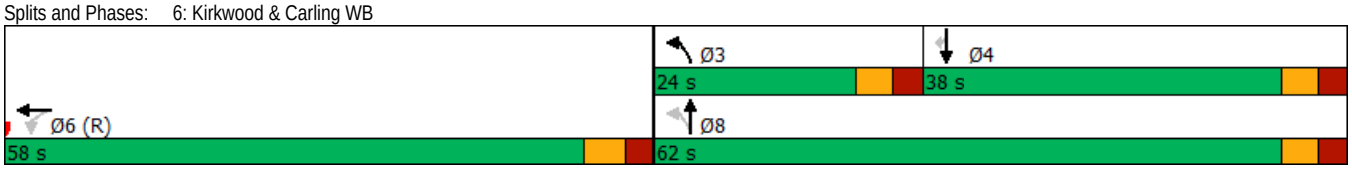
Splits and Phases: 5: Carling & Westgate SC W

Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	203	1561	280	319	401	360
Future Volume (vph)	203	1561	280	319	401	360
Lane Group Flow (vph)	214	1907	295	336	422	379
Turn Type	Perm	NA	pm+pt	NA	NA	Perm
Protected Phases		6	3	8	4	
Permitted Phases	6		8			4
Detector Phase	6	6	3	8	4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	35.3	35.3	11.0	29.0	29.0	29.0
Total Split (s)	58.0	58.0	24.0	62.0	38.0	38.0
Total Split (%)	48.3%	48.3%	20.0%	51.7%	31.7%	31.7%
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	2.6	2.6	2.7	2.7	2.7	2.7
Lost Time Adjust (s)	-2.3	-2.3	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	C-Max	C-Max	None	Ped	Ped	Ped
Act Effct Green (s)	57.4	57.4	54.6	54.6	31.5	31.5
Actuated g/C Ratio	0.48	0.48	0.46	0.46	0.26	0.26
v/c Ratio	0.14	0.84	0.67	0.41	0.47	0.85
Control Delay	18.7	31.9	21.3	15.5	38.8	51.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.7	31.9	21.3	15.5	38.8	51.0
LOS	B	C	C	B	D	D
Approach Delay		30.5		18.2	44.6	
Approach LOS		C		B	D	
Queue Length 50th (m)	14.9	146.0	49.5	57.1	42.8	65.7
Queue Length 95th (m)	22.4	168.3	m70.8	m79.8	57.8	#113.6
Internal Link Dist (m)		110.3		152.2	73.8	
Turn Bay Length (m)	40.0					22.0
Base Capacity (vph)	1564	2270	449	862	960	472
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	0.14	0.84	0.66	0.39	0.44	0.80

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 66 (55%), Referenced to phase 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 31.5	Intersection LOS: C
Intersection Capacity Utilization 97.8%	ICU Level of Service F
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Kirkwood & Carling WB



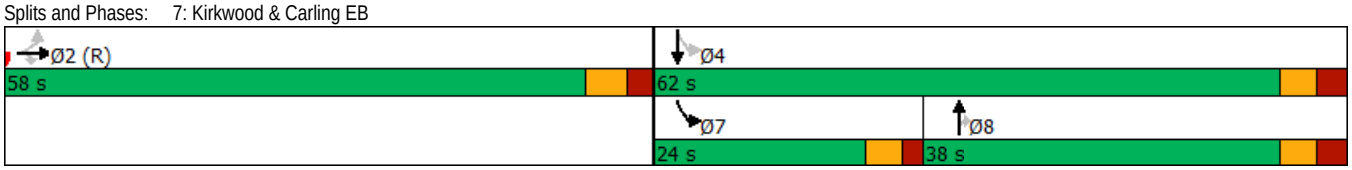
Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	187	2036	422	384	398	473	222
Future Volume (vph)	187	2036	422	384	398	473	222
Lane Group Flow (vph)	177	2163	444	404	419	498	234
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		2		8		7	4
Permitted Phases	2		2		8	4	
Detector Phase	2	2	2	8	8	7	4
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	29.2	29.2	29.2	26.1	26.1	10.1	26.1
Total Split (s)	58.0	58.0	58.0	38.0	38.0	24.0	62.0
Total Split (%)	48.3%	48.3%	48.3%	31.7%	31.7%	20.0%	51.7%
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.5	2.5	2.8	2.8	1.8	2.8
Lost Time Adjust (s)	-2.2	-2.2	-2.2	-2.1	-2.1	-1.1	-2.1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	C-Max	C-Max	C-Max	Min	Min	Min	Min
Act Effct Green (s)	54.0	54.0	54.0	34.0	34.0	58.0	58.0
Actuated g/C Ratio	0.45	0.45	0.45	0.28	0.28	0.48	0.48
v/c Ratio	0.27	1.04	0.54	0.42	0.98	1.03	0.27
Control Delay	22.1	65.3	9.1	36.6	81.2	81.1	21.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.1	65.3	9.1	36.6	81.2	81.1	21.6
LOS	C	E	A	D	F	F	C
Approach Delay		53.6		59.3			62.1
Approach LOS		D		E			E
Queue Length 50th (m)	29.6	~214.1	17.5	40.7	97.8	~116.1	38.8
Queue Length 95th (m)	48.2	#244.6	46.7	55.4	#160.8	#190.5	71.4
Internal Link Dist (m)		161.6		158.6			152.2
Turn Bay Length (m)	40.0				90.0		
Base Capacity (vph)	655	2071	820	960	429	482	862
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	1.04	0.54	0.42	0.98	1.03	0.27

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 15 (13%), Referenced to phase 2:EBTL, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.04	
Intersection Signal Delay: 56.1	Intersection LOS: E
Intersection Capacity Utilization 97.8%	ICU Level of Service F
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 7: Kirkwood & Carling EB



Lane Group		
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Lane Group Flow (vph)		
Sign Control		

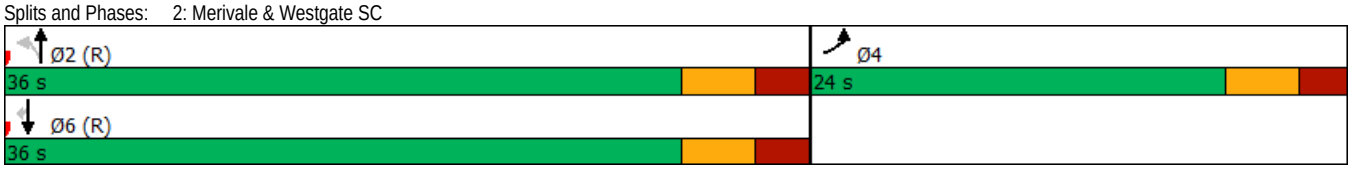
Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 0.0%		ICU Level of Service A
Analysis Period (min) 15		

Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Configurations					
Traffic Volume (vph)	78	79	192	470	94
Future Volume (vph)	78	79	192	470	94
Lane Group Flow (vph)	177	83	202	495	99
Turn Type	Prot	Perm	NA	NA	Perm
Protected Phases	4		2	6	
Permitted Phases		2			6
Detector Phase	4	2	2	6	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.0	24.0	24.0	35.8	35.8
Total Split (s)	24.0	36.0	36.0	36.0	36.0
Total Split (%)	40.0%	60.0%	60.0%	60.0%	60.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.8	5.8	5.8	5.8
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	10.8	42.1	42.1	42.1	42.1
Actuated g/C Ratio	0.18	0.70	0.70	0.70	0.70
v/c Ratio	0.48	0.14	0.16	0.40	0.09
Control Delay	15.6	1.8	1.5	6.7	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	15.6	1.8	1.5	6.7	1.6
LOS	B	A	A	A	A
Approach Delay	15.6		1.6	5.8	
Approach LOS	B		A	A	
Queue Length 50th (m)	8.0	1.6	3.9	22.1	0.0
Queue Length 95th (m)	21.5	m2.9	5.7	46.0	4.5
Internal Link Dist (m)	28.7		87.9	55.1	
Turn Bay Length (m)		40.0			40.0
Base Capacity (vph)	564	576	1252	1252	1094
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	8	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.31	0.14	0.16	0.40	0.09

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 60	
Offset: 27 (45%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.48	
Intersection Signal Delay: 6.3	Intersection LOS: A
Intersection Capacity Utilization 59.1%	ICU Level of Service B
Analysis Period (min) 15	

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

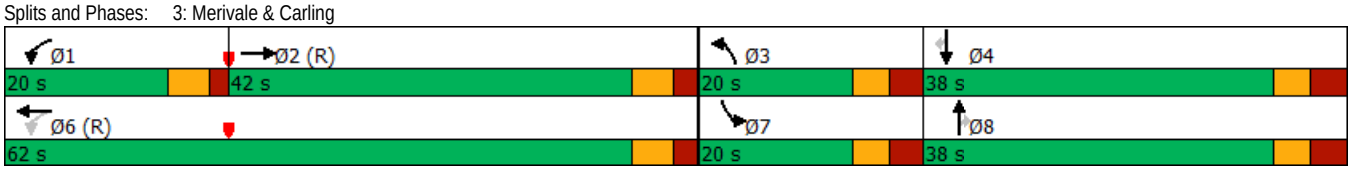
Splits and Phases: 2: Merivale & Westgate SC



Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	860	349	1434	176	204	185	51	276	188
Future Volume (vph)	860	349	1434	176	204	185	51	276	188
Lane Group Flow (vph)	1025	367	1551	185	215	195	54	291	198
Turn Type	NA	pm+pt	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	2	1	6	3	8		7	4	
Permitted Phases		6				8			4
Detector Phase	2	1	6	3	8	8	7	4	4
Switch Phase									
Minimum Initial (s)	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	29.0	10.4	29.0	11.3	37.7	37.7	11.3	37.7	37.7
Total Split (s)	42.0	20.0	62.0	20.0	38.0	38.0	20.0	38.0	38.0
Total Split (%)	35.0%	16.7%	51.7%	16.7%	31.7%	31.7%	16.7%	31.7%	31.7%
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	1.7	2.3	3.0	3.4	3.4	3.0	3.4	3.4
Lost Time Adjust (s)	-2.0	-1.4	-2.0	-2.3	-2.7	-2.7	-2.3	-2.7	-2.7
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lead		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	None	C-Max	None	None	None	None	None	None
Act Effct Green (s)	38.0	64.7	64.7	15.8	34.2	34.2	11.5	27.5	27.5
Actuated g/C Ratio	0.32	0.54	0.54	0.13	0.28	0.28	0.10	0.23	0.23
v/c Ratio	0.68	0.93	0.59	0.83	0.42	0.35	0.33	0.71	0.45
Control Delay	32.8	62.2	20.7	79.8	38.2	6.3	55.4	47.1	13.8
Queue Delay	2.0	0.0	0.1	0.0	0.0	0.0	0.0	0.9	0.0
Total Delay	34.8	62.2	20.8	79.8	38.2	6.3	55.4	48.0	13.8
LOS	C	E	C	E	D	A	E	D	B
Approach Delay	34.8		28.7		40.7			36.3	
Approach LOS	C		C		D			D	
Queue Length 50th (m)	76.8	67.1	88.4	43.0	41.9	0.0	12.5	52.0	11.3
Queue Length 95th (m)	88.8	#147.0	114.6	#80.4	63.1	16.8	25.6	68.2	24.9
Internal Link Dist (m)	81.2		139.3		110.3			87.9	
Turn Bay Length (m)		90.0		40.0			40.0		70.0
Base Capacity (vph)	1515	395	2611	226	523	565	226	505	510
Starvation Cap Reductn	325	0	0	0	0	0	0	62	0
Spillback Cap Reductn	0	0	193	0	0	0	0	0	5
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.93	0.64	0.82	0.41	0.35	0.24	0.66	0.39

Intersection Summary		
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 15 (13%), Referenced to phase 2:EBT and 6:WBTL, Start of Green		
Natural Cycle: 100		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.93		
Intersection Signal Delay: 33.0	Intersection LOS: C	
Intersection Capacity Utilization 84.7%	ICU Level of Service E	
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		

Splits and Phases: 3: Merivale & Carling



Lane Group	EBU	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	70	155	700	7	1764	10	5	110	1	70
Future Volume (vph)	70	155	700	7	1764	10	5	110	1	70
Lane Group Flow (vph)	0	237	750	7	1977	0	29	0	117	74
Turn Type	pm+pt	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	5	2		6		8		4	
Permitted Phases	2	2		6		8		4		4
Detector Phase	5	5	2	6	6	8	8	4	4	4
Switch Phase										
Minimum Initial (s)	5.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.6	10.6	23.6	23.6	23.6	37.0	37.0	37.0	37.0	37.0
Total Split (s)	24.0	24.0	83.0	59.0	59.0	37.0	37.0	37.0	37.0	37.0
Total Split (%)	20.0%	20.0%	69.2%	49.2%	49.2%	30.8%	30.8%	30.8%	30.8%	30.8%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.9	1.9	1.9	1.9	1.9	4.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)		-1.6	-1.6	-1.6	-1.6		-3.0		-3.0	-3.0
Total Lost Time (s)		4.0	4.0	4.0	4.0		4.0		4.0	4.0
Lead/Lag	Lead	Lead		Lag	Lag					
Lead-Lag Optimize?	Yes	Yes		Yes	Yes					
Recall Mode	None	None	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)		91.0	91.0	70.4	70.4		21.0		21.0	21.0
Actuated g/C Ratio		0.76	0.76	0.59	0.59		0.18		0.18	0.18
v/c Ratio		0.81	0.20	0.02	0.70		0.11		0.54	0.23
Control Delay		60.1	2.4	8.1	11.5		25.1		53.0	9.6
Queue Delay		0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay		60.1	2.4	8.1	11.5		25.1		53.0	9.6
LOS		E	A	A	B		C		D	A
Approach Delay			16.3		11.5		25.1		36.2	
Approach LOS			B		B		C		D	
Queue Length 50th (m)		34.7	7.2	0.3	35.5		3.2		25.8	0.0
Queue Length 95th (m)		#75.1	9.6	m0.8	180.6		10.2		39.2	11.1
Internal Link Dist (m)			113.0		81.2		26.4		38.7	
Turn Bay Length (m)		70.0		36.0						
Base Capacity (vph)		342	3675	360	2819		407		337	454
Starvation Cap Reductn		0	0	0	0		0		0	0
Spillback Cap Reductn		0	239	0	0		0		0	0
Storage Cap Reductn		0	0	0	0		0		0	0
Reduced v/c Ratio		0.69	0.22	0.02	0.70		0.07		0.35	0.16

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 3 (3%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 14.6	Intersection LOS: B
Intersection Capacity Utilization 100.0%	ICU Level of Service G
Analysis Period (min) 15	

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

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

Splits and Phases: 4: Carling & Westgate SC E

Lane Group	EBT	WBT	SBL
Lane Configurations			
Traffic Volume (vph)	832	1711	25
Future Volume (vph)	832	1711	25
Lane Group Flow (vph)	876	1808	68
Turn Type	NA	NA	Prot
Protected Phases	2	6	4
Permitted Phases			
Detector Phase	2	6	4
Switch Phase			
Minimum Initial (s)	10.0	10.0	10.0
Minimum Split (s)	24.1	42.3	37.1
Total Split (s)	83.0	83.0	37.0
Total Split (%)	69.2%	69.2%	30.8%
Yellow Time (s)	3.7	3.7	3.0
All-Red Time (s)	1.6	1.6	3.1
Lost Time Adjust (s)	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.3	6.1
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	C-Max	C-Max	None
Act Effct Green (s)	102.2	102.2	10.7
Actuated g/C Ratio	0.85	0.85	0.09
v/c Ratio	0.21	0.44	0.41
Control Delay	1.4	1.0	42.3
Queue Delay	0.0	0.1	0.0
Total Delay	1.4	1.0	42.3
LOS	A	A	D
Approach Delay	1.4	1.0	42.3
Approach LOS	A	A	D
Queue Length 50th (m)	6.6	4.7	9.7
Queue Length 95th (m)	m10.7	13.2	23.5
Internal Link Dist (m)	42.6	113.0	40.2
Turn Bay Length (m)			
Base Capacity (vph)	4148	4144	431
Starvation Cap Reductn	0	557	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.21	0.50	0.16

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 107 (89%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.44	
Intersection Signal Delay: 2.2	Intersection LOS: A
Intersection Capacity Utilization 52.9%	ICU Level of Service A
Analysis Period (min) 15	

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

Splits and Phases: 5: Carling/Carling EB & Westgate SC W

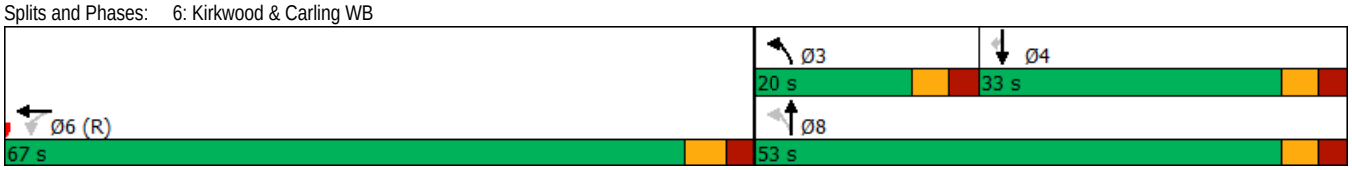
Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	216	2504	227	567	520	410
Future Volume (vph)	216	2504	227	567	520	410
Lane Group Flow (vph)	227	2968	239	597	547	432
Turn Type	Perm	NA	pm+pt	NA	NA	Perm
Protected Phases		6	3	8	4	
Permitted Phases	6		8			4
Detector Phase	6	6	3	8	4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	35.3	35.3	11.0	29.0	29.0	29.0
Total Split (s)	67.0	67.0	20.0	53.0	33.0	33.0
Total Split (%)	55.8%	55.8%	16.7%	44.2%	27.5%	27.5%
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	2.6	2.6	2.7	2.7	2.7	2.7
Lost Time Adjust (s)	-2.3	-2.3	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	C-Max	C-Max	None	Ped	Ped	Ped
Act Effct Green (s)	63.0	63.0	49.0	49.0	29.5	29.5
Actuated g/C Ratio	0.52	0.52	0.41	0.41	0.25	0.25
v/c Ratio	0.13	1.19	0.74	0.82	0.66	1.05
Control Delay	8.9	112.8	35.6	41.2	45.3	94.2
Queue Delay	0.0	0.0	0.0	8.2	0.0	0.0
Total Delay	8.9	112.8	35.6	49.4	45.3	94.2
LOS	A	F	D	D	D	F
Approach Delay		105.4		45.5	66.9	
Approach LOS		F		D	E	
Queue Length 50th (m)	9.3	~313.0	47.2	142.5	61.6	~96.0
Queue Length 95th (m)	11.2	#340.1	#69.5	#188.5	80.6	#158.3
Internal Link Dist (m)		113.3		144.7	73.8	
Turn Bay Length (m)	40.0					22.0
Base Capacity (vph)	1715	2497	330	728	832	411
Starvation Cap Reductn	0	0	0	102	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.13	1.19	0.72	0.95	0.66	1.05

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 39 (33%), Referenced to phase 6:WBTL, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.19	
Intersection Signal Delay: 87.9	Intersection LOS: F
Intersection Capacity Utilization 112.1%	ICU Level of Service H
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 6: Kirkwood & Carling WB



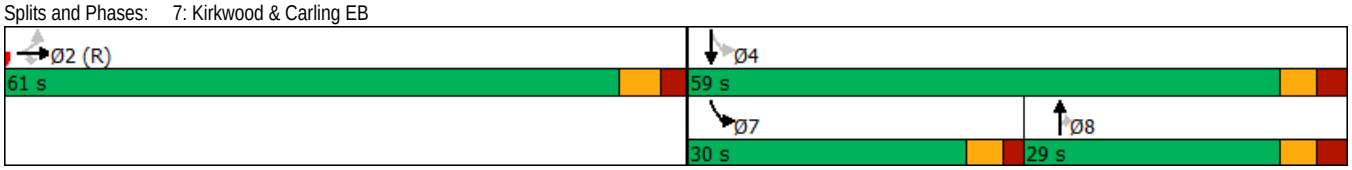
Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	419	1347	405	341	306	423	312
Future Volume (vph)	419	1347	405	341	306	423	312
Lane Group Flow (vph)	392	1467	426	359	322	445	328
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		2		8		7	4
Permitted Phases	2		2		8	4	
Detector Phase	2	2	2	8	8	7	4
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	29.2	29.2	29.2	26.1	26.1	10.1	26.1
Total Split (s)	61.0	61.0	61.0	29.0	29.0	30.0	59.0
Total Split (%)	50.8%	50.8%	50.8%	24.2%	24.2%	25.0%	49.2%
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.5	2.5	2.8	2.8	1.8	2.8
Lost Time Adjust (s)	-2.2	-2.2	-2.2	-2.1	-2.1	-1.1	-2.1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	C-Max	C-Max	C-Max	Min	Min	Min	Min
Act Effct Green (s)	57.0	57.0	57.0	25.0	25.0	55.0	55.0
Actuated g/C Ratio	0.48	0.48	0.48	0.21	0.21	0.46	0.46
v/c Ratio	0.57	0.67	0.50	0.51	1.02	0.88	0.40
Control Delay	26.7	26.2	6.8	45.0	102.8	30.7	9.2
Queue Delay	0.5	0.2	0.0	0.0	0.0	0.0	0.0
Total Delay	27.1	26.4	6.8	45.0	102.8	30.7	9.2
LOS	C	C	A	D	F	C	A
Approach Delay		22.9		72.3			21.6
Approach LOS		C		E			C
Queue Length 50th (m)	75.1	100.5	11.7	39.7	~80.4	83.3	6.4
Queue Length 95th (m)	110.9	117.9	35.4	54.8	#136.2	#124.0	46.0
Internal Link Dist (m)		161.6		158.6			144.7
Turn Bay Length (m)	40.0				90.0		
Base Capacity (vph)	691	2182	855	706	316	506	817
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	71	149	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.72	0.50	0.51	1.02	0.88	0.40

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 81 (68%), Referenced to phase 2:EBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.02	
Intersection Signal Delay: 31.6	Intersection LOS: C
Intersection Capacity Utilization 112.1%	ICU Level of Service H
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 7: Kirkwood & Carling EB



Lane Group	EBT	WBR
Lane Configurations		
Traffic Volume (vph)	1075	1868
Future Volume (vph)	1075	1868
Lane Group Flow (vph)	1132	1966
Sign Control	Free	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 49.3%		ICU Level of Service A
Analysis Period (min) 15		

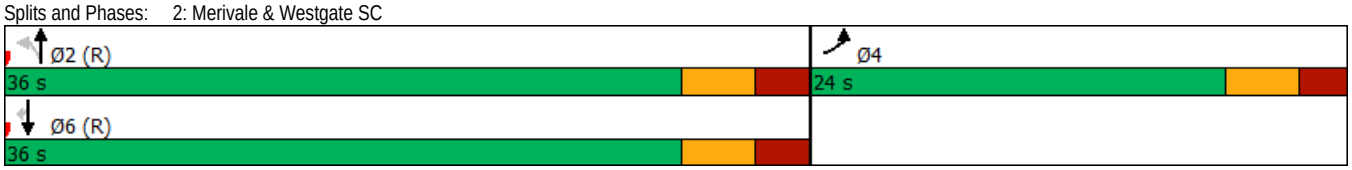
Appendix E

SYNCHRO 2025 Background Traffic Analysis

Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Configurations					
Traffic Volume (vph)	27	47	167	501	67
Future Volume (vph)	27	47	167	501	67
Lane Group Flow (vph)	53	49	176	527	71
Turn Type	Prot	Perm	NA	NA	Perm
Protected Phases	4		2	6	
Permitted Phases		2			6
Detector Phase	4	2	2	6	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	23.5	23.8	23.8	35.8	35.8
Total Split (s)	24.0	36.0	36.0	36.0	36.0
Total Split (%)	40.0%	60.0%	60.0%	60.0%	60.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.8	5.8	5.8	5.8
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	10.0	47.2	47.2	47.2	47.2
Actuated g/C Ratio	0.17	0.79	0.79	0.79	0.79
v/c Ratio	0.18	0.08	0.13	0.38	0.06
Control Delay	15.7	1.2	1.0	5.1	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	15.7	1.2	1.0	5.1	1.4
LOS	B	A	A	A	A
Approach Delay	15.7		1.0	4.6	
Approach LOS	B		A	A	
Queue Length 50th (m)	2.7	0.2	0.8	24.2	0.0
Queue Length 95th (m)	10.5	1.9	5.0	40.7	3.1
Internal Link Dist (m)	40.8		88.4	58.0	
Turn Bay Length (m)		40.0			40.0
Base Capacity (vph)	518	636	1404	1404	1209
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.10	0.08	0.13	0.38	0.06

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 60	
Offset: 8 (13%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.38	
Intersection Signal Delay: 4.4	Intersection LOS: A
Intersection Capacity Utilization 58.8%	ICU Level of Service B
Analysis Period (min) 15	

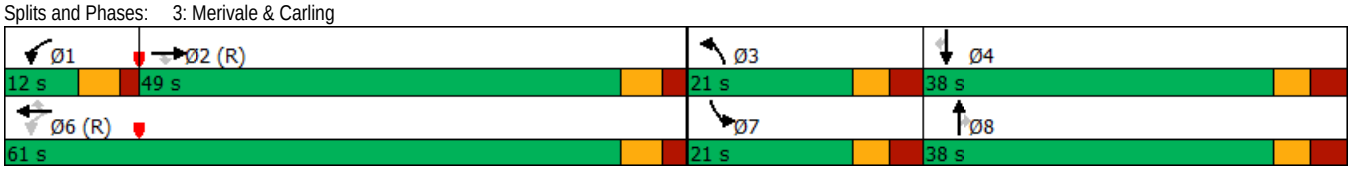
Splits and Phases: 2: Merivale & Westgate SC



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	857	71	149	662	32	224	206	237	26	234	208
Future Volume (vph)	857	71	149	662	32	224	206	237	26	234	208
Lane Group Flow (vph)	902	75	157	697	34	236	217	249	27	246	219
Turn Type	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	2		1	6		3	8		7	4	
Permitted Phases		2	6		6			8			4
Detector Phase	2	2	1	6	6	3	8	8	7	4	4
Switch Phase											
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	29.0	29.0	10.4	29.0	29.0	11.3	37.7	37.7	11.3	37.7	37.7
Total Split (s)	49.0	49.0	12.0	61.0	61.0	21.0	38.0	38.0	21.0	38.0	38.0
Total Split (%)	40.8%	40.8%	10.0%	50.8%	50.8%	17.5%	31.7%	31.7%	17.5%	31.7%	31.7%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	1.7	2.3	2.3	3.0	3.4	3.4	3.0	3.4	3.4
Lost Time Adjust (s)	-2.0	0.0	-1.4	-2.0	0.0	-2.3	-2.7	-2.7	-2.3	-2.7	-2.7
Total Lost Time (s)	4.0	6.0	4.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	50.8	48.8	66.0	66.0	64.0	17.0	37.2	37.2	9.8	25.0	25.0
Actuated g/C Ratio	0.42	0.41	0.55	0.55	0.53	0.14	0.31	0.31	0.08	0.21	0.21
v/c Ratio	0.63	0.12	0.55	0.37	0.04	0.98	0.39	0.40	0.20	0.66	0.54
Control Delay	25.9	1.6	23.5	17.0	0.1	105.8	35.5	5.8	55.2	47.3	17.7
Queue Delay	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2
Total Delay	26.7	1.6	23.5	17.0	0.1	105.8	35.5	5.8	55.2	47.6	17.9
LOS	C	A	C	B	A	F	D	A	E	D	B
Approach Delay	24.8			17.5			48.6			34.8	
Approach LOS	C			B			D			C	
Queue Length 50th (m)	88.7	0.4	17.4	46.3	0.0	56.1	42.8	0.0	6.4	45.6	15.8
Queue Length 95th (m)	118.5	4.5	#36.6	70.5	0.0	#106.3	60.9	17.7	16.1	64.5	27.7
Internal Link Dist (m)	89.4			139.3			131.8			88.4	
Turn Bay Length (m)		25.0	90.0		25.0	40.0			40.0		70.0
Base Capacity (vph)	1436	642	287	1863	782	240	558	627	240	505	504
Starvation Cap Reductn	249	0	0	0	0	0	0	0	0	44	38
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.12	0.55	0.37	0.04	0.98	0.39	0.40	0.11	0.53	0.47

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 54 (45%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.98	
Intersection Signal Delay: 29.7	Intersection LOS: C
Intersection Capacity Utilization 81.1%	ICU Level of Service D
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 3: Merivale & Carling



Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	99	100	1295	14	7	868	57	12	2	24	1	16
Future Volume (vph)	99	100	1295	14	7	868	57	12	2	24	1	16
Lane Group Flow (vph)	0	209	1363	15	7	914	60	0	29	0	26	17
Turn Type	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases			2			6			8		4	
Permitted Phases	2	2		2	6		6	8		4		4
Detector Phase	2	2	2	2	6	6	6	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	23.6	23.6	23.6	23.6	23.6	23.6	23.6	37.0	37.0	37.0	37.0	37.0
Total Split (s)	83.0	83.0	83.0	83.0	83.0	83.0	83.0	37.0	37.0	37.0	37.0	37.0
Total Split (%)	69.2%	69.2%	69.2%	69.2%	69.2%	69.2%	69.2%	30.8%	30.8%	30.8%	30.8%	30.8%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.9	1.9	1.9	1.9	1.9	1.9	1.9	4.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)		-1.6	-1.6	0.0	-1.6	-1.6	0.0		-3.0		-3.0	-3.0
Total Lost Time (s)		4.0	4.0	5.6	4.0	4.0	5.6		4.0		4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)		103.4	103.4	102.4	103.4	103.4	102.4		17.0		17.0	17.0
Actuated g/C Ratio		0.86	0.86	0.85	0.86	0.86	0.85		0.14		0.14	0.14
v/c Ratio		0.46	0.47	0.01	0.03	0.31	0.05		0.14		0.14	0.07
Control Delay		8.7	4.3	0.2	5.3	3.7	2.3		26.8		43.6	10.4
Queue Delay		0.0	0.1	0.0	0.0	0.1	0.0		0.0		0.0	0.0
Total Delay		8.7	4.3	0.2	5.3	3.8	2.3		26.8		43.6	10.4
LOS		A	A	A	A	A	A		C		D	B
Approach Delay			4.9			3.7			26.8		30.5	
Approach LOS			A			A			C		C	
Queue Length 50th (m)		9.4	32.4	0.0	0.3	28.7	1.0		3.2		5.7	0.0
Queue Length 95th (m)		53.3	108.1	m0.2	m1.2	m48.6	m3.6		10.0		11.7	4.4
Internal Link Dist (m)			112.0			89.4			10.8		48.4	
Turn Bay Length (m)		100.0		25.0	45.0		25.0					
Base Capacity (vph)		457	2921	1253	275	2921	1199		400		350	424
Starvation Cap Reductn		0	315	0	0	790	0		0		0	0
Spillback Cap Reductn		0	275	0	0	0	0		0		0	0
Storage Cap Reductn		0	0	0	0	0	0		0		0	0
Reduced v/c Ratio		0.46	0.52	0.01	0.03	0.43	0.05		0.07		0.07	0.04

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 26 (22%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.47	
Intersection Signal Delay: 5.1	Intersection LOS: A
Intersection Capacity Utilization 79.0%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 4: Carling & Westgate SC E

Lane Group	EBT	WBT	WBR	SBL
Lane Configurations				
Traffic Volume (vph)	1090	1154	13	13
Future Volume (vph)	1090	1154	13	13
Lane Group Flow (vph)	1147	1215	14	34
Turn Type	NA	NA	Perm	Prot
Protected Phases	2	6		4
Permitted Phases			6	
Detector Phase	2	6	6	4
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	24.0	48.3	48.3	37.1
Total Split (s)	83.0	83.0	83.0	37.0
Total Split (%)	69.2%	69.2%	69.2%	30.8%
Yellow Time (s)	3.7	3.7	3.7	3.0
All-Red Time (s)	1.6	1.6	1.6	3.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.3	5.3	6.1
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	C-Max	None
Act Effct Green (s)	107.2	107.2	107.2	10.0
Actuated g/C Ratio	0.89	0.89	0.89	0.08
v/c Ratio	0.38	0.40	0.01	0.22
Control Delay	2.4	1.1	0.1	32.6
Queue Delay	0.0	0.1	0.0	0.0
Total Delay	2.4	1.2	0.1	32.6
LOS	A	A	A	C
Approach Delay	2.4	1.2		32.6
Approach LOS	A	A		C
Queue Length 50th (m)	29.7	4.6	0.1	3.1
Queue Length 95th (m)	36.5	6.4	m0.1	13.2
Internal Link Dist (m)	32.6	112.0		92.7
Turn Bay Length (m)			25.0	
Base Capacity (vph)	3027	3027	1355	429
Starvation Cap Reductn	0	366	0	0
Spillback Cap Reductn	80	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.39	0.46	0.01	0.08

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 38 (32%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.40	
Intersection Signal Delay: 2.2	Intersection LOS: A
Intersection Capacity Utilization 51.5%	ICU Level of Service A
Analysis Period (min) 15	

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

Splits and Phases: 5: Carling & Westgate SC W

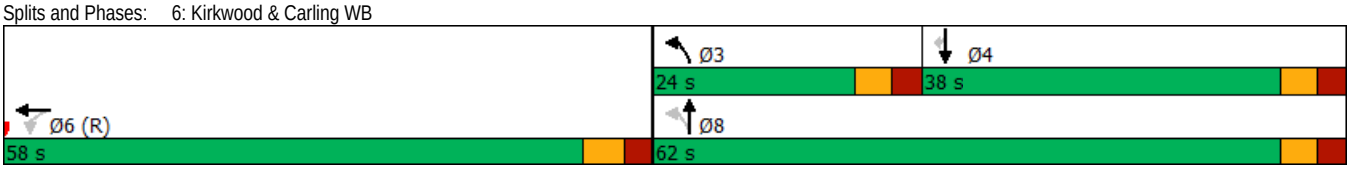
Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	203	1651	280	339	424	360
Future Volume (vph)	203	1651	280	339	424	360
Lane Group Flow (vph)	214	2002	295	357	446	379
Turn Type	Perm	NA	pm+pt	NA	NA	Perm
Protected Phases		6	3	8	4	
Permitted Phases	6		8			4
Detector Phase	6	6	3	8	4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	35.3	35.3	11.0	29.0	29.0	29.0
Total Split (s)	58.0	58.0	24.0	62.0	38.0	38.0
Total Split (%)	48.3%	48.3%	20.0%	51.7%	31.7%	31.7%
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	2.6	2.6	2.7	2.7	2.7	2.7
Lost Time Adjust (s)	-2.3	-2.3	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	C-Max	C-Max	None	Ped	Ped	Ped
Act Effct Green (s)	57.4	57.4	54.6	54.6	31.5	31.5
Actuated g/C Ratio	0.48	0.48	0.46	0.46	0.26	0.26
v/c Ratio	0.14	0.88	0.69	0.44	0.50	0.85
Control Delay	18.7	34.2	21.2	15.3	39.3	51.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.7	34.2	21.2	15.3	39.3	51.0
LOS	B	C	C	B	D	D
Approach Delay		32.7		18.0	44.7	
Approach LOS		C		B	D	
Queue Length 50th (m)	14.9	158.7	48.9	60.5	45.6	65.7
Queue Length 95th (m)	22.4	#187.4	m70.0	m83.5	61.1	#113.6
Internal Link Dist (m)		110.3		152.2	73.8	
Turn Bay Length (m)	40.0					22.0
Base Capacity (vph)	1564	2272	439	862	960	472
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	0.14	0.88	0.67	0.41	0.46	0.80

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 66 (55%), Referenced to phase 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 32.8	Intersection LOS: C
Intersection Capacity Utilization 100.5%	ICU Level of Service G
Analysis Period (min) 15	

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

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

Splits and Phases: 6: Kirkwood & Carling WB



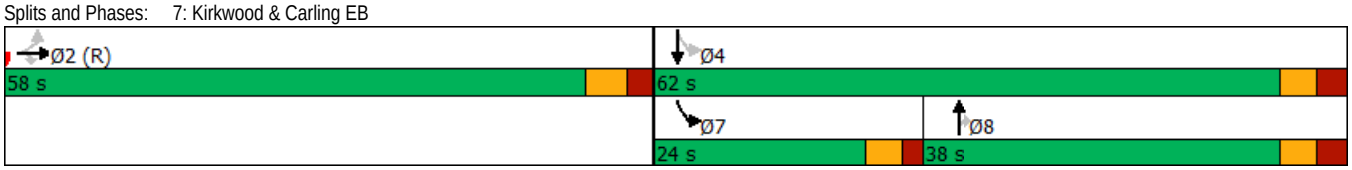
Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	212	2183	422	407	398	473	250
Future Volume (vph)	212	2183	422	407	398	473	250
Lane Group Flow (vph)	201	2320	444	428	419	498	263
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		2		8		7	4
Permitted Phases	2		2		8	4	
Detector Phase	2	2	2	8	8	7	4
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	29.2	29.2	29.2	26.1	26.1	10.1	26.1
Total Split (s)	58.0	58.0	58.0	38.0	38.0	24.0	62.0
Total Split (%)	48.3%	48.3%	48.3%	31.7%	31.7%	20.0%	51.7%
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.5	2.5	2.8	2.8	1.8	2.8
Lost Time Adjust (s)	-2.2	-2.2	-2.2	-2.1	-2.1	-1.1	-2.1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	C-Max	C-Max	C-Max	Min	Min	Min	Min
Act Effct Green (s)	54.0	54.0	54.0	34.0	34.0	58.0	58.0
Actuated g/C Ratio	0.45	0.45	0.45	0.28	0.28	0.48	0.48
v/c Ratio	0.31	1.12	0.55	0.45	0.98	1.06	0.31
Control Delay	22.7	93.3	10.2	37.1	81.2	88.3	22.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.7	93.3	10.2	37.1	81.2	88.3	22.6
LOS	C	F	B	D	F	F	C
Approach Delay		76.1		58.9			65.6
Approach LOS		E		E			E
Queue Length 50th (m)	34.4	~243.9	21.8	43.5	97.8	~119.8	44.7
Queue Length 95th (m)	54.7	#274.1	51.8	58.7	#160.8	#193.9	79.4
Internal Link Dist (m)		161.6		158.6			152.2
Turn Bay Length (m)	40.0				90.0		
Base Capacity (vph)	655	2071	808	960	429	471	862
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	1.12	0.55	0.45	0.98	1.06	0.31

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 15 (13%), Referenced to phase 2:EBTL, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.12	
Intersection Signal Delay: 71.2	Intersection LOS: E
Intersection Capacity Utilization 100.5%	ICU Level of Service G
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 7: Kirkwood & Carling EB



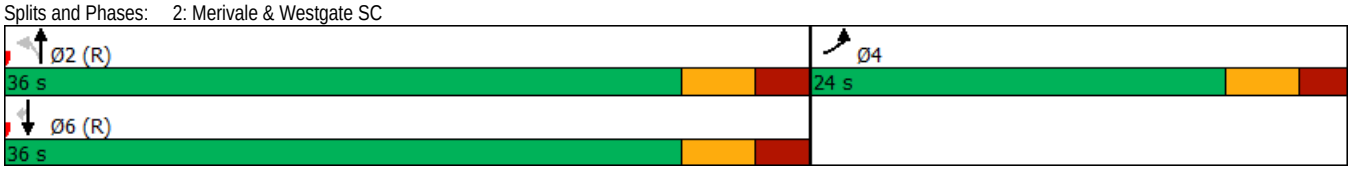
Lane Group		
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Lane Group Flow (vph)		
Sign Control		

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 0.0%	ICU Level of Service A	
Analysis Period (min) 15		

Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Configurations					
Traffic Volume (vph)	78	79	200	491	94
Future Volume (vph)	78	79	200	491	94
Lane Group Flow (vph)	177	83	211	517	99
Turn Type	Prot	Perm	NA	NA	Perm
Protected Phases	4		2	6	
Permitted Phases		2			6
Detector Phase	4	2	2	6	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.0	24.0	24.0	35.8	35.8
Total Split (s)	24.0	36.0	36.0	36.0	36.0
Total Split (%)	40.0%	60.0%	60.0%	60.0%	60.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.8	5.8	5.8	5.8
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	10.8	42.1	42.1	42.1	42.1
Actuated g/C Ratio	0.18	0.70	0.70	0.70	0.70
v/c Ratio	0.48	0.15	0.17	0.41	0.09
Control Delay	15.6	1.8	1.4	6.9	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	15.6	1.8	1.4	6.9	1.6
LOS	B	A	A	A	A
Approach Delay	15.6		1.5	6.0	
Approach LOS	B		A	A	
Queue Length 50th (m)	8.0	0.7	1.8	23.5	0.0
Queue Length 95th (m)	21.5	2.1	4.4	48.8	4.5
Internal Link Dist (m)	28.7		87.9	55.1	
Turn Bay Length (m)		40.0			40.0
Base Capacity (vph)	564	557	1252	1252	1094
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	14	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.31	0.15	0.17	0.42	0.09

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 60	
Offset: 27 (45%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.48	
Intersection Signal Delay: 6.4	Intersection LOS: A
Intersection Capacity Utilization 60.3%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 2: Merivale & Westgate SC

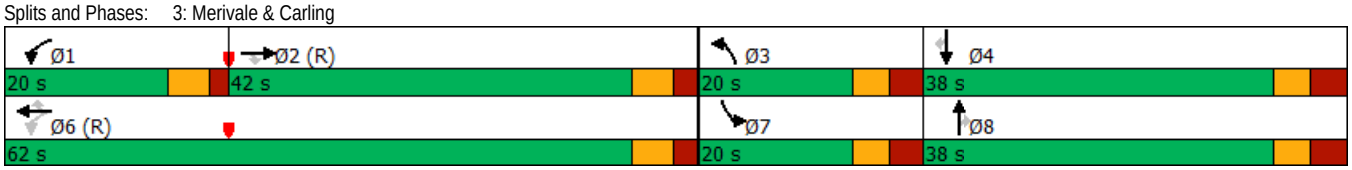


Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	923	114	349	1538	40	176	206	185	51	288	188
Future Volume (vph)	923	114	349	1538	40	176	206	185	51	288	188
Lane Group Flow (vph)	972	120	367	1619	42	185	217	195	54	303	198
Turn Type	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	2		1	6		3	8		7	4	
Permitted Phases		2	6		6			8			4
Detector Phase	2	2	1	6	6	3	8	8	7	4	4
Switch Phase											
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	29.0	29.0	10.4	29.0	29.0	11.3	37.7	37.7	11.3	37.7	37.7
Total Split (s)	42.0	42.0	20.0	62.0	62.0	20.0	38.0	38.0	20.0	38.0	38.0
Total Split (%)	35.0%	35.0%	16.7%	51.7%	51.7%	16.7%	31.7%	31.7%	16.7%	31.7%	31.7%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	1.7	2.3	2.3	3.0	3.4	3.4	3.0	3.4	3.4
Lost Time Adjust (s)	-2.0	0.0	-1.4	-2.0	0.0	-2.3	-2.7	-2.7	-2.3	-2.7	-2.7
Total Lost Time (s)	4.0	6.0	4.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	38.0	36.0	64.1	64.1	62.1	15.8	34.8	34.8	11.5	28.1	28.1
Actuated g/C Ratio	0.32	0.30	0.53	0.53	0.52	0.13	0.29	0.29	0.10	0.23	0.23
v/c Ratio	0.91	0.23	0.98	0.89	0.06	0.83	0.42	0.35	0.33	0.73	0.44
Control Delay	46.5	3.7	77.4	33.8	0.1	79.8	37.7	6.3	55.2	47.3	13.5
Queue Delay	43.3	0.0	0.0	20.9	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Total Delay	89.8	3.7	77.4	54.7	0.1	79.8	37.7	6.3	55.2	48.3	13.5
LOS	F	A	E	D	A	E	D	A	E	D	B
Approach Delay	80.3			57.7			40.5			36.6	
Approach LOS	F			E			D			D	
Queue Length 50th (m)	121.4	0.3	~76.6	176.0	0.0	43.0	41.9	0.0	12.6	53.8	11.4
Queue Length 95th (m)	#154.1	9.0	#153.4	#248.7	0.0	#80.4	63.9	16.8	25.6	70.4	24.7
Internal Link Dist (m)	81.2			139.3			110.3			87.9	
Turn Bay Length (m)		25.0	90.0		25.0	40.0			40.0		70.0
Base Capacity (vph)	1073	518	374	1810	763	226	527	568	226	505	510
Starvation Cap Reductn	183	0	0	0	0	0	0	0	0	63	0
Spillback Cap Reductn	0	0	0	248	0	0	0	0	0	0	9
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.09	0.23	0.98	1.04	0.06	0.82	0.41	0.34	0.24	0.69	0.40

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 15 (13%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.98	
Intersection Signal Delay: 58.3	Intersection LOS: E
Intersection Capacity Utilization 91.6%	ICU Level of Service F
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Merivale & Carling



Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	155	749	12	7	1890	114	10	5	110	1	70
Future Volume (vph)	70	155	749	12	7	1890	114	10	5	110	1	70
Lane Group Flow (vph)	0	237	788	13	7	1989	120	0	29	0	117	74
Turn Type	pm+pt	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	5	5	2			6			8		4	
Permitted Phases	2	2		2	6		6	8		4		4
Detector Phase	5	5	2	2	6	6	6	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.6	10.6	23.6	23.6	23.6	23.6	23.6	37.0	37.0	37.0	37.0	37.0
Total Split (s)	24.0	24.0	83.0	83.0	59.0	59.0	59.0	37.0	37.0	37.0	37.0	37.0
Total Split (%)	20.0%	20.0%	69.2%	69.2%	49.2%	49.2%	49.2%	30.8%	30.8%	30.8%	30.8%	30.8%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.9	1.9	1.9	1.9	1.9	1.9	1.9	4.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)		-1.6	-1.6	0.0	-1.6	-1.6	0.0		-3.0		-3.0	-3.0
Total Lost Time (s)		4.0	4.0	5.6	4.0	4.0	5.6		4.0		4.0	4.0
Lead/Lag	Lead	Lead			Lag	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes			Yes	Yes	Yes					
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)		91.0	91.0	89.4	70.4	70.4	68.8		21.0		21.0	21.0
Actuated g/C Ratio		0.76	0.76	0.74	0.59	0.59	0.57		0.18		0.18	0.18
v/c Ratio		0.81	0.31	0.01	0.02	1.00	0.14		0.11		0.54	0.23
Control Delay		60.1	2.6	0.0	8.7	30.6	1.5		25.1		53.0	9.6
Queue Delay		0.0	0.1	0.0	0.0	0.5	0.0		0.0		0.0	0.0
Total Delay		60.1	2.7	0.0	8.7	31.0	1.5		25.1		53.0	9.6
LOS		E	A	A	A	C	A		C		D	A
Approach Delay			15.8			29.3			25.1		36.2	
Approach LOS			B			C			C		D	
Queue Length 50th (m)		35.4	11.0	0.0	0.3	~51.5	0.4		3.2		25.8	0.0
Queue Length 95th (m)		#74.5	14.1	m0.0	m0.6	#350.7	m1.0		10.2		39.2	11.1
Internal Link Dist (m)			113.0			81.2			26.4		38.7	
Turn Bay Length (m)		100.0		25.0	45.0		25.0					
Base Capacity (vph)		342	2569	1020	359	1987	829		407		337	454
Starvation Cap Reductn		0	758	0	0	4	0		0		0	0
Spillback Cap Reductn		0	726	0	0	0	0		2		0	0
Storage Cap Reductn		0	0	0	0	0	0		0		0	0
Reduced v/c Ratio		0.69	0.44	0.01	0.02	1.00	0.14		0.07		0.35	0.16

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 3 (3%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.00	
Intersection Signal Delay: 25.5	Intersection LOS: C
Intersection Capacity Utilization 116.4%	ICU Level of Service H
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Carling & Westgate SC E

Lane Group	EBT	WBT	WBR	SBL
Lane Configurations				
Traffic Volume (vph)	891	1833	7	25
Future Volume (vph)	891	1833	7	25
Lane Group Flow (vph)	938	1929	7	68
Turn Type	NA	NA	Perm	Prot
Protected Phases	2	6		4
Permitted Phases			6	
Detector Phase	2	6	6	4
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	24.1	42.3	42.3	37.1
Total Split (s)	83.0	83.0	83.0	37.0
Total Split (%)	69.2%	69.2%	69.2%	30.8%
Yellow Time (s)	3.7	3.7	3.7	3.0
All-Red Time (s)	1.6	1.6	1.6	3.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.3	5.3	6.1
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	C-Max	None
Act Effct Green (s)	102.0	102.0	102.0	10.9
Actuated g/C Ratio	0.85	0.85	0.85	0.09
v/c Ratio	0.33	0.67	0.01	0.42
Control Delay	1.6	5.8	1.0	46.2
Queue Delay	0.0	0.2	0.0	0.0
Total Delay	1.6	6.0	1.0	46.2
LOS	A	A	A	D
Approach Delay	1.6	6.0		46.2
Approach LOS	A	A		D
Queue Length 50th (m)	11.7	12.3	0.1	11.1
Queue Length 95th (m)	m18.2	m53.7	m0.1	24.9
Internal Link Dist (m)	42.6	113.0		40.2
Turn Bay Length (m)			25.0	
Base Capacity (vph)	2882	2882	1290	427
Starvation Cap Reductn	0	294	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.33	0.75	0.01	0.16

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 107 (89%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 5.5	Intersection LOS: A
Intersection Capacity Utilization 71.3%	ICU Level of Service C
Analysis Period (min) 15	

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

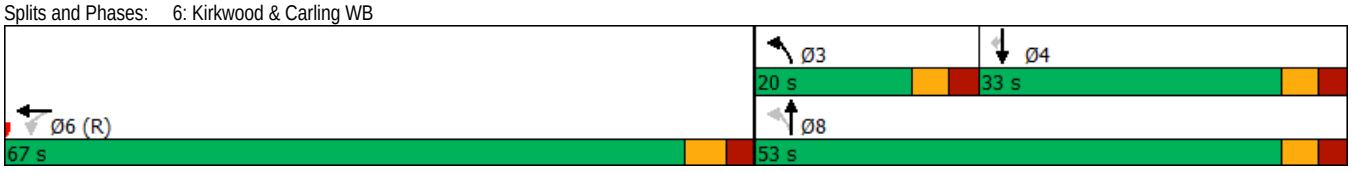
Splits and Phases: 5: Carling & Westgate SC W

Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	216	2680	227	602	551	410
Future Volume (vph)	216	2680	227	602	551	410
Lane Group Flow (vph)	227	3153	239	634	580	432
Turn Type	Perm	NA	pm+pt	NA	NA	Perm
Protected Phases		6	3	8	4	
Permitted Phases	6		8			4
Detector Phase	6	6	3	8	4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	35.3	35.3	11.0	29.0	29.0	29.0
Total Split (s)	67.0	67.0	20.0	53.0	33.0	33.0
Total Split (%)	55.8%	55.8%	16.7%	44.2%	27.5%	27.5%
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	2.6	2.6	2.7	2.7	2.7	2.7
Lost Time Adjust (s)	-2.3	-2.3	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	C-Max	C-Max	None	Ped	Ped	Ped
Act Effct Green (s)	63.0	63.0	49.0	49.0	29.4	29.4
Actuated g/C Ratio	0.52	0.52	0.41	0.41	0.24	0.24
v/c Ratio	0.13	1.26	0.76	0.87	0.70	1.05
Control Delay	10.2	144.8	38.0	45.9	46.6	94.5
Queue Delay	0.0	0.0	0.0	17.4	0.0	0.0
Total Delay	10.2	144.8	38.0	63.3	46.6	94.5
LOS	B	F	D	E	D	F
Approach Delay		135.8		56.3	67.1	
Approach LOS		F		E	E	
Queue Length 50th (m)	8.9	~347.1	47.4	153.4	66.1	~96.0
Queue Length 95th (m)	17.0	#373.2	m#73.8	#207.3	85.9	#158.3
Internal Link Dist (m)		113.3		144.7	73.8	
Turn Bay Length (m)	40.0					22.0
Base Capacity (vph)	1715	2499	319	728	831	411
Starvation Cap Reductn	0	0	0	100	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.13	1.26	0.75	1.01	0.70	1.05

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 39 (33%), Referenced to phase 6:WBTL, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.26	
Intersection Signal Delay: 109.4	Intersection LOS: F
Intersection Capacity Utilization 115.6%	ICU Level of Service H
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Kirkwood & Carling WB



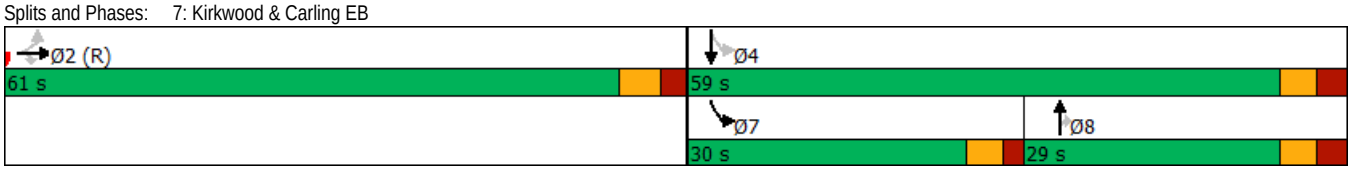
Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	419	1439	405	362	306	423	312
Future Volume (vph)	419	1439	405	362	306	423	312
Lane Group Flow (vph)	392	1564	426	381	322	445	328
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		2		8		7	4
Permitted Phases	2		2		8	4	
Detector Phase	2	2	2	8	8	7	4
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	29.2	29.2	29.2	26.1	26.1	10.1	26.1
Total Split (s)	61.0	61.0	61.0	29.0	29.0	30.0	59.0
Total Split (%)	50.8%	50.8%	50.8%	24.2%	24.2%	25.0%	49.2%
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.5	2.5	2.8	2.8	1.8	2.8
Lost Time Adjust (s)	-2.2	-2.2	-2.2	-2.1	-2.1	-1.1	-2.1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	C-Max	C-Max	C-Max	Min	Min	Min	Min
Act Effct Green (s)	57.0	57.0	57.0	25.0	25.0	55.0	55.0
Actuated g/C Ratio	0.48	0.48	0.48	0.21	0.21	0.46	0.46
v/c Ratio	0.57	0.72	0.50	0.54	1.02	0.90	0.40
Control Delay	26.7	27.4	6.8	45.7	102.8	32.6	9.1
Queue Delay	1.1	0.6	0.0	0.0	0.0	0.0	0.0
Total Delay	27.8	28.0	6.8	45.7	102.8	32.6	9.1
LOS	C	C	A	D	F	C	A
Approach Delay		24.2		71.8			22.6
Approach LOS		C		E			C
Queue Length 50th (m)	75.1	110.7	11.7	42.4	~80.4	88.5	12.0
Queue Length 95th (m)	110.9	129.1	35.4	58.1	#136.2	#128.6	24.6
Internal Link Dist (m)		161.6		158.6			144.7
Turn Bay Length (m)	40.0				90.0		
Base Capacity (vph)	691	2182	855	706	316	497	817
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	125	263	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.82	0.50	0.54	1.02	0.90	0.40

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 81 (68%), Referenced to phase 2:EBTL, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.02	
Intersection Signal Delay: 32.5	Intersection LOS: C
Intersection Capacity Utilization 115.6%	ICU Level of Service H
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 7: Kirkwood & Carling EB



Lane Group	EBT	WBR
Lane Configurations		
Traffic Volume (vph)	1075	1868
Future Volume (vph)	1075	1868
Lane Group Flow (vph)	1132	1966
Sign Control	Free	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 72.3%		ICU Level of Service C
Analysis Period (min) 15		

Appendix F

MMLOS Analysis

Multi-Modal Level of Service - Intersections Form

Consultant	**Parsons**	**Project**	**Westgate SC - Phase 1**
Scenario	**Existing/Future (upto 2025)**		**1309 Carling Ave**
Comments		**Date**	**Nov. 08, 2018**

Unlocked Rows for Replicating

INTERSECTIONS		Carling and Merivale				Carling and Westgate SC E				Carling and Westgate SC W			
	Crossing Side	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
Pedestrian	Lanes	4	3	7	6	4	0 - 2	7	7	0 - 2		6	6
	Median	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	Median > 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m		No Median - 2.4 m	No Median - 2.4 m
	Conflicting Left Turns	No left turn / Prohib.	Protected	Protected	Protected	Protected/ Permissive	Permissive	Permissive	Permissive	No left turn / Prohib.		No left turn / Prohib.	Permissive
	Conflicting Right Turns	Permissive or yield control	No right turn	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control		Permissive or yield control	No right turn
	Right Turns on Red (RToR) ?	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed		RTOR allowed	RTOR prohibited
	Ped Signal Leading Interval?	No	No	No	No	No	No	No	No	No		No	No
	Right Turn Channel	No Channel	No Right Turn	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel		No Channel	No Right Turn
	Corner Radius	10-15m	10-15m	5-10m	5-10m	5-10m	5-10m	5-10m	5-10m	5-10m		5-10m	No Right Turn
	Crosswalk Type	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement		Textured/coloured pavement	Textured/coloured pavement
	PETSI Score	**64**	**90**	**16**	**37**	**57**	**89**	**8**	**8**	**97**		**32**	**41**
	Ped. Exposure to Traffic LoS	**C**	**A**	**F**	**E**	**D**	**B**	**F**	**F**	**A**	**-**	**E**	**E**
	Cycle Length												
	Effective Walk Time												
	Average Pedestrian Delay												
	Pedestrian Delay LoS	-	-	-	-	-	-	-	-	-	-	-	-
	Level of Service	**C**	**A**	**F**	**E**	**D**	**B**	**F**	**F**	**A**	**-**	**E**	**E**
		F				**F**				**E**			
	Approach From	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
Bicycle	Bicycle Lane Arrangement on Approach	Pocket Bike Lane	Curb Bike Lane, Cycletrack or MUP	Mixed Traffic	Curb Bike Lane, Cycletrack or MUP	Mixed Traffic	Mixed Traffic	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Mixed Traffic		Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP
	Right Turn Lane Configuration	≤ 50 m Introduced right turn lane	Not Applicable	≤ 50 m	Not Applicable	≤ 50 m	≤ 50 m	Not Applicable	Not Applicable	≤ 50 m		Not Applicable	Not Applicable
	Right Turning Speed	≤ 25 km/h	Not Applicable	≤ 25 km/h	Not Applicable	≤ 25 km/h	≤ 25 km/h	Not Applicable	Not Applicable	≤ 25 km/h		Not Applicable	Not Applicable
	Cyclist relative to RT motorists	**B**	**Not Applicable**	**D**	**Not Applicable**	**D**	**D**	**Not Applicable**	**Not Applicable**	**D**	**-**	**Not Applicable**	**Not Applicable**
	Separated or Mixed Traffic	**Separated**	**Separated**	**Mixed Traffic**	**Separated**	**Mixed Traffic**	**Mixed Traffic**	**Separated**	**Separated**	**Mixed Traffic**	**-**	**Separated**	**Separated**
	Left Turn Approach	1 lane crossed	1 lane crossed	≥ 2 lanes crossed		No lane crossed	No lane crossed	≥ 2 lanes crossed	≥ 2 lanes crossed	No lane crossed			
	Operating Speed	> 50 to < 60 km/h	> 50 to < 60 km/h	> 50 to < 60 km/h		≤ 40 km/h	≤ 40 km/h	> 50 to < 60 km/h	> 50 to < 60 km/h	≤ 40 km/h			
	Left Turning Cyclist	**D**	**D**	**F**	**-**	**B**	**B**	**F**	**F**	**B**	**-**	**-**	**-**
	Level of Service	**D**	**D**	**F**	**-**	**D**	**D**	**F**	**F**	**D**	**-**	**-**	**-**
		F				**F**				**D**			
Transit	Average Signal Delay		≤ 40 sec	≤ 30 sec	≤ 20 sec			≤ 10 sec	≤ 20 sec			≤ 10 sec	≤ 10 sec
	Level of Service	**-**	**E**	**D**	**C**	**-**	**-**	**B**	**C**	**-**	**-**	**B**	**B**
		E				**C**				**B**			
Truck	Effective Corner Radius	> 15 m	> 15 m	> 15 m	> 15 m	> 15 m	> 15 m	> 15 m	> 15 m	< 10 m		< 10 m	
	Number of Receiving Lanes on Departure from Intersection	≥ 2	1	≥ 2	≥ 2	≥ 2	1	≥ 2	≥ 2	≥ 2		1	
	Level of Service	**A**	**C**	**A**	**A**	**A**	**C**	**A**	**A**	**D**	**-**	**F**	**-**
		C				**C**				**F**			
Auto	Volume to Capacity Ratio												
	Level of Service	**-**				**-**				**-**			

Merivale and Westgate SC				Carling and Kirkwood N				Carling and Kirkwood S			
NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
3	3		3	6	4	4	3	4	5		5
Median > 2.4 m	No Median - 2.4 m		No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m		No Median - 2.4 m
Permissive	No left turn / Prohib.		Permissive	No left turn / Prohib.	Permissive	No left turn / Prohib.	Protected/ Permissive	Permissive	No left turn / Prohib.		Permissive
Permissive or yield control	Permissive or yield control		Permissive or yield control	Permissive or yield control	No right turn	Permissive or yield control	Permissive or yield control	No right turn	Permissive or yield control		Permissive or yield control
RTOR allowed	RTOR allowed		RTOR allowed	RTOR allowed	RTOR prohibited	RTOR allowed	RTOR prohibited	RTOR prohibited	RTOR prohibited		RTOR allowed
No	No		No	No	No	No	No	No	No		No
No Channel	No Channel		No Channel	No Channel	No Right Turn	No Channel	No Right Turn	No Right Turn	No Channel		Smart Channel
10-15m	10-15m		10-15m	10-15m	No Right Turn	10-15m	No Right Turn	No Right Turn	5-10m		15-25m
Textured/coloured pavement	Textured/coloured pavement		Textured/coloured pavement	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings		Zebra stripe hi-vis markings
73	**81**		**73**	**28**	**71**	**61**	**83**	**74**	**52**		**44**
C	**B**	**-**	**C**	**F**	**C**	**C**	**B**	**C**	**D**	**-**	**E**
-	-	-	-	-	-	-	-	-	-	-	-
C	**B**	**-**	**C**	**F**	**C**	**C**	**B**	**C**	**D**	**-**	**E**
C				**F**				**E**			
NORTH	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**
Pocket Bike Lane	Curb Bike Lane, Cycletrack or MUP		Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic		Pocket Bike Lane
≤ 50 m Introduced right turn lane	Not Applicable		≤ 50 m	≤ 50 m	≤ 50 m	≤ 50 m	≤ 50 m	> 50 m	≤ 50 m		Bike lane shifts to the left of right turn
>25 to 30 km/h	Not Applicable		≤ 25 km/h	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h		>25 to 30 km/h
C	**Not Applicable**	**-**	**D**	**D**	**D**	**D**	**D**	**F**	**D**	**-**	**F**
Separated	**Separated**	**-**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**-**	**Separated**
	1 lane crossed		No lane crossed	No lane crossed		One lane crossed		One lane crossed			≥ 2 lanes crossed
	> 50 to < 60 km/h		≤ 40 km/h	> 50 to < 60 km/h		> 50 to < 60 km/h		> 50 to < 60 km/h			> 50 to < 60 km/h
-	**D**	-	**B**	**C**	-	**E**	-	**E**	-	-	**F**
-	**D**	**-**	**D**	**D**	**-**	**E**	**-**	**F**	**-**	**-**	**F**
D				**E**				**F**			
	> 40 sec						> 40 sec			> 40 sec	
-	**F**	**-**	**-**	**-**	**-**	**-**	**F**	**-**	**-**	**F**	**-**
F				**F**				**F**			
> 15 m			> 15 m	< 10 m		> 15 m			< 10 m		> 15 m
1			1	≥ 2		≥ 2			≥ 2		≥ 2
C	**-**	**-**	**C**	**D**	**-**	**A**	**-**	**-**	**D**	**-**	**A**
C				**D**				**D**			
-				**-**				**-**			

Multi-Modal Level of Service - Segments Form

Consultant	**Parsons**	**Project**	**Westgate SC - Phase 1**
Scenario	**Existing/Future (upto 2025)**		**1309 Carling Ave**
Comments		**Date**	**Sept. 11, 2018**

SEGMENTS		Street A	Carling	Merivale	Section
			Existing	Existing	3
Pedestrian	Sidewalk Width Boulevard Width	-	≥ 2 m 0.5 - 2 m	≥ 2 m > 2 m	
	Avg Daily Curb Lane Traffic Volume		> 3000	> 3000	
	Operating Speed On-Street Parking		> 30 to 50 km/h no	> 50 to 60 km/h no	
	Exposure to Traffic PLoS		**C**	**C**	**-**
	Effective Sidewalk Width				
	Pedestrian Volume				
	Crowding PLoS		**-**	**-**	**-**
	Level of Service		**-**	**-**	**-**
Bicycle	Type of Cycling Facility	-	Curbside Bike Lane	Curbside Bike Lane	
	Number of Travel Lanes		≥ 3 each direction	≤ 1 each direction	
	Operating Speed		>50 to 70 km/h	>50 to 70 km/h	
	# of Lanes & Operating Speed LoS		**D**	**C**	**-**
	Bike Lane (+ Parking Lane) Width		≥ 1.8 m	≥ 1.8 m	
	Bike Lane Width LoS		**A**	**A**	**-**
	Bike Lane Blockages		Rare	Rare	
	Blockage LoS		**A**	**A**	**-**
	Median Refuge Width (no median = < 1.8 m)				
	No. of Lanes at Unsignalized Crossing				
	Sidestreet Operating Speed				
	Unsignalized Crossing - Lowest LoS		**-**	**-**	**-**
	Level of Service		**-**	**-**	**-**
Transit	Facility Type	D	Mixed Traffic	Mixed Traffic	
	Friction or Ratio Transit:Posted Speed		Vt/Vp ≥ 0.8	Vt/Vp ≥ 0.8	
	Level of Service		**D**	**D**	**-**
Truck	Truck Lane Width	D	≤ 3.3 m	≤ 3.3 m	
	Travel Lanes per Direction		> 1	1	
	Level of Service		**C**	**D**	**-**
Auto	**Level of Service**	**Not Applicable**			

Appendix G

TDM Checklist

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

Legend

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

		TDM-supportive design & infrastructure measures: *Residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	1.	**WALKING & CYCLING: ROUTES**	
	1.1	**Building location & access points**	
BASIC	1.1.1	Locate building close to the street, and do not locate parking areas between the street and building entrances	☑
BASIC	1.1.2	Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	☑
BASIC	1.1.3	Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	☑
	1.2	**Facilities for walking & cycling**	
REQUIRED	1.2.1	Provide convenient, direct access to stations or major stops along rapid transit routes within 600 metres; minimize walking distances from buildings to rapid transit; provide pedestrian-friendly, weather-protected (where possible) environment between rapid transit accesses and building entrances; ensure quality linkages from sidewalks through building entrances to integrated stops/stations *(see Official Plan policy 4.3.3)*	☑
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 *(see Official Plan policy 4.3.12)*	☑

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

		TDM-supportive design & infrastructure measures: *Residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	2.	**WALKING & CYCLING: END-OF-TRIP FACILITIES**	
	2.1	**Bicycle parking**	
REQUIRED	2.1.1	Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible *(see Official Plan policy 4.3.6)*	☐
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 Zoning By-law Section 111)*	☑
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 Zoning By-law Section 111)*	☐
BASIC	2.1.4	Provide bicycle parking spaces equivalent to the expected number of resident-owned bicycles, plus the expected peak number of visitor cyclists	☐
	2.2	**Secure bicycle parking**	
REQUIRED	2.2.1	Where more than 50 bicycle parking spaces are provided for a single residential building, locate at least 25% of spaces within a building/structure, a secure area (e.g. supervised parking lot or enclosure) or bicycle lockers *(see Zoning By-law Section 111)*	☐
BETTER	2.2.2	Provide secure bicycle parking spaces equivalent to at least the number of units at condominiums or multi-family residential developments	☐
	2.3	**Bicycle repair station**	
BETTER	2.3.1	Provide a permanent bike repair station, with commonly used tools and an air pump, adjacent to the main bicycle parking area (or secure bicycle parking area, if provided)	☐
	3.	**TRANSIT**	
	3.1	**Customer amenities**	
BASIC	3.1.1	Provide shelters, lighting and benches at any on-site transit stops	☐ *N/A*
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	☐ *N/A*
BETTER	3.1.3	Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	☐ *N/A*

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

TDM Measures Checklist:
Non-Residential Developments (office, institutional, retail or industrial)

Legend

BASIC — The measure is generally feasible and effective, and in most cases would benefit the development and its users

BETTER — The measure could maximize support for users of sustainable modes, and optimize development performance

★ — The measure is one of the most dependably effective tools to encourage the use of sustainable modes

			TDM measures: *Non-residential developments*	Check if proposed & add descriptions
		1.	**TDM PROGRAM MANAGEMENT**	
		1.1	**Program coordinator**	
BASIC	★	1.1.1	Designate an internal coordinator, or contract with an external coordinator	☐
		1.2	**Travel surveys**	
BETTER		1.2.1	Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress	☐
		2.	**WALKING AND CYCLING**	
		2.1	**Information on walking/cycling routes & destinations**	
BASIC		2.1.1	Display local area maps with walking/cycling access routes and key destinations at major entrances	☐
		2.2	**Bicycle skills training** *Commuter travel*	
BETTER	★	2.2.1	Offer on-site cycling courses for commuters, or subsidize off-site courses	☐
		2.3	**Valet bike parking** *Visitor travel*	
BETTER		2.3.1	Offer secure valet bike parking during public events when demand exceeds fixed supply (e.g. for festivals, concerts, games)	☐

		TDM measures: *Non-residential developments*	Check if proposed & add descriptions
		3. TRANSIT	
		3.1 Transit information	
BASIC	3.1.1	Display relevant transit schedules and route maps at entrances	☐
BASIC	3.1.2	Provide online links to OC Transpo and STO information	☐
BETTER	3.1.3	Provide real-time arrival information display at entrances	☐
		3.2 Transit fare incentives	
		Commuter travel	
BETTER	3.2.1	Offer preloaded PRESTO cards to encourage commuters to use transit	☐
BETTER ★	3.2.2	Subsidize or reimburse monthly transit pass purchases by employees	☐
		Visitor travel	
BETTER	3.2.3	Arrange inclusion of same-day transit fare in price of tickets (e.g. for festivals, concerts, games)	☐
		3.3 Enhanced public transit service	
		Commuter travel	
BETTER	3.3.1	Contract with OC Transpo to provide enhanced transit services (e.g. for shift changes, weekends)	☐
		Visitor travel	
BETTER	3.3.2	Contract with OC Transpo to provide enhanced transit services (e.g. for festivals, concerts, games)	☐
		3.4 Private transit service	
		Commuter travel	
BETTER	3.4.1	Provide shuttle service when OC Transpo cannot offer sufficient quality or capacity to serve demand (e.g. for shift changes, weekends)	☐
		Visitor travel	
BETTER	3.4.2	Provide shuttle service when OC Transpo cannot offer sufficient quality or capacity to serve demand (e.g. for festivals, concerts, games)	☐

		TDM measures: *Non-residential developments*	Check if proposed & add descriptions
	4.	**RIDESHARING**	
	4.1	**Ridematching service**	
		Commuter travel	
BASIC ★	4.1.1	Provide a dedicated ridematching portal at OttawaRideMatch.com	☐
	4.2	**Carpool parking price incentives**	
		Commuter travel	
BETTER	4.2.1	Provide discounts on parking costs for registered carpools	☐
	4.3	**Vanpool service**	
		Commuter travel	
BETTER	4.3.1	Provide a vanpooling service for long-distance commuters	☐
	5.	**CARSHARING & BIKESHARING**	
	5.1	**Bikeshare stations & memberships**	
BETTER	5.1.1	Contract with provider to install on-site bikeshare station for use by commuters and visitors	☐
		Commuter travel	
BETTER	5.1.2	Provide employees with bikeshare memberships for local business travel	☐
	5.2	**Carshare vehicles & memberships**	
		Commuter travel	
BETTER	5.2.1	Contract with provider to install on-site carshare vehicles and promote their use by tenants	☐
BETTER	5.2.2	Provide employees with carshare memberships for local business travel	☐
	6.	**PARKING**	
	6.1	**Priced parking**	
		Commuter travel	
BASIC ★	6.1.1	Charge for long-term parking (daily, weekly, monthly)	☐
BASIC	6.1.2	Unbundle parking cost from lease rates at multi-tenant sites	☐
		Visitor travel	
BETTER	6.1.3	Charge for short-term parking (hourly)	☐

			TDM measures: *Non-residential developments*	Check if proposed & add descriptions
		7.	**TDM MARKETING & COMMUNICATIONS**	
		7.1	**Multimodal travel information**	
			Commuter travel	
BASIC	★	7.1.1	Provide a multimodal travel option information package to new/relocating employees and students	☐
			Visitor travel	
BETTER	★	7.1.2	Include multimodal travel option information in invitations or advertising that attract visitors or customers (e.g. for festivals, concerts, games)	☐
		7.2	**Personalized trip planning**	
			Commuter travel	
BETTER	★	7.2.1	Offer personalized trip planning to new/relocating employees	☐
		7.3	**Promotions**	
			Commuter travel	
BETTER		7.3.1	Deliver promotions and incentives to maintain awareness, build understanding, and encourage trial of sustainable modes	☐
		8.	**OTHER INCENTIVES & AMENITIES**	
		8.1	**Emergency ride home**	
			Commuter travel	
BETTER	★	8.1.1	Provide emergency ride home service to non-driving commuters	☐
		8.2	**Alternative work arrangements**	
			Commuter travel	
BASIC	★	8.2.1	Encourage flexible work hours	☐
BETTER		8.2.2	Encourage compressed workweeks	☐
BETTER	★	8.2.3	Encourage telework	☐
		8.3	**Local business travel options**	
			Commuter travel	
BASIC	★	8.3.1	Provide local business travel options that minimize the need for employees to bring a personal car to work	☐
		8.4	**Commuter incentives**	
			Commuter travel	
BETTER		8.4.1	Offer employees a taxable, mode-neutral commuting allowance	☐
		8.5	**On-site amenities**	
			Commuter travel	
BETTER		8.5.1	Provide on-site amenities/services to minimize mid-day or mid-commute errands	☐

TDM Measures Checklist:
Residential Developments (multi-family, condominium or subdivision)

Legend

BASIC — The measure is generally feasible and effective, and in most cases would benefit the development and its users

BETTER — The measure could maximize support for users of sustainable modes, and optimize development performance

★ — The measure is one of the most dependably effective tools to encourage the use of sustainable modes

		TDM measures: *Residential developments*	Check if proposed & add descriptions
		1. TDM PROGRAM MANAGEMENT	
		1.1 Program coordinator	
BASIC	★	1.1.1 Designate an internal coordinator, or contract with an external coordinator	☐
		1.2 Travel surveys	
BETTER		1.2.1 Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress	☐
		2. WALKING AND CYCLING	
		2.1 Information on walking/cycling routes & destinations	
BASIC		2.1.1 Display local area maps with walking/cycling access routes and key destinations at major entrances *(multi-family, condominium)*	☐ Not at this time, but a possibility to display in the future.
		2.2 Bicycle skills training	
BETTER		2.2.1 Offer on-site cycling courses for residents, or subsidize off-site courses	☐

			TDM measures: *Residential developments*	Check if proposed & add descriptions
		3.	**TRANSIT**	
		3.1	**Transit information**	
BASIC		3.1.1	Display relevant transit schedules and route maps at entrances *(multi-family, condominium)*	☐ Possibly, the lobby will have screens but the content has yet to be decided.
BETTER		3.1.2	Provide real-time arrival information display at entrances *(multi-family, condominium)*	☐
		3.2	**Transit fare incentives**	
BASIC	★	3.2.1	Offer PRESTO cards preloaded with one monthly transit pass on residence purchase/move-in, to encourage residents to use transit	☐
BETTER		3.2.2	Offer at least one year of free monthly transit passes on residence purchase/move-in	☐
		3.3	**Enhanced public transit service**	
BETTER	★	3.3.1	Contract with OC Transpo to provide early transit services until regular services are warranted by occupancy levels *(subdivision)*	☐
		3.4	**Private transit service**	
BETTER		3.4.1	Provide shuttle service for seniors homes or lifestyle communities (e.g. scheduled mall or supermarket runs)	☐
		4.	**CARSHARING & BIKESHARING**	
		4.1	**Bikeshare stations & memberships**	
BETTER		4.1.1	Contract with provider to install on-site bikeshare station (*multi-family)*	☐
BETTER		4.1.2	Provide residents with bikeshare memberships, either free or subsidized *(multi-family)*	☐
		4.2	**Carshare vehicles & memberships**	
BETTER		4.2.1	Contract with provider to install on-site carshare vehicles and promote their use by residents	☐
BETTER		4.2.2	Provide residents with carshare memberships, either free or subsidized	☐
		5.	**PARKING**	
		5.1	**Priced parking**	
BASIC	★	5.1.1	Unbundle parking cost from purchase price *(condominium)*	☐ N/A
BASIC	★	5.1.2	Unbundle parking cost from monthly rent *(multi-family)*	☒

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

Appendix H

SYNCHRO 2020 Total Traffic Analysis

Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Configurations					
Traffic Volume (vph)	31	48	160	479	68
Future Volume (vph)	31	48	160	479	68
Lane Group Flow (vph)	62	51	168	504	72
Turn Type	Prot	Perm	NA	NA	Perm
Protected Phases	4		2	6	
Permitted Phases		2			6
Detector Phase	4	2	2	6	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	23.5	23.8	23.8	35.8	35.8
Total Split (s)	28.0	72.0	72.0	72.0	72.0
Total Split (%)	28.0%	72.0%	72.0%	72.0%	72.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.8	5.8	5.8	5.8
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	10.2	82.7	82.7	82.7	82.7
Actuated g/C Ratio	0.10	0.83	0.83	0.83	0.83
v/c Ratio	0.32	0.07	0.11	0.34	0.06
Control Delay	30.4	0.9	0.7	3.6	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	30.4	0.9	0.7	3.6	0.7
LOS	C	A	A	A	A
Approach Delay	30.4		0.8	3.3	
Approach LOS	C		A	A	
Queue Length 50th (m)	6.0	0.2	0.8	22.7	0.0
Queue Length 95th (m)	18.0	1.3	3.1	35.9	2.5
Internal Link Dist (m)	40.8		88.4	58.0	
Turn Bay Length (m)		40.0			40.0
Base Capacity (vph)	388	691	1476	1476	1267
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.16	0.07	0.11	0.34	0.06

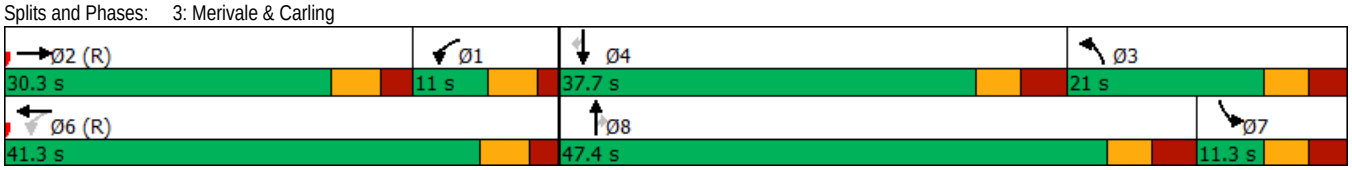
Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 35 (35%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.34	
Intersection Signal Delay: 4.6	Intersection LOS: A
Intersection Capacity Utilization 57.5%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 2: Merivale & Westgate SC

Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	805	149	624	224	198	237	26	227	208
Future Volume (vph)	805	149	624	224	198	237	26	227	208
Lane Group Flow (vph)	922	157	691	236	208	249	27	239	219
Turn Type	NA	pm+pt	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	2	1	6	3	8		7	4	
Permitted Phases		6				8			4
Detector Phase	2	1	6	3	8	8	7	4	4
Switch Phase									
Minimum Initial (s)	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	29.0	10.4	29.0	11.3	37.7	37.7	11.3	37.7	37.7
Total Split (s)	30.3	11.0	41.3	21.0	47.4	47.4	11.3	37.7	37.7
Total Split (%)	30.3%	11.0%	41.3%	21.0%	47.4%	47.4%	11.3%	37.7%	37.7%
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	1.7	2.3	3.0	3.4	3.4	3.0	3.4	3.4
Lost Time Adjust (s)	-2.0	-1.4	-2.0	-2.3	-2.7	-2.7	-2.3	-2.7	-2.7
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	None	C-Max	None	None	None	None	None	None
Act Effct Green (s)	34.4	45.4	45.4	19.9	36.3	36.3	13.7	22.7	22.7
Actuated g/C Ratio	0.34	0.45	0.45	0.20	0.36	0.36	0.14	0.23	0.23
v/c Ratio	0.56	0.63	0.32	0.70	0.32	0.36	0.12	0.59	0.43
Control Delay	27.9	42.8	19.0	49.8	25.9	5.1	33.4	35.9	4.1
Queue Delay	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.1	42.8	19.0	49.8	25.9	5.1	33.4	35.9	4.1
LOS	C	D	B	D	C	A	C	D	A
Approach Delay	28.1		23.4		26.6			21.4	
Approach LOS	C		C		C			C	
Queue Length 50th (m)	28.6	18.2	30.6	41.5	22.9	0.0	5.1	32.4	0.0
Queue Length 95th (m)	78.4	#42.6	45.0	#83.1	48.7	16.0	12.0	39.3	7.5
Internal Link Dist (m)	89.4		139.3		131.8			88.4	
Turn Bay Length (m)		90.0		40.0			40.0		70.0
Base Capacity (vph)	1652	249	2191	341	790	787	232	601	648
Starvation Cap Reductn	150	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.63	0.32	0.69	0.26	0.32	0.12	0.40	0.34

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 84 (84%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 25.3	Intersection LOS: C
Intersection Capacity Utilization 75.1%	ICU Level of Service D
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 3: Merivale & Carling



Lane Group	EBU	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	99	108	1210	7	819	12	2	28	1	43
Future Volume (vph)	99	108	1210	7	819	12	2	28	1	43
Lane Group Flow (vph)	0	218	1289	7	988	0	29	0	30	45
Turn Type	Perm	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases			2		6		8		4	
Permitted Phases	2	2		6		8		4		4
Detector Phase	2	2	2	6	6	8	8	4	4	4
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	23.6	23.6	23.6	23.6	23.6	37.0	37.0	37.0	37.0	37.0
Total Split (s)	63.0	63.0	63.0	63.0	63.0	37.0	37.0	37.0	37.0	37.0
Total Split (%)	63.0%	63.0%	63.0%	63.0%	63.0%	37.0%	37.0%	37.0%	37.0%	37.0%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.9	1.9	1.9	1.9	1.9	4.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)		-1.6	-1.6	-1.6	-1.6		-3.0		-3.0	-3.0
Total Lost Time (s)		4.0	4.0	4.0	4.0		4.0		4.0	4.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)		79.2	79.2	79.2	79.2		17.0		17.0	17.0
Actuated g/C Ratio		0.79	0.79	0.79	0.79		0.17		0.17	0.17
v/c Ratio		0.58	0.33	0.03	0.26		0.11		0.14	0.16
Control Delay		21.6	7.8	6.1	5.6		20.8		33.4	9.8
Queue Delay		0.0	0.2	0.0	0.1		0.0		0.0	0.0
Total Delay		21.6	8.0	6.1	5.8		20.8		33.4	9.8
LOS		C	A	A	A		C		C	A
Approach Delay			10.0		5.8		20.8		19.3	
Approach LOS			A		A		C		B	
Queue Length 50th (m)		27.2	33.4	0.3	18.2		2.6		5.3	0.0
Queue Length 95th (m)		#77.6	79.3	m1.6	69.4		8.1		10.4	7.4
Internal Link Dist (m)			112.0		89.4		10.8		48.4	
Turn Bay Length (m)		70.0		36.0						
Base Capacity (vph)		378	3850	271	3761		485		431	519
Starvation Cap Reductn		0	1345	0	1497		0		0	0
Spillback Cap Reductn		0	0	0	0		0		0	0
Storage Cap Reductn		0	0	0	0		0		0	0
Reduced v/c Ratio		0.58	0.51	0.03	0.44		0.06		0.07	0.09

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.58	
Intersection Signal Delay: 8.7	Intersection LOS: A
Intersection Capacity Utilization 73.9%	ICU Level of Service D
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Carling & Westgate SC E

Lane Group	EBT	WBT	SBL
Lane Configurations			
Traffic Volume (vph)	1027	1112	13
Future Volume (vph)	1027	1112	13
Lane Group Flow (vph)	1081	1185	34
Turn Type	NA	NA	Prot
Protected Phases	2	6	4
Permitted Phases			
Detector Phase	2	6	4
Switch Phase			
Minimum Initial (s)	10.0	10.0	10.0
Minimum Split (s)	24.0	48.3	37.1
Total Split (s)	62.0	62.0	38.0
Total Split (%)	62.0%	62.0%	38.0%
Yellow Time (s)	3.7	3.7	3.0
All-Red Time (s)	1.6	1.6	3.1
Lost Time Adjust (s)	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.3	6.1
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	C-Max	C-Max	None
Act Effct Green (s)	87.2	87.2	10.0
Actuated g/C Ratio	0.87	0.87	0.10
v/c Ratio	0.25	0.28	0.19
Control Delay	1.0	3.9	26.5
Queue Delay	0.0	0.1	0.0
Total Delay	1.0	4.0	26.5
LOS	A	A	C
Approach Delay	1.0	4.0	26.5
Approach LOS	A	A	C
Queue Length 50th (m)	8.2	13.9	2.5
Queue Length 95th (m)	m7.7	59.4	11.6
Internal Link Dist (m)	32.6	112.0	92.7
Turn Bay Length (m)			
Base Capacity (vph)	4245	4237	527
Starvation Cap Reductn	0	1627	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.25	0.45	0.06

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 60 (60%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.28	
Intersection Signal Delay: 2.9	Intersection LOS: A
Intersection Capacity Utilization 40.8%	ICU Level of Service A
Analysis Period (min) 15	

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

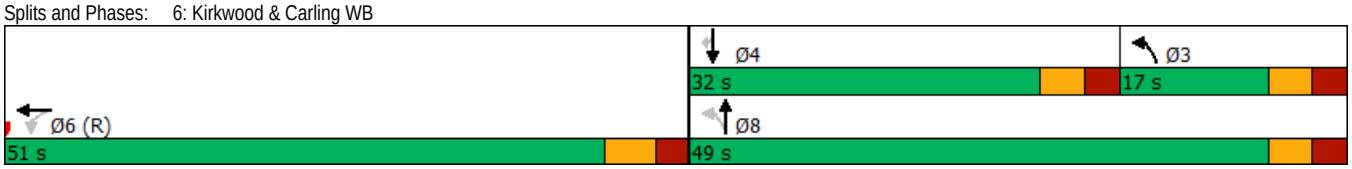
Splits and Phases: 5: Carling & Westgate SC W

Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	215	1576	280	319	402	360
Future Volume (vph)	215	1576	280	319	402	360
Lane Group Flow (vph)	226	1925	295	336	423	379
Turn Type	Perm	NA	pm+pt	NA	NA	Perm
Protected Phases		6	3	8	4	
Permitted Phases	6		8			4
Detector Phase	6	6	3	8	4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	35.3	35.3	11.0	29.0	29.0	29.0
Total Split (s)	51.0	51.0	17.0	49.0	32.0	32.0
Total Split (%)	51.0%	51.0%	17.0%	49.0%	32.0%	32.0%
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	2.6	2.6	2.7	2.7	2.7	2.7
Lost Time Adjust (s)	-2.3	-2.3	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lag		Lead	Lead
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	C-Max	C-Max	None	Ped	Ped	Ped
Act Effct Green (s)	50.7	50.7	41.3	41.3	26.9	26.9
Actuated g/C Ratio	0.51	0.51	0.41	0.41	0.27	0.27
v/c Ratio	0.14	0.80	0.75	0.46	0.46	0.81
Control Delay	12.1	19.3	23.8	11.4	32.2	39.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.1	19.3	23.8	11.4	32.2	39.9
LOS	B	B	C	B	C	D
Approach Delay		18.6		17.2	35.9	
Approach LOS		B		B	D	
Queue Length 50th (m)	9.1	69.2	20.9	24.0	35.4	50.6
Queue Length 95th (m)	22.7	129.5	m29.1	m31.6	49.5	#95.7
Internal Link Dist (m)		346.9		152.2	73.8	
Turn Bay Length (m)	40.0					22.0
Base Capacity (vph)	1659	2412	438	802	949	481
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	0.14	0.80	0.67	0.42	0.45	0.79

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 22.2	Intersection LOS: C
Intersection Capacity Utilization 98.6%	ICU Level of Service F
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Kirkwood & Carling WB

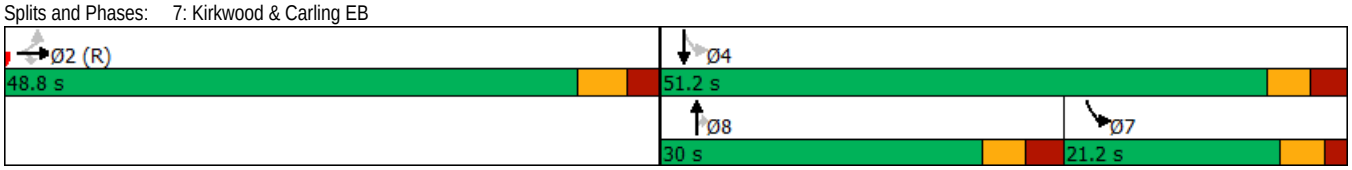


Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	187	2040	422	384	399	484	224
Future Volume (vph)	187	2040	422	384	399	484	224
Lane Group Flow (vph)	177	2167	444	404	420	509	236
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		2		8		7	4
Permitted Phases	2		2		8	4	
Detector Phase	2	2	2	8	8	7	4
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	29.2	29.2	29.2	26.1	26.1	10.1	26.1
Total Split (s)	48.8	48.8	48.8	30.0	30.0	21.2	51.2
Total Split (%)	48.8%	48.8%	48.8%	30.0%	30.0%	21.2%	51.2%
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.5	2.5	2.8	2.8	1.8	2.8
Lost Time Adjust (s)	-2.2	-2.2	-2.2	-2.1	-2.1	-1.1	-2.1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag				Lead	Lead	Lag	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	C-Max	C-Max	C-Max	Min	Min	Min	Min
Act Effct Green (s)	44.8	44.8	44.8	26.0	26.0	47.2	47.2
Actuated g/C Ratio	0.45	0.45	0.45	0.26	0.26	0.47	0.47
v/c Ratio	0.27	1.05	0.52	0.46	1.07	0.99	0.28
Control Delay	18.8	62.9	5.7	33.1	101.1	68.0	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.8	62.9	5.7	33.1	101.1	68.0	12.8
LOS	B	E	A	C	F	E	B
Approach Delay		51.0		67.8			50.5
Approach LOS		D		E			D
Queue Length 50th (m)	24.4	~178.5	7.1	34.6	~90.4	79.9	19.7
Queue Length 95th (m)	41.2	#209.3	28.4	48.7	#147.1	#143.7	53.0
Internal Link Dist (m)		164.7		158.6			152.2
Turn Bay Length (m)	40.0				90.0		
Base Capacity (vph)	652	2062	855	881	394	512	842
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	1.05	0.52	0.46	1.07	0.99	0.28

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 19 (19%), Referenced to phase 2:EBTL, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.07	
Intersection Signal Delay: 54.1	Intersection LOS: D
Intersection Capacity Utilization 98.6%	ICU Level of Service F
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Kirkwood & Carling EB



Lane Group	EBT	WBR
Lane Configurations		
Traffic Volume (vph)	1093	1114
Future Volume (vph)	1093	1114
Lane Group Flow (vph)	1151	1173
Sign Control	Free	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 30.8%		ICU Level of Service A
Analysis Period (min) 15		

Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Configurations					
Traffic Volume (vph)	82	84	192	470	99
Future Volume (vph)	82	84	192	470	99
Lane Group Flow (vph)	185	88	202	495	104
Turn Type	Perm	Perm	NA	NA	Perm
Protected Phases			2	6	
Permitted Phases	4	2			6
Detector Phase	4	2	2	6	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	23.5	24.0	24.0	35.8	35.8
Total Split (s)	36.0	74.0	74.0	74.0	74.0
Total Split (%)	32.7%	67.3%	67.3%	67.3%	67.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.8	5.8	5.8	5.8
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	15.2	83.5	83.5	83.5	83.5
Actuated g/C Ratio	0.14	0.76	0.76	0.76	0.76
v/c Ratio	0.69	0.14	0.15	0.37	0.09
Control Delay	45.2	1.4	1.1	5.8	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	45.2	1.4	1.1	5.8	1.1
LOS	D	A	A	A	A
Approach Delay	45.3		1.2	5.0	
Approach LOS	D		A	A	
Queue Length 50th (m)	27.6	0.9	2.0	28.9	0.0
Queue Length 95th (m)	47.7	m2.0	3.8	56.0	4.6
Internal Link Dist (m)	28.7		87.9	55.1	
Turn Bay Length (m)		40.0			40.0
Base Capacity (vph)	486	620	1354	1354	1177
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.38	0.14	0.15	0.37	0.09

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 90 (82%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 10.9	Intersection LOS: B
Intersection Capacity Utilization 59.6%	ICU Level of Service B
Analysis Period (min) 15	

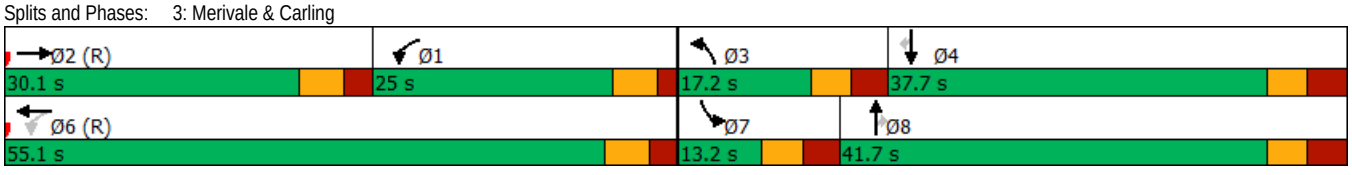
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Merivale & Westgate SC

Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	864	349	1439	176	209	185	51	281	188
Future Volume (vph)	864	349	1439	176	209	185	51	281	188
Lane Group Flow (vph)	1029	367	1557	185	220	195	54	296	198
Turn Type	NA	pm+pt	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	2	1	6	3	8		7	4	
Permitted Phases		6				8			4
Detector Phase	2	1	6	3	8	8	7	4	4
Switch Phase									
Minimum Initial (s)	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	29.0	10.4	29.0	11.3	37.7	37.7	11.3	37.7	37.7
Total Split (s)	30.1	25.0	55.1	17.2	41.7	41.7	13.2	37.7	37.7
Total Split (%)	27.4%	22.7%	50.1%	15.6%	37.9%	37.9%	12.0%	34.3%	34.3%
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	1.7	2.3	3.0	3.4	3.4	3.0	3.4	3.4
Lost Time Adjust (s)	-2.0	-1.4	-2.0	-2.3	-2.7	-2.7	-2.3	-2.7	-2.7
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	None	C-Max	None	None	None	None	None	None
Act Effct Green (s)	33.3	58.3	58.3	13.2	33.1	33.1	8.9	26.5	26.5
Actuated g/C Ratio	0.30	0.53	0.53	0.12	0.30	0.30	0.08	0.24	0.24
v/c Ratio	0.71	0.90	0.61	0.91	0.41	0.34	0.39	0.69	0.42
Control Delay	26.9	62.6	19.9	92.5	33.1	5.5	61.4	39.6	7.7
Queue Delay	0.9	0.0	0.1	0.0	0.0	0.0	0.0	0.7	0.0
Total Delay	27.8	62.6	20.0	92.5	33.1	5.5	61.4	40.3	7.7
LOS	C	E	C	F	C	A	E	D	A
Approach Delay	27.8		28.1		42.4			30.6	
Approach LOS	C		C		D			C	
Queue Length 50th (m)	48.2	56.9	81.7	39.8	38.7	0.0	11.1	50.4	2.6
Queue Length 95th (m)	#100.8	#116.9	110.2	#80.7	55.5	14.7	23.9	54.1	12.5
Internal Link Dist (m)	81.2		139.3		110.3			87.9	
Turn Bay Length (m)		90.0		40.0			40.0		70.0
Base Capacity (vph)	1452	409	2569	203	611	628	141	546	554
Starvation Cap Reductn	185	0	0	0	0	0	0	68	0
Spillback Cap Reductn	0	0	127	0	0	0	0	0	4
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.90	0.64	0.91	0.36	0.31	0.38	0.62	0.36

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 7 (6%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 30.5	Intersection LOS: C
Intersection Capacity Utilization 85.0%	ICU Level of Service E
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 3: Merivale & Carling

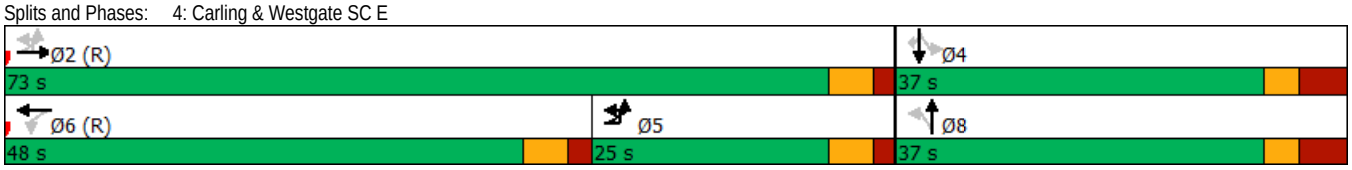


Lane Group	EBU	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	70	188	699	7	1763	10	5	115	1	96
Future Volume (vph)	70	188	699	7	1763	10	5	115	1	96
Lane Group Flow (vph)	0	272	749	7	1982	0	29	0	122	101
Turn Type	pm+pt	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	5	2		6		8		4	
Permitted Phases	2	2		6		8		4		4
Detector Phase	5	5	2	6	6	8	8	4	4	4
Switch Phase										
Minimum Initial (s)	5.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.6	10.6	23.6	23.6	23.6	37.0	37.0	37.0	37.0	37.0
Total Split (s)	25.0	25.0	73.0	48.0	48.0	37.0	37.0	37.0	37.0	37.0
Total Split (%)	22.7%	22.7%	66.4%	43.6%	43.6%	33.6%	33.6%	33.6%	33.6%	33.6%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.9	1.9	1.9	1.9	1.9	4.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)		-1.6	-1.6	-1.6	-1.6		-3.0		-3.0	-3.0
Total Lost Time (s)		4.0	4.0	4.0	4.0		4.0		4.0	4.0
Lead/Lag	Lag	Lag		Lead	Lead					
Lead-Lag Optimize?	Yes	Yes		Yes	Yes					
Recall Mode	None	None	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)		81.3	81.3	56.3	56.3		20.7		20.7	20.7
Actuated g/C Ratio		0.74	0.74	0.51	0.51		0.19		0.19	0.19
v/c Ratio		0.70	0.21	0.02	0.81		0.10		0.53	0.28
Control Delay		43.9	2.7	11.4	16.0		22.0		46.9	8.3
Queue Delay		0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay		43.9	2.7	11.4	16.0		22.0		46.9	8.3
LOS		D	A	B	B		C		D	A
Approach Delay			13.7		15.9		22.0		29.4	
Approach LOS			B		B		C		C	
Queue Length 50th (m)		43.2	5.7	0.4	47.5		2.9		24.3	0.0
Queue Length 95th (m)		#77.4	10.4	m1.0	#190.1		9.2		36.5	11.9
Internal Link Dist (m)			113.0		81.2		26.4		38.7	
Turn Bay Length (m)		70.0		36.0						
Base Capacity (vph)		388	3583	309	2459		444		369	508
Starvation Cap Reductn		0	0	0	0		0		0	0
Spillback Cap Reductn		0	102	0	0		0		0	0
Storage Cap Reductn		0	0	0	0		0		0	0
Reduced v/c Ratio		0.70	0.22	0.02	0.81		0.07		0.33	0.20

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 7 (6%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 16.2	Intersection LOS: B
Intersection Capacity Utilization 102.2%	ICU Level of Service G
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Carling & Westgate SC E



Lane Group	EBT	WBT	SBL
Lane Configurations			
Traffic Volume (vph)	864	1736	25
Future Volume (vph)	864	1736	25
Lane Group Flow (vph)	909	1834	68
Turn Type	NA	NA	Prot
Protected Phases	2	6	4
Permitted Phases			
Detector Phase	2	6	4
Switch Phase			
Minimum Initial (s)	10.0	10.0	10.0
Minimum Split (s)	24.1	42.3	37.1
Total Split (s)	71.0	71.0	39.0
Total Split (%)	64.5%	64.5%	35.5%
Yellow Time (s)	3.7	3.7	3.0
All-Red Time (s)	1.6	1.6	3.1
Lost Time Adjust (s)	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.3	6.1
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	C-Max	C-Max	None
Act Effct Green (s)	92.2	92.2	10.7
Actuated g/C Ratio	0.84	0.84	0.10
v/c Ratio	0.22	0.45	0.40
Control Delay	3.6	0.5	42.8
Queue Delay	0.0	0.2	0.0
Total Delay	3.6	0.7	42.8
LOS	A	A	D
Approach Delay	3.6	0.7	42.8
Approach LOS	A	A	D
Queue Length 50th (m)	22.2	1.4	10.5
Queue Length 95th (m)	29.5	4.6	23.6
Internal Link Dist (m)	42.6	113.0	40.2
Turn Bay Length (m)			
Base Capacity (vph)	4081	4077	491
Starvation Cap Reductn	0	1155	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.22	0.63	0.14

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 18 (16%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.45	
Intersection Signal Delay: 2.7	Intersection LOS: A
Intersection Capacity Utilization 53.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 5: Carling/Carling EB & Westgate SC W

Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	234	2518	227	567	522	410
Future Volume (vph)	234	2518	227	567	522	410
Lane Group Flow (vph)	246	2985	239	597	549	432
Turn Type	Perm	NA	pm+pt	NA	NA	Perm
Protected Phases		6	3	8	4	
Permitted Phases	6		8			4
Detector Phase	6	6	3	8	4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	35.3	35.3	11.0	29.0	29.0	29.0
Total Split (s)	68.0	68.0	12.0	42.0	30.0	30.0
Total Split (%)	61.8%	61.8%	10.9%	38.2%	27.3%	27.3%
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	2.6	2.6	2.7	2.7	2.7	2.7
Lost Time Adjust (s)	-2.3	-2.3	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	C-Max	C-Max	None	Ped	Ped	Ped
Act Effct Green (s)	64.0	64.0	38.0	38.0	26.0	26.0
Actuated g/C Ratio	0.58	0.58	0.35	0.35	0.24	0.24
v/c Ratio	0.13	1.08	1.08	0.97	0.69	1.06
Control Delay	5.4	57.1	108.2	47.1	43.4	95.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.4	57.1	108.2	47.1	43.4	95.5
LOS	A	E	F	D	D	F
Approach Delay		53.2		64.6	66.3	
Approach LOS		D		E	E	
Queue Length 50th (m)	5.7	~263.5	~44.5	85.7	56.8	~86.4
Queue Length 95th (m)	8.4	#282.7	m#76.8	#186.1	75.4	#147.0
Internal Link Dist (m)		113.3		144.7	73.8	
Turn Bay Length (m)	40.0					22.0
Base Capacity (vph)	1902	2769	222	616	801	406
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	0.13	1.08	1.08	0.97	0.69	1.06

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 28 (25%), Referenced to phase 6:WBTL, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.08	
Intersection Signal Delay: 57.6	Intersection LOS: E
Intersection Capacity Utilization 112.4%	ICU Level of Service H
Analysis Period (min) 15	

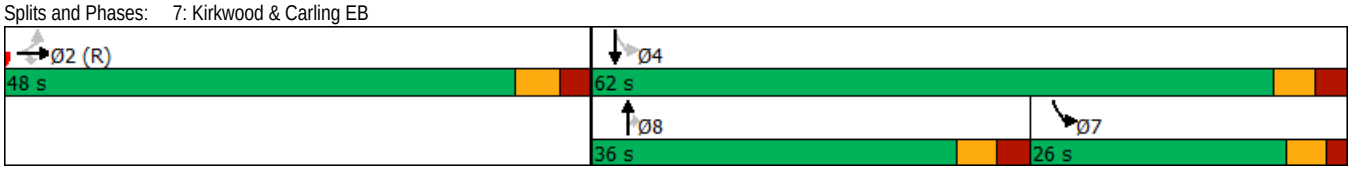
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Kirkwood & Carling WB

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	419	1365	405	341	308	441	314
Future Volume (vph)	419	1365	405	341	308	441	314
Lane Group Flow (vph)	392	1486	426	359	324	464	331
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		2		8		7	4
Permitted Phases	2		2		8	4	
Detector Phase	2	2	2	8	8	7	4
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	29.2	29.2	29.2	26.1	26.1	10.1	26.1
Total Split (s)	48.0	48.0	48.0	36.0	36.0	26.0	62.0
Total Split (%)	43.6%	43.6%	43.6%	32.7%	32.7%	23.6%	56.4%
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.5	2.5	2.8	2.8	1.8	2.8
Lost Time Adjust (s)	-2.2	-2.2	-2.2	-2.1	-2.1	-1.1	-2.1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag				Lead	Lead	Lag	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	C-Max	C-Max	C-Max	Min	Min	Min	Min
Act Effct Green (s)	46.9	46.9	46.9	29.1	29.1	55.1	55.1
Actuated g/C Ratio	0.43	0.43	0.43	0.26	0.26	0.50	0.50
v/c Ratio	0.63	0.76	0.51	0.40	0.81	0.80	0.37
Control Delay	31.6	30.7	5.7	34.1	53.8	26.0	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.6	30.7	5.7	34.2	53.8	26.0	7.7
LOS	C	C	A	C	D	C	A
Approach Delay		26.2		43.5			18.4
Approach LOS		C		D			B
Queue Length 50th (m)	79.0	107.9	4.8	32.1	62.6	44.9	14.5
Queue Length 95th (m)	119.1	128.1	27.0	45.0	#96.3	#79.8	23.0
Internal Link Dist (m)		161.6		158.6			144.7
Turn Bay Length (m)	40.0				90.0		
Base Capacity (vph)	620	1956	834	986	441	588	940
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	50	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.76	0.51	0.38	0.73	0.79	0.35

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 60 (55%), Referenced to phase 2:EBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 27.7	Intersection LOS: C
Intersection Capacity Utilization 112.4%	ICU Level of Service H
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 7: Kirkwood & Carling EB



Lane Group	EBT	WBR
Lane Configurations		
Traffic Volume (vph)	1001	1868
Future Volume (vph)	1001	1868
Lane Group Flow (vph)	1054	1966
Sign Control	Free	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 49.3%		ICU Level of Service A
Analysis Period (min) 15		

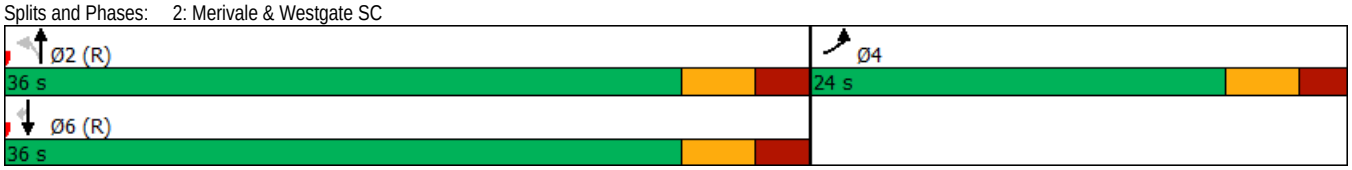
Appendix I

SYNCHRO 2025 Total Traffic Analysis

Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Configurations					
Traffic Volume (vph)	31	48	167	501	68
Future Volume (vph)	31	48	167	501	68
Lane Group Flow (vph)	62	51	176	527	72
Turn Type	Prot	Perm	NA	NA	Perm
Protected Phases	4		2	6	
Permitted Phases		2			6
Detector Phase	4	2	2	6	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	23.5	23.8	23.8	35.8	35.8
Total Split (s)	24.0	36.0	36.0	36.0	36.0
Total Split (%)	40.0%	60.0%	60.0%	60.0%	60.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.8	5.8	5.8	5.8
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	10.0	47.2	47.2	47.2	47.2
Actuated g/C Ratio	0.17	0.79	0.79	0.79	0.79
v/c Ratio	0.21	0.08	0.13	0.38	0.06
Control Delay	15.8	0.8	0.7	5.1	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	15.8	0.8	0.7	5.1	1.4
LOS	B	A	A	A	A
Approach Delay	15.8		0.7	4.6	
Approach LOS	B		A	A	
Queue Length 50th (m)	3.1	0.2	0.8	24.2	0.0
Queue Length 95th (m)	11.7	0.8	2.0	40.7	3.1
Internal Link Dist (m)	40.8		88.4	58.0	
Turn Bay Length (m)		40.0			40.0
Base Capacity (vph)	522	636	1404	1404	1209
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.12	0.08	0.13	0.38	0.06

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 60	
Offset: 13 (22%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.38	
Intersection Signal Delay: 4.4	Intersection LOS: A
Intersection Capacity Utilization 58.8%	ICU Level of Service B
Analysis Period (min) 15	

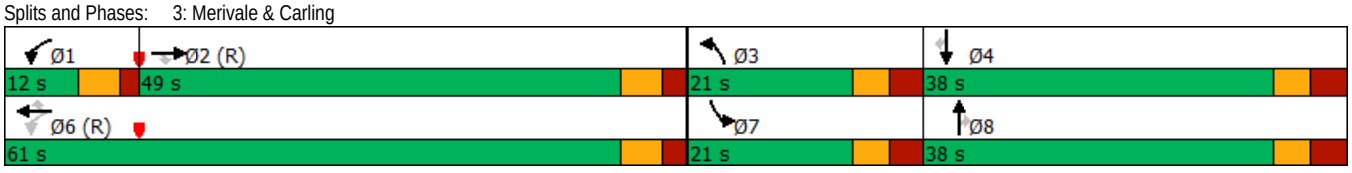
Splits and Phases: 2: Merivale & Westgate SC



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	861	71	149	663	32	224	207	237	26	238	208
Future Volume (vph)	861	71	149	663	32	224	207	237	26	238	208
Lane Group Flow (vph)	906	75	157	698	34	236	218	249	27	251	219
Turn Type	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	2		1	6		3	8		7	4	
Permitted Phases		2	6		6			8			4
Detector Phase	2	2	1	6	6	3	8	8	7	4	4
Switch Phase											
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	29.0	29.0	10.4	29.0	29.0	11.3	37.7	37.7	11.3	37.7	37.7
Total Split (s)	49.0	49.0	12.0	61.0	61.0	21.0	38.0	38.0	21.0	38.0	38.0
Total Split (%)	40.8%	40.8%	10.0%	50.8%	50.8%	17.5%	31.7%	31.7%	17.5%	31.7%	31.7%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	1.7	2.3	2.3	3.0	3.4	3.4	3.0	3.4	3.4
Lost Time Adjust (s)	-2.0	0.0	-1.4	-2.0	0.0	-2.3	-2.7	-2.7	-2.3	-2.7	-2.7
Total Lost Time (s)	4.0	6.0	4.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	50.6	48.6	65.7	65.7	63.7	17.0	37.4	37.4	9.8	25.3	25.3
Actuated g/C Ratio	0.42	0.40	0.55	0.55	0.53	0.14	0.31	0.31	0.08	0.21	0.21
v/c Ratio	0.63	0.12	0.56	0.38	0.04	0.98	0.39	0.40	0.20	0.67	0.54
Control Delay	25.4	0.5	24.1	17.1	0.1	105.8	35.3	5.7	51.3	47.3	17.2
Queue Delay	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.2
Total Delay	26.2	0.5	24.1	17.1	0.1	105.8	35.3	5.7	51.3	47.7	17.4
LOS	C	A	C	B	A	F	D	A	D	D	B
Approach Delay	24.2			17.7			48.5			34.5	
Approach LOS	C			B			D			C	
Queue Length 50th (m)	89.0	0.3	17.5	46.7	0.0	56.1	42.9	0.0	6.2	45.0	15.7
Queue Length 95th (m)	67.4	0.0	#37.3	70.5	0.0	#106.3	61.1	17.7	15.6	57.6	28.5
Internal Link Dist (m)	89.4			139.3			131.8			88.4	
Turn Bay Length (m)		25.0	90.0		25.0	40.0			40.0		70.0
Base Capacity (vph)	1430	640	282	1855	779	240	561	629	240	505	504
Starvation Cap Reductn	245	0	0	0	0	0	0	0	0	46	33
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.12	0.56	0.38	0.04	0.98	0.39	0.40	0.11	0.55	0.46

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 113 (94%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.98	
Intersection Signal Delay: 29.6	Intersection LOS: C
Intersection Capacity Utilization 81.3%	ICU Level of Service D
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 3: Merivale & Carling



Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	99	108	1295	14	7	868	58	12	2	28	1	43
Future Volume (vph)	99	108	1295	14	7	868	58	12	2	28	1	43
Lane Group Flow (vph)	0	218	1363	15	7	914	61	0	29	0	30	45
Turn Type	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases			2			6			8		4	
Permitted Phases	2	2		2	6		6	8		4		4
Detector Phase	2	2	2	2	6	6	6	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	23.6	23.6	23.6	23.6	23.6	23.6	23.6	37.0	37.0	37.0	37.0	37.0
Total Split (s)	83.0	83.0	83.0	83.0	83.0	83.0	83.0	37.0	37.0	37.0	37.0	37.0
Total Split (%)	69.2%	69.2%	69.2%	69.2%	69.2%	69.2%	69.2%	30.8%	30.8%	30.8%	30.8%	30.8%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.9	1.9	1.9	1.9	1.9	1.9	1.9	4.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)		-1.6	-1.6	0.0	-1.6	-1.6	0.0		-3.0		-3.0	-3.0
Total Lost Time (s)		4.0	4.0	5.6	4.0	4.0	5.6		4.0		4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)		99.2	99.2	97.9	99.2	99.2	97.9		17.0		17.0	17.0
Actuated g/C Ratio		0.83	0.83	0.82	0.83	0.83	0.82		0.14		0.14	0.14
v/c Ratio		0.50	0.49	0.01	0.03	0.33	0.05		0.14		0.16	0.18
Control Delay		10.4	4.9	0.2	2.6	2.1	0.7		26.8		44.2	12.4
Queue Delay		0.0	0.1	0.0	0.0	0.2	0.0		0.0		0.0	0.0
Total Delay		10.4	4.9	0.2	2.6	2.3	0.7		26.8		44.2	12.4
LOS		B	A	A	A	A	A		C		D	B
Approach Delay			5.6			2.2			26.8		25.1	
Approach LOS			A			A			C		C	
Queue Length 50th (m)		9.5	31.1	0.0	0.0	8.2	0.3		3.2		6.6	0.0
Queue Length 95th (m)		42.2	108.1	m0.2	m0.5	m19.3	m0.4		10.0		12.9	8.9
Internal Link Dist (m)			112.0			89.4			10.8		48.4	
Turn Bay Length (m)		100.0		25.0	45.0		25.0					
Base Capacity (vph)		434	2802	1199	259	2802	1148		403		353	439
Starvation Cap Reductn		0	313	0	0	882	0		0		0	0
Spillback Cap Reductn		0	157	0	0	0	0		0		0	0
Storage Cap Reductn		0	0	0	0	0	0		0		0	0
Reduced v/c Ratio		0.50	0.55	0.01	0.03	0.48	0.05		0.07		0.08	0.10

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 108 (90%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.50	
Intersection Signal Delay: 5.1	Intersection LOS: A
Intersection Capacity Utilization 79.4%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 4: Carling & Westgate SC E

Lane Group	EBT	WBT	WBR	SBL
Lane Configurations				
Traffic Volume (vph)	1098	1181	13	13
Future Volume (vph)	1098	1181	13	13
Lane Group Flow (vph)	1156	1243	14	34
Turn Type	NA	NA	Perm	Prot
Protected Phases	2	6		4
Permitted Phases			6	
Detector Phase	2	6	6	4
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	24.0	48.3	48.3	37.1
Total Split (s)	83.0	83.0	83.0	37.0
Total Split (%)	69.2%	69.2%	69.2%	30.8%
Yellow Time (s)	3.7	3.7	3.7	3.0
All-Red Time (s)	1.6	1.6	1.6	3.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.3	5.3	6.1
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	C-Max	None
Act Effct Green (s)	107.2	107.2	107.2	10.0
Actuated g/C Ratio	0.89	0.89	0.89	0.08
v/c Ratio	0.38	0.41	0.01	0.22
Control Delay	2.4	1.1	0.2	32.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	2.4	1.1	0.2	32.6
LOS	A	A	A	C
Approach Delay	2.4	1.1		32.6
Approach LOS	A	A		C
Queue Length 50th (m)	30.0	5.2	0.0	3.1
Queue Length 95th (m)	36.7	8.8	m0.2	13.2
Internal Link Dist (m)	32.6	112.0		92.7
Turn Bay Length (m)			25.0	
Base Capacity (vph)	3027	3027	1355	429
Starvation Cap Reductn	0	343	0	0
Spillback Cap Reductn	80	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.39	0.46	0.01	0.08

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 119 (99%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.41	
Intersection Signal Delay: 2.1	Intersection LOS: A
Intersection Capacity Utilization 52.3%	ICU Level of Service A
Analysis Period (min) 15	

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

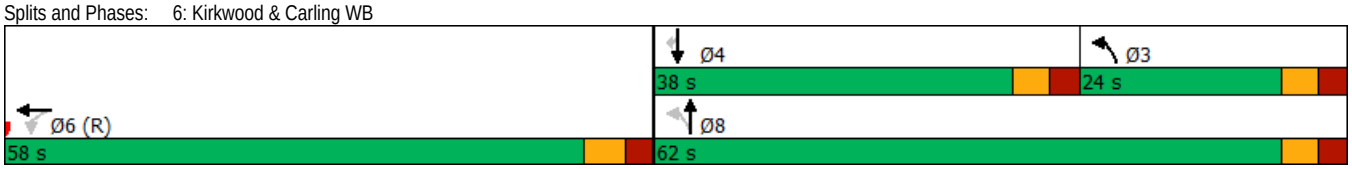
Splits and Phases: 5: Carling & Westgate SC W

Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	215	1666	280	339	425	360
Future Volume (vph)	215	1666	280	339	425	360
Lane Group Flow (vph)	226	2020	295	357	447	379
Turn Type	Perm	NA	pm+pt	NA	NA	Perm
Protected Phases		6	3	8	4	
Permitted Phases	6		8			4
Detector Phase	6	6	3	8	4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	35.3	35.3	11.0	29.0	29.0	29.0
Total Split (s)	58.0	58.0	24.0	62.0	38.0	38.0
Total Split (%)	48.3%	48.3%	20.0%	51.7%	31.7%	31.7%
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	2.6	2.6	2.7	2.7	2.7	2.7
Lost Time Adjust (s)	-2.3	-2.3	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lag		Lead	Lead
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	C-Max	C-Max	None	Ped	Ped	Ped
Act Effct Green (s)	63.2	63.2	48.8	48.8	31.5	31.5
Actuated g/C Ratio	0.53	0.53	0.41	0.41	0.26	0.26
v/c Ratio	0.13	0.81	0.78	0.49	0.50	0.85
Control Delay	16.2	27.7	43.0	27.9	39.3	51.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.2	27.7	43.0	27.9	39.3	51.0
LOS	B	C	D	C	D	D
Approach Delay		26.6		34.7	44.7	
Approach LOS		C		C	D	
Queue Length 50th (m)	13.8	141.1	31.6	38.5	45.7	65.7
Queue Length 95th (m)	23.5	#198.4	m39.1	m46.3	61.2	#113.6
Internal Link Dist (m)		110.3		152.2	73.8	
Turn Bay Length (m)	40.0					22.0
Base Capacity (vph)	1719	2496	472	862	960	472
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	0.13	0.81	0.63	0.41	0.47	0.80

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 16 (13%), Referenced to phase 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 32.0	Intersection LOS: C
Intersection Capacity Utilization 100.8%	ICU Level of Service G
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Kirkwood & Carling WB

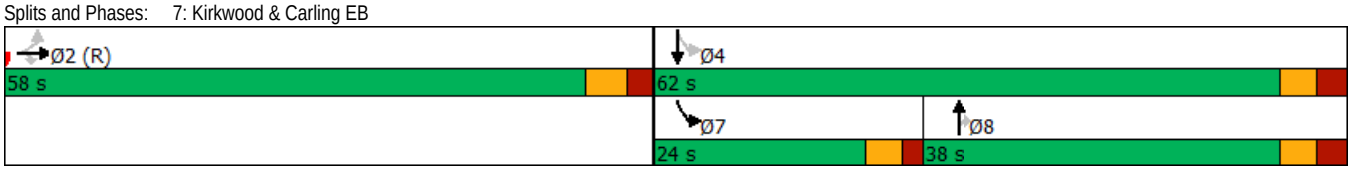


Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	187	2187	422	407	399	484	252
Future Volume (vph)	187	2187	422	407	399	484	252
Lane Group Flow (vph)	177	2322	444	428	420	509	265
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		2		8		7	4
Permitted Phases	2		2		8	4	
Detector Phase	2	2	2	8	8	7	4
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	29.2	29.2	29.2	26.1	26.1	10.1	26.1
Total Split (s)	58.0	58.0	58.0	38.0	38.0	24.0	62.0
Total Split (%)	48.3%	48.3%	48.3%	31.7%	31.7%	20.0%	51.7%
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.5	2.5	2.8	2.8	1.8	2.8
Lost Time Adjust (s)	-2.2	-2.2	-2.2	-2.1	-2.1	-1.1	-2.1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	C-Max	C-Max	C-Max	Min	Min	Min	Min
Act Effct Green (s)	54.0	54.0	54.0	34.0	34.0	58.0	58.0
Actuated g/C Ratio	0.45	0.45	0.45	0.28	0.28	0.48	0.48
v/c Ratio	0.27	1.12	0.55	0.45	0.98	1.08	0.31
Control Delay	22.1	93.7	10.2	37.1	81.8	86.9	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.1	93.7	10.2	37.1	81.8	86.9	13.7
LOS	C	F	B	D	F	F	B
Approach Delay		76.8		59.2			61.8
Approach LOS		E		E			E
Queue Length 50th (m)	29.6	~244.3	21.8	43.5	98.1	~123.0	22.8
Queue Length 95th (m)	48.2	#274.3	51.8	58.7	#161.8	#204.6	32.6
Internal Link Dist (m)		161.6		158.6			152.2
Turn Bay Length (m)	40.0				90.0		
Base Capacity (vph)	655	2071	808	960	429	471	862
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	1.12	0.55	0.45	0.98	1.08	0.31

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 16 (13%), Referenced to phase 2:EBTL, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.12	
Intersection Signal Delay: 71.0	Intersection LOS: E
Intersection Capacity Utilization 100.8%	ICU Level of Service G
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Kirkwood & Carling EB



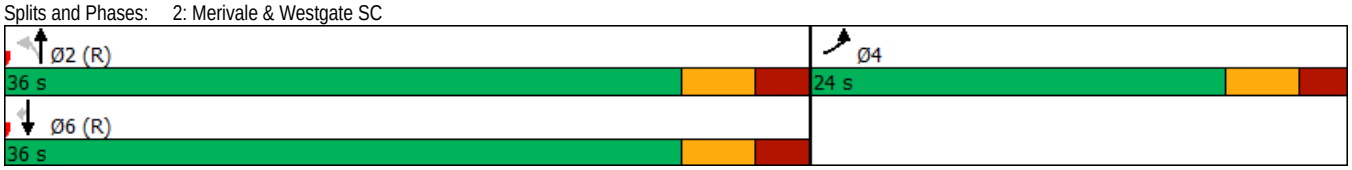
Lane Group		
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Lane Group Flow (vph)		
Sign Control		

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 0.0%		ICU Level of Service A
Analysis Period (min) 15		

Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Configurations					
Traffic Volume (vph)	82	84	200	491	99
Future Volume (vph)	82	84	200	491	99
Lane Group Flow (vph)	185	88	211	517	104
Turn Type	Prot	Perm	NA	NA	Perm
Protected Phases	4		2	6	
Permitted Phases		2			6
Detector Phase	4	2	2	6	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.0	24.0	24.0	35.8	35.8
Total Split (s)	24.0	36.0	36.0	36.0	36.0
Total Split (%)	40.0%	60.0%	60.0%	60.0%	60.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.8	5.8	5.8	5.8
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	10.9	37.8	37.8	37.8	37.8
Actuated g/C Ratio	0.18	0.63	0.63	0.63	0.63
v/c Ratio	0.49	0.18	0.19	0.46	0.10
Control Delay	15.7	2.9	2.5	7.8	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	15.7	2.9	2.5	7.8	1.6
LOS	B	A	A	A	A
Approach Delay	15.7		2.6	6.8	
Approach LOS	B		A	A	
Queue Length 50th (m)	8.5	0.7	1.7	23.5	0.0
Queue Length 95th (m)	22.0	1.6	3.1	49.6	4.7
Internal Link Dist (m)	28.7		87.9	55.1	
Turn Bay Length (m)		40.0			40.0
Base Capacity (vph)	567	486	1122	1122	993
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	11	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.33	0.18	0.19	0.47	0.10

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 60	
Offset: 6 (10%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.49	
Intersection Signal Delay: 7.1	Intersection LOS: A
Intersection Capacity Utilization 60.7%	ICU Level of Service B
Analysis Period (min) 15	

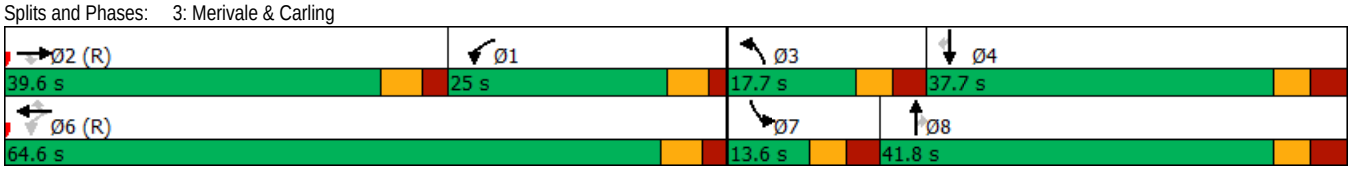
Splits and Phases: 2: Merivale & Westgate SC



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	927	114	349	1543	40	176	218	185	51	292	188
Future Volume (vph)	927	114	349	1543	40	176	218	185	51	292	188
Lane Group Flow (vph)	976	120	367	1624	42	185	229	195	54	307	198
Turn Type	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	2		1	6		3	8		7	4	
Permitted Phases		2	6		6			8			4
Detector Phase	2	2	1	6	6	3	8	8	7	4	4
Switch Phase											
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	29.0	29.0	10.4	29.0	29.0	11.3	37.7	37.7	11.3	37.7	37.7
Total Split (s)	39.6	39.6	25.0	64.6	64.6	17.7	41.8	41.8	13.6	37.7	37.7
Total Split (%)	33.0%	33.0%	20.8%	53.8%	53.8%	14.8%	34.8%	34.8%	11.3%	31.4%	31.4%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	1.7	2.3	2.3	3.0	3.4	3.4	3.0	3.4	3.4
Lost Time Adjust (s)	-2.0	0.0	-1.4	-2.0	0.0	-2.3	-2.7	-2.7	-2.3	-2.7	-2.7
Total Lost Time (s)	4.0	6.0	4.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lag			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	41.1	39.1	66.1	66.1	64.1	13.7	35.1	35.1	9.3	28.2	28.2
Actuated g/C Ratio	0.34	0.33	0.55	0.55	0.53	0.11	0.29	0.29	0.08	0.24	0.24
v/c Ratio	0.84	0.22	1.00	0.87	0.05	0.96	0.44	0.35	0.42	0.73	0.44
Control Delay	34.5	1.4	90.7	30.7	0.1	108.1	37.5	6.0	59.9	46.8	13.0
Queue Delay	15.2	0.0	0.0	12.7	0.0	0.0	0.0	0.0	0.0	1.1	0.7
Total Delay	49.7	1.4	90.7	43.4	0.1	108.1	37.5	6.0	59.9	48.0	13.8
LOS	D	A	F	D	A	F	D	A	E	D	B
Approach Delay	44.4			51.1			48.9			37.0	
Approach LOS	D			D			D			D	
Queue Length 50th (m)	115.7	0.3	~70.0	169.8	0.0	44.0	44.7	0.0	12.6	55.5	10.9
Queue Length 95th (m)	#154.8	0.9	#135.5	#240.3	0.0	#88.3	64.9	16.2	26.0	73.0	24.2
Internal Link Dist (m)	81.2			139.3			110.3			87.9	
Turn Bay Length (m)		25.0	90.0		25.0	40.0			40.0		70.0
Base Capacity (vph)	1160	554	367	1866	784	193	562	593	135	501	510
Starvation Cap Reductn	191	0	0	0	0	0	0	0	0	63	0
Spillback Cap Reductn	0	0	0	257	0	0	0	0	0	0	118
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.01	0.22	1.00	1.01	0.05	0.96	0.41	0.33	0.40	0.70	0.51

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 92 (77%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.00	
Intersection Signal Delay: 47.2	Intersection LOS: D
Intersection Capacity Utilization 91.8%	ICU Level of Service F
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 3: Merivale & Carling

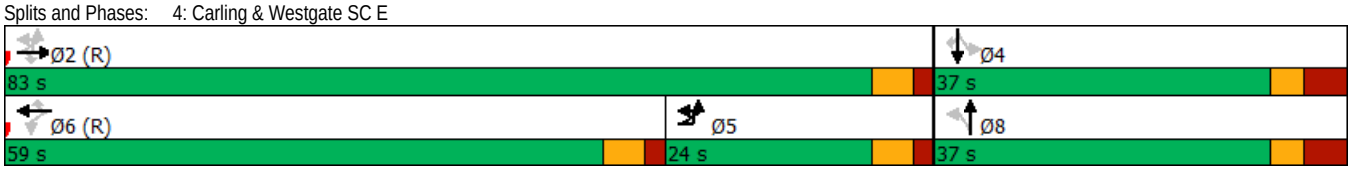


Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	188	748	12	7	1889	120	10	5	115	1	96
Future Volume (vph)	70	188	748	12	7	1889	120	10	5	115	1	96
Lane Group Flow (vph)	0	272	787	13	7	1988	126	0	29	0	122	101
Turn Type	pm+pt	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	5	5	2			6			8		4	
Permitted Phases	2	2		2	6		6	8		4		4
Detector Phase	5	5	2	2	6	6	6	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.6	10.6	23.6	23.6	23.6	23.6	23.6	37.0	37.0	37.0	37.0	37.0
Total Split (s)	24.0	24.0	83.0	83.0	59.0	59.0	59.0	37.0	37.0	37.0	37.0	37.0
Total Split (%)	20.0%	20.0%	69.2%	69.2%	49.2%	49.2%	49.2%	30.8%	30.8%	30.8%	30.8%	30.8%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.9	1.9	1.9	1.9	1.9	1.9	1.9	4.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)		-1.6	-1.6	0.0	-1.6	-1.6	0.0		-3.0		-3.0	-3.0
Total Lost Time (s)		4.0	4.0	5.6	4.0	4.0	5.6		4.0		4.0	4.0
Lead/Lag	Lag	Lag			Lead	Lead	Lead					
Lead-Lag Optimize?	Yes	Yes			Yes	Yes	Yes					
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)		90.7	90.7	89.1	66.7	66.7	65.1		21.3		21.3	21.3
Actuated g/C Ratio		0.76	0.76	0.74	0.56	0.56	0.54		0.18		0.18	0.18
v/c Ratio		0.80	0.31	0.01	0.02	1.06	0.16		0.11		0.56	0.30
Control Delay		59.7	3.6	0.3	12.3	51.2	3.9		25.0		53.4	9.2
Queue Delay		0.0	0.1	0.0	0.0	1.1	0.0		0.0		0.1	0.0
Total Delay		59.7	3.7	0.3	12.3	52.3	3.9		25.0		53.6	9.2
LOS		E	A	A	B	D	A		C		D	A
Approach Delay			17.9			49.3			25.0		33.5	
Approach LOS			B			D			C		C	
Queue Length 50th (m)		48.5	6.6	0.0	0.3	~267.4	0.4		3.2		26.8	0.0
Queue Length 95th (m)		#93.0	62.0	m0.4	m0.8	m#350.3	m2.8		10.2		40.8	13.0
Internal Link Dist (m)			113.0			81.2			26.4		38.7	
Turn Bay Length (m)		100.0		25.0	45.0		25.0					
Base Capacity (vph)		342	2561	1017	319	1883	789		407		337	473
Starvation Cap Reductn		0	753	0	0	5	0		0		0	0
Spillback Cap Reductn		0	305	0	0	0	0		23		19	0
Storage Cap Reductn		0	0	0	0	0	0		0		0	0
Reduced v/c Ratio		0.80	0.44	0.01	0.02	1.06	0.16		0.08		0.38	0.21

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 96 (80%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.06	
Intersection Signal Delay: 38.3	Intersection LOS: D
Intersection Capacity Utilization 118.4%	ICU Level of Service H
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Carling & Westgate SC E



Lane Group	EBT	WBT	WBR	SBL
Lane Configurations				
Traffic Volume (vph)	923	1858	7	25
Future Volume (vph)	923	1858	7	25
Lane Group Flow (vph)	972	1956	7	68
Turn Type	NA	NA	Perm	Prot
Protected Phases	2	6		4
Permitted Phases			6	
Detector Phase	2	6	6	4
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	24.1	42.3	42.3	37.1
Total Split (s)	82.9	82.9	82.9	37.1
Total Split (%)	69.1%	69.1%	69.1%	30.9%
Yellow Time (s)	3.7	3.7	3.7	3.0
All-Red Time (s)	1.6	1.6	1.6	3.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.3	5.3	6.1
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	C-Max	None
Act Effct Green (s)	102.0	102.0	102.0	10.9
Actuated g/C Ratio	0.85	0.85	0.85	0.09
v/c Ratio	0.34	0.68	0.01	0.42
Control Delay	3.1	3.9	0.3	46.8
Queue Delay	0.0	0.4	0.0	0.0
Total Delay	3.1	4.4	0.3	46.8
LOS	A	A	A	D
Approach Delay	3.1	4.4		46.8
Approach LOS	A	A		D
Queue Length 50th (m)	27.5	5.2	0.0	11.3
Queue Length 95th (m)	50.1	m27.2	m0.0	25.1
Internal Link Dist (m)	42.6	113.0		40.2
Turn Bay Length (m)			25.0	
Base Capacity (vph)	2881	2881	1289	427
Starvation Cap Reductn	0	419	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.34	0.79	0.01	0.16

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 95 (79%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 4.9	Intersection LOS: A
Intersection Capacity Utilization 72.0%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 5: Carling & Westgate SC W

Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	234	2694	227	602	553	410
Future Volume (vph)	234	2694	227	602	553	410
Lane Group Flow (vph)	246	3170	239	634	582	432
Turn Type	Perm	NA	pm+pt	NA	NA	Perm
Protected Phases		6	3	8	4	
Permitted Phases	6		8			4
Detector Phase	6	6	3	8	4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	35.3	35.3	11.0	29.0	29.0	29.0
Total Split (s)	78.0	78.0	11.0	42.0	31.0	31.0
Total Split (%)	65.0%	65.0%	9.2%	35.0%	25.8%	25.8%
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	2.6	2.6	2.7	2.7	2.7	2.7
Lost Time Adjust (s)	-2.3	-2.3	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	C-Max	C-Max	None	Ped	Ped	Ped
Act Effct Green (s)	74.0	74.0	38.0	38.0	27.0	27.0
Actuated g/C Ratio	0.62	0.62	0.32	0.32	0.22	0.22
v/c Ratio	0.12	1.08	1.37	1.12	0.76	1.12
Control Delay	6.2	58.6	226.5	98.3	51.1	119.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.2	58.6	226.5	98.3	51.1	119.1
LOS	A	E	F	F	D	F
Approach Delay		54.8		133.4	80.1	
Approach LOS		D		F	F	
Queue Length 50th (m)	5.8	~305.4	~56.8	~175.7	67.9	~101.3
Queue Length 95th (m)	13.6	#328.0	m#104.3	#231.6	88.2	#163.5
Internal Link Dist (m)		113.3		144.7	73.8	
Turn Bay Length (m)	40.0					22.0
Base Capacity (vph)	2015	2934	174	564	762	384
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	0.12	1.08	1.37	1.12	0.76	1.13

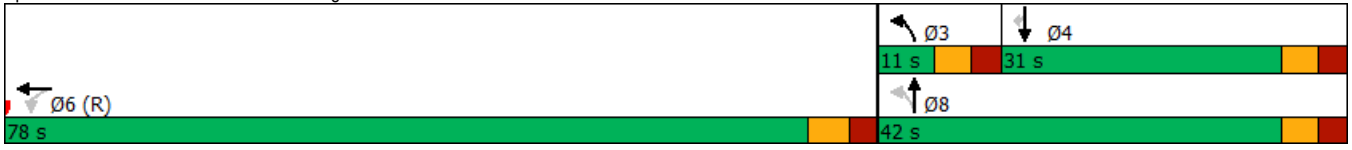
Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 119 (99%), Referenced to phase 6:WBTL, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.37	
Intersection Signal Delay: 72.6	Intersection LOS: E
Intersection Capacity Utilization 116.0%	ICU Level of Service H
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Splits and Phases: 6: Kirkwood & Carling WB

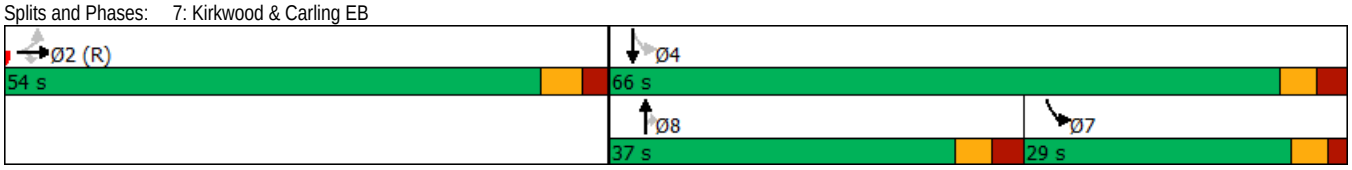


Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	419	1457	405	362	308	441	338
Future Volume (vph)	419	1457	405	362	308	441	338
Lane Group Flow (vph)	392	1583	426	381	324	464	356
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		2		8		7	4
Permitted Phases	2		2		8	4	
Detector Phase	2	2	2	8	8	7	4
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	29.2	29.2	29.2	26.1	26.1	10.1	26.1
Total Split (s)	54.0	54.0	54.0	37.0	37.0	29.0	66.0
Total Split (%)	45.0%	45.0%	45.0%	30.8%	30.8%	24.2%	55.0%
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.5	2.5	2.8	2.8	1.8	2.8
Lost Time Adjust (s)	-2.2	-2.2	-2.2	-2.1	-2.1	-1.1	-2.1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag				Lead	Lead	Lag	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	C-Max	C-Max	C-Max	Min	Min	Min	Min
Act Effct Green (s)	52.7	52.7	52.7	30.6	30.6	59.3	59.3
Actuated g/C Ratio	0.44	0.44	0.44	0.26	0.26	0.49	0.49
v/c Ratio	0.61	0.78	0.51	0.44	0.84	0.83	0.40
Control Delay	31.9	33.0	7.0	38.8	61.7	28.1	7.6
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Total Delay	31.9	33.0	7.0	39.1	61.7	28.1	7.6
LOS	C	C	A	D	E	C	A
Approach Delay		28.2		49.5			19.2
Approach LOS		C		D			B
Queue Length 50th (m)	84.3	126.6	9.7	38.6	70.5	54.4	17.1
Queue Length 95th (m)	124.5	147.5	35.1	52.8	#111.9	#94.0	m21.0
Internal Link Dist (m)		161.6		158.6			144.7
Turn Bay Length (m)	40.0				90.0		
Base Capacity (vph)	639	2019	829	932	417	572	921
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	155	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.78	0.51	0.49	0.78	0.81	0.39

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 33 (28%), Referenced to phase 2:EBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 30.1	Intersection LOS: C
Intersection Capacity Utilization 116.0%	ICU Level of Service H
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Kirkwood & Carling EB



Lane Group	EBT	WBR
Lane Configurations		
Traffic Volume (vph)	1075	1868
Future Volume (vph)	1075	1868
Lane Group Flow (vph)	1132	1966
Sign Control	Free	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 72.3%		ICU Level of Service C
Analysis Period (min) 15		