1545A Merivale Road

Transportation Impact Assessment

Final

May 2023

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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1545A Merivale Road

Transportation Impact Assessment

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TRANSPORTATION IMPACT ASSESSMENT

Parsons has been retained by 1545 Merivale Road Inc. to prepare a TIA in support of a Site Plan Application to re-develop the existing industrial building located at 1545A Merivale Road as a new approximately 27,700 sq. ft. medical imaging clinic. This document follows the TIA process as outlined in the City Transportation Impact Assessment (TIA) Guidelines (2017). The following report represents the Transportation Impact Assessment, the compilation of Steps 1-thru-5.

1.0 SCREENING FORM

The Screening Form confirmed the need for a TIA Report based on the Trip Generation, Location and Safety triggers. The Trip Generation trigger was met as the development is anticipated to generate more than 60 person trips during peak hours. The Screening Form and response to City of Ottawa comments have been provided in **Appendix A.**

2.0 SCOPING REPORT

2.1. Existing and Planned Conditions

2.1.1. Proposed Development

The proposed development will be located at the municipal address of 1545A Merivale Road. The site is currently occupied by an abandoned industrial/warehouse building which likely has little associated traffic.

Figure 1 illustrates the proposed site plan which is to have the existing industrial buildings removed in favour of a one-storey medical imaging clinic with an approximate area of 27,700 ft^2 and accessed from the existing driveway to Merivale Road, which is shared with the adjacent Ultramar Gas Station (1543 Merivale Road) via an easement. The existing access provides for all left turn movements for properties on both the west side and east sides of Merivale Road via a depressed median. As per City of Ottawa Staff guidance, this access has been proposed as a right-in-right-out (RIRO) access only.

The 1545A Merivale Road site is currently zoned as AM10 – Arterial Main Street Zone General Mixed-Use Zone which permits a medical facility. A total of 127 auto parking spaces are provided 70 at-grade and 57 underground parking spaces are proposed, for a combined 129 parking spaces. 27 bicycle stalls are being provided, 5 located at the front of the building for visitors and 22 stalls located inside the building for staff. The lot is going to be pay-and-display parking, which will have no impact to Para-Transpo vehicles. Occupancy is forecasted for 2024 in a single phase.

The local context of the site is illustrated in **Figure 2.**

Figure 1: Site Plan (May 2023)

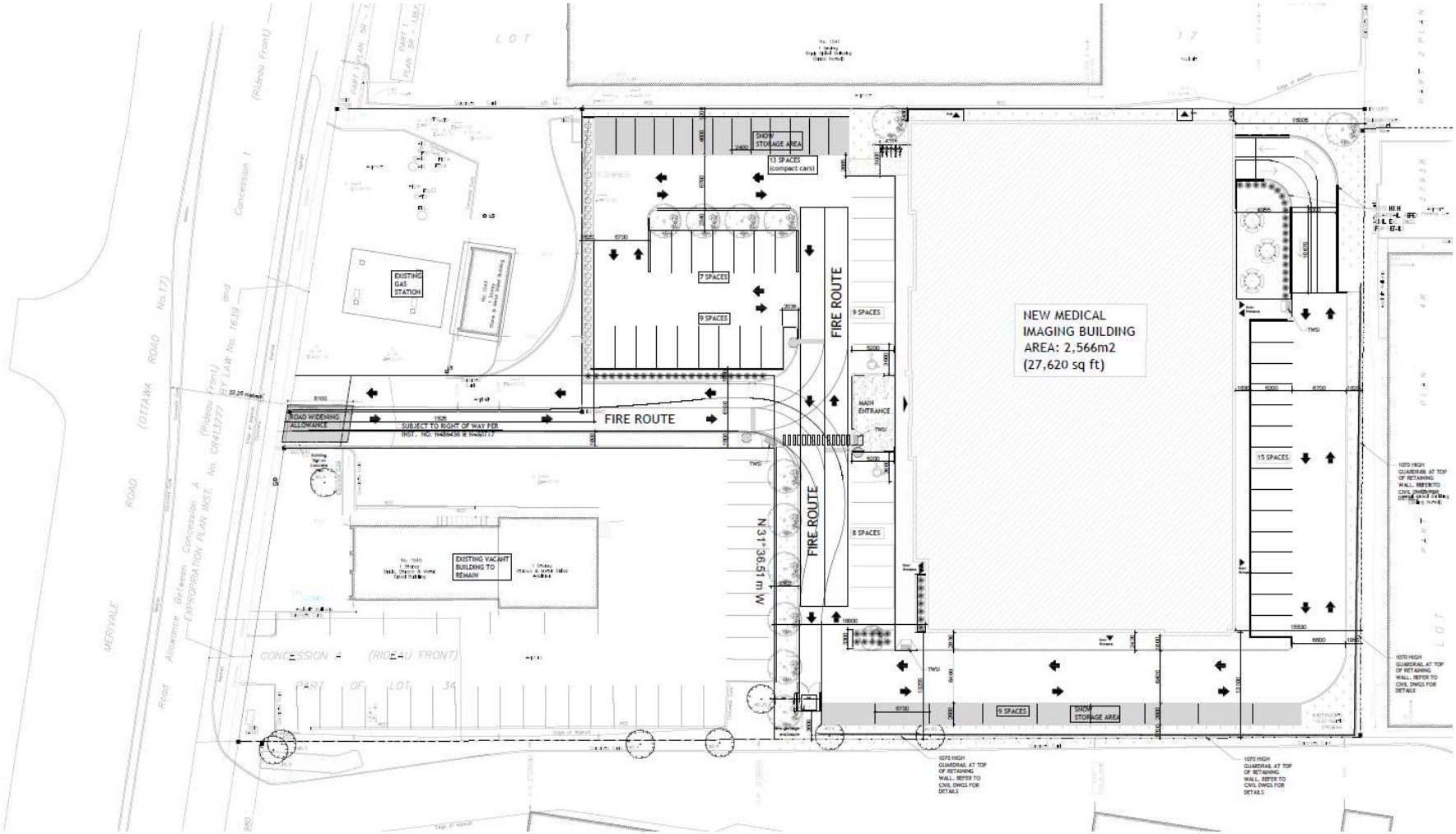


Figure 2: Local Context

2.1.2. Existing Conditions

Area Road Network

The following roads were included in the TIA. Description for each road within the study area has been provided below.

Merivale Road is a north-south municipal arterial road that extends from Island Park in the north to Fallowfield Road. Fronting the site, Merivale Road has a 4-lane divided urban cross section with a posted speed limit of 60 km/h.

Meadowlands Drive is an east-west municipal major collector road that connects Woodroffe in the west to Prince of Wales Drive in the east, which then continues as Hogs' Back Road. It typically provides for a 2-lane urban cross-section, except in the vicinity of Merivale Road where it widens to 4-lanes with additional auxiliary lanes. Nearest Merivale Road, the speed limit is posted 50km/h.

Clyde Avenue is a north-south municipal arterial road which extends northerly to Maitland Avenue and the HWY 417 from the Merivale/Clyde intersection at its south terminus. It is characterized by a 4-lane divided urban cross section with a 60 km/hr posted speed limit.

Capilano Drive is an east-west municipal collector road that connects to Beaver Ridge in the east to Merivale Road to the west, before continuing as Withrow Avenue which extends southwesterly to Meadowlands Drive. It is typified by a 2-lane cross section and a posted 40 km/hr speed limit

Rossland Avenue is a local east-west municipal street that connects to Merivale Road opposite to the existing site access, sharing the same Merivale Road median break. It has a 2-lane rural cross-section and has an assumed posted speed limit of 40 km/hr.

Existing Study Area Intersections

Merivale/Clyde

The Merivale/Clyde intersection is a four-legged signalized intersection. The westbound approach consists of a dedicated through lane, a dedicated and channelized right turn lane and a double left-turn lane. The southbound approach consists of a dedicated through lane, a dedicated left turn lane and a shared thru/right-turn lane. The northbound approach provides for a dedicated left turn lane, two dedicated through lanes and a channelized right turn lane with a large island. The eastbound approach provides for a dedicated left turn lane and a shared through/right turn lane. RTOR is permitted on all approaches and U-turns are not permitted for the eastbound and westbound movements.

Merivale/Capilano-Withrow

The Merivale/Capilano intersection is a four-legged signalized intersection. The minor leg eastbound and westbound approaches each provide for dedicated left turns and shared through/right turns. The major north-south approaches each provide for a dedicated right turn, 2 dedicated through lanes and a dedicated single left-turn. No RTOR restrictions are present. U-Turns are not permitted in the major north-south directions.

Merivale/Rossland-Site Access-Ultramar

The Merivale/Rossland-Site Access intersection is STOP-controlled on the east-west minor approaches. Rossland and the existing site access share a median break on Merivale Road. Rossland and the site access provide a single lane right/through/left approach. The major north-south Merivale Road approaches provide for two through lanes. The site access is shared with the adjacent Ultramar.

Merivale/Emerald Plaza

The Merivale/Emerald Plaza intersection is a four-legged signalized intersection where the east-west approaches serve adjacent private commercial centres. The minor east-west approaches provide for a shared through/right lane and dedicated left-turn lane. The southbound approach provides for a double left tun lane, a dedicated through lane and shared through/right lane. The northbound approach provides or a dedicated left turn lane, two dedicated through lanes and a dedicated right turn lane. No RTOR restrictions are present, however there is a no U-turn allowed restriction for the northbound and southbound movements.

Merivale/Meadowlands

The Merivale/Meadowlands intersection is a signalized four-legged intersection. The minor east-west approaches each provide for a dedicated left turn, two through lanes and a channelized right turn. Similarly, the major north-south approaches accommodate dedicated single left-turns, two dedicated through lanes and a channelized right turn.

Existing Driveways to Adjacent Developments

Within 200m of the proposed site access along Merivale Road, there are 6 accesses adjacent to the site and 4 accesses opposite the site as shown in **Figure 3**.

Figure 3: Adjacent Driveways within 200m of Site Access

Inspection of **Figure 3** and the existing access arrangements along Merivale indicated that:

- The existing site access is shared with the adjacent Ultramar to the north and the adjacent retail building (Formerly a Four Seasons Cookhouse BBQ store) to the south through an existing registered ROW to the benefit of the Ultramar Gas Station. Each of those separate properties have their own access adjacent to the existing 1545A Merivale property.

- On the east side of Merivale Road between Capilano and Emerald Plaza, there exists 5 driveways including the existing site access to 1545A Merivale.
- Again, between Capilano and Emerald Plaza, there exists an extended median break fronting the site access. This allows the site access, Rossland Avenue and the Shell Gas Station (west side of Merivale) full movements to and from Merivale.

Existing Area Traffic Management Measures

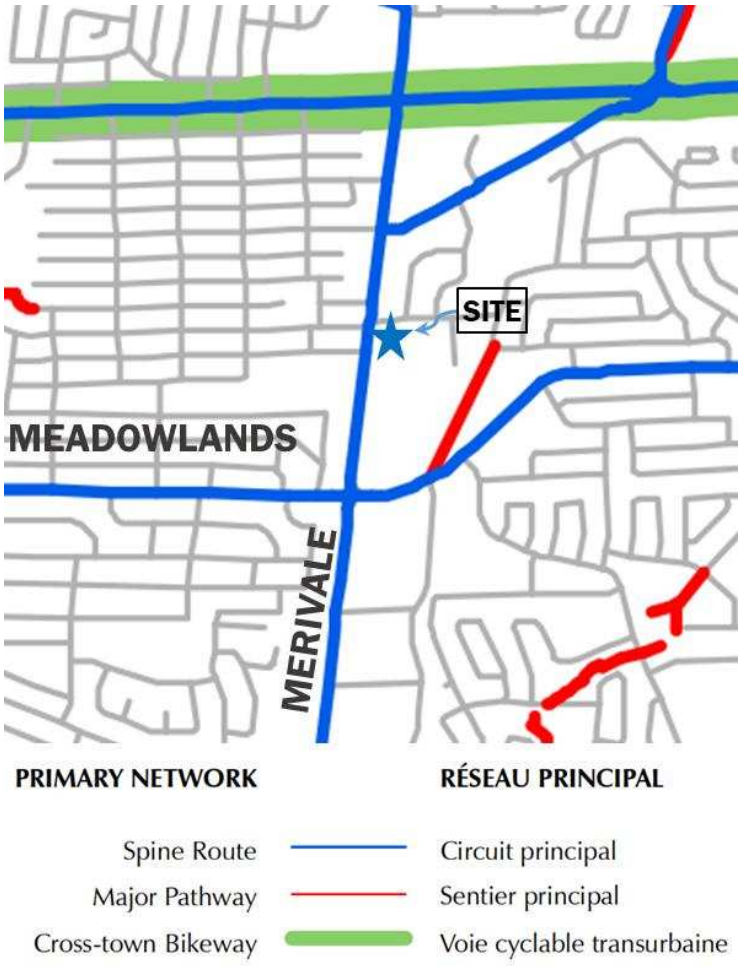
Existing area traffic management measures within the study area are limited to pedestrian advance walk phases and zebra crosswalks at intersections with Merivale Road.

Pedestrian/Cycling Network

Figure 4 illustrates an extract from the City of Ottawa's TMP, Map 1, Cycling Network – Primary Urban. Merivale Road and Meadowlands Drive are designated cycling 'Spine Routes', however, neither roadway provides cycling facilities at segments or intersections in the study area. A review of GeoOttawa indicates that Capilano and Withrow are suggested routes, however a review of street-level photography indicates that no cycling facilities are present. The Nepean Trail is located east of the site, connecting Birchwood Drive to Meadowlands Drive.

A sidewalk and paved boulevard arrangement is provided along both sides of Merivale Road nearest the proposed development. Capilano Drive includes a concrete sidewalk on the south side of the street with a narrow paved boulevard.

Figure 4: Study Area Active Transportation Facilities



Transit Network

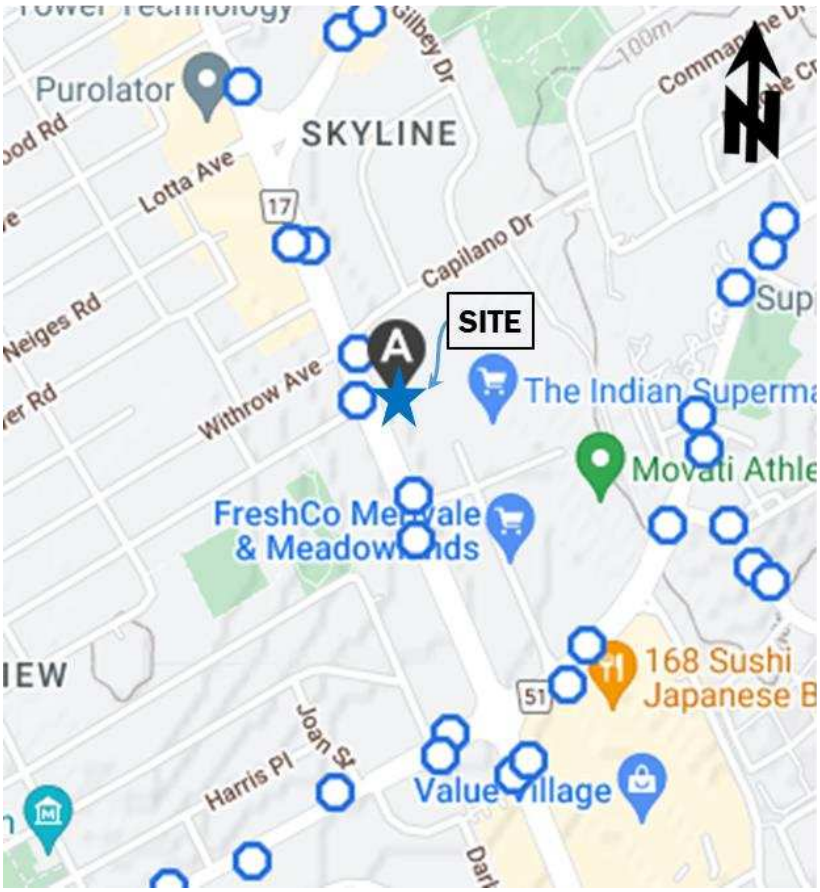
Due to the current circumstances regarding COVID-19, some bus services may have been altered by OC Transpo to operate on a different schedule. The following description of OC Transpo routes within the study area reflect the current bus operations (July 2022):

- **Route #80 (Barrhaven Centre <-> Tunney's Pasture):** identified by OC Transpo as a "Frequent Route", this route operates all day, 7 days a week and at an average rate of every 15 or less on weekdays. The nearest bus stops to the site are at the intersections of Merivale/Capilano (northbound) and Merivale/Rossland (southbound).
- **Route #81 (Clyde <-> Tunney's Pasture):** identified by OC Transpo as a "Local Route", this route operates 7 days a week (except on weekend evenings) and at an average headway of 30 minutes. The nearest bus stops to the site are located at the Merivale / Clyde intersection.
- **Route #86 (Baseline <-> Tunney's Pasture):** identified by OC Transpo as a "Local Route", this route operates 7 days a week with all day service and at an average headway of 15-to-30 minutes. The nearest bus stops to the site are located at the Merivale / Meadowlands intersection.
- **Route #186 (Lincoln Fields <-> Merivale/Slack)**: identified by OC Transpo as a weekday "Local Route" with service during the peak hours, Monday to Friday. The nearest bus stops to the site are located at the Merivale / Meadowlands intersection

The transit network for the study area is illustrated in **Figure 5** and the transit route maps are provided in **Appendix B**. **Figure 6** illustrates the bus stop locations.

Figure 5: Area Transit Network

Figure 6: Bus Stop Locations



Peak Hour Travel Demands

The existing peak hour traffic volumes at the signalized intersections within the study area were obtained from the City of Ottawa for the following intersections:

- Merivale/Clyde – Conducted Wednesday, April 05, 2017
- Merivale/Capilano – Conducted Wednesday, April 19, 2017
- Merivale/Rossland-Ultramar – Conducted side movements on Tuesday, August 2nd, 2022
- Merivale/Emerald Plaza – Conducted Wednesday, April 05, 2017
- Merivale/Meadowlands – Conducted Wednesday, April 05, 2017

The traffic volumes at study area intersections are illustrated in **Figure 7**, with raw traffic count data provided in **Appendix C**. No adjustments such as traffic growth have been applied to the traffic volumes given the study area context includes a well-established neighborhood and in a central area of the City of Ottawa.

The peak hour volumes were then imported into Trafficware Synchro™ 10 software to complete intersection capacity analysis. The resultant intersection performance has been summarized in **Table 1** with detailed results provided in **Appendix D**.

Figure 7: Existing Vehicle & Pedestrian/Cyclist Volumes (2022) – AM (PM) Peak Hours

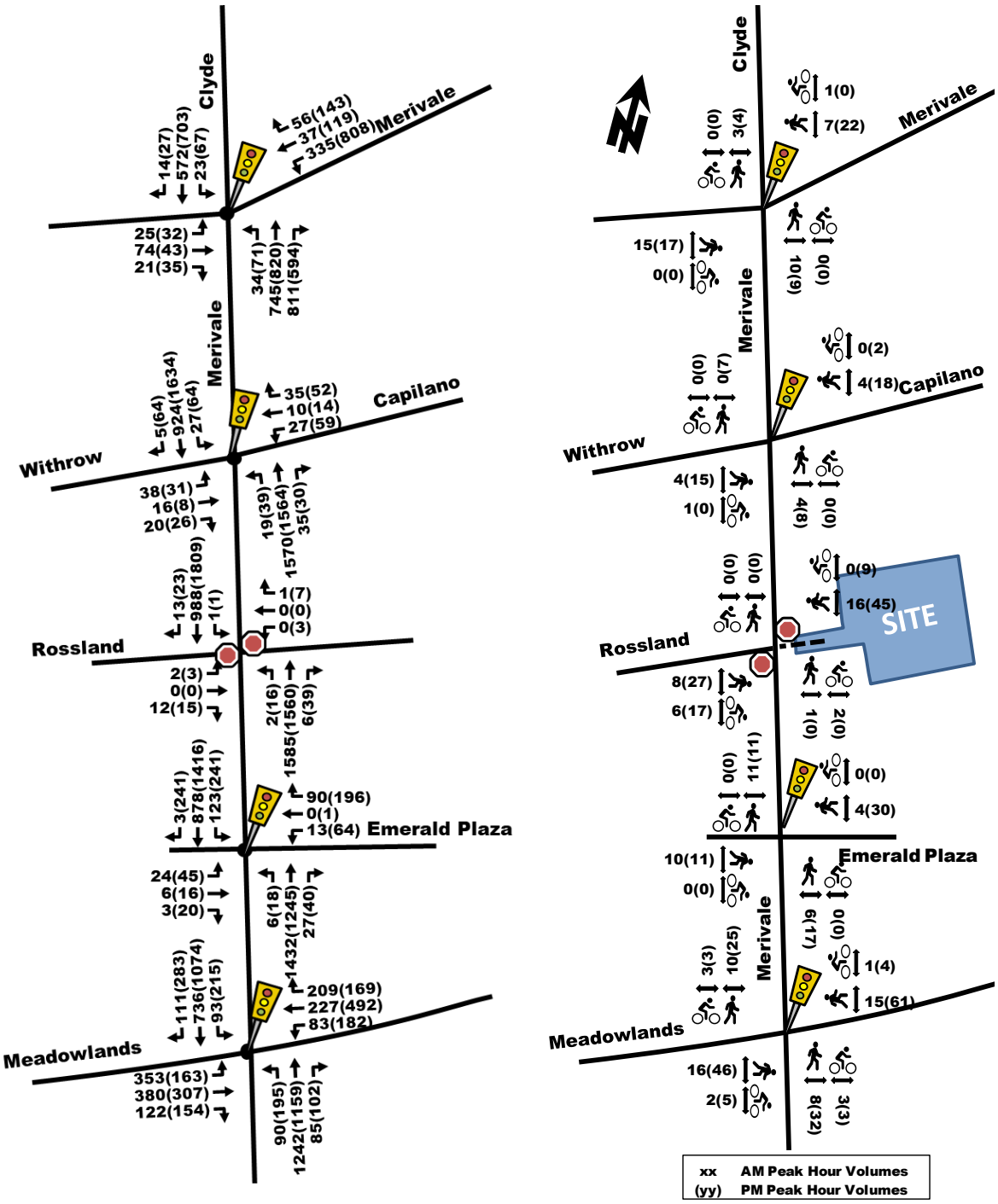


Table 1: Existing Study Area Intersection Performance

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'As a Whole'		
	LoS	Max Delay (s) or v/c	Movement	Delay (s)	LoS	Max v/c
SIGNALIZED INTERSECTIONS						
Clyde/Merivale	C(E)	0.74(0.96)	WBL(WBL)	19.8(41.3)	C(D)	0.72(0.81)
Capilano/Merivale	B(D)	0.68(0.81)	NBT(SBT)	9.6(19.4)	B(C)	0.65(0.77)
Emerald Plaza/Merivale	B(C)	0.69(0.74)	NBT(SBT)	12.9(17.4)	B(C)	0.67(0.72)
Meadowland/Merivale	F(E)	1.17(0.94)	EBL(NBL)	43.3(44.2)	D(D)	0.86(0.84)
UNSIGNALIZED INTERSECTIONS						
Site – Rossland/Merivale	C(C)	18(18)	WB(WB)	1(5)	A(A)	-
Note: Analysis of intersections assumes a PHF of 0.90 and a saturation flow rate of 1800 veh/h/lane						

As shown in **Table 1**, all intersections perform overall at good LoS D or better; however, most intersections also have critical turning movement, particularly left turns, approaching capacity. In the AM peak hour, the eastbound left turn at Meadowlands/Merivale operates above capacity, which can be expected from a major arterial to arterial intersection which processes a high number of vehicles per hour. Also of note, the westbound left turn at Clyde/Merivale has queue lengths longer than the available storage space for the PM peak hour, with approximately 800 left turning vehicles accommodated in a double left turn lane arrangement.

Existing Road Safety Conditions

Five years of collision history data (2016-2020, inclusive) was obtained from the City of Ottawa OpenData portal for all intersections and road segments within the study area. It was determined that a total of 367 collisions have been reported, of which 50% (185) were rear-ends, 23% (84) were turning movements, 12% (45) were sideswipes and 9% (32) were angle collisions. 81% (297) collisions resulted in property damage while the remaining result in injury. No fatalities were reported. 5 collisions involved pedestrians. The source collision data from OpenData Ottawa and detailed analysis results are provided in **Appendix E**.

A standard unit of measure for assessing collisions at an intersection is based on the number of collisions per million entering vehicles (MEV). Intersections with a ratio of 1.0 Collisions/MEV or greater are considered to be at a higher risk for collisions. At signalized intersections within the study area, reported collisions have historically taken place at a rate of:

- 1.38 Collisions/MEV at the intersection of Clyde/Merivale which experienced 106 collisions in the five-year period. 54% (57) of collisions were reported as rear-ends, 18% (19) were reported as turning movements and 16% reported as sideswipes of which types are typical of congested intersections, particularly those with a heavily utilized double left-turn.
- 0.37 Collisions/MEV at the intersection of Merivale/Capilano where 29 collisions occurred. More than half the collisions were reported as rear-ends. No other discernible pattern was evident in the remaining collisions,
- 0.22 Collisions/MEV at the intersection of Merivale/Rossland where 15 collisions were recorded. While 67% (10) were labelled as rear-ends (typically indicating sudden stops on the mainline) there were 4 collisions reported as turning movements and 4 collisions reported as angle collisions. Closer inspection indicated that a left turn was the initial maneuver for two collisions, one each in the northbound and southbound directions. One incident resulted in an injury collision, which occurred after 2 AM in late December 2020. Given the low number of left turning trips, and that only two collisions were observed in the 5-year period, there is little evidence of a historic collision pattern.
- 0.32 Collisions/MEV at the intersection of Merivale/Emerald Plaza, where a total of 23 collisions were reported. The most frequent type of collision was a rear end, where 10 collisions were reported as such.

- 1.42 Collisions/MEV at the intersection of Merivale/Meadowlands where 130 collisions were reported over the 5-year period. Notably, 53 (41%) rear end collisions, 50 (38%) turning movement collisions and 11 (8%) sideswipe collisions were reported.

With respect to the existing Merivale/Rossland-Site Access intersection, vehicles have been observed to use the depressed median for turns to and from Merivale Road. To turn from Merivale Road, vehicles often wait in the limited vehicle storage area for upstream traffic signals to provide a red phase for oncoming traffic. Similarly, left turning vehicles from the side streets often need red phases from both intersections before proceeding. Two collision patterns of note are rear-ends and angled collisions. The risk of rear-end collisions in the northbound and southbound directions occur when vehicles turn from Merivale Road and remain within the partial storage lane. The driver expectation is for this vehicle to turn left at the next signalized intersection, so sudden braking can be unexpected. Left-turn angled and similar collisions carry a risk due to misjudging vehicle gaps in the 4-lane Merivale Road traffic flow.

Segment collisions have also been evaluated, with particular interest to the Merivale Road segments from Withrow Avenue to Emerald Plaza Shopping Center, an approximate 220-meter segment with the site access located between the two points. Within this segment of Merivale Road, a total of 23 collisions have been recorded, with 13 of them being north of the site access and 10 south of the site access. The collisions north of the site access were predominantly property damage only (11 or 85%) and about half of them involved rear-end collisions, normally attributed with start and go traffic or having a large number of driveway accesses. The segment south of the site however had a larger percentage of non-fatal injury, with 3 or 30% involving injuries, and one of the injuries resulting from a collision with a cyclist. Unlike the north segment, a larger percentage of collisions involved sideswipes and angle collisions, likely attributed to vehicles changing lanes or merging in and out of driveway accesses. It is noteworthy that only 1 of the 23 (4%) involved turning movements.

Of the remaining segment collisions, the majority of collisions were reported as rear-end incidents. This finding is consistent with the presence of a significant number of accesses along Merivale Road which require vehicles to come nearly to a stop resulting in conflicts with through traffic.

2.1.3. Planned Conditions

2.1.3.1. Future Transportation Network Changes

Merivale Road Secondary Plan

The proposed site is located within the Merivale Road Secondary Plan Area which provides planning direction for the Merivale Main Street corridor. The Plan is founded on the premise that Merivale Road is not a 'greenfield' area and is therefore to be maintained as a retail and service corridor between 'Activity Centres'. The purpose of the Merivale Planning Area is to support ongoing retail function.

The relevant Transportation and streetscape policies from the Merivale Road Secondary Plan include:

- **Pedestrian R**ealm: Well furnished, protected and continuous pedestrian sidewalks are to be provided on the frontage of all developments.
- **Transit Network:** Pedestrian routes to and from sidewalks shall connect directly to transit stops.
- **Interconnected Vehicle Access:** where possible, parking aisles and bays shall be linked between sites.

City of Ottawa Transportation Master Plan (2013)

A review of the City of Ottawa Official Plan, Transportation Master Plan, Pedestrian Plan and Cycling Plan has indicated the following:

- The Baseline BRT Corridor Plan and the Affordable Transit Network Plan indicates a future BRT station at the Clyde/Merivale/Baseline junction within approximately 800m of the site. The timing of which is currently unknown and likely outside this development's horizon.

- Merivale Road is designed a transit priority corridor (continuous lanes) in the TMP Network Concept. These transit improvements are omitted from the Affordable Concept. To the knowledge of the proponent, no design has been prepared.
- Merivale Road is designated a Spine Route in the Ultimate Cycling Network
- Capilano Drive-Withrow Drive is designated a Local Route in the Ultimate Cycling Network.
- Birchwood Drive is indicated to extend to Meadowlands Drive (Schedule 4 of the New Official Plan).

2.1.3.1 Other Study Area Developments

Based on the City of Ottawa's Development Applications search tool, several applications have been initiated near the proposed development site which include:

- 1375 Clyde Avenue (Parsons, 2017) This proposal is located north of the Merivale/Clyde intersection within the Baseline-Clyde-Merivale triangle. The proposal includes a self-storage facility, a restaurant (with drive-thru) and an expansion on the existing retail building. The development is anticipated to generated 47 and 93 new AM and PM peak hour two-way auto trips.
- 1357 Baseline Road (Stantec, 2020) This proposal includes 174 residential units, 228 senior residence units and a 5,900 ft^2 ground floor retail. The total two-way trips are estimated to be 53 auto trips in the AM and 66 auto trips in the PM peaks.
- 1500 Merivale Road (Novatech, 2021) This proposal is located within the Baseline-Clyde-Merivale and proposed 1,967 dwelling units and approximately 12,000 ft^2 of commercial over the span of 10 phases from 2023 to 2028. At 50% build-out, the development would contribute 118 two-way AM peak hour trips and 131 PM peak hour trips to the surrounding network.
- 1509 Merivale Road (CGH, 2021) This proposal is located north of Capilano Drive along Merivale and would include a high-rise residential development of 203 units. This proposal is anticipated to generate 32 and 33 morning and afternoon peak hour trips, respectively.
- 56 Capilano Drive (ZBLA) – The existing curling rink is proposed to be re-zoned from an L1 – Community Leisure Facility to an R4Z – Residential use. The proposal would include 50 units. A 2013 Transportation Overview estimated existing peak hour traffic demand of approximately 24 two-way auto trips. When considering the balance of removing the existing curling trips for 50 residential units, the net impact to Capilano and Merivale would be minimal, therefore no additional traffic has been assumed from this proposal.

2.2. Study Area and Time Periods

The proposed development will be constructed in a single phase, anticipated for 2023. The assumed 5-year time horizon will be 2028. Given the proposed site characteristics, the AM and PM peak hours are proposed for evaluation.

Proposed study area intersections are listed below and illustrated in **Figure 8.**

- Merivale/Clyde-Lotto (Signalized) – February, 2020
- Merivale/Capilano-Withrow (Signalized) – February, 2018
- Merivale/Rossland-Site Access (Unsignalized) – August, 2022
- Merivale/Emerald Plaza (Signalized) – February, 2020
- Merivale/Meadowlands (Signalized) – November, 2018

As part of this TIA, a traffic count was undertaken during the AM and PM peak periods to determine turning movement volumes to and from Rossland Avenue and the existing site access. The count also identified pedestrian and cyclist movements during the peak periods. Notably, the majority of vehicles utilizing Rossland Avenue were destined to/originating from the Shell gas station west of Merivale Road. The median break was observed to be used consistently for all movements. Northbound and south left turns across the median typically relied on downstream traffic signals to provide a red phase to Merivale Road before proceeding.

Figure 8: Study Area

2.3. Exemption Review

The following modules/elements of the TIA process are recommended to be exempt based on the City's TIA guidelines:

Table 2: Exemptions Review Summary

Module	Element	Exemption Consideration
4.1 Development Design	4.1.3 New Street Networks	This element is only required for applications involving Plan of Subdivision.
4.2 Parking	4.2.2 Spillover Parking	Only required for Site Plans where parking supply is 15% below unconstrained demand.
4.6 Neighborhood Traffic Management	4.6.1 Adjacent Neighbourhoods	Only required when the development relies on local or collector streets for access and total volumes exceed ATM capacity thresholds
4.8 Network Concept	All	Only required when proposed development generates more than 200 person-trips peak hour in excess of the equivalent volumes permitted by established zoning.

3.0 FORECASTING

3.1. Development Generated Travel Demand

3.1.1. Trip Generation and mode shares

Trip Generation Rates

The proposed development includes a single medical clinic commercial building with an approximate area of 27,700 ft². Therefore, trip generation rates for non-residential land uses were obtained from the ITE Trip Generation Manual (10th edition), assuming the "Clinic" land use for the gross floor area. The relevant trip rates for the peak hour of the development are summarized in **Table 3** below.

Table 3: Proposed Development Trip Rates

Land Use	ITE/TRANS Designation	Data Source	Trip Rates	
			AM PEAK	PM PEAK
Medical	Clinic	ITE 630	T = 3.69(x);	T = 3.28(x);

Notes: *T = Average Vehicle Trip Ends*
Gross Floor Area (1,000 ft²)

Note that while there is an existing industrial use on the proposed property, the traffic generated by this building is anticipated to be negligible. Therefore, no trip reductions from re-developing the property are considered relevant.

Using the trip rates provided in **Table 3**, the total number of person trips per hour generated by the proposed medical clinic are multiplied by a factor of 1.28, as per TIA standards, 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 resulting total person trips per hour are summarized in **Table 4**.

Table 4: Warehouse Peak Hour Person Trips

Land Use	GFA (ft²)	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Medical Clinic	27,700	102	29	131	34	82	116

Table 5 summarizes the mode shares for the Merivale area 'Commercial' uses extracted from TRANS Trip Generation Manual 2020. The table also indicates the proposed mode shares for the medical clinic as the development is anticipated to have a greater transit and auto passenger mode shares than a typical commercial establishment as medical clinics typical have scheduled appointments, patrons can plan their trip ahead with ride sharing or transit. No pass-by trip reductions are considered applicable for this development.

Table 5: Merivale Mode Shares (TRANS 2020) and Proposed Clinic Mode Shares

Travel mode	AM Mode Share Merivale – Commercial	PM Mode Share Merivale - Commercial	AM/PM Proposed Mode Share
Auto Driver	71%	61%	50%
Auto Passenger	19%	16%	20%
Transit	1%	8%	15%
Cycling	0%	1%	3%
Pedestrian	9%	14%	12%
Total	100%	100%	100%

Table 6 summarizes the forecast mode shares and person trips for the proposed medical clinic development. The site is forecast to generate 131 and 116 AM and PM peak hour person trips, of which 66 and 58 'new' vehicle trips are to be added to the transportation network.

Table 6: Medical Clinic Peak Hour Trips Mode Shares Breakdown

Travel Mode	Mode Share	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
		IN (65%)	OUT (35%)	TOTAL	IN (24%)	OUT (76%)	TOTAL
Auto Driver	50%	51	14	66	17	41	58
Auto Passenger	20%	20	6	26	7	16	23
Transit	15%	16	4	20	5	12	17
Cycling	3%	3	1	4	1	2	3
Pedestrian	12%	12	4	16	4	10	14
Total Person Trips	100%	102	29	131	34	82	116
'New' Auto Driver Trips		51	14	66	17	41	58

3.1.2. Trip Distribution and Assignment

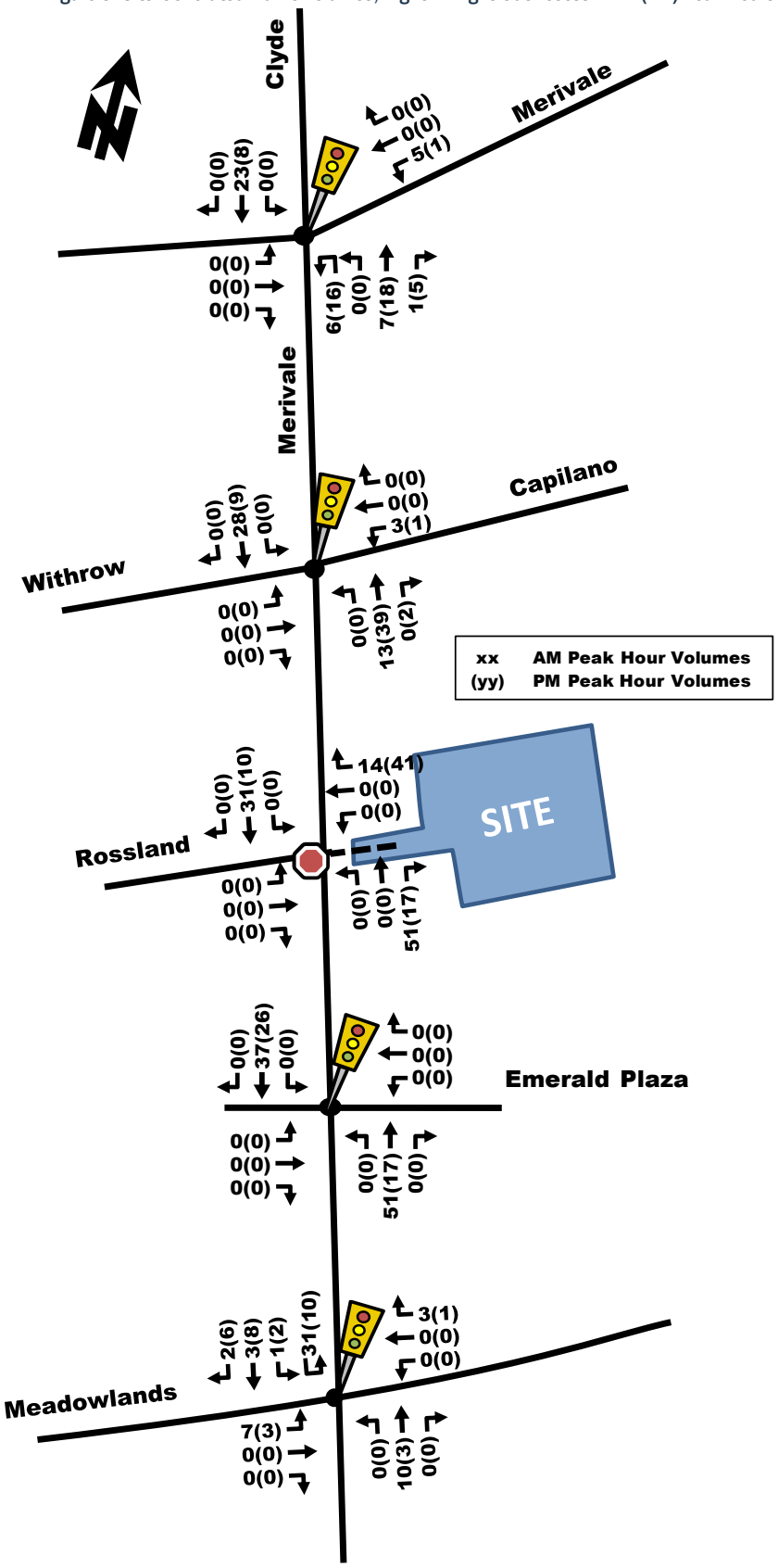
Based on the 2011 OD Survey (Merivale district) and the location of adjacent arterial roadways and neighbourhoods, the distribution of site-generated traffic volumes was estimated as follows:

- 15% to/from the east via Capilano, Clyde, Baseline and Meadowlands
- 20% to/from the west via Baseline, West Hunt Club, Meadowlands and Withrow
- 45% to/from the north via Merivale-Clyde (Highway 417)
- 20% to/from the south via Merivale Road, West Hunt Club Road

The anticipated total 'new' auto trips for the proposed development from Table 6 were then assigned to the road network as shown in Figure 9.

Based on the site assessment and discussions with the City of Ottawa, the site access has been modified from an all-movement intersection to a right-in-right-out (RIRO) intersection. Vehicles wishing to exit the site southbound must exit right and perform a U-turn at Clyde/Merivale. Vehicle wishing to enter the site from the north must continue past the site access and perform a U-turn at Meadowlands/Merivale and then continue north to the right-turn.

Figure 9: Site-Generated Traffic Volumes, Right-in Right-Out Access – AM (PM) Peak Hours



3.2. Background Network Traffic

3.2.1. Transportation network plans

Refer to Section 2.1.2.1: Planned Conditions. The Baseline BRT corridor and station nearest Clyde Avenue are assumed to be outside of the study horizon.

3.2.2. Background Growth

The City's TRANS Regional Model forecasts were reviewed for the 2011 and 2031 horizons along Merivale Road (Appendix F). In general, growth was found to be essentially near-zero along Merivale Road and Clyde Avenue surrounding the proposed development.

Therefore, it is anticipated that background growth along the Merivale Road corridor will be captured through the addition of other nearby developments layered on individually as described in Section 3.2.3. Therefore, a 0% background annual growth rate has been applied to study area intersections.

3.2.3. Other Developments

Section 2.1.3.1 - Other Study Area Developments summarizes the other area development applications identified and found to have a transportation impact on the surrounding study area network. Appendix G provides the site generated traffic volumes extracted from their respective transportation studies.

Figure 10: 2023 Future Background Traffic Volumes

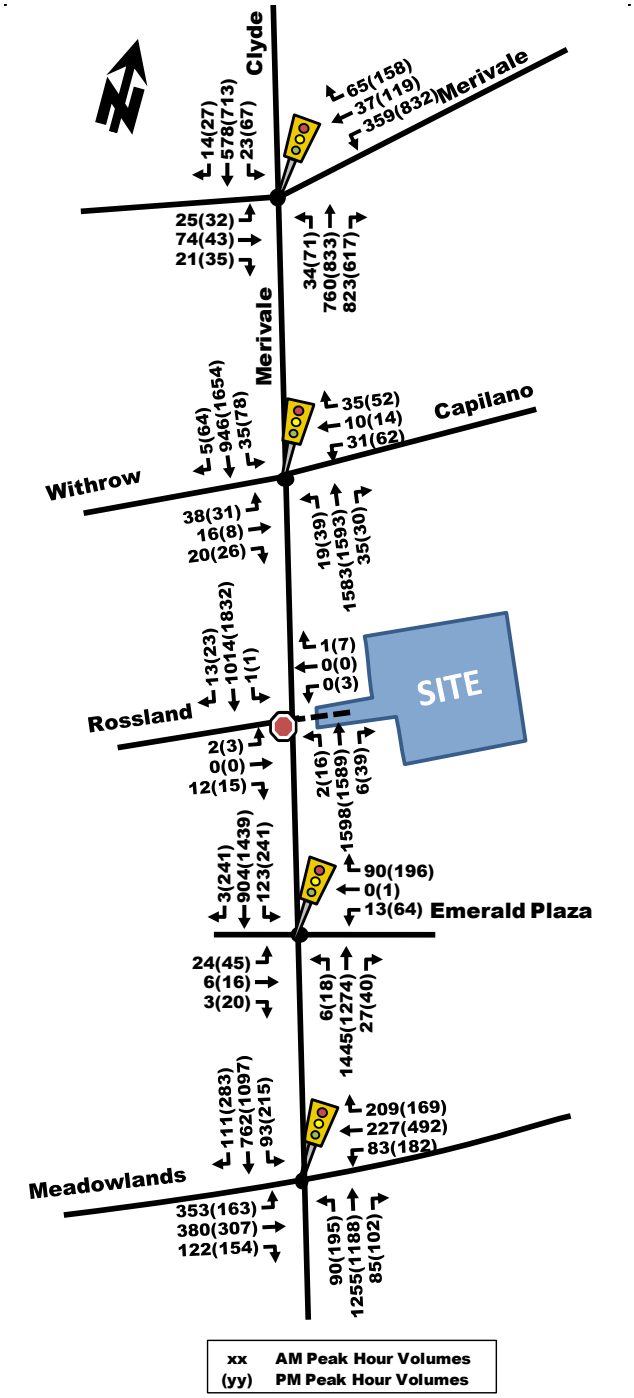
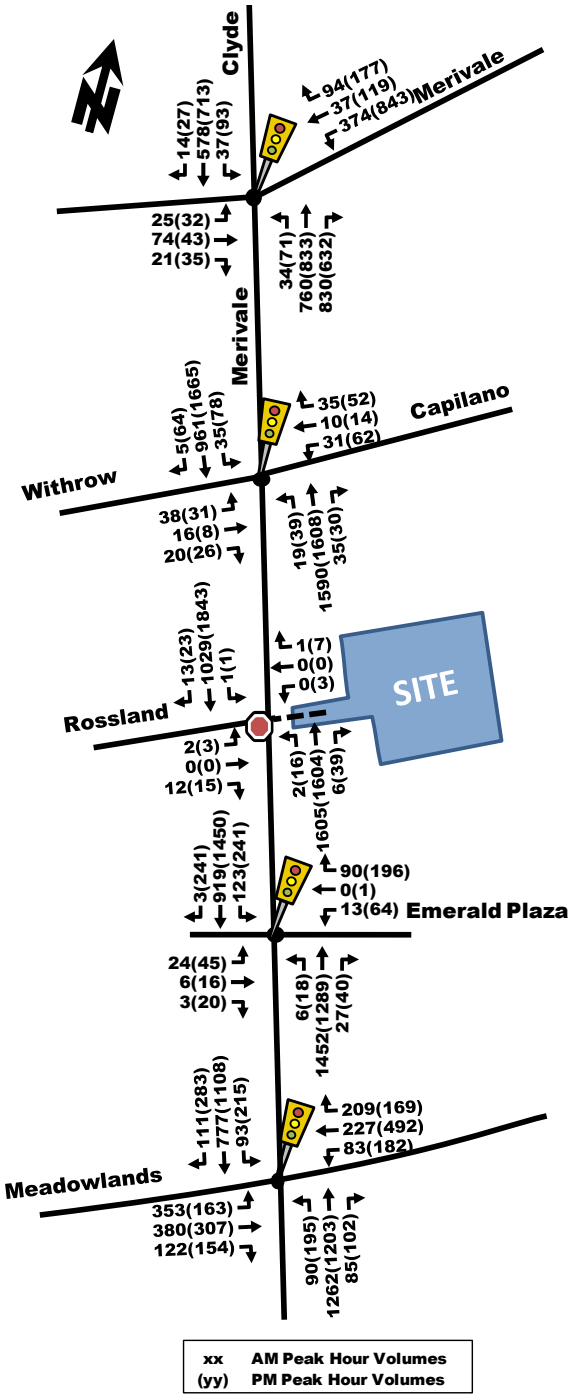


Figure 11: 2028 Future Background Traffic Volumes



The following development assumptions have been made regarding build out timelines:

- 1375 Clyde Avenue (Parsons, 2017) – Assumed full build-out by 2023 horizon.
- 1357 Baseline Road (Stantec, 2020) – Assumed full build-out by 2023 where site generated volumes correspond to the 'Without Baseline BRT Scenario' (Figure 10, **Appendix G**).
- 1500 Merivale Road (Novatech, 2021) – Assumed no development by 2023, 50% of build-out by 2028 horizon.
- 1509 Merivale Road (CGH, 2021) – Assumed full build-out by 2023 horizon.

- 56 Capilano Drive (ZBLA) – Not included within background traffic as the net impact of the re-development is anticipated to be negligible.

Figure 10 and **Figure 11** illustrate the AM and PM forecast background traffic for the 2023 and 2028 horizon years, respectively, assuming a 0% annual growth on study area intersections and individual layering of known other area developments.

3.3. Demand Rationalization

The forecast background traffic volumes (**Figure 10** and **Figure 11**) were imported into Synchro. The output intersection performance has been summarized in **Table 7** and **Table 8** for 2023 and 2028 background volumes respectively, with detailed output in **Appendix H**.

Table 7: 2023 Background Volume Intersection Performance

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'As a Whole'		
	LoS	Max Delay (s) or v/c	Movement	Delay (s)	LoS	Max v/c
SIGNALIZED INTERSECTIONS						
Clyde/Merivale	C(E)	0.73(0.92)	WBL(WBL)	18.5(37.1)	B(C)	0.68(0.79)
Capilano/Merivale	B(B)	0.61(0.70)	NBT(SBT)	8.7(15.9)	A(B)	0.58(0.66)
Emerald Plaza/Merivale	B(C)	0.62(0.73)	NBT(SBL)	11.8(16.5)	A(B)	0.60(0.62)
Meadowland/Merivale	F(D)	1.05(0.84)	EBL(WBT)	36.5(37.4)	C(D)	0.76(0.82)
UNSIGNALIZED INTERSECTIONS						
Site – Rossland/Merivale	C(F)	16(51)	WB(WB)	--	--	--
Note: Analysis of intersections assumes a PHF of 1.00 and a saturation flow rate of 1800 veh/h/lane						

Table 8: 2028 Background Volume Intersection Performance

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'As a Whole'		
	LoS	Max Delay (s) or v/c	Movement	Delay (s)	LoS	Max v/c
SIGNALIZED INTERSECTIONS						
Clyde/Merivale	C(E)	0.74(0.93)	WBL(WBL)	18.8(37.8)	B(C)	0.68(0.80)
Capilano/Merivale	B(C)	0.62(0.71)	NBT(SBT)	8.7(16.0)	A(B)	0.59(0.67)
Emerald Plaza/Merivale	B(C)	0.62(0.73)	NBT(SBL)	11.8(16.4)	A(B)	0.60(0.63)
Meadowland/Merivale	F(D)	1.05(0.84)	EBL(WBT)	36.6(37.8)	C(D)	0.77(0.82)
UNSIGNALIZED INTERSECTIONS						
Site – Rossland/Merivale	C(F)	17(59)	WB(WB)	--	--	--
Note: Analysis of intersections assumes a PHF of 1.00 and a saturation flow rate of 1800 veh/h/lane						

As shown in **Table 7** and **Table 8**, the future background intersection performance are anticipated to operate similar to, or better than, existing conditions given that a peak hour factor of 1.0 was used compared to 0.9 for existing (as per TIA guidelines). The only exception is the site access Rossland/Merivale intersection which is unsignalized. The added north-south background volumes on Merivale have reduced the gap for vehicles exiting the site or Rossland Avenue to perform their left turn maneuver, even though the intersection operates as overall very good. During the busiest times of the day, if a driver cannot find a gap to turn left, they may opt to turn right instead and perform a U-turn at the following intersection where it is allowed (such as Merivale/Clyde) or simply change their route. The intersection performance shows that there is available capacity throughout the study area to accommodate the proposed development.

Given that there is projected background capacity along Merivale Road, no demand rationalization is proposed to modify either background volumes or development volumes.

4.0 STRATEGY REPORT

4.1. Development Design

4.1.1. Design for Sustainable Modes

Location of Transit Facilities

There are existing bus stops on Merivale Road near the Capilano/Merivale and Rossland/Merivale intersections for northbound and southbound frequent transit Route #80 respectively, as shown in **Figure 6**. The site would be approximately 150 meters walk to the northbound stop and approximately 250 meters to the southbound stop, assuming transit users would cross at the Capilano/Merivale signalized intersection. Supplementary bus local routes are provided approximately 550 meters north for route #81 on Clyde Avenue and 650 meters south for routes #86 and #186 on Meadowlands Drive.

Pedestrian/Cycling Routes and Facilities

The site proposes a 1.5m sidewalk along the south side of the drive aisle connecting Merivale Road to the front door of the building, which reflects the available right of way for the drive aisle. A crosswalk is proposed from the front entrance to the driveway isle sidewalk, crossing the internal private driveway. These sidewalks will connect to existing sidewalk infrastructure on Merivale Road, which is provided on both sides of the roadway. All bus stop locations within an 800-meter walk are accessible via paved sidewalks.

Merivale Road and Meadowlands Drive are both denominated as spine routes, however neither of them has cycling facilities and it is assumed cyclists would share the road as mixed-user facilities. Desirable cycling routes can include the Nepean Trail Multi-Use Pathway (MUP) which provides connectivity to the Meadowlands Drive spine route (mixed-user facility). To the north, cyclists would need to use mixed facilities or local roads to travel 1.5kms to a branch of the Experimental Pathway MUP. It is understood that the future Baseline Road BRT Corridor could provide for future cycling infrastructure, however no formalized design has been confirmed.

Bicycle Parking

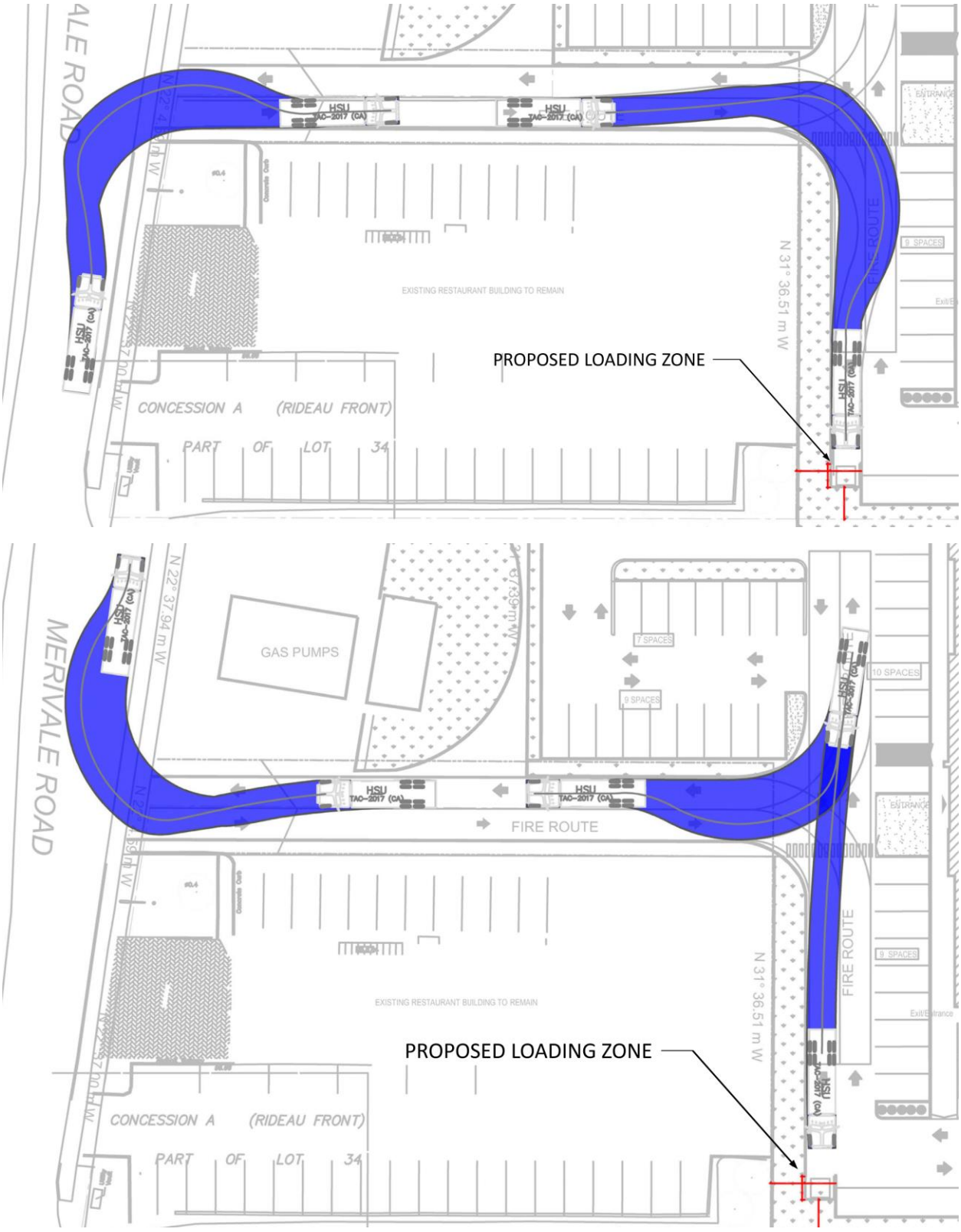
Bicycle parking has been proposed outdoors on bicycle racks fronting the site for patrons. The underground ground parking is anticipated to have a secure bicycle parking room intended for staff.

4.1.2. Circulation and Access

The site proposes an approximate 65m long private driveway throat with two-way vehicular traffic on a 6.1m wide road, thus adhering to private approach by-laws. This driveway throat connects to an internal driveway for surface parking to the north and a drive isle bordering the perimeter of the site to the south and east connecting to the underground parking ramp. The internal drive isles have a width of 6.7m and provide two-way circulation. The underground ramp gradient begins on a straightaway before the bend, which is generally considered preferable. The ramp grades have not been identified at this time, but it is expected that they will meet minimum standards. The latest site plan shows a ramp width of 5.5m. While the ramp details will be finalized during detailed design, a 16% ramp slope and 10% transition slope is expected.

Garbage pickup is proposed at ground level on the southwest quadrant of the site. Waste trucks will be required to turn right when entering the site, front-load the waste bin, then reverse down the aisle before exiting to Merivale Road. Waste collection is expected relatively frequently due to the use of the site. **Figure 12** illustrates the proposed truck turning templates, with higher quality provided in **Appendix I**.

Figure 12: Waste Collection Truck Turning Template



4.1.3. New Streets Network

Exempt, refer to **Table 2**.

4.2. Parking

The site is located in Area C, Schedule 1A, and is not within 600m walk to any rapid transit station within Schedule 2A or B. The proposed development remains beyond the 600m walking distance threshold to the future Baseline BRT system. **Table 9** summarizes the vehicle parking minimum and maximums allowed within the parking by-law (N51).

Table 10 summarizes the bicycle parking requirements as per City of Ottawa Zoning By-Law-Part 4, sections 100-114.

Table 9: Vehicle Parking Space Supply

Land Use	GFA (m²)	Rate per 100 m²	Vehicle Spaces Required	
		MIN	MIN	PROPOSED
Medical Clinic (N51)	2,573	4	103	127

Table 10: Bicycle Parking Requirements

Land Use	GFA (m²)	Rate per 1,000 m²	Bike Spaces		
		MIN	MIN	PROPOSED PUBLIC USE	INTERIOR EMPLOYEE USE
Medical Clinic	2,573	1	3	5	22

According to **Table 9** and **Table 10**, the vehicle and bicycle parking quantities are in conformance with the Parking By-Law requirements. A total of 72 at-grade vehicle parking spaces are proposed, catered predominantly to patients, while approximately 57 underground parking spaces catered predominantly to staff are proposed. A total of 5 at-grade outdoors bike parking stalls in the front of the building will be provided.

4.3. Boundary Street Design

4.3.1. Existing Conditions

The boundary street for the development is Merivale Road.

- *Merivale Road:*
  - 2 vehicle travel lane in each direction;
  - 1.5m sidewalk on both sides of road with 1.5m boulevard;
  - More than 3,000 vehicles per day;
  - Posted speed 60km/h (used 70km/h) with no parking allowed;
  - Classified an arterial mainstreet roadway;
  - Classified as a spine bike route; and,
  - Identified as a Truck Route.

The proposed site is not located within 600m of a rapid transit but is located within 300m of Elizabeth Wyn Wood Secondary School. Multi-modal Level of Service analysis for the subject road segments adjacent to the site is summarized in **Table 11** with detail analysis provided in **Appendix J**.

Table 11: MMLOS – Boundary Street Segments Existing and Future Proposed

Road Segment Level of Service (LoS)	Pedestrian PLoS		Bicycle (BLoS)		Transit (TLoS)		Truck (TkLoS)	
	PLOS	TARGET	BLOS	TARGET	TLOS	TARGET	TKLOS	TARGET
Merivale Road	E	A	F	C	D	D	A	D

Pedestrian: PLoS targets were not met due to the high target goal given the site's proximity to a school, the operating speeds, and types of sidewalk facilities. To achieve the PLoS target, the sidewalk would need to be widened to at least 2-meters wide with 2-meter boulevard separation and travel speeds would need to be reduced to 40 or less km/h. Given the arterial roadway designation, it is unlikely that speeds will be reduced.

Bicycle: BLoS targets were not met due to the lack of cycling infrastructure. Cyclists currently would have to share a lane with vehicles travelling 60km/h. Providing curbside bike lanes or physically separated bike lanes would meet the BLoS target on Merivale Road.

Transit: TLoS targets were met.

Truck: TkLoS targets were met.

4.4. Access Intersection Design

The 1545A Merivale Road development is currently accessed via an all movement approach as illustrated in **Figure 13**. The access forms the east leg of a 4-leg intersection which provides direct access to Rossland Avenue and the Shell Gas Station on the west side, and the 1545 Merivale and Ultramar Gas Station on the east side. Access across the median is provided by a depression measuring approximately 30m in length. Existing traffic counts noted low volumes crossing the median.

Figure 13: Existing 1545A Merivale / Rossland Avenue Intersection Arrangement

Although collision data from **Section 2.1.2** does not appear to show any significant collision patterns or a high incident of turning movement within historic data, it is acknowledged that an increase in turning movements to and from the site poses a risk to an increase in frequency of collisions at this location.

In previous submissions, various access alternatives were explored such as:

- Right-in Right-out Access (RIRO), which would restrict access to the surrounding commercial properties and the community to the west. This alternative has been chosen as the top contender by City of Ottawa Staff and all future analysis will include a RIRO intersection for the site.
- Extension of turning bays and storage capacity which maintains the risks of turning into, and out of, the 1545 Merivale site while providing a mitigation to southbound rear-end collisions. However, this is

contingent on the ability to modify the northbound left turn storage at the Merivale/Capilano-Withrow intersection.

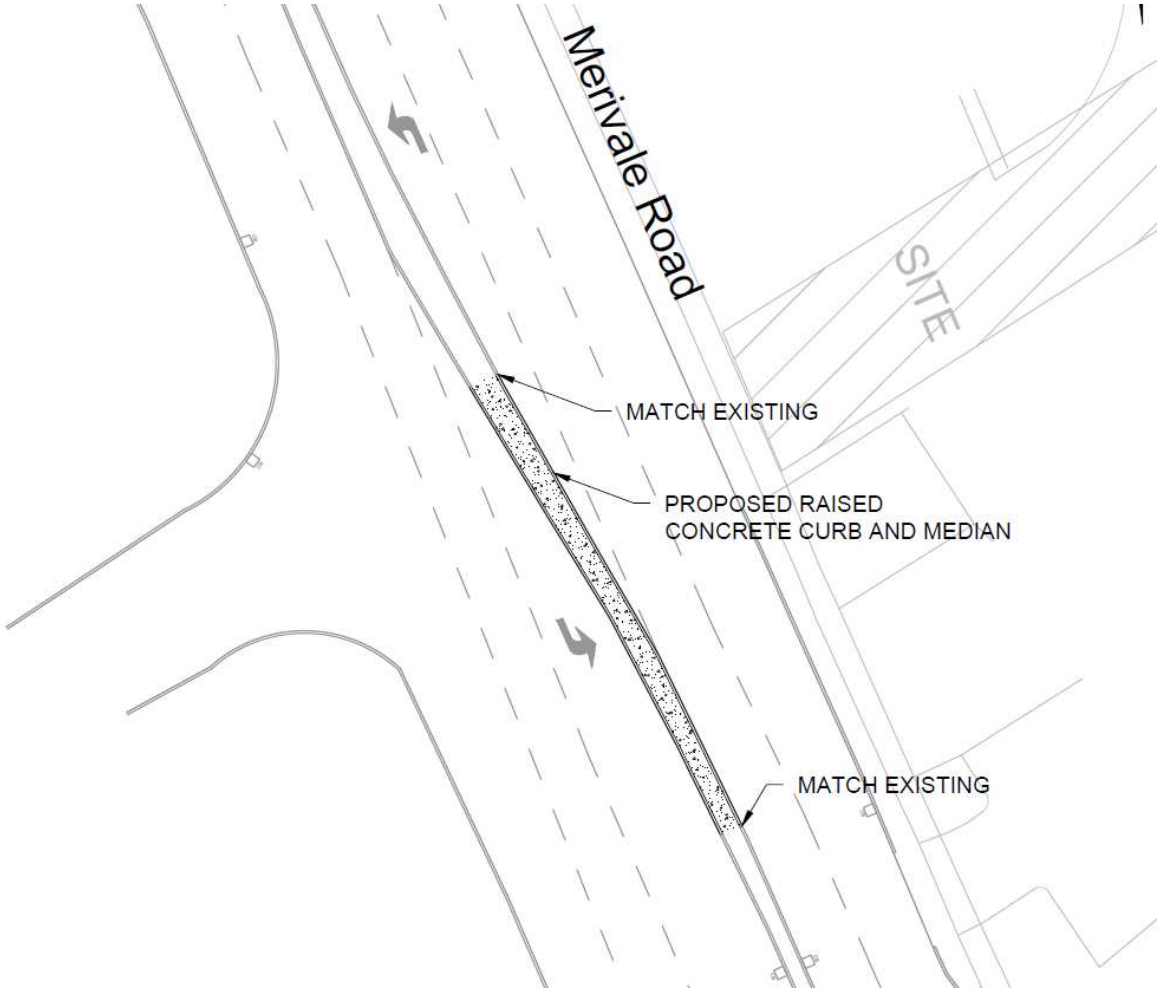
- Provide a secondary access via an adjacent lot easement, which was explored and found not to be preferred by the proponent.

4.4.1. Location and Design of Access

The site has a frontage along Merivale Road of approximately 4.5m, of which a sidewalk (1.8m) and inbound drive aisle is provided. Access is shared with the adjacent Ultramar development by way of an easement (Inst. No. N486436 & N480717). Inbound and outbound traffic will be mixed.

The development access is proposed to be restricted to right-in right-out operations based on the analysis findings, safety implications and the context of Merivale Road, illustrated by Figure 14. This proposal would restrict access to and from the adjacent Ultramar gas station, Rossland Avenue, and the gas stations adjacent. U-Turn maneuvers are available at Merivale/Meadowlands and Merivale/Clyde.

Figure 14: Proposed Right in Right Out Site Access



The nearest intersecting municipal street to the site access is located approximately 70m to the north at the Capilano/Merivale. This distance adheres to the By-law (No. 2003-447) Section 25(m)(ii), which suggests a separation between the site access and nearest intersection of 30m for a site with 100 to 150 parking spaces.

However, within the same by-law, a separation of 30m from the site access to the nearest private approach is not met, with the Ultramar site access located approximately 15m north and the restaurant to the south having

a driveway approximately 25m south. It is noteworthy that these three intersections currently exist, and the site is not proposing a new access to Merivale Road.

4.4.2. Intersection Control

The STOP-control condition will be maintained for the site access, which have a very low number of vehicle movements compared to the through movements of Merivale Road. A traffic signal would not be prudent at this location.

4.4.3. Intersection Design

A right-in rightout (RIRO) access from the site to and from Merivale Road is proposed. This approach would place a concrete median barrier on Merivale Road, effectively prohibiting left-turns on all approaches and through-movement on east-west travel.

The analysis presented within **Section 4.9.5** indicates the following relevant traffic operations which may affect the site access operations:

- The Merivale/Emerald Plaza SBL queue length can exceed 60m in the PM peak hour. The total available storage is approximately 125m with an estimate 21m taper.

4.5. Transportation Demand Management

4.5.1. Context for TDM

A mixture of staff and patient trips are anticipated to the site. Patients will likely arrive scattered throughout the day, beginning before the peak hour, unlike staff who will likely arrive in the AM peak hour and depart in the PM peak hour.

Sections 3.1.1 and **3.1.2** describe how many trips are anticipated per travel mode and anticipates the likely locations that they will travel to and from based on the OD-Survey 2011 for Merivale. The site is located adjacent to transit stops for frequent route #80, making it a good candidate to promote transit use for staff trips. The availability of underground and secure bicycle parking can encourage cycling for staff to and from the development.

4.5.2. Need and Opportunity

The proposed development will predominantly be accessed by Merivale Road, which is currently operating near capacity. TDM measures could encourage the use of sustainable active mode shares, both to relieve stress on an already congested Merivale Road and to promote environmentally conscious ways of commuting. Such measures are described in more detail in **Section 4.5.3** below, but can include, more aggressive Multi-Modal Levels of Service (MMLOS) as described in **Section 4.3** and **4.9** and safe and efficient connectivity to public transit as described in **Section 4.7**, to name a few.

4.5.3. TDM Program

The TDM infrastructure and measures checklist have been completed and have been provided in **Appendix K**. Some of the TDM measures that are proposed include:

<u>Proposed measures identified in the TDM Measures Checklist are:</u>

- Display local area maps with walking/cycling access routes and key destinations at major entrances,
- Display relevant transit schedules and route maps at entrances,
- Provide a muti-modal travel option information package to employees, and make available to hotel patrons,
- A pay-and-display parking system which will not impact Para-Transpo vehicles.

Proposed measures identified in the TDM-supportive Development Design and Infrastructure Checklist are:

- To the best of the site's ability, locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations,
- Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort,
- Provide a direct concrete sidewalk to Merivale Road, thereby providing a 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,
- 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,
- 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,
- Provide safe, direct and attractive walking routes from building entrances to nearby transit stops,
- Provide lighting, landscaping and benches along walking and cycling routes between building entrances and streets, sidewalks and trails,
- Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible,
- 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,
- 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,
- Employee bicycle stalls are located at least 25% of spaces within a building/structure, a secure area (e.g. supervised parking lot or enclosure) or bicycle lockers,

4.6. Neighborhood Traffic Management

4.6.1. Adjacent Neighborhoods

Exempt, refer to **Table 2**.

4.7. Transit

4.7.1. Route Capacity

Approximately 20 'new' two-way transit trips are projected for the AM and PM peak hours. The site will be located approximately 150 to 250 meters away from transit stops to frequent route #80. Route #80 operates at approximately 15-minute intervals with service from as early as 5 AM until midnight.

Given the high frequency of route #80 and the additional transit capacity on local transit routes on Meadowlands Drive and Clyde Avenue, there is expected sufficient capacity for route #80.

4.7.2. Transit Priority

Merivale Road in the vicinity of the proposed development is not identified as a Transit Priority Corridor in the TMP Affordable Network, but is identified as a Transit Priority Corridor (Continuous Lanes) in the 2031 Network Concept and Ultimate Network.

4.8. Review of Network Concept

Exempt, the development is anticipated to produce less than 130 people trips total. Refer to **Table 2**.

4.9. Intersection Design

4.9.1. Intersection Control

See **Section 4.4.2**.

4.9.2. Intersection Design

For the purpose of this evaluation, the proposed existing access intersection as discussed in **Section 4.4** will be maintained and analyzed for future scenarios.

Multi-Modal Level of Service

As stated in the MMLOS Guidelines, only signalized intersections are considered for the intersection Level of Service measures. The MMLOS analysis is summarized in **Table 12**, with detailed analyses provided in **Appendix L**. Note, Merivale Road is classified an arterial main street from Baseline Road to West Hunt Club Road.

Table 12: MMLOS – Existing and Future Intersections

Intersection Level of Service (LoS)	Pedestrian PLoS		Bicycle (BLoS)		Transit (TLoS)		Truck (TkLoS)	
	PLOS	TARGET	BLOS	TARGET	TLOS	TARGET	TKLOS	TARGET
Clyde/Merivale	F	C	F	C	F	D	B	D
Capilano/Merivale	F	A	F	C	D	D	-	n/a
Emerald Plaza/Merivale	F	C	F	C	C	D	-	n/a
Meadowlands/Merivale	F	C	F	C	F	D	-	n/a

Pedestrian

- No intersection met the pedestrian minimum desirable target of PLoS 'A or C'. All intersections had a PLoS of 'F' predominantly based on the number of lanes that would need to be crossed for pedestrians crossing Merivale Road (note that the number of lanes was determined from dividing the crossing distance by 3.5m and not by actual visible lanes). No mitigation would lower the PLoS to a level close to the desired MMLOS target without significantly reducing the vehicle capacity.

Bicycle

- No intersection met the cyclist minimum desirable target of BLoS 'C' due to the lack of cycling facilities. Even if curb or pocket bike lanes were added, the desired targets could not be met unless 2-stage left-turn boxes were added.

Transit

- Transit TLoS targets were met at Capilano/Merivale and Emerald Plaza/Merivale due to modest intersection delays for north-south through movement.
- Clyde/Merivale and Meadowland/Merivale had certain movements used by buses which surpassed 30 second delays and triggers the TLoS of 'E' or worse, exceeding the desired TLoS target of 'D' or better. Possible transit priority measures, such as a queue jump could reduce bus delays and improve the TLoS, however Merivale Road is not classified as a transit priority corridor.

Truck

- Only Clyde/Merivale intersection has a truck route with possible turning movements. The TkLoS was met.

Existing Conditions

The existing intersection performance was analyzed in **Section 2.1.2**, **Table 1.**

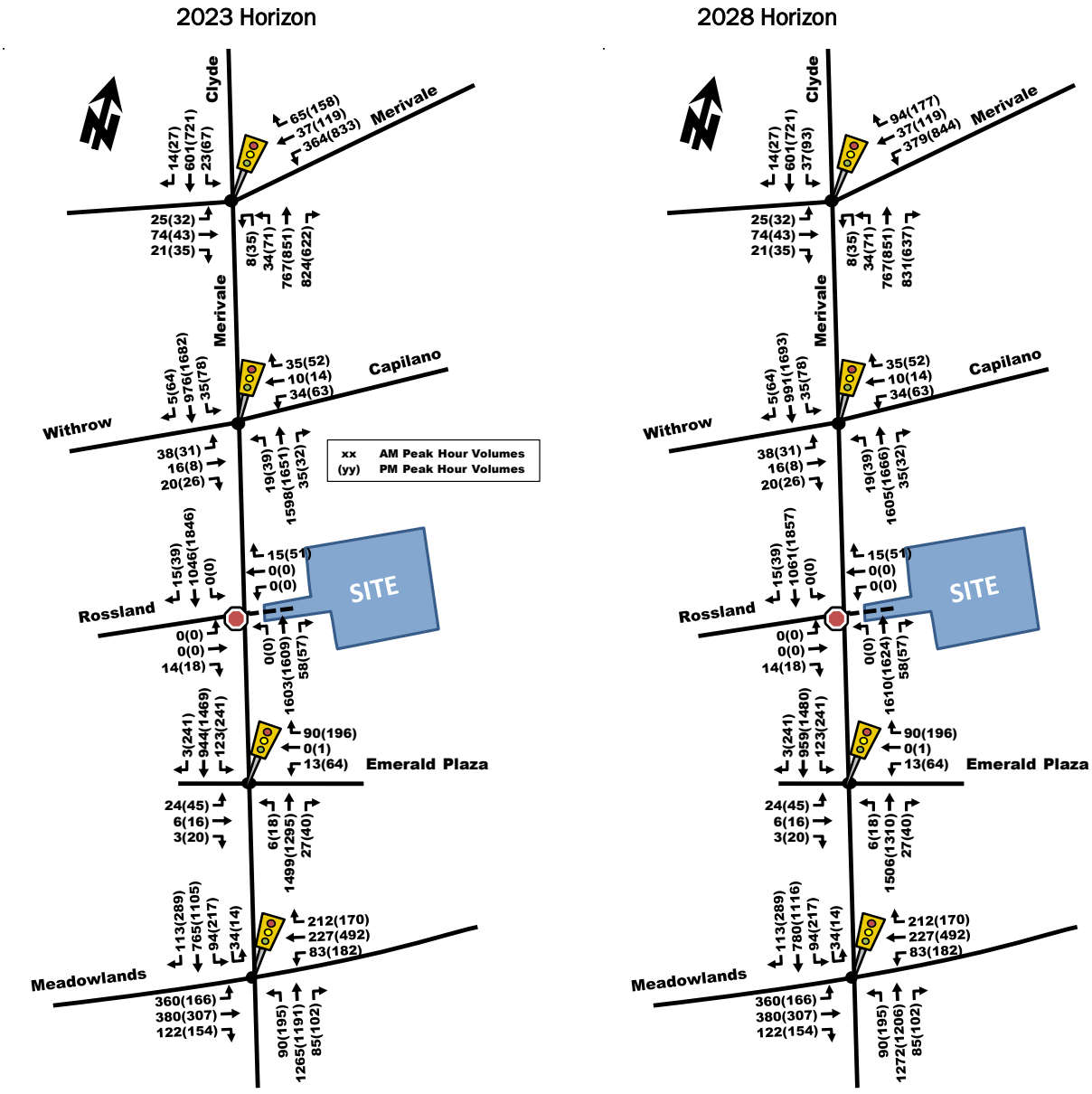
Background Conditions

The background intersection performance was analyzed in **Section 3.3**, **Table 7** and **Table 8** for 2023 and 2028 respectively.

Future Conditions at Full-Buildout

The future projected full-buildout volumes are illustrated in **Figure 15**, which assumes the layering of site generated traffic volumes on to the 2023 and 2028 background volumes and a RIRO treatment for the site access.

Figure 15: Full-Buildout Total Projected Peak Hour Traffic Volumes



4.9.3. 2023 Full-Buildout Horizon

Using the forecasted vehicular volumes from **Figure 15** for 2023 horizon and Synchro software, the projected traffic operations were calculated and are summarized in **Table 13**, with detailed result outputs provided in **Appendix M**.

Table 13: Full-Buildout Intersection Performance - 2023

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'As a Whole'		
	LoS	Max Delay or v/c	Movement	Delay (s)	LoS	Max v/c
SIGNALIZED INTERSECTIONS						
Clyde/Merivale	C(E)	0.73(0.92)	WBL(WBL)	24.3(37.6)	B(C)	0.66(0.77)
Capilano/Merivale	B(C)	0.62(0.71)	NBT(NBT)	8.7(16.4)	A(B)	0.59(0.67)
Emerald Plaza/Merivale	B(C)	0.64(0.73)	NBT(SBL)	14.4(16.6)	B(B)	0.62(0.63)
Meadowland/Merivale	F(D)	1.07(0.86)	EBL(SBT)	42.3(38.5)	C(D)	0.80(0.81)
UNSIGNALIZED INTERSECTIONS						
Site – Rossland/Merivale	C(C)	18(21)	WB(WB)	--	--	--
Note: Analysis of intersections assumes a PHF of 1.00 and a saturation flow rate of 1800 veh/h/lane						

As seen in **Table 13**, all signalized study area intersections are expected to operate very similarly to background conditions and within acceptable level of service.

The site access at Rossland/Merivale operates much better as a RIRO compared to a traditional all movement intersection. Although the access as a RIRO does eliminate conflict points and improves intersection performance, it does provide limitations to access and forces drivers to take longer routes, affecting other intersection performances.

4.9.4. 2028 Full-Buildout Horizon

Using the forecasted vehicular volumes from **Figure 15** for 2028 horizon and Synchro software, the projected traffic operations were calculated and are summarized in **Table 14**, with detailed result outputs provided in **Appendix N**.

Table 14: Full-Buildout Intersection Performance - 2028

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'As a Whole'		
	LoS	Max Delay or v/c	Movement	Delay (s)	LoS	Max v/c
SIGNALIZED INTERSECTIONS						
Clyde/Merivale	C(E)	0.74(0.93)	WBL(WBL)	24.5(38.3)	B(C)	0.67(0.78)
Capilano/Merivale	B(C)	0.62(0.72)	NBT(SBT)	8.9(16.6)	A(B)	0.59(0.68)
Emerald Plaza/Merivale	B(C)	0.65(0.73)	NBT(SBL)	14.3(16.6)	B(B)	0.63(0.63)
Meadowland/Merivale	F(D)	1.07(0.87)	EBL(SBT)	42.5(38.9)	D(D)	0.81(0.82)
UNSIGNALIZED INTERSECTIONS						
Site – Rossland/Merivale	C(C)	18(21)	WB(WB)	--	--	--
Note: Analysis of intersections assumes a PHF of 1.00 and a saturation flow rate of 1800 veh/h/lane						

As shown in **Table 14**, the study area intersections continue to operate similarly to background conditions and also to the 2023 horizon. The Meadowland/Merivale intersection continues to have a critical movement above capacity using the existing timing plan. By optimizing the signal timing, the critical movement can be improved to a v/c of 0.98 or LoS 'E' which is considered acceptable for intersection performance. Overall, the network can accommodate the development.

Future Conditions Assuming TRANS Mode Shares

The TRANS mode shares project an increase of approximately 27 and 13 new two-way trips for the AM and PM peaks respectively, compared to target mode shares. Given that the site access is now proposed as RIRO, there is additional capacity and the additional vehicle every 2 minutes for the AM and every 5 minutes for PM will have a negligible effect on study area intersections.

4.9.5. Queueing Analysis

The following **Table 15** summarizes queuing implications of leaving the existing Site/Merivale intersection geometry versus reducing the Capilano/Merivale northbound left-turn to allow room for a southbound left-turn at the Site/Merivale intersection.

Table 15: Queueing Analysis for Site Access with and without a SBL Storage Lane

Movement	Weekday AM Peak (PM Peak) Queueing Analysis	
	Capacity	95th % Synchro
Existing Site/Merivale SBL	0 m	2 m (1 m)
Existing Capilano/Merivale NBL	50 m	5 m (8 m)
Modified Site/Merivale SBL	15 m	2 m (1 m)
Modified Capilano/Merivale NBL	20 m	5 m (8 m)

The allocation of a few meters of storage from the northbound left-turn at Capilano/Merivale to Site/Merivale southbound left-turns would likely improve safety for southbound left-turning vehicles by allowing them a shelter to queue outside of the through traffic on Merivale Road while waiting to turn on to the site. The northbound left-turn at Capilano/Merivale is anticipated to still have enough queueing storage if it was shortened. These modifications however would require reconstruction of the intersection approaches and would not provide any improvements to the westbound left-turn leaving the site.

5.0 FINDINGS AND RECOMMENDATIONS

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

Existing Conditions

- The existing site access is currently in use by three different properties us from Merivale Road. One is an Ultramar Gas Station to the north (1543 Merivale Road) which is to remain, a restaurant to the south which is currently not operating (1545B Merivale Road) which is also to remain, and the commercial/warehouse buildings which will be replaced by the proposed development (referred to as 1545A Merivale Road).
- The existing site access is provided via a shared easement with the Ultramar Gas Station, as only 4.5m of the access are within the 1545A Merivale property. The future access is proposed as a RIRO. Traffic will be mixed with the adjacent Ultramar Gas Station.
- Bus stops for frequent transit route #80 are located approximately 150-to-250-meter walk from the subject site on Merivale Road. Additional local routes are available on Clyde Avenue and Meadowlands Drive.
- Historical collision records confirm elevated incident typical of major urban arterial corridors in the City. Of particular note, Clyde/Merivale and Meadowlands/Merivale experienced a high rate of collision with over 1 collision per million entering vehicles. The site access intersection though not showing high rates of collision has also been considered a sensitive location due to a potential increase in left-turning vehicles at an unsignalized intersection with heavy north-south through volumes. For this reason, the City has recommended the design be implemented as a RIRO access only.
- Existing study area intersections operate well overall, with LoS 'D' or better but most with critical movements LoS 'E' or better. The Meadowlands/Merivale intersection does experience additional

congestion in the afternoon peak hour. The Site – Rossland/Merivale intersection is also shown to experience peak hour congestion for the stop-controlled movements.

Proposed Development

- The applicant is proposing the construction of a 27,700 ft^2 medical clinic, projected to be built by 2023.
- The development is projected to generate approximately 65 to 60 'new' vehicle trips during the weekday morning and afternoon peak hours respectively.
- The development is projected to generate approximately 20 'new' transit trips during the AM and PM peak hour periods, which is expected to be accommodated by existing frequent transit route #80.
- The applicant is proposing a sidewalk on the south side of the drive-aisle and a crosswalk to connect the drive isle sidewalk to the front entrance.
- The development proposes 127 vehicle parking spaces with 70 of them being at-grade and geared to patients, while the remaining 57 spaces are proposed underground for staff. Vehicle parking requirements adhere to the by-law.
- Bike parking is proposed outdoors with 5 spaces located at the front of the building and 22 spaces indoors.
- TDM measures include pay by the hour parking for patrons.

Future Conditions

- Peak hour traffic volumes from nearby adjacent developments were incorporated into the future traffic volume projections. A background growth rate of 0% on study area intersections was applied.
- The MMLOS road segment analysis demonstrated that Merivale Road does not currently meet PLoS targets given the high number of curbside vehicles and the narrow sidewalks and boulevard treatment. Bicycle BLoS targets were also not met given that cyclists must share the road with vehicles on a road with high posted speed limit. All other MMLOS road segment categories were met.
- The MMLOS intersection analysis showed that all truck target goals were met. Transit targets were met at Capilano Avenue and Emerald Plaza intersections with Merivale Road, the remaining did not due to anticipated approach delays on Merivale Road in the future.
- Bicycle targets were not met at any location given the lack of cycling facilities. Even if cycling facilities were added, the targets would not be met unless 2-stage left-turns were added given the number of lanes on Merivale Road.
- The pedestrian targets were not met at any intersection due to the quantity of lanes required to cross on Merivale Road.
- All signalized study area intersections were shown to operate acceptably by the 2028 horizon year including full buildout of the site and other area developments, even if the target mode shares are not met (i.e. the average Merivale mode share assumptions were applied).
- The site proposes a new sidewalk from the front door to Merivale Road along the new driveway access.

Based on the preceding report, the proposed development located at 1545A Merivale Road is recommended from a transportation perspective.

Prepared By:

Juan Lavin, P. Eng.

Reviewed By:

Jake Berube, P.Eng.

Appendix A:

Screening Form and Response to City Comments

PARSONS

1223 Michael Street, Suite 100, Ottawa, Ontario, K1J 7T2
P: +1 613.738.4160 l F: +1 613.739.7105 l www.parsons.com

City of Ottawa 2017 TIA Guidelines

TIA Screening Form

Date	31-May-22
Project	1545 Merivale Road
Project Number	908-979-10099

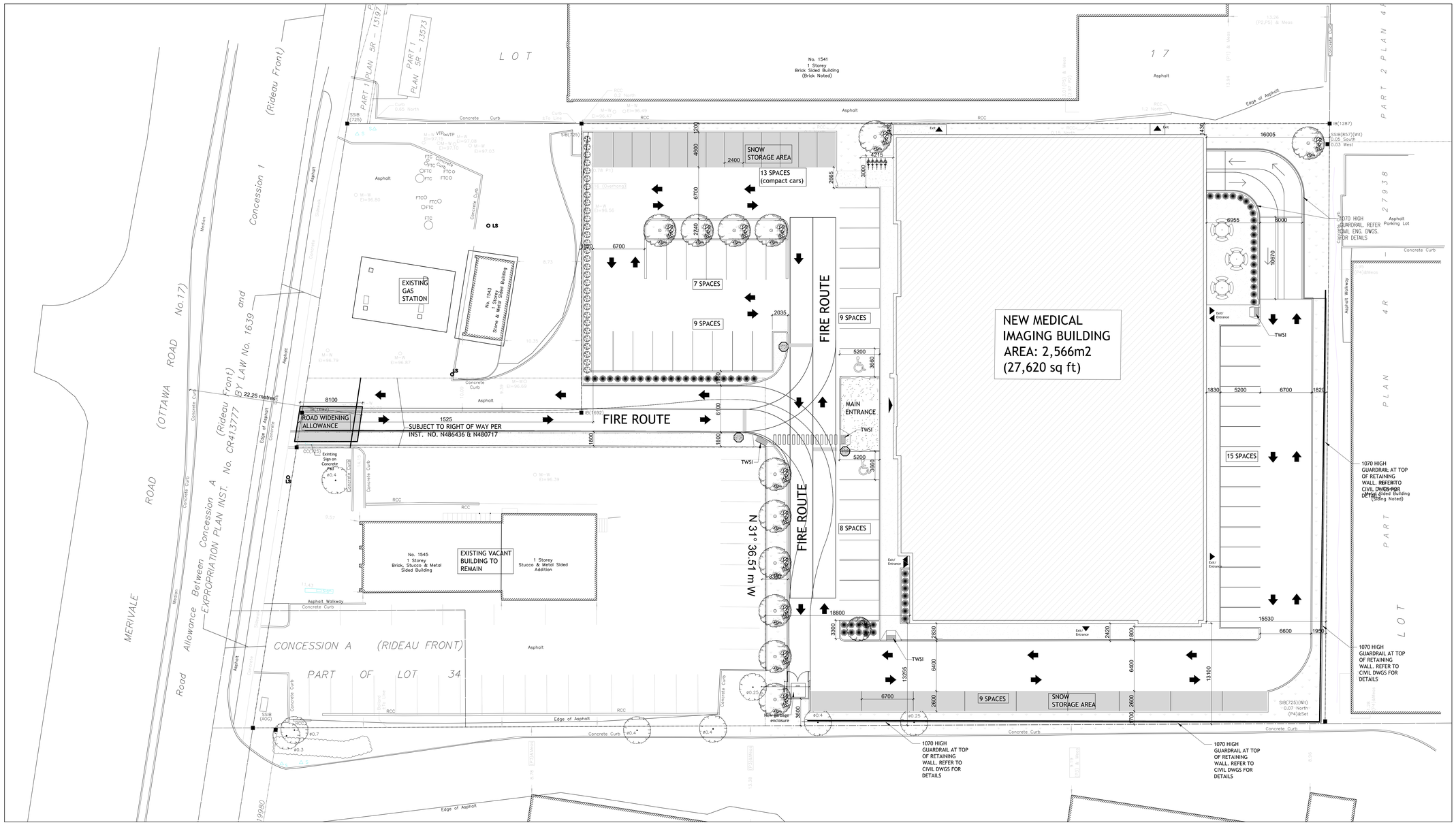
Results of Screening	Yes/No
Development Satisfies the Trip Generation Trigger	Yes
Development Satisfies the Location Trigger	Yes
Development Satisfies the Safety Trigger	Yes

Module 1.1 - Description of Proposed Development	
Municipal Address	1545 Merivale Road
Description of location	Property located east Merivale Road, south of the Capilano Drive intersection. Site is currently developed with an unoccupied restaurant and industrial building
Land Use	Medical Clinic
Development Size	25,000 sq. ft. / 2,350 m2
Number of Accesses and Locations	One Existing Access to Merivale Road
Development Phasing	One phase
Buildout Year	2023
Sketch Plan / Site Plan	See attached

Module 1.2 - Trip Generation Trigger		
Land Use Type	Medical - Clinic (630)	Clinic
Development Size	2340	sq. m
Trip Generation Trigger Met?	Yes	
Note: Development anticipated to generate 92 AM peak hour vehicle trips and 82 PM peak hour vehicle trips based on a review of ITE land use 630: Clinic. This exceeds the threshold of 60 person-trips for a		

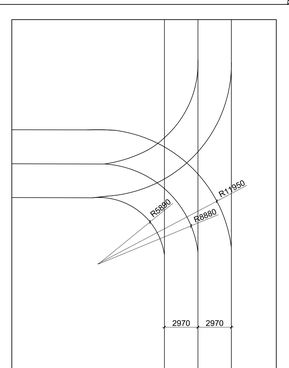
Module 1.3 - Location Triggers		
Development Proposes a new driveway to a boundary street that is designated as part of the City's Transit Priority, Rapid Transit, or Spine Bicycle Networks (See Sheet 3)	No	
Development is in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone. (See Sheet 3)	Yes	Merivale Main Street Secondary Plan and Traditional Main Street
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;	Yes	85m to Merivale/Capilano and 150m to Merivale/Emerald Plaza. Within the double SB-LT lanes.
A proposed driveway makes use of an existing median break that serves an existing site	No	
There is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development	No	*Not to our current knowledge
The development includes a drive-thru facility	No	
Safety Trigger Met?	Yes	



1 SITE PLAN
A-100
SCALE = 1:200 (1/16" = 1'-0")

3 GARBAGE TRUCK ROUTE DIMENSIONS
A-100
SCALE = 1:200 (1/16" = 1'-0")



2 FIRE TRUCK ROUTE DIMENSIONS
A-100
SCALE = 1:200 (1/16" = 1'-0")

PROJECT INFORMATION

PROJECT: NEW MEDICAL CLINIC BUILDING

MUNICIPAL ADDRESS: 1545A MERIVALE RD, OTTAWA, ONTARIO

PIN: 04678-0004

ZONING USE: AM10 - ARTERIAL MAINSTREET ZONE, MEDICAL FACILITY

PROPOSED CONSTRUCTION: NEW 1 - STOREY BUILDING

PROPOSED USE: MEDICAL CLINIC

BUILDING HEIGHT: ± 6,858m (± 22'-6")

GROSS FLOOR AREA: 27, 620 SQ FT (2,566 m2)

SITE AREA: 74,293.150m2

PARKING STATISTICS:

STANDARD PARKING:
53 SPACES OF 2.6m W X 5.2m L
(8' - 7"W x 17' - 0"L)

COMPACT CAR PARKING:
13 SPACES OF 2.4m W X 5.2m L

ACCESSIBLE PARKING:
2 SPACES OF 3.66m W x 5.2m L
12'-0" W x 17'-0"L)

TOTAL PARKING SPACES:
AT GRADE: 70
UNDERGROUND: 57
TOTAL: 127

BICYCLE PARKING:
ABOVE-GROUND: 5 SPACES
BELOW-GROUND: 22 SPACES

LANDSCAPING:
REQUIRED 15% OF PARKING AREA

TOTAL PARKING AREA: 3,633 m2
15% LANDSCAPING REQUIRED: 545m2

TOTAL LANDSCAPED AREAS PROVIDED: 1,136.25 m2

GENERAL NOTES:

1. REFER TO SURVEY BY FARLEY, SMITH AND DENIS SURVEYING LTD.
1. ALL GRADES TO MATCH EXISTING UNLESS OTHERWISE INDICATED ON SITE PLAN. NEW GRADES TO TIE INTO EXISTING GRADES.
2. CURBS AND LANDSCAPING SHOWN OUTSIDE OF PROPERTY LINE AND IN EXISTING NATURAL ZONE ARE SHOWN FOR INFORMATION PURPOSES ONLY. SITE VERIFICATION OF ALL CONDITIONS REQUIRED.
3. REFER TO LANDSCAPE ARCHITECT'S DRAWINGS FOR NEW LANDSCAPING AND TREE PRESERVATION.
4. REFER TO ENGINEERING DRAWINGS FOR EXTENT OF NEW ROAD DEVELOPMENT, SITE LIGHTING, AND MASTER SITE PLAN.
5. ALL NOTES ARE AS PER CITY/ PROVINCIAL STANDARDS, GUIDELINES, BY-LAWS AND DETAIL DRAWINGS.

ZONE MECHANISM	ZONE PROVISION DEVELOPMENT	PROPOSED	IN COMPLIANCE (YES/NO)
MINIMUM LOT AREA (M²)	NO MINIMUM	6,905 M	YES
MINIMUM LOT WIDTH	NO MINIMUM	4.7 M	YES
MINIMUM FRONT YARD SETBACK (TO MERIVALE ROAD)	0 M	78 M	YES
MINIMUM PERCENTAGE OF FRONTAGE ALONG FRONT LOT LINE TO BE OCCUPIED BY BUILDING WALLS LOCATED WITHIN 3.0M OF THE LOT LINE	50%	0%	NO* SUBJECT TO MINOR VARIANCE
MINIMUM CORNER SIDE YARD SETBACK (NOT APPLICABLE)	0M	N/A	N/A
MINIMUM REAR YARD SETBACKS	7.5 M	15 M	YES
MINIMUM INTERIOR SIDE YARD SETBACK ABUTTING NON-RESIDENTIAL)	NO MINIMUM	12.5 M (TO 1547 MERIVALE ROAD) 1.69 M (TO 1541 MERIVALE ROAD)	YES
MAXIMUM BUILDING HEIGHT	30M	6.7 M	YES
MAXIMUM FLOOR SPACE INDEX	NONE	0.36	YES
MINIMUM WIDTH OF LANDSCAPED AREA AROUND A PARKING LOT (SECTION 110)	1.5 M	VARIES (1.5M MINIMUM ACHIEVED)	YES
MINIMUM PARKING (SECTION 101)	4 PER 100 M² OF GFA (100 REQUIRED)	127 SPACES 105 (INCL AREAS FOR SNOW STORAGE)	YES
MINIMUM BICYCLE PARKING (SECTION 111)	1 PER 1000 OF GFA (3 REQUIRED)	5 OUTDOOR 22 INDOOR	YES

CLIENT

MMI Merivale Medical Imaging

PROJECT NORTH

SEAL

CONSULTANTS - ARCHITECTS

(L+D) LALANDE + DOYLE ARCHITECTS INC.
www.lplusd.com
Tel 613.233.2900
Fax 613.233.1008
159 Holland Ave
Ottawa, Ontario K1Y 0Y2

CONSULTANTS - STRUCTURAL/MECHANICAL/ELECTRICAL

ROBERT E. DALE LIMITED CONSULTING ENGINEERS

CONSULTANTS - CIVIL ENGINEERING

NOVATECH Engineers, Planners & Landscape Architects

CONSULTANTS - LANDSCAPE ARCHITECTS

JAMES B. LENNOX & ASSOCIATES INC.
LANDSCAPE ARCHITECTS
361 HINTON AVENUE SOUTH OTTAWA, ONTARIO K1Y 1A6
TEL. (613) 722-5168 – FAX. (613) 728-0735 – JBLA@ROGERS.COM

APPROVED ☐ REFUSED ☐

THIS _____ DAY OF _____, 20 _____

MANAGER DEVELOPMENT REVIEW CENTRAL, PLANNING, INFRASTRUCTURE AND ECONOMIC DEVELOPMENT DEPARTMENT, CITY OF OTTAWA

ALL NOTES ARE AS PER CITY/ PROVINCIAL STANDARDS, GUIDELINES, BY-LAWS AND DETAIL DRAWINGS.

DATE	DESCRIPTION	ISSUE	REV.
12/05/2023	REISSUED FOR SITE PLAN APPROVAL	02	
21/12/2022	ISSUED FOR SITE PLAN APPROVAL	01	

PROJECT NAME

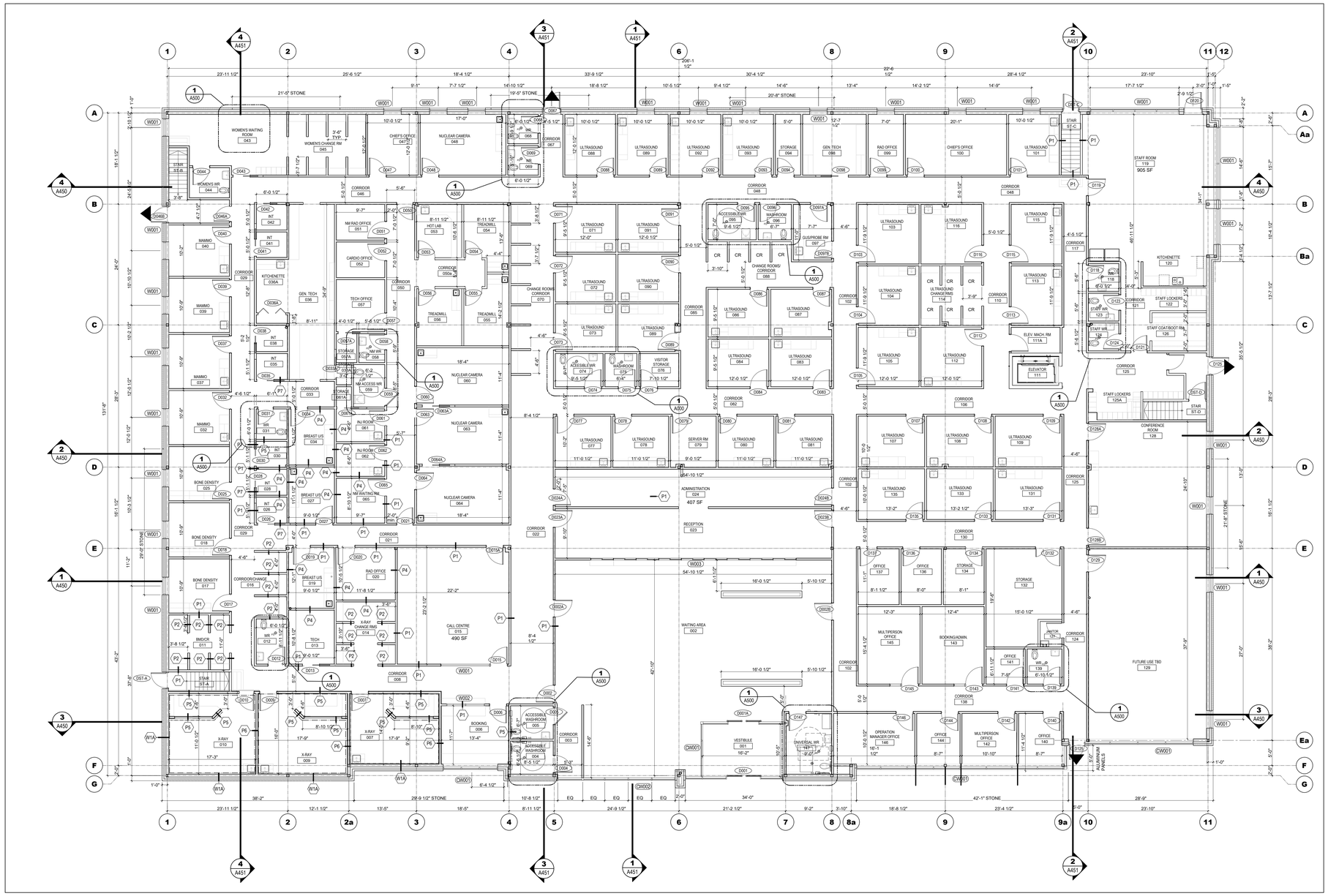
MERIVALE MEDICAL IMAGING CLINIC

1545A Merivale Rd. Ottawa, On. K2G 3J

DRAWING TITLE

SITE PLAN - REVISED NEW CONSTRUCTION

DATE	PROJECT NO.
2022/09/20	20-021
SCALE: AS NOTED	
DRAWN BY: MD	DRAWING NO. A-100
REVIEWED BY: LCL	



1 A-200 GROUND FLOOR PLAN

1/8" = 1'-0"

CONSTRUCTION LEGEND :

- ND / PAGE — REFERENCE TO A DETAIL OR AN ENLARGEMENT
- ND / PAGE — REFERENCE TO A SECTION
- ND / PAGE — REFERENCE TO AN ELEVATION
- ND / PAGE — REFERENCE TO A SECTION DETAIL
- NAME / NUMBER / NUMBERS / AREA — ROOM, NAME, NUMBER AND AREA
- P1 — PARTITION TYPE, SEE ALSO PAGE A-060 TO A-064
- 000 — DOOR NUMBER - REFER TO DOOR SCHEDULE IN THE SPECIFICATIONS
- W# — WINDOW REFERENCE
- GL# — INTERIOR GLAZING REFERENCE
- NEW BUILT-IN MILLWORK. REFER TO A-900 SERIES FOR DETAILS.
- UNLESS OTHERWISE INDICATED, INSTALL DOOR FRAMES AT 100mm FROM PERPENDICULAR WALL.
- FD — INDICATES FLOOR DRAIN

GENERAL NOTES :

1. LAYOUT OF ALL PARTITIONS TO BE APPROVED BY ARCHITECT BEFORE ERECTING PARTITIONS.

2. UNLESS OTHERWISE INDICATED, DIMENSIONS ARE TO BE ESTABLISHED FROM THE CENTRE OF NEW WALLS, THE FINISHED FACE OF CONCRETE WALLS, OR STRUCTURAL GRID LINE.

SPECIFIC NOTES:

1
2
3
4
5

CLIENT

MMI Merivale Medical Imaging

PROJECT NORTH

SEAL

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Fax 613.233.1008
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CONSULTANTS - CIVIL ENGINEERING

NOVATECH ENGINEERING CONSULTANTS LTD. ENGINEERS & PLANNERS

DATE	DESCRIPTION	ISSUE	REV.
16/05/2023	REISSUED FOR SITE PLAN	04	
30/08/2022	ISSUED FOR REVIEW	04	
10/08/2022	ISSUED FOR REVIEW	03	
07/06/2022	ISSUED FOR REVIEW	02	
5/5/2022	ISSUED FOR REVIEW	01	

PROJECT NAME

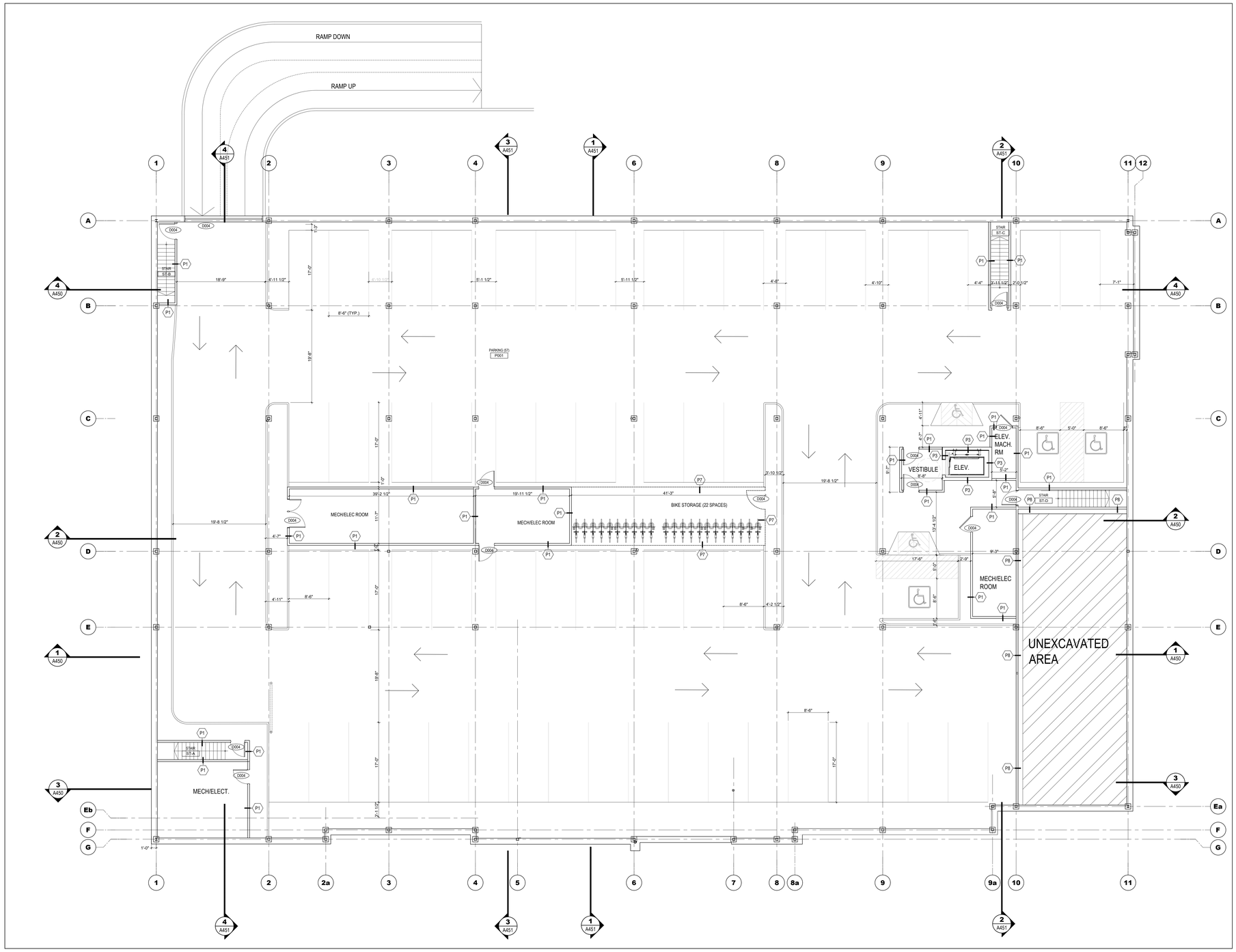
MERIVALE MEDICAL IMAGING CLINIC

1545A Merivale Rd. Ottawa, On. K2G 3J

DRAWING TITLE

GROUND FLOOR PLAN

DATE	PROJECT NO.
06.05.2022	20-021
SCALE: 1/8" = 1'-0"	
DRAWN BY: B.R	DRAWING NO. A-200
REVIEWED BY: P.D	



1 A-201 P1 FLOOR PLAN

1/8" = 1'-0"

LEGEND:

- 000 DOOR REFERENCE
- W# WINDOW REFERENCE
- P1 PARTITION TYPE

SPECIFIC NOTES:

1. 123456
2.
3.
4.
5.

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TEL. (613) 722-5168 – FAX. (613) 728-0735 – JBLA@ROGERS.COM

DATE	DESCRIPTION	ISSUE	REV.
16/05/2023	REISSUED FOR SITE PLAN		03
21/12/2022	ISSUED FOR SITE PLAN		03
07/06/2022	ISSUED FOR REVIEW		02
5/5/2022	ISSUED FOR REVIEW		01

PROJECT NAME

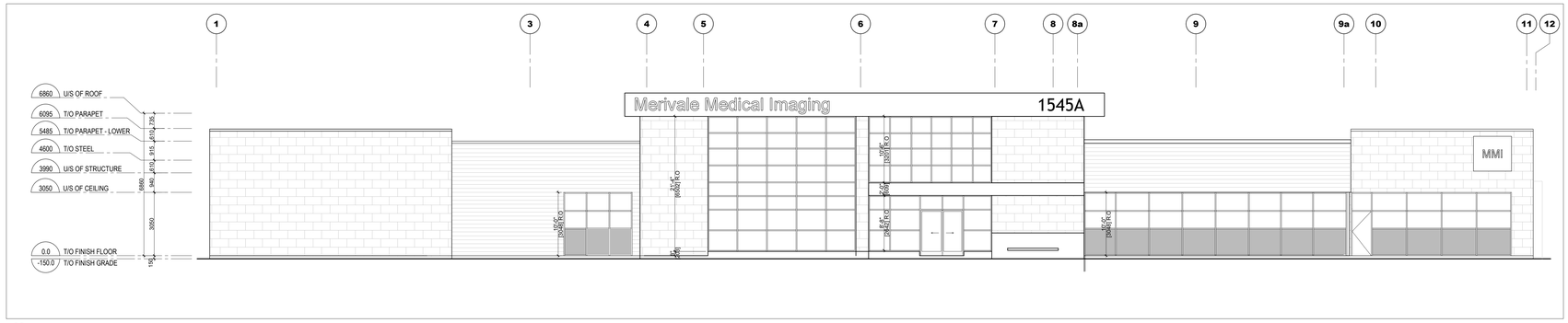
MERIVALE MEDICAL IMAGING CLINIC

1545A Merivale Rd. Ottawa, On. K2G 3J

DRAWING TITLE

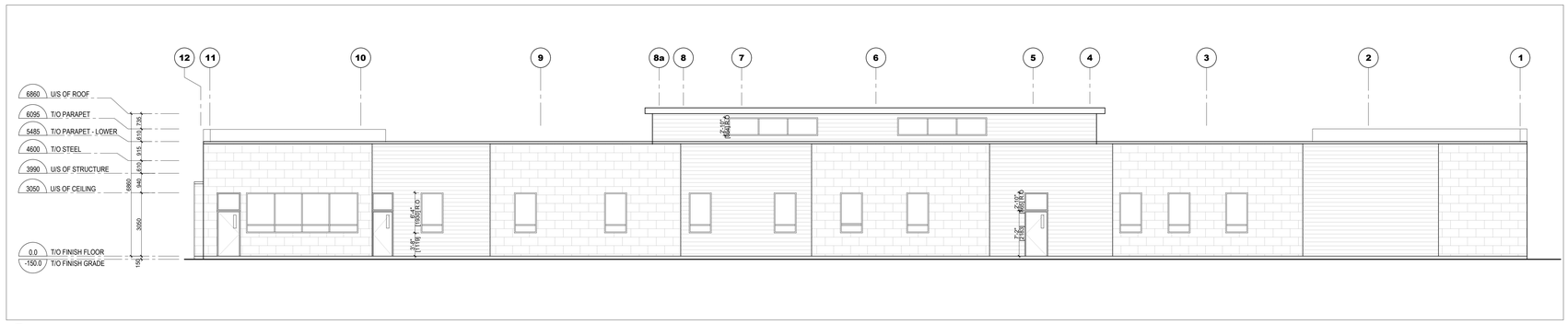
P1 FLOOR PLAN

DATE	PROJECT NO.
06.05.2022	20-021
SCALE 1/8" = 1'-0"	
DRAWN BY MD	DRAWING NO.
REVIEWED BY LCL	A-201



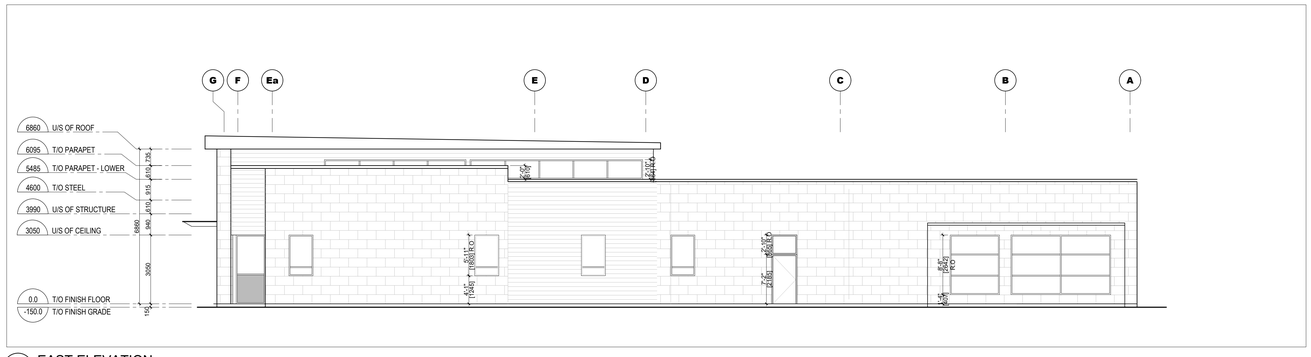
1 A-400 SOUTH ELEVATION

1:100 (1/8" = 1'-0")



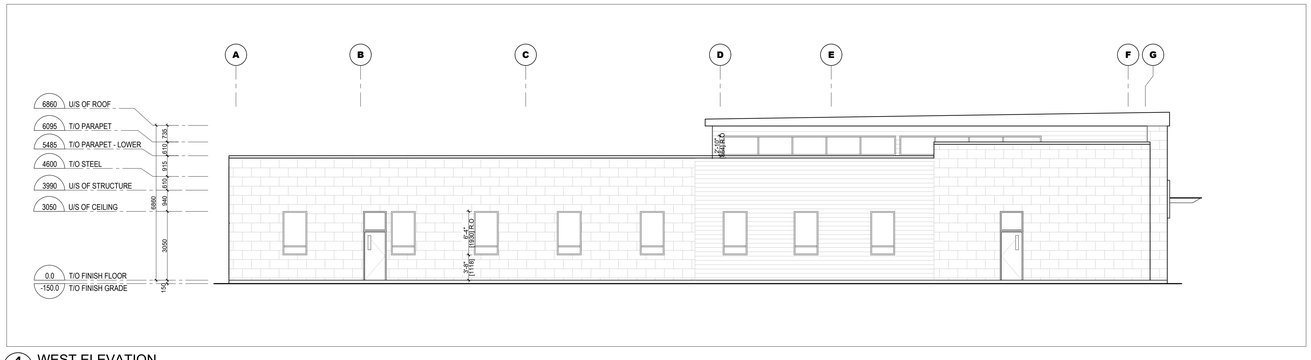
2 A-400 NORTH ELEVATION

1:100 (1/8" = 1'-0")



3 A-400 EAST ELEVATION

1:100 (1/8" = 1'-0")



4 A-400 WEST ELEVATION

1:100 (1/8" = 1'-0")

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DATE	DESCRIPTION	ISSUE	REV.
2023/05/16	RE-ISSUED FOR SITE PLAN	04	
2022/12/16	ISSUED FOR SITE PLAN	03	
2022/07/10	ISSUED FOR REVIEW	02	
2022/05/05	ISSUED FOR REVIEW	01	

PROJECT NAME

MERIVALE MEDICAL IMAGING CLINIC

1545 Merivale Rd. Ottawa, On. K2G 3J

DRAWING TITLE

BUILDING ELEVATIONS

DATE 18/04/2023

SCALE AS INDICATED

DRAWN BY BR

REVIEWED BY LCL

PROJECT NO. 21-021

DRAWING NO. A-400

Appendix B:

Transit Route Maps

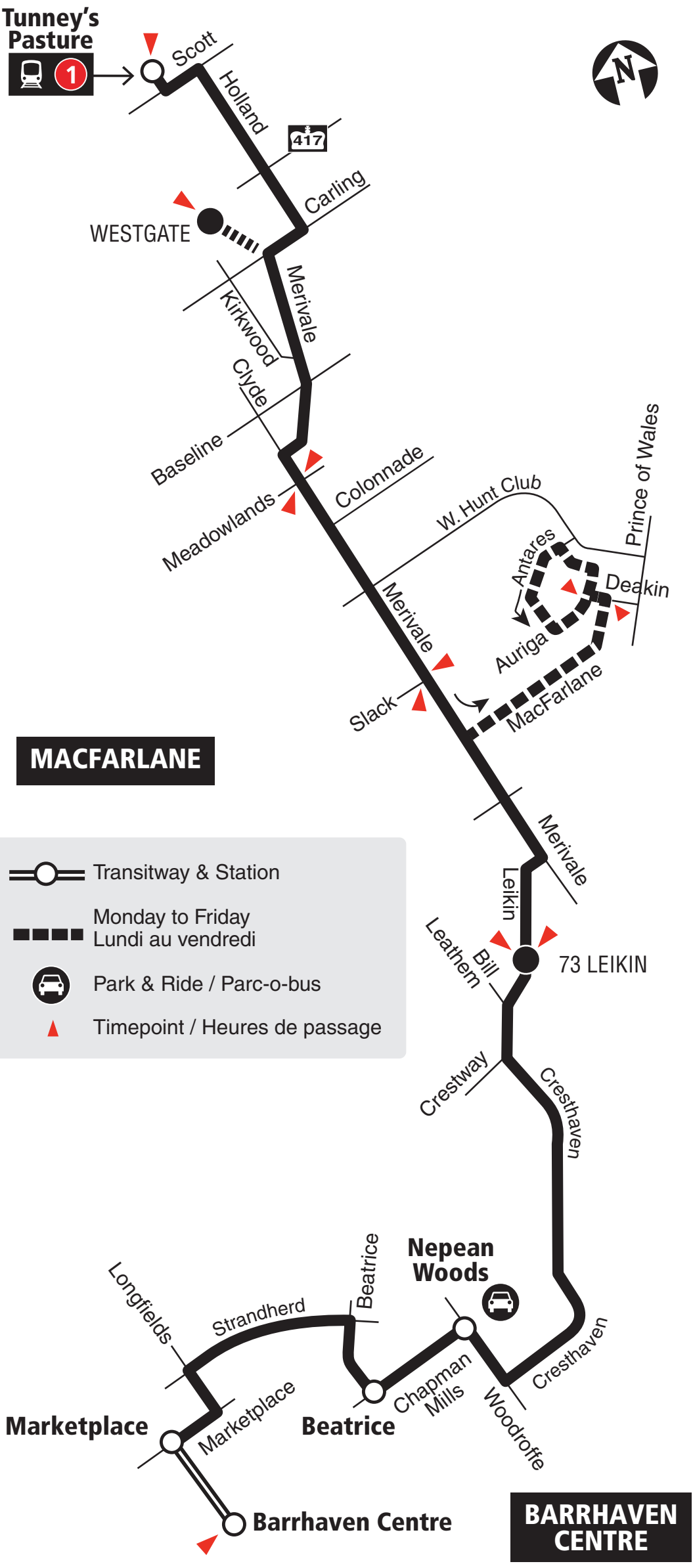
80

Fréquent

BARRHAVEN CENTRE
TUNNEY'S PASTURE

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

TUNNEY'S PASTURE



2018.12

Schedule / Horaire.....613-560-1000
Text / Texto 560560
plus your four digit bus stop number / *plus* votre numéro d'arrêt à quatre chiffres

Customer Relations
Service à la clientèle **613-842-3600**

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

Security / Sécurité **613-741-2478**

Effective June 24, 2018
En vigueur 24 june 2018

OC Transpo

INFO 613-741-4390
octranspo.com

81

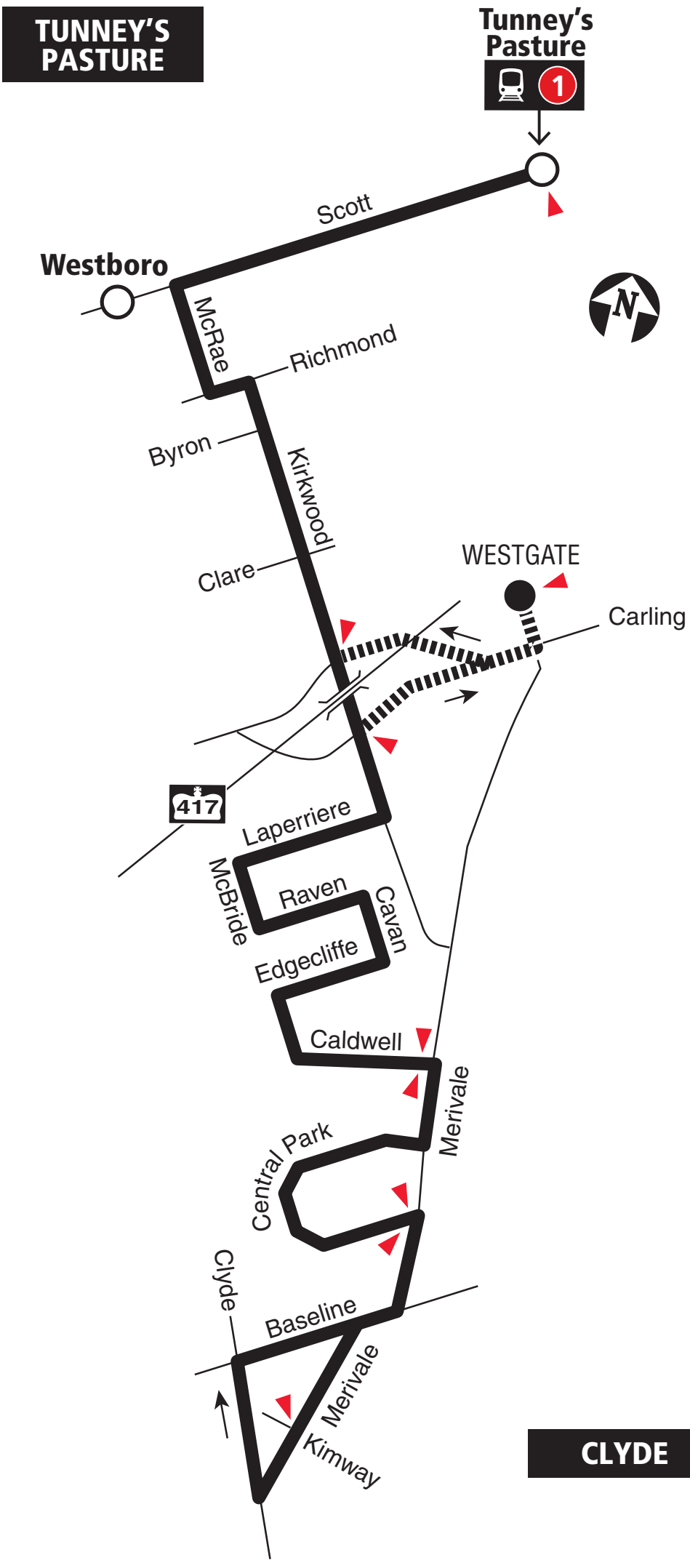
CLYDE

TUNNEY'S PASTURE

Local

7 days a week / 7 jours par semaine

No service in the evening on weekends
Aucun service le soir les fins de semaine



Station

Some trips / Quelques trajets

Timepoint / Heures de passage

2019.07

1

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

Lost and Found / Objets perdus..... **613-563-4011**
Security / Sécurité **613-741-2478**

OC Transpo

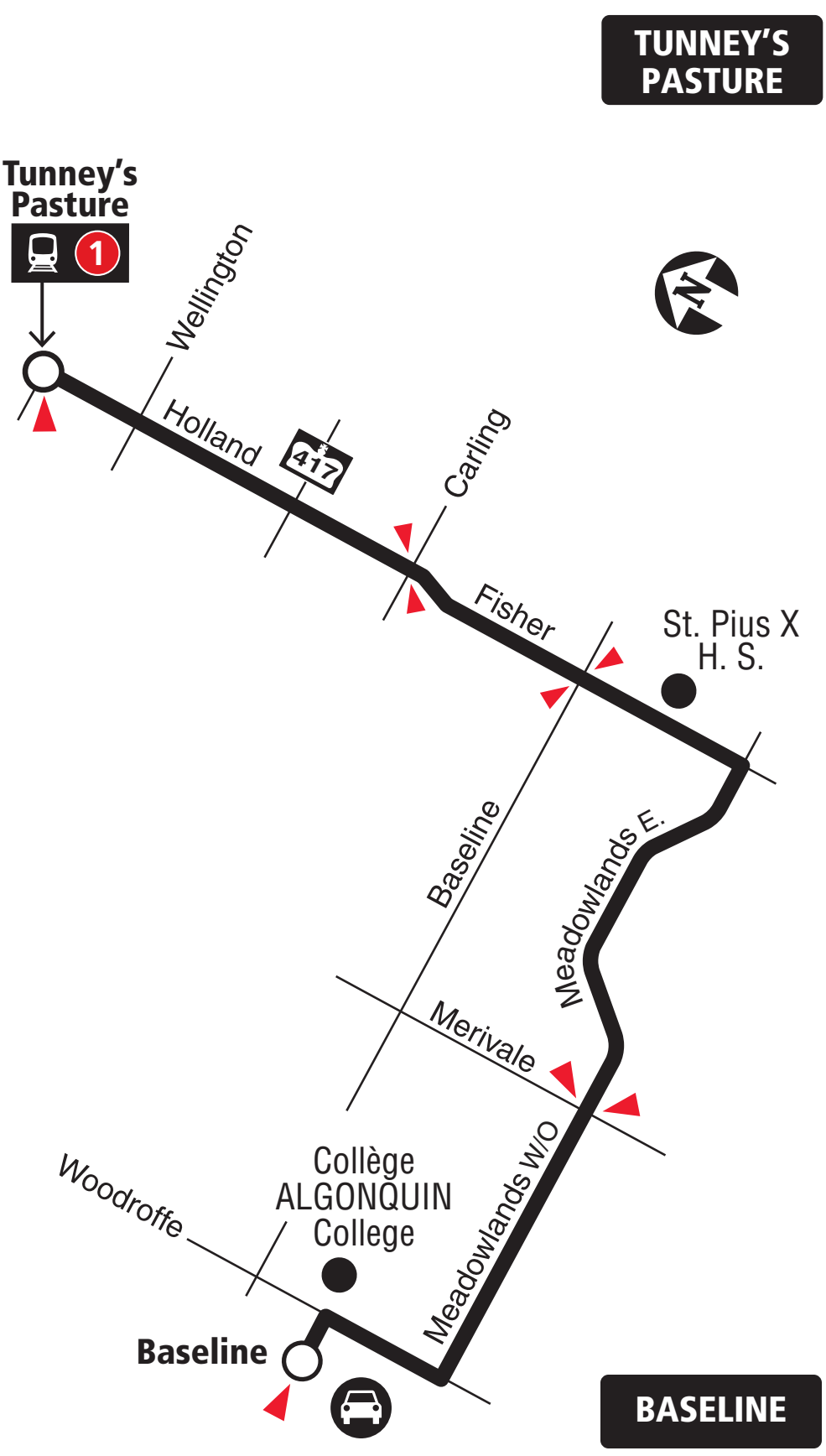
INFO 613-741-4390
octranspo.com

86 BASELINE

TUNNEY'S PASTURE

7 days a week / 7 jours par semaine

All day service
Service toute la journée



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

2019.07

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

Lost and Found / Objets perdus..... **613-563-4011**
Security / Sécurité **613-741-2478**

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octranspo.com

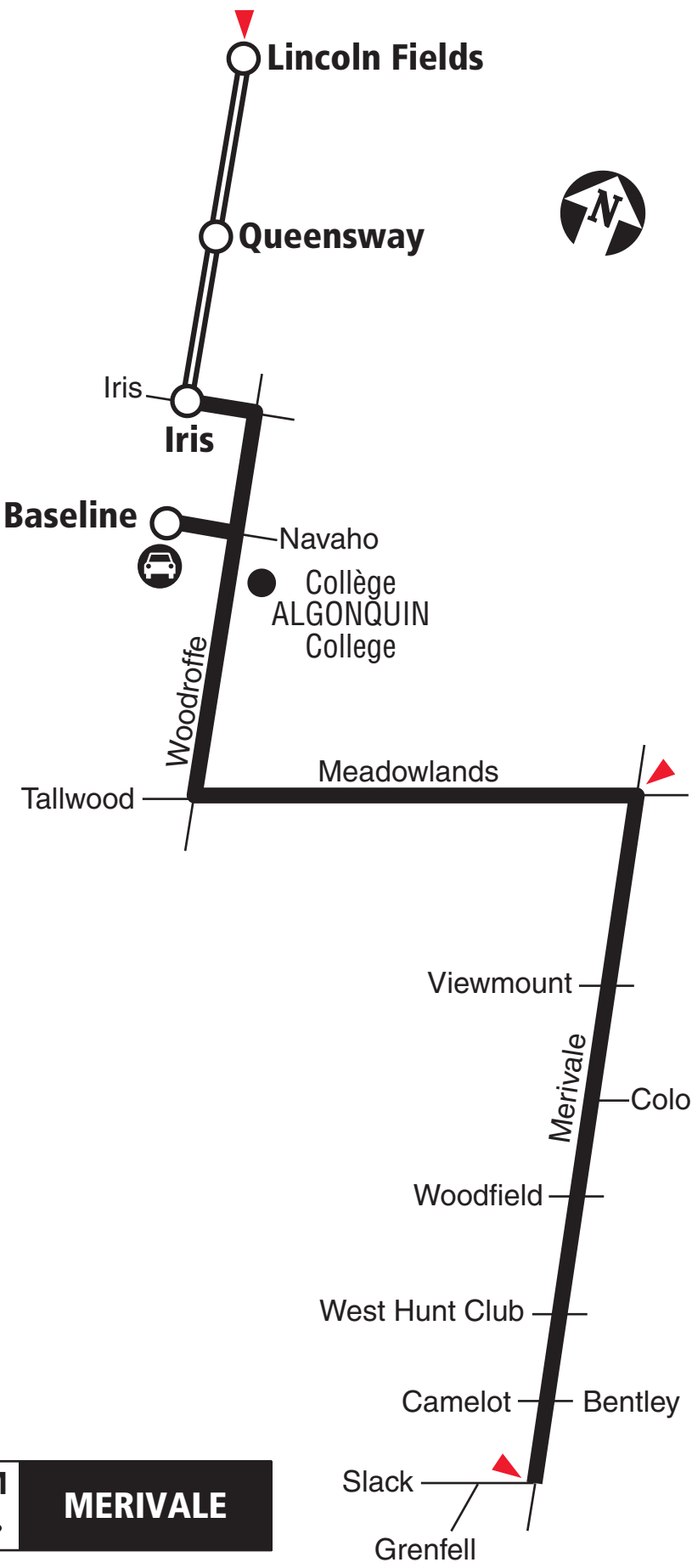
186

LINCOLN FIELDS
MERIVALE

Local

Monday to Friday / Lundi au vendredi
Peak periods only
Périodes de pointe seulement

PM ↑ LINCOLN FIELDS



AM ↓ MERIVALE

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

2022.06

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

Customer Service
Service à la clientèle **613-560-5000**

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

Security / Sécurité **613-741-2478**

Effective June 26, 2022
En vigueur 26 juin 2022

OC Transpo

INFO 613-560-5000
octranspo.com

Appendix C:

Traffic Data

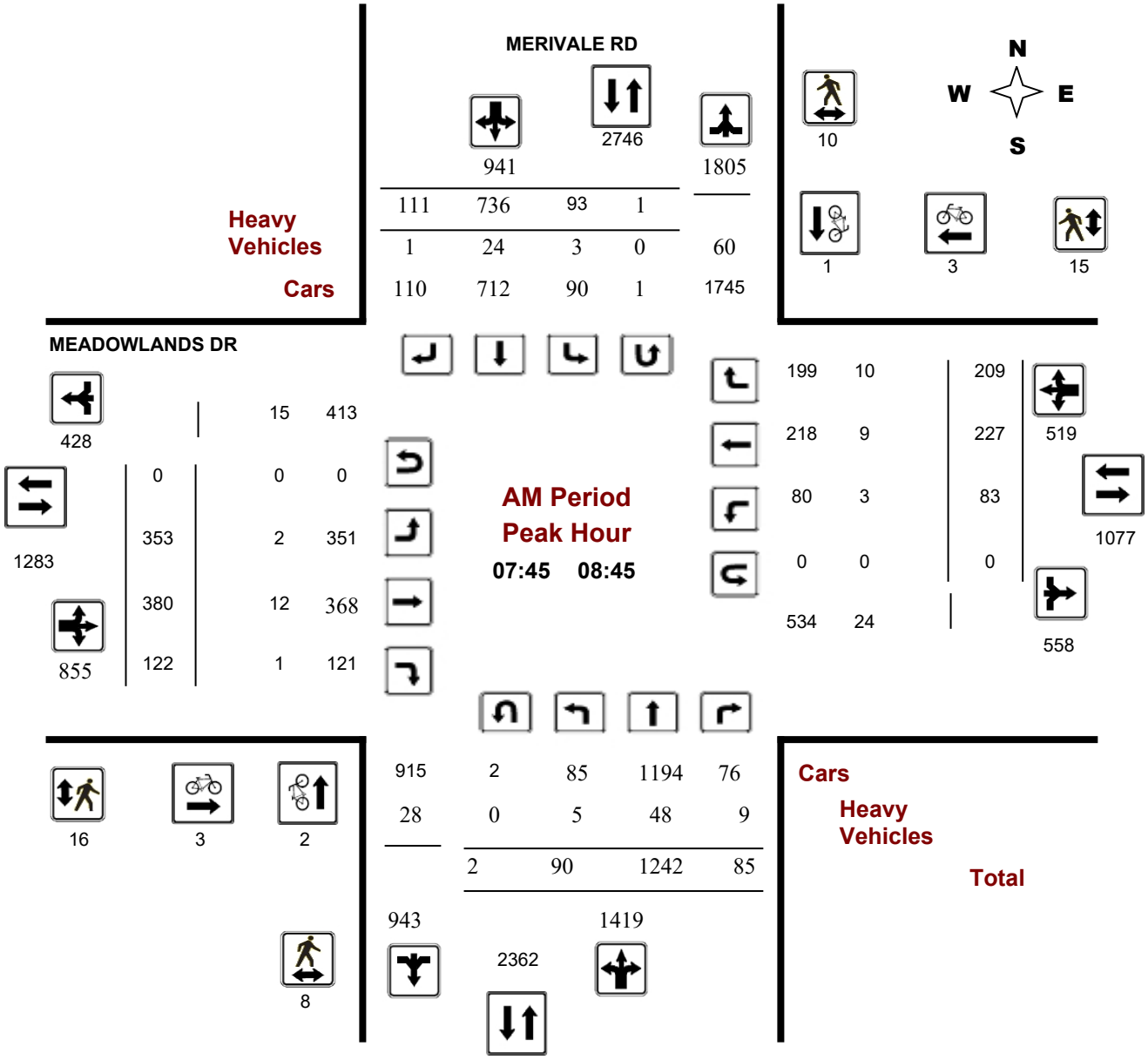
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

MEADOWLANDS DR @ MERIVALE RD

Survey Date: Thursday, November 01, 2018 **WO No:** 38079

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



Comments

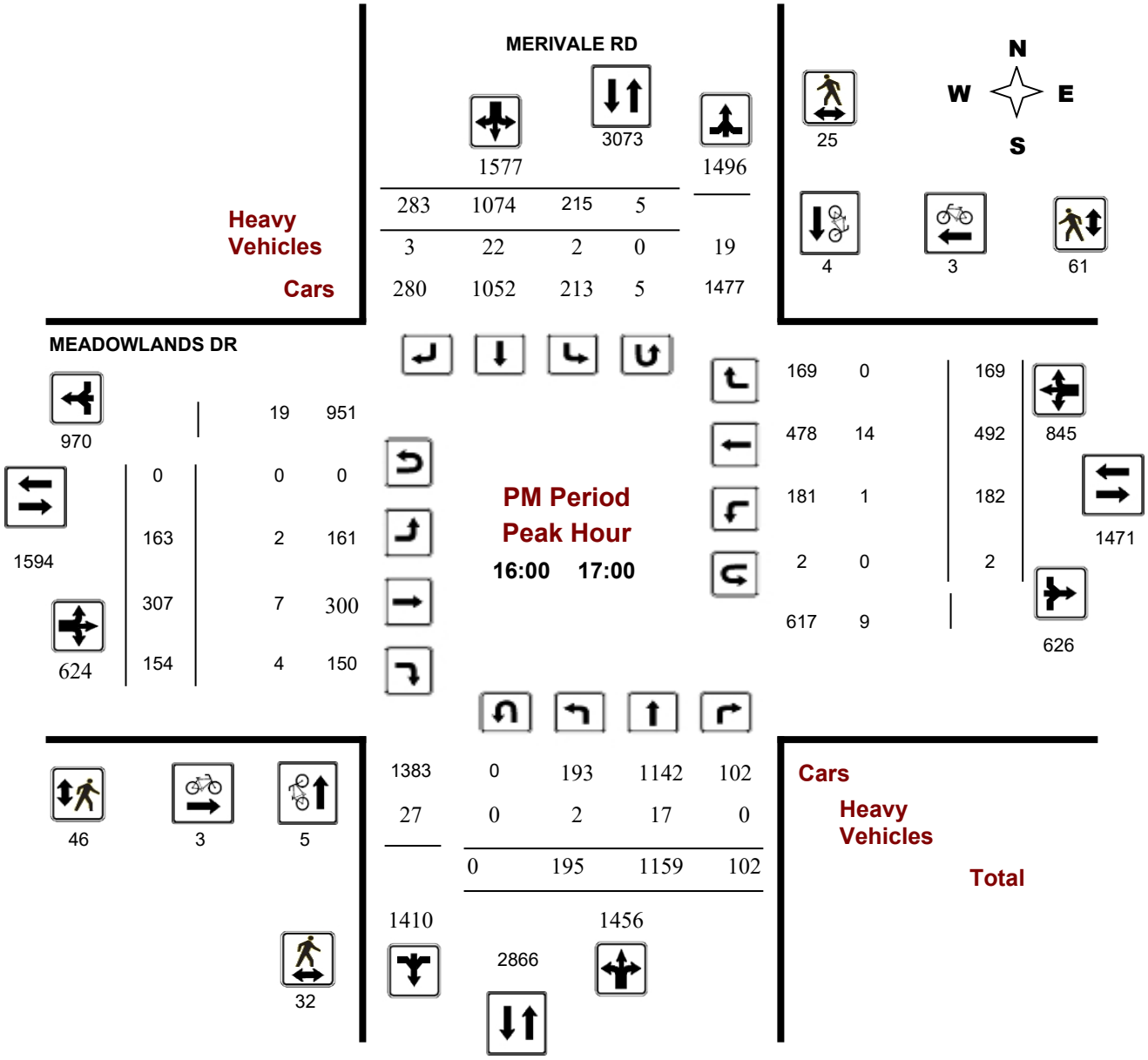
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

MEADOWLANDS DR @ MERIVALE RD

Survey Date: Thursday, November 01, 2018 **WO No:** 38079

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



Comments

ACCURATE TRUSTED TRAFFIC DATA

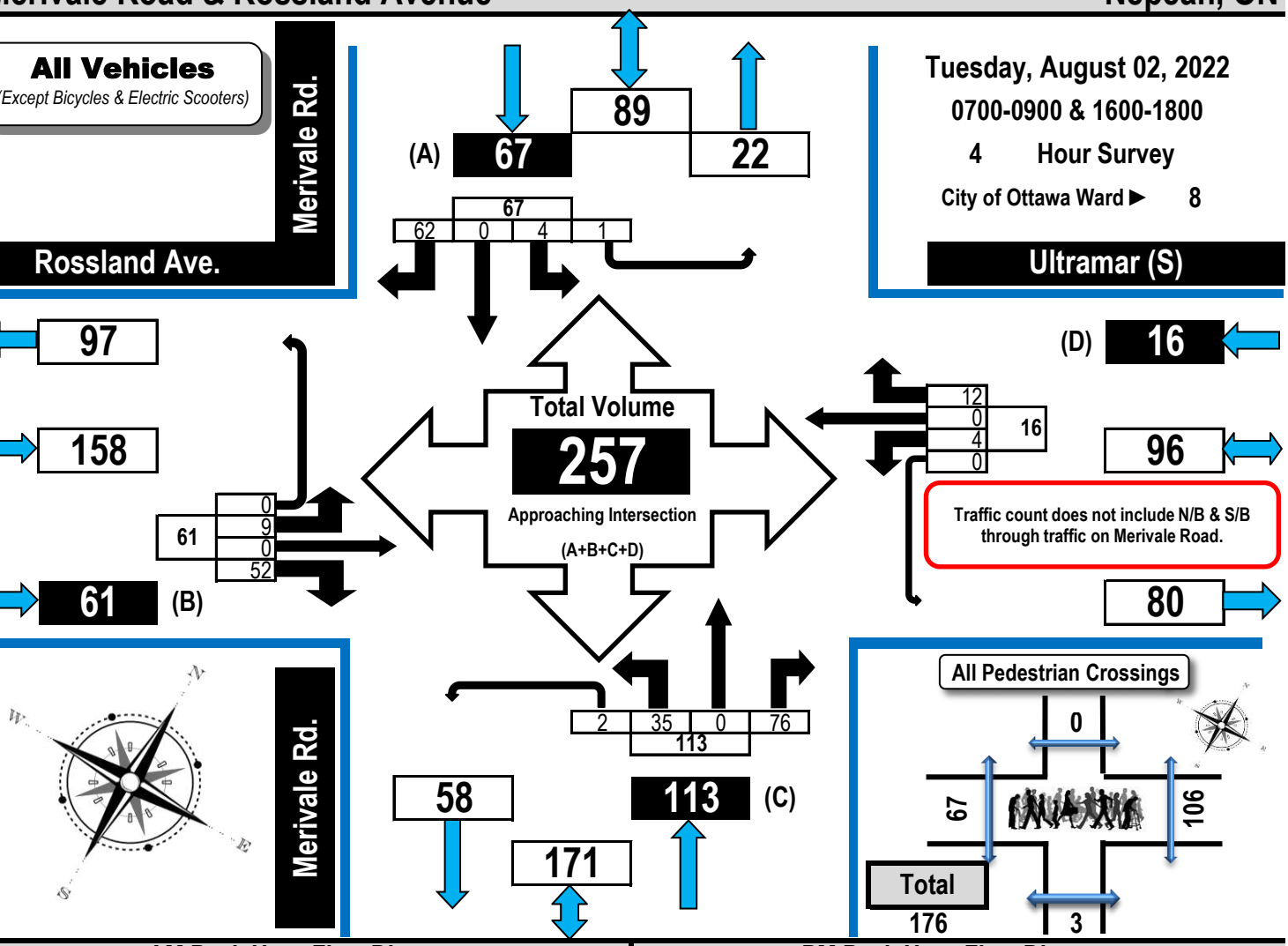
Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams
All Vehicles Except Bicycles

Merivale Road & Rossland Avenue — Nepean, ON

All Vehicles
(Except Bicycles & Electric Scooters)

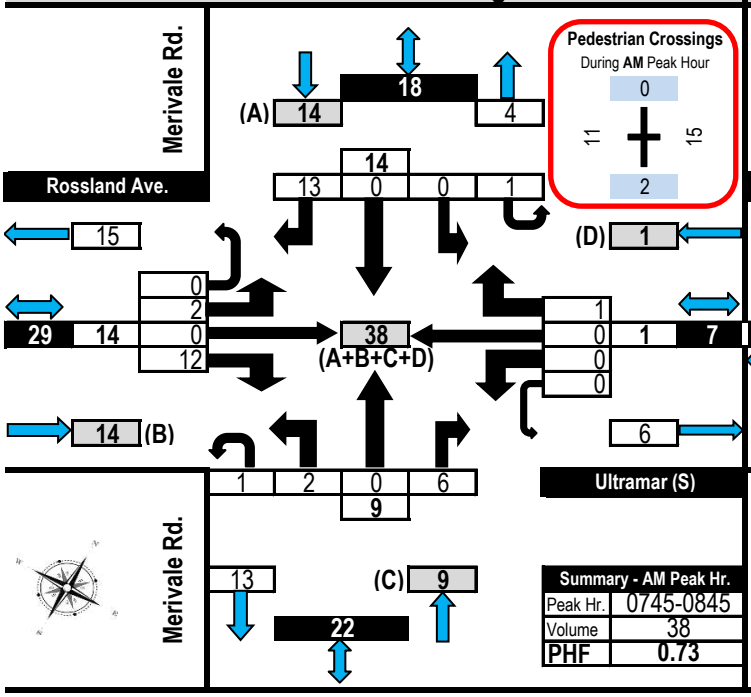
Tuesday, August 02, 2022
0700-0900 & 1600-1800
4 Hour Survey
City of Ottawa Ward ► 8

Merivale Rd. | Rossland Ave. | Ultramar (S)



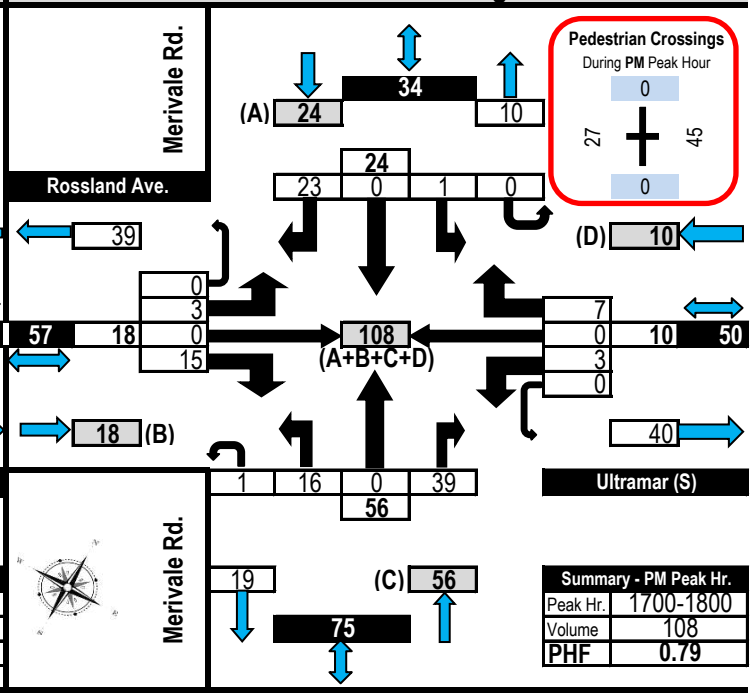
Merivale Rd.

AM Peak Hour Flow Diagram



Summary - AM Peak Hr.	
Peak Hr.	0745-0845
Volume	38
PHF	0.73

PM Peak Hour Flow Diagram



Summary - PM Peak Hr.	
Peak Hr.	1700-1800
Volume	108
PHF	0.79

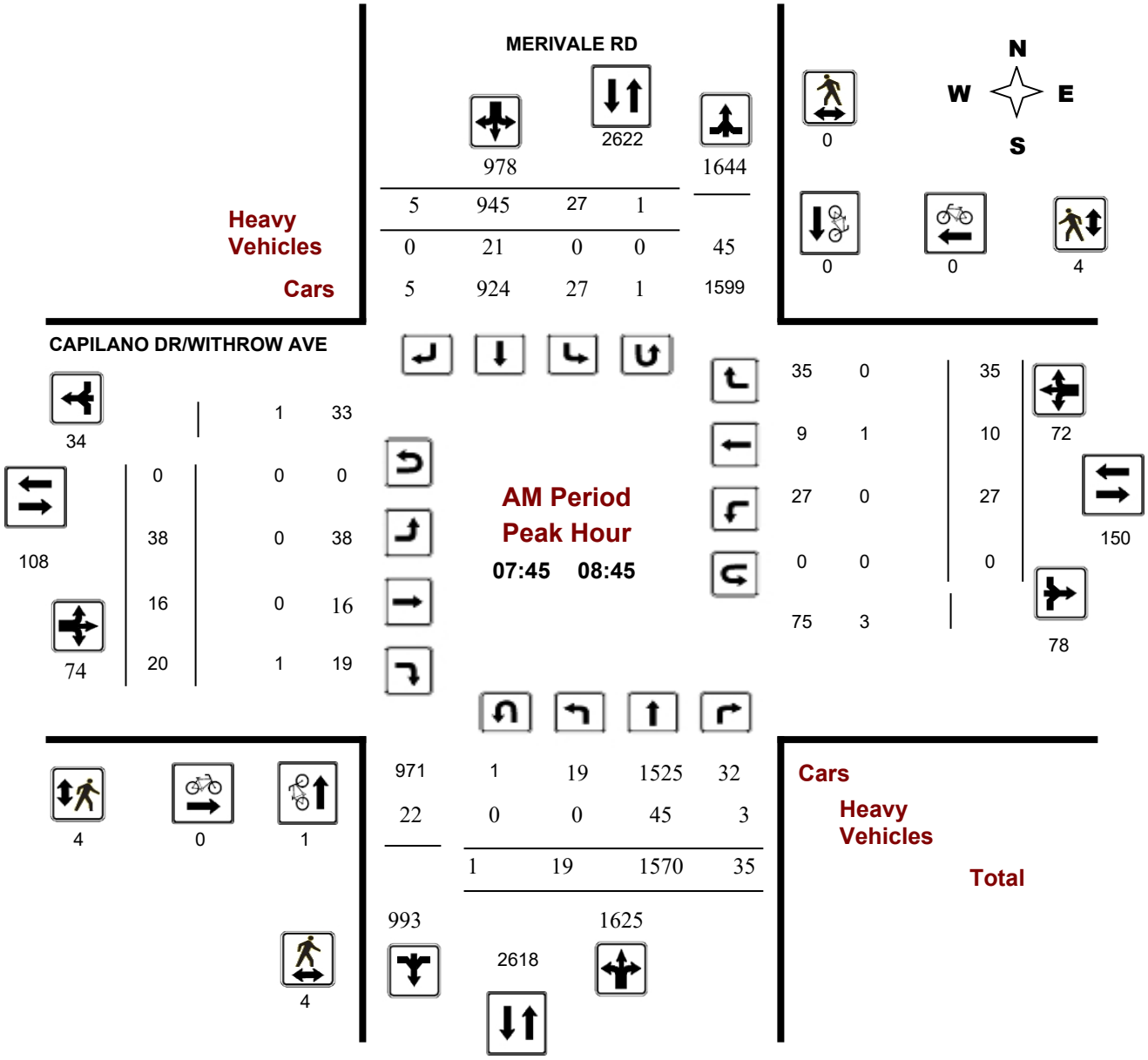
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

MERIVALE RD @ CAPILANO DR/WITHROW AVE

Survey Date: Wednesday, February 21, 2018 **WO No:** 37551

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



Comments

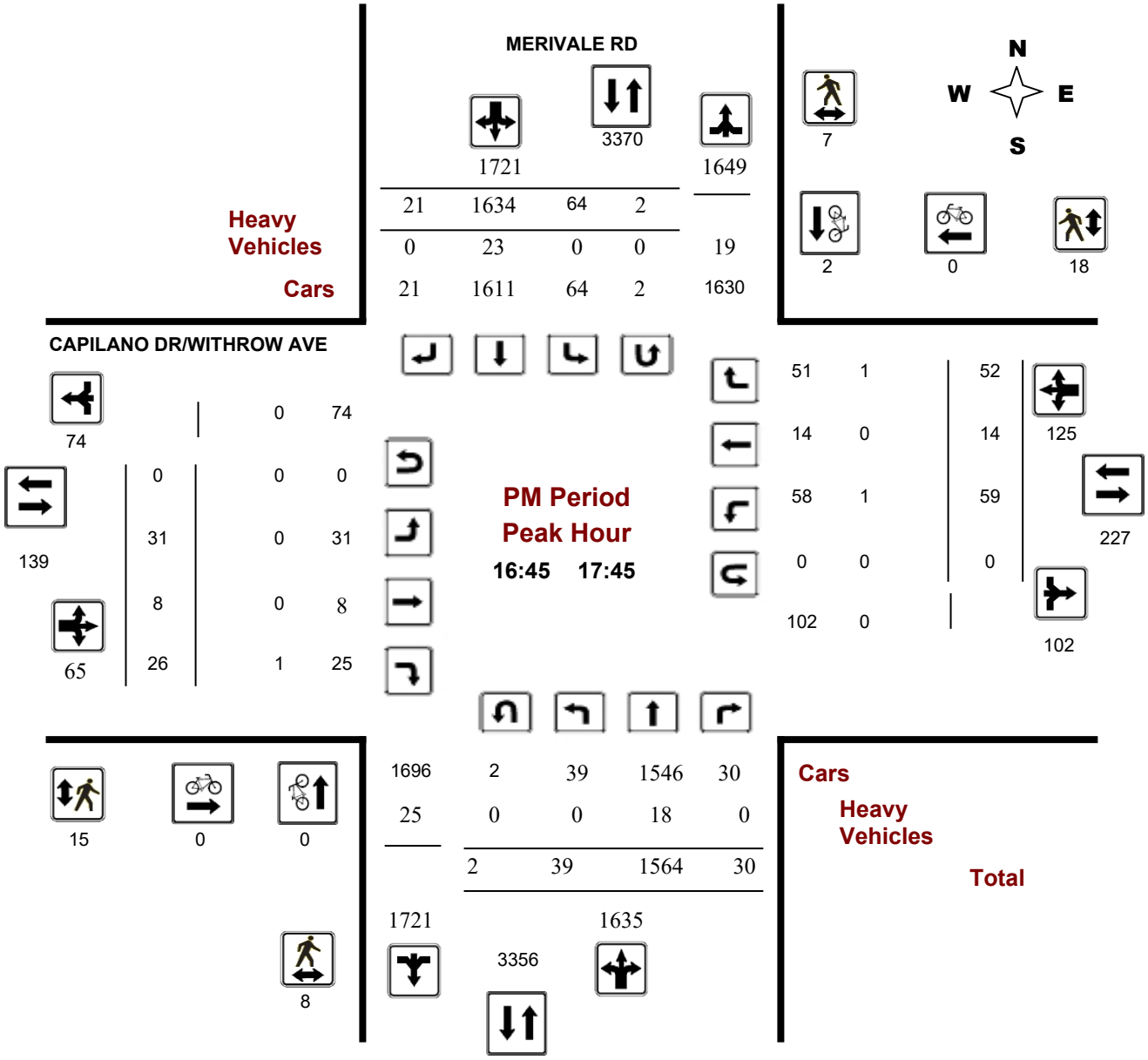
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

MERIVALE RD @ CAPILANO DR/WITHROW AVE

Survey Date: Wednesday, February 21, 2018 **WO No:** 37551

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



Comments

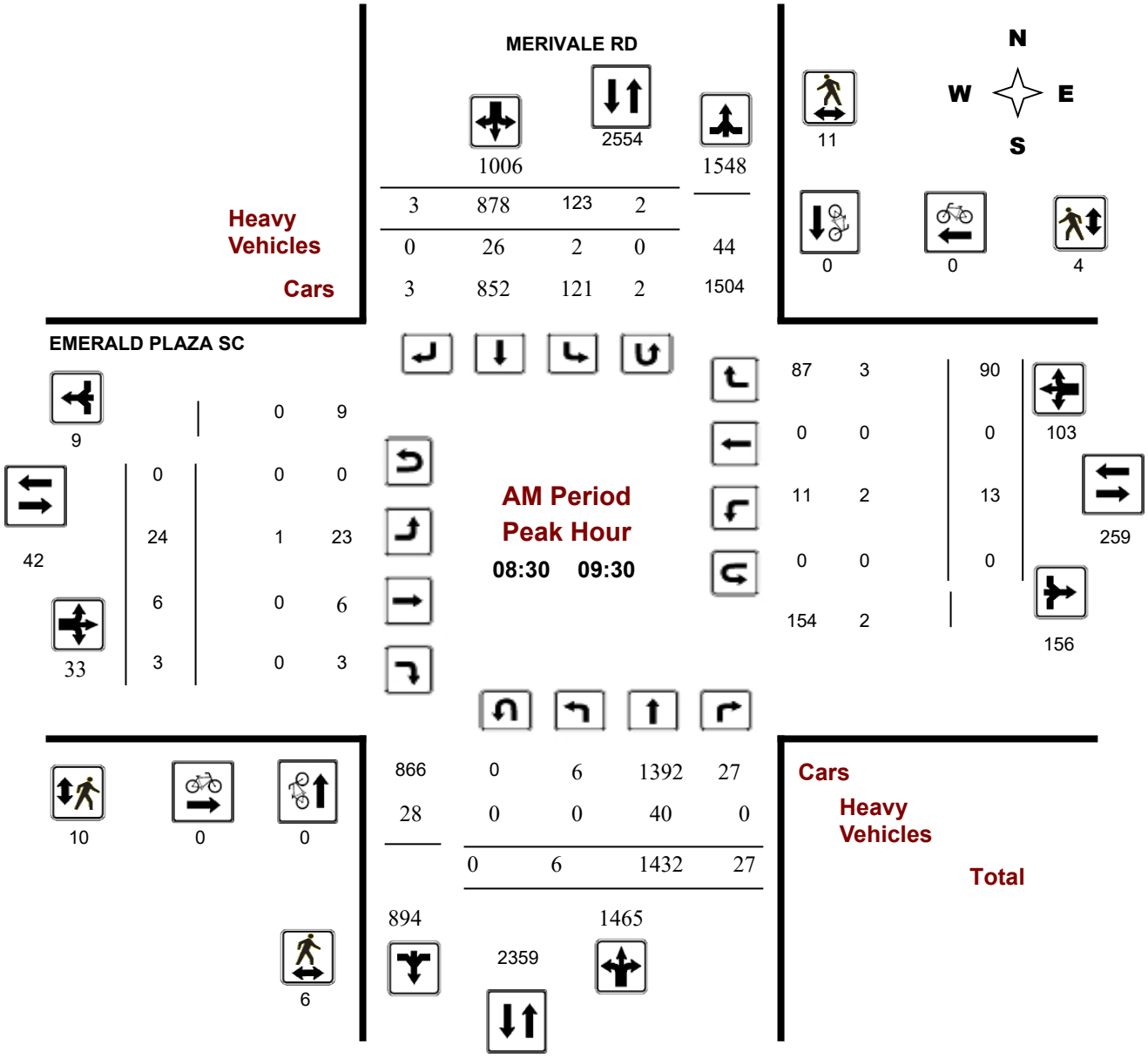
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

MERIVALE RD @ EMERALD PLAZA SC

Survey Date: Monday, February 10, 2020 **WO No:** 39430

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



Comments

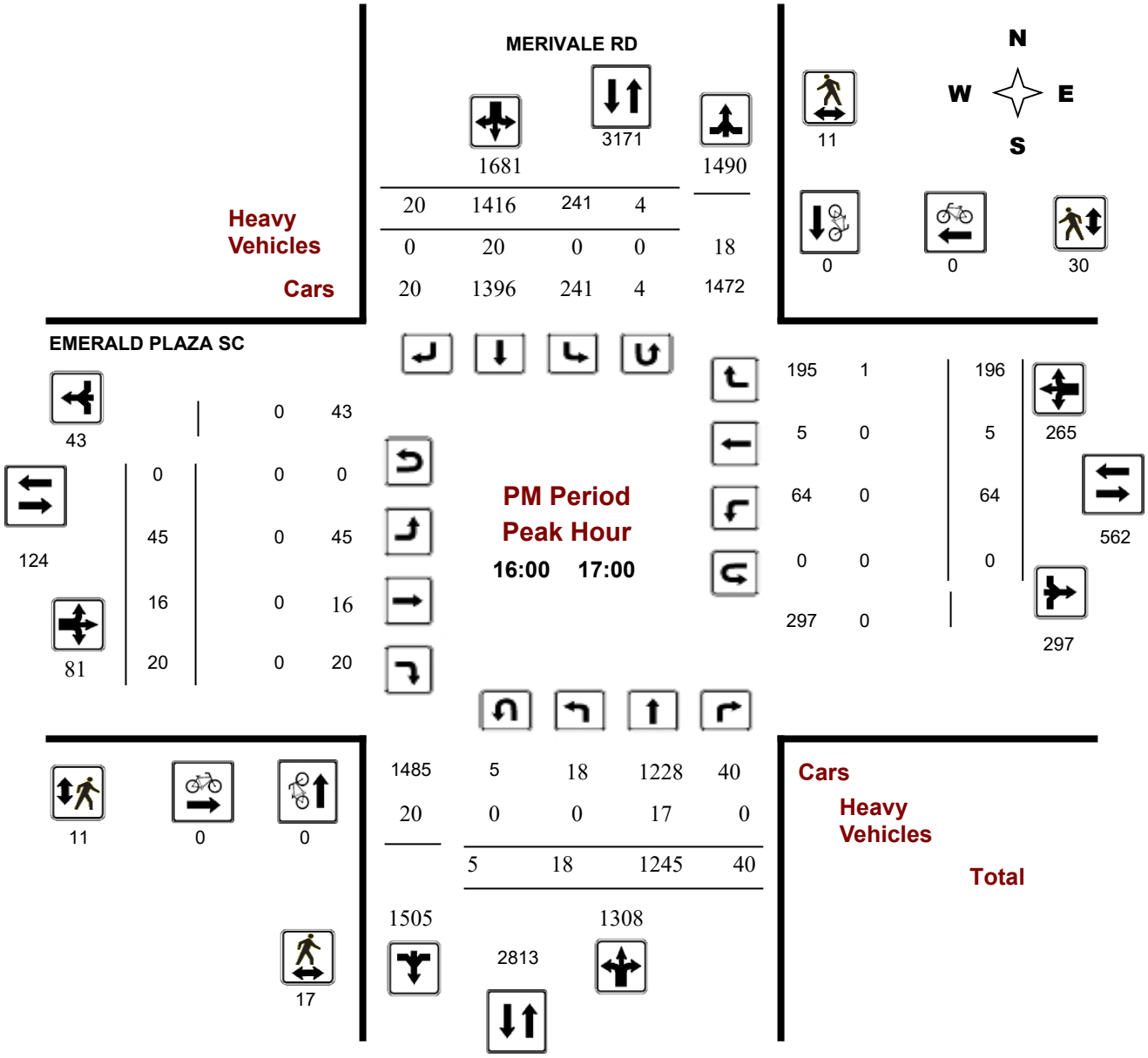
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

MERIVALE RD @ EMERALD PLAZA SC

Survey Date: Monday, February 10, 2020 **WO No:** 39430

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



Comments

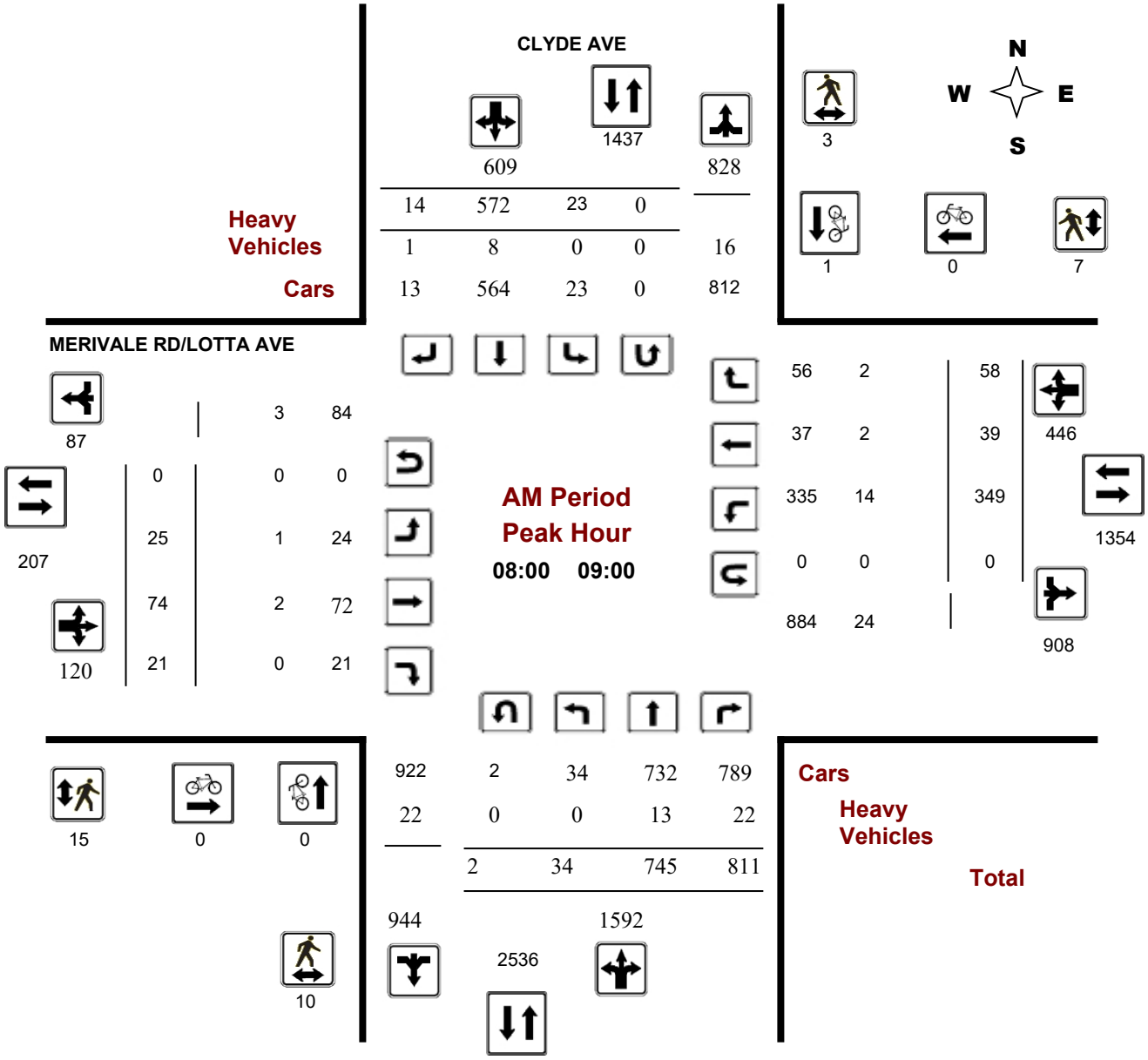
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

MERIVALE RD/LOTTA AVE @ CLYDE AVE

Survey Date: Monday, February 10, 2020 **WO No:** 39436

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



Comments

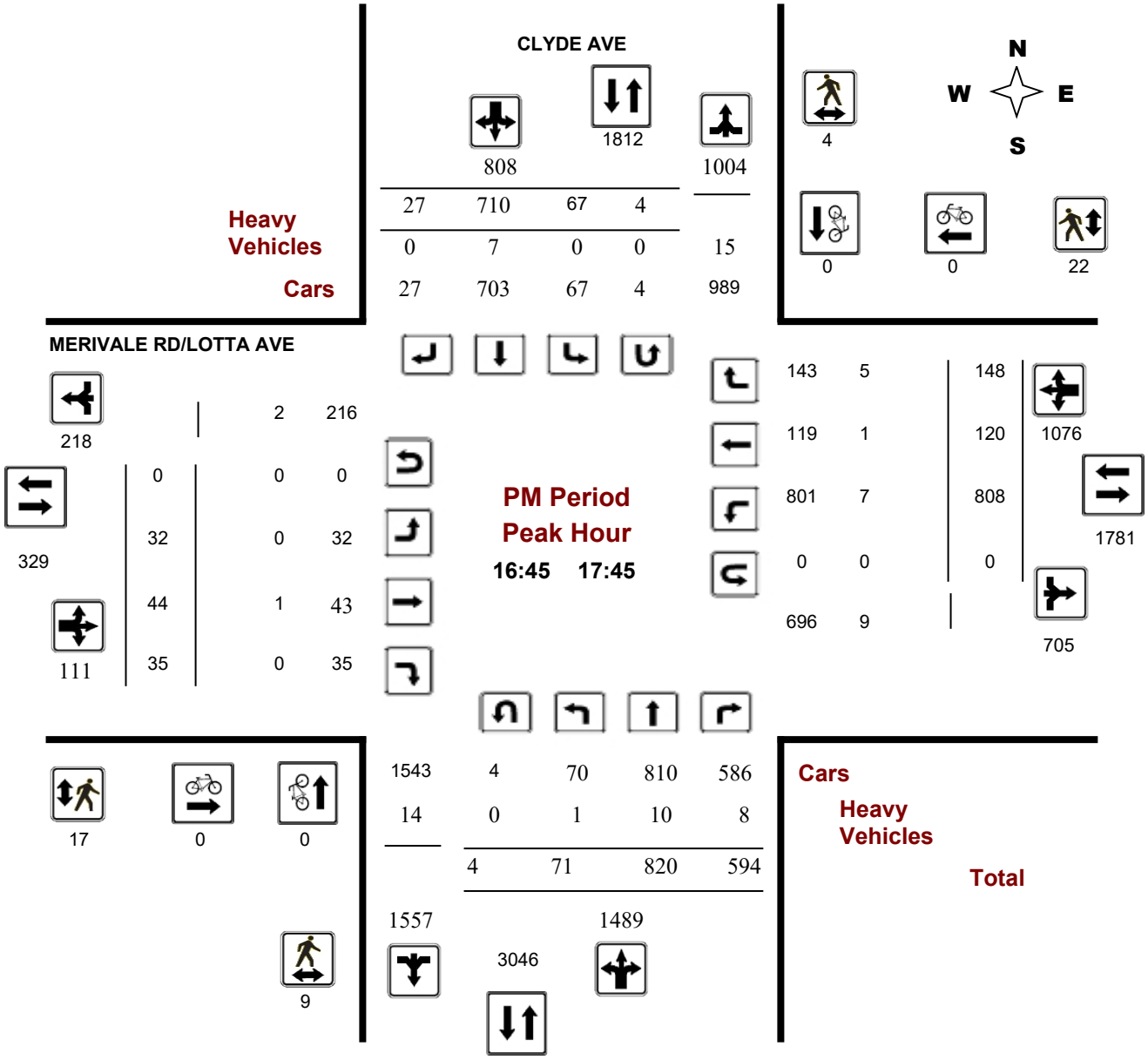
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

MERIVALE RD/LOTTA AVE @ CLYDE AVE

Survey Date: Monday, February 10, 2020 **WO No:** 39436

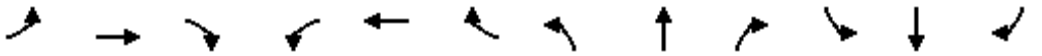
Start Time: 07:00 **Device:** Miovision



Comments

Appendix D:

Existing Synchro Analysis



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	74	21	335	37	56	34	745	811	23	572	14
Future Volume (vph)	25	74	21	335	37	56	34	745	811	23	572	14
Satd. Flow (prot)	1695	1716	0	3288	1608	0	1695	3390	1517	1695	3372	0
Flt Permitted	0.950			0.950			0.364			0.284		
Satd. Flow (perm)	1689	1716	0	3247	1608	0	641	3390	1481	506	3372	0
Satd. Flow (RTOR)		10			53				833		2	
Lane Group Flow (vph)	28	105	0	372	103	0	38	828	901	26	652	0
Turn Type	Prot	NA		Prot	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2		2	6		
Detector Phase	7	4		3	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	11.8	33.8		11.2	33.2		30.0	30.0	30.0	30.0	30.0	
Total Split (s)	33.0	34.0		33.0	34.0		63.0	63.0	63.0	63.0	63.0	
Total Split (%)	25.4%	26.2%		25.4%	26.2%		48.5%	48.5%	48.5%	48.5%	48.5%	
Yellow Time (s)	3.0	3.0		3.7	3.7		3.7	3.7	3.7	3.7	3.7	
All-Red Time (s)	3.8	3.8		2.5	2.5		2.3	2.3	2.3	2.3	2.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.8	6.8		6.2	6.2		6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		C-Min	C-Min	C-Min	C-Min	C-Min	
Act Effct Green (s)	7.7	15.0		19.9	32.3		76.1	76.1	76.1	76.1	76.1	
Actuated g/C Ratio	0.06	0.12		0.15	0.25		0.59	0.59	0.59	0.59	0.59	
v/c Ratio	0.28	0.51		0.74	0.23		0.10	0.42	0.74	0.09	0.33	
Control Delay	64.8	56.0		61.5	20.8		11.8	12.9	11.0	16.7	15.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	1.3	0.0	0.0	
Total Delay	64.8	56.0		61.5	20.8		11.8	12.9	12.3	16.7	15.9	
LOS	E	E		E	C		B	B	B	B	B	
Approach Delay		57.8			52.7			12.6			15.9	
Approach LOS		E			D			B			B	
Queue Length 50th (m)	7.0	23.7		47.5	10.8		3.4	38.3	29.3	2.6	40.7	
Queue Length 95th (m)	16.8	37.5		61.3	22.4		m2.2	27.1	279.5	9.9	73.6	
Internal Link Dist (m)		214.0			445.3			280.9			385.6	
Turn Bay Length (m)	40.0			95.0			85.0			80.0		
Base Capacity (vph)	341	366		677	446		375	1985	1212	296	1975	
Starvation Cap Reductn	0	0		0	0		0	0	140	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	0.08	0.29		0.55	0.23		0.10	0.42	0.84	0.09	0.33	

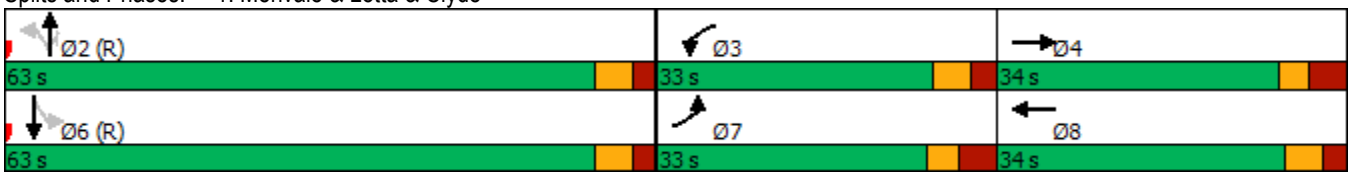
Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 9 (7%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

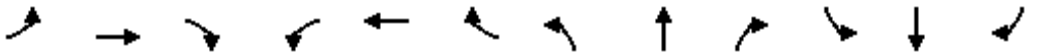
Maximum v/c Ratio: 0.74

Intersection Signal Delay: 21.5	Intersection LOS: C
Intersection Capacity Utilization 90.1%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 1: Merivale & Lotta & Clyde





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	16	20	27	10	35	19	1570	35	27	924	5
Future Volume (vph)	38	16	20	27	10	35	19	1570	35	27	924	5
Satd. Flow (prot)	1695	1622	0	1695	1576	0	1695	3390	1517	1695	3390	1517
Flt Permitted	0.724			0.731			0.251			0.089		
Satd. Flow (perm)	1292	1622	0	1299	1576	0	447	3390	1472	159	3390	1471
Satd. Flow (RTOR)		22			39				86			86
Lane Group Flow (vph)	42	40	0	30	50	0	21	1744	39	30	1027	6
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	43.2	43.2		43.2	43.2		11.1	33.1	33.1	11.1	33.1	33.1
Total Split (s)	43.0	43.0		43.0	43.0		12.0	75.0	75.0	12.0	75.0	75.0
Total Split (%)	33.1%	33.1%		33.1%	33.1%		9.2%	57.7%	57.7%	9.2%	57.7%	57.7%
Yellow Time (s)	3.0	3.0		3.0	3.0		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	4.2	4.2		4.2	4.2		2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2	7.2		7.2	7.2		6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)	15.4	15.4		15.4	15.4		101.0	98.7	98.7	101.1	98.7	98.7
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.78	0.76	0.76	0.78	0.76	0.76
v/c Ratio	0.27	0.19		0.20	0.23		0.05	0.68	0.03	0.16	0.40	0.01
Control Delay	53.0	27.4		50.4	20.0		4.2	7.2	0.2	5.9	9.1	0.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.0	27.4		50.4	20.0		4.2	7.2	0.2	5.9	9.1	0.0
LOS	D	C		D	C		A	A	A	A	A	A
Approach Delay		40.5			31.4			7.1			9.0	
Approach LOS		D			C			A			A	
Queue Length 50th (m)	10.5	4.4		7.4	2.7		0.3	14.7	0.0	0.7	62.1	0.0
Queue Length 95th (m)	17.6	12.4		13.6	11.8		m1.9	#276.1	m0.0	m5.4	88.6	m0.0
Internal Link Dist (m)		182.8			218.9			60.6			280.9	
Turn Bay Length (m)				35.0					15.0	100.0		
Base Capacity (vph)	355	462		357	462		404	2573	1138	193	2574	1138
Starvation Cap Reductn	0	0		0	0		0	61	0	0	0	0
Spillback Cap Reductn	16	0		0	20		0	8	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.09		0.08	0.11		0.05	0.69	0.03	0.16	0.40	0.01

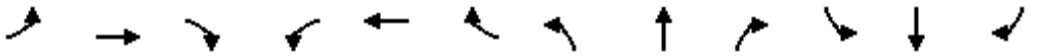
Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 116 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 9.3	Intersection LOS: A
Intersection Capacity Utilization 68.4%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 2: Merivale & Withrow/Capilano



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	6	3	13	0	90	6	1432	27	123	878	3
Future Volume (vph)	24	6	3	13	0	90	6	1432	27	123	878	3
Satd. Flow (prot)	1695	1694	0	1695	1476	0	1695	3379	0	3288	3390	0
Flt Permitted	0.688			0.751			0.950			0.950		
Satd. Flow (perm)	1212	1694	0	1329	1476	0	1688	3379	0	3285	3390	0
Satd. Flow (RTOR)		3			108			2				
Lane Group Flow (vph)	27	10	0	14	100	0	7	1621	0	137	979	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	35.5	35.5		35.5	35.5		11.7	31.2		11.7	31.2	
Total Split (s)	36.0	36.0		36.0	36.0		13.0	81.0		13.0	81.0	
Total Split (%)	27.7%	27.7%		27.7%	27.7%		10.0%	62.3%		10.0%	62.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		3.0	2.5		3.0	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.7	6.2		6.7	6.2	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	
Act Effct Green (s)	17.6	17.6		17.6	17.6		6.1	83.0		10.0	97.0	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.05	0.64		0.08	0.75	
v/c Ratio	0.16	0.04		0.08	0.34		0.09	0.75		0.54	0.39	
Control Delay	47.5	35.4		44.5	9.6		57.0	19.4		73.7	5.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.1		0.0	0.0	
Total Delay	47.5	35.4		44.5	9.6		57.0	19.5		73.7	5.5	
LOS	D	D		D	A		E	B		E	A	
Approach Delay		44.2			13.9			19.7			13.9	
Approach LOS		D			B			B			B	
Queue Length 50th (m)	6.7	1.7		3.4	0.0		1.7	125.5		18.4	14.7	
Queue Length 95th (m)	13.8	6.1		8.5	12.6		m1.7	m96.7		#36.2	44.5	
Internal Link Dist (m)		58.9			208.4			286.8			128.3	
Turn Bay Length (m)										100.0		
Base Capacity (vph)	275	386		301	418		84	2188		252	2529	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	1		0	60		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.10	0.03		0.05	0.24		0.08	0.76		0.54	0.39	

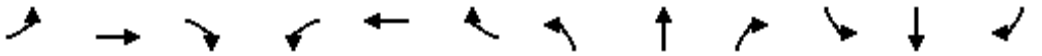
Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 108 (83%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 17.5	Intersection LOS: B
Intersection Capacity Utilization 76.2%	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: Merivale & Emerald Plaza



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	353	380	122	83	227	209	90	1242	85	93	736	111
Future Volume (vph)	353	380	122	83	227	209	90	1242	85	93	736	111
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	3390	1517	1695	3390	1517
Flt Permitted	0.378			0.506			0.255			0.067		
Satd. Flow (perm)	667	3390	1474	897	3390	1469	453	3390	1471	120	3390	1468
Satd. Flow (RTOR)			136			130			134			134
Lane Group Flow (vph)	392	422	136	92	252	232	100	1380	94	103	818	123
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.5	30.5	30.5	11.5	30.5	30.5	11.0	38.0	38.0	11.0	38.0	38.0
Total Split (s)	23.0	33.0	33.0	23.0	33.0	33.0	11.0	63.0	63.0	11.0	63.0	63.0
Total Split (%)	17.7%	25.4%	25.4%	17.7%	25.4%	25.4%	8.5%	48.5%	48.5%	8.5%	48.5%	48.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)	43.3	27.6	27.6	28.4	17.9	17.9	65.9	58.6	58.6	68.1	59.7	59.7
Actuated g/C Ratio	0.33	0.21	0.21	0.22	0.14	0.14	0.51	0.45	0.45	0.52	0.46	0.46
v/c Ratio	1.03	0.59	0.32	0.35	0.54	0.74	0.33	0.90	0.13	0.63	0.53	0.16
Control Delay	93.4	50.2	8.8	34.2	55.5	36.7	17.4	42.7	1.5	49.0	16.2	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	93.4	50.2	8.8	34.2	55.5	36.7	17.4	42.7	1.5	49.0	16.2	2.7
LOS	F	D	A	C	E	D	B	D	A	D	B	A
Approach Delay		62.1			44.5			38.6			17.8	
Approach LOS		E			D			D			B	
Queue Length 50th (m)	~92.3	55.0	0.0	17.5	32.7	25.8	10.2	159.5	0.0	12.4	31.9	0.1
Queue Length 95th (m)	#133.4	68.2	16.4	27.7	42.5	50.7	21.8	#220.9	3.8	#45.1	42.3	5.6
Internal Link Dist (m)		169.3			250.3			97.3			286.8	
Turn Bay Length (m)	100.0		120.0	130.0		105.0	85.0		95.0	140.0		175.0
Base Capacity (vph)	380	746	430	338	691	402	299	1528	736	164	1556	746
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.03	0.57	0.32	0.27	0.36	0.58	0.33	0.90	0.13	0.63	0.53	0.16

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 115 (88%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 39.6	Intersection LOS: D
Intersection Capacity Utilization 94.8%	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: 5: Merivale & Meadowlands

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↕			↕	
Traffic Vol, veh/h	2	0	12	0	0	1	2	1585	6	1	988	13
Future Vol, veh/h	2	0	12	0	0	1	2	1585	6	1	988	13
Conflicting Peds, #/hr	0	0	2	2	0	0	11	0	15	15	0	11
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	0	12	0	0	1	2	1585	6	1	988	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1805	2618	514	2105	2621	811	1012	0	0	1606	0	0
Stage 1	1008	1008	-	1607	1607	-	-	-	-	-	-	-
Stage 2	797	1610	-	498	1014	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	50	24	505	29	24	322	681	-	-	403	-	-
Stage 1	258	316	-	109	163	-	-	-	-	-	-	-
Stage 2	346	162	-	523	314	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	48	23	499	27	23	318	675	-	-	398	-	-
Mov Cap-2 Maneuver	152	104	-	86	104	-	-	-	-	-	-	-
Stage 1	249	311	-	105	157	-	-	-	-	-	-	-
Stage 2	336	156	-	507	309	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.9	16.4	0.1	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	675	-	-	376	318	398	-	-
HCM Lane V/C Ratio	0.003	-	-	0.037	0.003	0.003	-	-
HCM Control Delay (s)	10.3	0.1	-	14.9	16.4	14.1	0	-
HCM Lane LOS	B	A	-	B	C	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	43	35	808	119	143	71	820	594	67	703	27
Future Volume (vph)	32	43	35	808	119	143	71	820	594	67	703	27
Satd. Flow (prot)	1695	1646	0	3288	1622	0	1695	3390	1517	1695	3362	0
Flt Permitted	0.950			0.950			0.179			0.130		
Satd. Flow (perm)	1689	1646	0	3250	1622	0	317	3390	1445	232	3362	0
Satd. Flow (RTOR)		28			42				568		3	
Lane Group Flow (vph)	36	87	0	898	291	0	79	911	660	74	811	0
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2		2	6		
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.8	33.8		11.2	33.2		10.3	30.0	30.0	10.3	30.0	
Total Split (s)	44.0	34.0		44.0	34.0		12.0	41.0	41.0	12.0	41.0	
Total Split (%)	33.6%	26.0%		33.6%	26.0%		9.2%	31.3%	31.3%	9.2%	31.3%	
Yellow Time (s)	3.0	3.0		3.7	3.7		3.3	3.7	3.7	3.3	3.7	
All-Red Time (s)	3.8	3.8		2.5	2.5		2.0	2.3	2.3	2.0	2.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.8	6.8		6.2	6.2		5.3	6.0	6.0	5.3	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Min	C-Min	None	C-Min	
Act Effct Green (s)	8.3	16.8		37.3	51.1		54.4	47.7	47.7	54.2	47.6	
Actuated g/C Ratio	0.06	0.13		0.28	0.39		0.42	0.36	0.36	0.41	0.36	
v/c Ratio	0.34	0.37		0.96	0.44		0.38	0.74	0.74	0.42	0.66	
Control Delay	66.5	37.6		67.2	27.4		29.6	42.7	12.7	31.6	40.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	66.5	37.6		67.2	27.4		29.6	42.7	12.7	31.6	40.5	
LOS	E	D		E	C		C	D	B	C	D	
Approach Delay		46.1			57.5			30.1			39.7	
Approach LOS		D			E			C			D	
Queue Length 50th (m)	9.1	14.8		117.3	54.0		10.5	103.4	15.5	9.8	88.6	
Queue Length 95th (m)	19.9	27.4		#156.3	69.4		24.8	#169.7	79.6	23.5	#141.3	
Internal Link Dist (m)		214.0			445.3			280.9			385.6	
Turn Bay Length (m)	40.0			95.0			85.0			80.0		
Base Capacity (vph)	481	363		948	657		209	1233	887	177	1222	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.07	0.24		0.95	0.44		0.38	0.74	0.74	0.42	0.66	

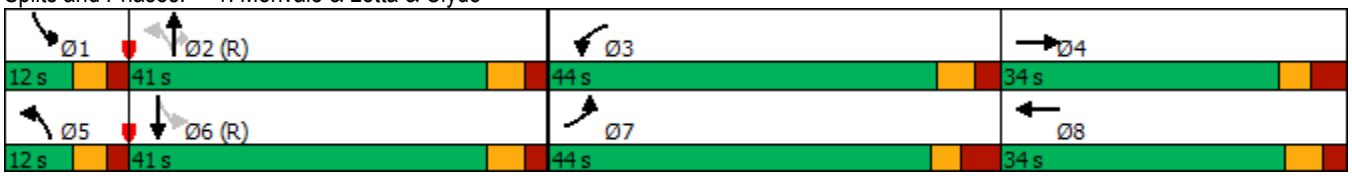
Intersection Summary
Cycle Length: 131
Actuated Cycle Length: 131
Offset: 98 (75%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated

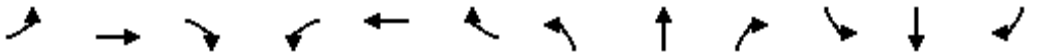
Maximum v/c Ratio: 0.96

Intersection Signal Delay: 41.3	Intersection LOS: D
Intersection Capacity Utilization 73.7%	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: 1: Merivale & Lotta & Clyde





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	8	26	59	14	52	39	1564	30	64	1634	64
Future Volume (vph)	31	8	26	59	14	52	39	1564	30	64	1634	64
Satd. Flow (prot)	1695	1556	0	1695	1550	0	1695	3390	1517	1695	3390	1517
Flt Permitted	0.709			0.732			0.058			0.068		
Satd. Flow (perm)	1256	1556	0	1295	1550	0	103	3390	1420	121	3390	1433
Satd. Flow (RTOR)		29			58				86			86
Lane Group Flow (vph)	34	38	0	66	74	0	43	1738	33	71	1816	71
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	43.2	43.2		43.2	43.2		11.1	33.1	33.1	11.1	33.1	33.1
Total Split (s)	44.0	44.0		44.0	44.0		14.0	72.0	72.0	14.0	72.0	72.0
Total Split (%)	33.8%	33.8%		33.8%	33.8%		10.8%	55.4%	55.4%	10.8%	55.4%	55.4%
Yellow Time (s)	3.0	3.0		3.0	3.0		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	4.2	4.2		4.2	4.2		2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2	7.2		7.2	7.2		6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)	20.8	20.8		20.8	20.8		90.5	85.1	85.1	91.5	85.6	85.6
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.70	0.65	0.65	0.70	0.66	0.66
v/c Ratio	0.17	0.14		0.32	0.25		0.28	0.78	0.03	0.42	0.81	0.07
Control Delay	43.5	17.4		48.3	15.3		15.0	13.1	0.1	17.5	23.9	2.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.1	0.0	0.0	0.2	0.0
Total Delay	43.5	17.4		48.3	15.3		15.0	13.2	0.1	17.5	24.1	2.4
LOS	D	B		D	B		B	B	A	B	C	A
Approach Delay		29.7			30.8			13.0			23.0	
Approach LOS		C			C			B			C	
Queue Length 50th (m)	8.3	2.1		16.5	3.8		1.1	31.4	0.0	3.0	137.1	0.0
Queue Length 95th (m)	15.0	10.2		25.0	14.7		m4.9	#284.6	m0.0	15.9	#308.1	5.5
Internal Link Dist (m)		182.8			218.9			60.6			280.9	
Turn Bay Length (m)				35.0					15.0	100.0		
Base Capacity (vph)	355	461		366	480		169	2218	959	184	2231	972
Starvation Cap Reductn	0	0		0	0		0	42	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	50	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.08		0.18	0.15		0.25	0.80	0.03	0.39	0.83	0.07

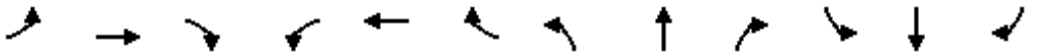
Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 76 (58%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 18.8	Intersection LOS: B
Intersection Capacity Utilization 81.5%	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: 2: Merivale & Withrow/Capilano



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	16	20	64	1	196	18	1245	40	241	1416	241
Future Volume (vph)	45	16	20	64	1	196	18	1245	40	241	1416	241
Satd. Flow (prot)	1695	1605	0	1695	1478	0	1695	3367	0	3288	3302	0
Flt Permitted	0.255			0.731			0.950			0.950		
Satd. Flow (perm)	451	1605	0	1276	1478	0	1693	3367	0	3253	3302	0
Satd. Flow (RTOR)		22			165			4			23	
Lane Group Flow (vph)	50	40	0	71	219	0	20	1427	0	268	1841	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	35.5	35.5		35.5	35.5		11.7	31.2		11.7	31.2	
Total Split (s)	36.0	36.0		36.0	36.0		17.0	77.0		17.0	77.0	
Total Split (%)	27.7%	27.7%		27.7%	27.7%		13.1%	59.2%		13.1%	59.2%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		3.0	2.5		3.0	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.7	6.2		6.7	6.2	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	
Act Effct Green (s)	15.8	15.8		15.8	15.8		7.1	78.4		16.4	95.5	
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.05	0.60		0.13	0.73	
v/c Ratio	0.93	0.19		0.46	0.68		0.22	0.70		0.64	0.76	
Control Delay	157.3	27.9		60.5	25.1		61.2	8.1		59.1	12.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.1		0.0	0.1	
Total Delay	157.3	27.9		60.5	25.1		61.2	8.2		59.1	12.9	
LOS	F	C		E	C		E	A		E	B	
Approach Delay		99.8			33.8			8.9			18.8	
Approach LOS		F			C			A			B	
Queue Length 50th (m)	~14.4	4.3		17.6	13.1		5.3	43.5		35.9	62.7	
Queue Length 95th (m)	25.8	13.4		29.0	34.7		m6.8	m41.2		m#56.2	#291.7	
Internal Link Dist (m)		58.9			208.4			286.8			128.3	
Turn Bay Length (m)										100.0		
Base Capacity (vph)	102	381		289	462		134	2032		416	2430	
Starvation Cap Reductn	0	0		0	0		0	0		0	56	
Spillback Cap Reductn	0	0		0	3		0	70		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.49	0.10		0.25	0.48		0.15	0.73		0.64	0.78	

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 65 (50%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 18.1	Intersection LOS: B
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.

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

Splits and Phases: 4: Merivale & Emerald Plaza

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	163	307	154	182	492	169	195	1159	102	215	1074	283
Future Volume (vph)	163	307	154	182	492	169	195	1159	102	215	1074	283
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	3390	1517	1695	3390	1517
Flt Permitted	0.187			0.428			0.104			0.071		
Satd. Flow (perm)	329	3390	1416	742	3390	1433	184	3390	1384	127	3390	1412
Satd. Flow (RTOR)			171			188			134			314
Lane Group Flow (vph)	181	341	171	202	547	188	217	1288	113	239	1193	314
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.5	30.5	30.5	11.5	30.5	30.5	11.0	38.0	38.0	11.0	38.0	38.0
Total Split (s)	19.0	31.0	31.0	19.0	31.0	31.0	17.0	59.0	59.0	21.0	63.0	63.0
Total Split (%)	14.6%	23.8%	23.8%	14.6%	23.8%	23.8%	13.1%	45.4%	45.4%	16.2%	48.5%	48.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)	36.1	23.8	23.8	36.0	23.7	23.7	65.7	53.5	53.5	72.2	56.8	56.8
Actuated g/C Ratio	0.28	0.18	0.18	0.28	0.18	0.18	0.51	0.41	0.41	0.56	0.44	0.44
v/c Ratio	0.82	0.55	0.43	0.68	0.89	0.45	0.93	0.92	0.17	0.93	0.81	0.40
Control Delay	62.5	51.9	10.0	47.3	69.0	9.9	72.6	48.3	3.0	74.8	35.0	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.5	51.9	10.0	47.3	69.0	9.9	72.6	48.3	3.0	74.8	35.0	7.8
LOS	E	D	A	D	E	A	E	D	A	E	D	A
Approach Delay		44.3			52.5			48.4			35.6	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	34.5	41.8	0.0	39.0	72.1	0.0	35.7	163.7	0.0	43.4	105.7	5.8
Queue Length 95th (m)	#65.1	57.5	19.2	60.2	#99.3	20.0	#87.6	#209.5	8.0	m#89.8	114.9	m32.2
Internal Link Dist (m)		169.3			250.3			97.3			286.8	
Turn Bay Length (m)	100.0		120.0	130.0		105.0	85.0		95.0	140.0		175.0
Base Capacity (vph)	222	638	405	298	638	422	234	1396	648	256	1486	795
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.53	0.42	0.68	0.86	0.45	0.93	0.92	0.17	0.93	0.80	0.39

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 61 (47%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 44.1	Intersection LOS: D
Intersection Capacity Utilization 94.3%	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: 5: Merivale & Meadowlands

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	15	3	0	7	16	1560	39	1	1809	23
Future Vol, veh/h	3	0	15	3	0	7	16	1560	39	1	1809	23
Conflicting Peds, #/hr	0	0	0	0	0	0	27	0	45	45	0	27
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	0	15	3	0	7	16	1560	39	1	1809	23

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2662	3526	943	2564	3518	845	1859	0	0	1644	0	0
Stage 1	1850	1850	-	1657	1657	-	-	-	-	-	-	-
Stage 2	812	1676	-	907	1861	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	11	6	264	13	6	306	321	-	-	390	-	-
Stage 1	77	123	-	102	154	-	-	-	-	-	-	-
Stage 2	339	150	-	297	121	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	7	3	258	7	3	294	314	-	-	375	-	-
Mov Cap-2 Maneuver	32	43	-	41	42	-	-	-	-	-	-	-
Stage 1	40	120	-	52	78	-	-	-	-	-	-	-
Stage 2	174	76	-	280	118	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	40.6	43.7	4	0
HCM LOS	E	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	314	-	-	119	103	375	-	-
HCM Lane V/C Ratio	0.051	-	-	0.151	0.097	0.003	-	-
HCM Control Delay (s)	17.1	4	-	40.6	43.7	14.6	0	-
HCM Lane LOS	C	A	-	E	E	B	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.5	0.3	0	-	-

Appendix E:

Collision Data

Total Area

Classification of Accident	*Rear End*	*Turning Movement*	*Sideswipe*	*Angle*	*Approaching*	*SMV other*	*SMV unattended vehicle*	*Other*	*Total*	
P.D. only	154	61	44	22	1	6	0	9	297	81%
Non-fatal injury	31	23	1	10	0	4	0	1	70	19%
Non-reportable	0	0	0	0	0	0	0	0	0	0%
Total	**185**	**84**	**45**	**32**	**1**	**10**	**0**	**10**	**367**	100%
	#1 or 50%	#2 or 23%	#3 or 12%	#4 or 9%	#7 or 0%	#5 or 3%	#8 or 0%	#5 or 3%		

MERIVALE RD, ROSSLAND AVE to EMERALD PLAZA SC

Years	*Total # Collisions*	*24 Hr AADT Veh Volume*	*Days*	*Collisions/MEV*
2016-2020	13	n/a	1825	**n/a**

Classification of Accident	*Rear End*	*Turning Movement*	*Sideswipe*	*Angle*	*Approaching*	*SMV other*	*SMV unattended vehicle*	*Other*	*Total*	
P.D. only	5	1	2	2	0	0	0	1	11	85%
Non-fatal injury	1	0	1	0	0	0	0	0	2	15%
Non-reportable	0	0	0	0	0	0	0	0	0	0%
Total	**6**	**1**	**3**	**2**	**0**	**0**	**0**	**1**	**13**	100%
	46%	8%	23%	15%	0%	0%	0%	8%		

MEADOWLANDS DR/MERIVALE RD

Years	*Total # Collisions*	*24 Hr AADT Veh Volume*	*Days*	*Collisions/MEV*
2016-2020	130	50,000	1825	**1.42**

Classification of Accident	*Rear End*	*Turning Movement*	*Sideswipe*	*Angle*	*Approaching*	*SMV other*	*SMV unattended vehicle*	*Other*	*Total*	
P.D. only	45	34	11	4	1	2	0	4	101	78%
Non-fatal injury	8	16	0	3	0	1	0	1	29	22%
Non-reportable	0	0	0	0	0	0	0	0	0	0%
Total	**53**	**50**	**11**	**7**	**1**	**3**	**0**	**5**	**130**	100%
	41%	38%	8%	5%	1%	2%	0%	4%		

MERIVALE RD, EMERALD PLAZA SC to MEADOWLANDS DR

Years	*Total # Collisions*	*24 Hr AADT Veh Volume*	*Days*	*Collisions/MEV*
2016-2020	19	n/a	1825	**n/a**

Classification of Accident	*Rear End*	*Turning Movement*	*Sideswipe*	*Angle*	*Approaching*	*SMV other*	*SMV unattended vehicle*	*Other*	*Total*	
P.D. only	8	0	4	2	0	0	0	2	16	84%
Non-fatal injury	2	0	0	1	0	0	0	0	3	16%
Non-reportable	0	0	0	0	0	0	0	0	0	0%
Total	**10**	**0**	**4**	**3**	**0**	**0**	**0**	**2**	**19**	100%
	53%	0%	21%	16%	0%	0%	0%	11%		

MERIVALE RD/LOTTA AVE/CLYDE AVE

Years	*Total # Collisions*	*24 Hr AADT Veh Volume*	*Days*	*Collisions/MEV*
2016-2020	106	42,000	1825	**1.38**

Classification of Accident	*Rear End*	*Turning Movement*	*Sideswipe*	*Angle*	*Approaching*	*SMV other*	*SMV unattended vehicle*	*Other*	*Total*	
P.D. only	50	15	16	6	0	4	0	2	93	88%
Non-fatal injury	7	4	0	2	0	0	0	0	13	12%
Non-reportable	0	0	0	0	0	0	0	0	0	0%
Total	**57**	**19**	**16**	**8**	**0**	**4**	**0**	**2**	**106**	100%
	54%	18%	15%	8%	0%	4%	0%	2%		

MERIVALE RD/EMERALD PLAZA SC

Years	*Total # Collisions*	*24 Hr AADT Veh Volume*	*Days*	*Collisions/MEV*
2016-2020	23	40,000	1825	**0.32**

Classification of Accident	*Rear End*	*Turning Movement*	*Sideswipe*	*Angle*	*Approaching*	*SMV other*	*SMV unattended vehicle*	*Other*	*Total*	
P.D. only	8	3	4	2	0	0	0	0	17	74%
Non-fatal injury	2	1	0	2	0	1	0	0	6	26%
Non-reportable	0	0	0	0	0	0	0	0	0	0%
Total	**10**	**4**	**4**	**4**	**0**	**1**	**0**	**0**	**23**	100%
	43%	17%	17%	17%	0%	4%	0%	0%		

MERIVALE RD/ROSSLAND AVE

Years	*Total # Collisions*	*24 Hr AADT Veh Volume*	*Days*	*Collisions/MEV*
2016-2020	15	38,000	1825	**0.22**

Classification of Accident	*Rear End*	*Turning Movement*	*Sideswipe*	*Angle*	*Approaching*	*SMV other*	*SMV unattended vehicle*	*Other*	*Total*	
P.D. only	7	2	1	1	0	0	0	0	11	73%
Non-fatal injury	3	1	0	0	0	0	0	0	4	27%
Non-reportable	0	0	0	0	0	0	0	0	0	0%
Total	**10**	**3**	**1**	**1**	**0**	**0**	**0**	**0**	**15**	100%
	67%	20%	7%	7%	0%	0%	0%	0%		

MERIVALE RD, CLYDE AVE to RITA AVE

Years	*Total # Collisions*	*24 Hr AADT Veh Volume*	*Days*	*Collisions/MEV*
2016-2020	24	n/a	1825	**n/a**

Classification of Accident	*Rear End*	*Turning Movement*	*Sideswipe*	*Angle*	*Approaching*	*SMV other*	*SMV unattended vehicle*	*Other*	*Total*	
P.D. only	11	1	3	3	0	0	0	0	18	75%
Non-fatal injury	6	0	0	0	0	0	0	0	6	25%
Non-reportable	0	0	0	0	0	0	0	0	0	0%
Total	**17**	**1**	**3**	**3**	**0**	**0**	**0**	**0**	**24**	100%
	71%	4%	13%	13%	0%	0%	0%	0%		

CAPILANO DR, WITHROW AVE to KERRY CRES

Years	*Total # Collisions*	*24 Hr AADT Veh Volume*	*Days*	*Collisions/MEV*
2016-2020	2	n/a	1825	**n/a**

Classification of Accident	*Rear End*	*Turning Movement*	*Sideswipe*	*Angle*	*Approaching*	*SMV other*	*SMV unattended vehicle*	*Other*	*Total*	
P.D. only	1	1	0	0	0	0	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**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	100%
	50%	50%	0%	0%	0%	0%	0%	0%		

RITA AVE/MERIVALE RD

Years	*Total # Collisions*	*24 Hr AADT Veh Volume*	*Days*	*Collisions/MEV*
2016-2020	2	n/a	1825	**n/a**

Classification of Accident	*Rear End*	*Turning Movement*	*Sideswipe*	*Angle*	*Approaching*	*SMV other*	*SMV unattended vehicle*	*Other*	*Total*	
P.D. only	2	0	0	0	0	0	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	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	100%
	100%	0%	0%	0%	0%	0%	0%	0%		

MERIVALE RD/CAPILANO DR/WITHROW AVE

Years	*Total # Collisions*	*24 Hr AADT Veh Volume*	*Days*	*Collisions/MEV*
2016-2020	29	43,000	1825	**0.37**

Classification of Accident	*Rear End*	*Turning Movement*	*Sideswipe*	*Angle*	*Approaching*	*SMV other*	*SMV unattended vehicle*	*Other*	*Total*	
P.D. only	14	4	3	2	0	0	0	0	23	79%
Non-fatal injury	2	1	0	2	0	1	0	0	6	21%
Non-reportable	0	0	0	0	0	0	0	0	0	0%
Total	**16**	**5**	**3**	**4**	**0**	**1**	**0**	**0**	**29**	100%
	55%	17%	10%	14%	0%	3%	0%	0%		

MERIVALE RD, WITHROW AVE to RITA AVE

Years	*Total # Collisions*	*24 Hr AADT Veh Volume*	*Days*	*Collisions/MEV*
2016-2020	4	n/a	1825	**n/a**

Classification of Accident	*Rear End*	*Turning Movement*	*Sideswipe*	*Angle*	*Approaching*	*SMV other*	*SMV unattended vehicle*	*Other*	*Total*	
P.D. only	3	0	0	0	0	0	0	0	3	75%
Non-fatal injury	0	0	0	0	0	1	0	0	1	25%
Non-reportable	0	0	0	0	0	0	0	0	0	0%
Total	**3**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**4**	100%
	75%	0%	0%	0%	0%	25%	0%	0%		

New Sections From Nov 21, 2022 Request (not included in totals above)

MERIVALE RD, EMERALD PLAZA SC to ROSSLAND AVE

Years	*Total # Collisions*	*24 Hr AADT Veh Volume*	*Days*	*Collisions/MEV*
2016-2020	#VALUE!	n/a	1825	**n/a**

Classification of Accident	*Rear End*	*Turning Movement*	*Sideswipe*	*Angle*	*Approaching*	*SMV other*	*SMV unattended vehicle*	*Other*	*Total*	
P.D. only	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	
Non-fatal injury	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	
Non-reportable	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	
Total	**#VALUE!**	**#VALUE!**	**#VALUE!**	**#VALUE!**	**#VALUE!**	**#VALUE!**	**#VALUE!**	**#VALUE!**	**#VALUE!**	0%

MERIVALE RD, ROSSLAND AVE to WITHROW AVE

Years	*Total # Collisions*	*24 Hr AADT Veh Volume*	*Days*	*Collisions/MEV*
2016-2020	#VALUE!	n/a	1825	**n/a**

Classification of Accident	*Rear End*	*Turning Movement*	*Sideswipe*	*Angle*	*Approaching*	*SMV other*	*SMV unattended vehicle*	*Other*	*Total*	
P.D. only	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	
Non-fatal injury	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	
Non-reportable	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	
Total	**#VALUE!**	**#VALUE!**	**#VALUE!**	**#VALUE!**	**#VALUE!**	**#VALUE!**	**#VALUE!**	**#VALUE!**	**#VALUE!**	0%

Appendix F:

TRANS Model Outputs, 2013 & 2031

TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

Baseline/Meadowlands

2011 Model - Basecase

N/A

User Initials: KN
Plot Prepared: Aug 17, 2022
EMME Scenario: 21713

TRANS

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

N

Distance (m)

100 200 300 400 500

Wading Pool - Agincourt

SKYLINE

CITY VIEW

ST CLAIRE GARDENS

ORCHARD PARK

PARKWOOD HILLS

STEWART FARM

The TRANS model is continuously refined & maintained, and all information is provided in good faith. However, model outputs are provided "as is", and no warranty or guarantee is provided as to the accuracy, reliability or reasonableness of the results. In using this data, you agree to accept any and all risks arising from any incorrect, incomplete, or misleading information.

Recipients are required to use caution and professional judgement in using and interpreting model outputs. In particular, caution should be used when focusing on a geographically limited area (such as a single road or intersection), as the model is primarily designed to simulate regional-scale phenomena and has been calibrated at a regional level.

As general good practice, it is recommended that the user confirm the network coding within the area of interest, and compare base year forecasts against traffic count data to assess the extent to which the model may be over- or under-estimating the travel demand.

TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

BaselineMeadowlands

2031 Model - Basecase

N/A

User Initials: KN
Plot Prepared: Aug 17, 2022
EMME Scenario: 21715

TRANS

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

N

Distance (m)

200 400 600 800

Appendix G:

Other Background Development Volumes

Figure 10 - Site Generated Traffic Volumes – Without Baseline BRT

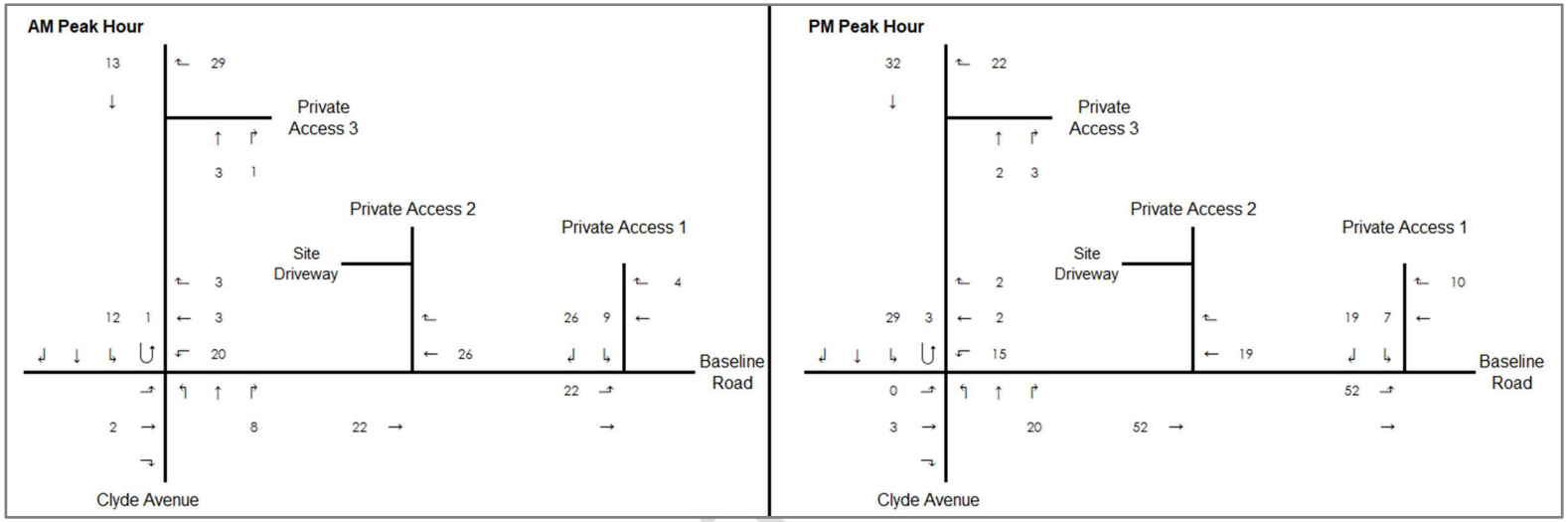


Figure 11 - Site Generated Traffic Volumes - With Baseline BRT

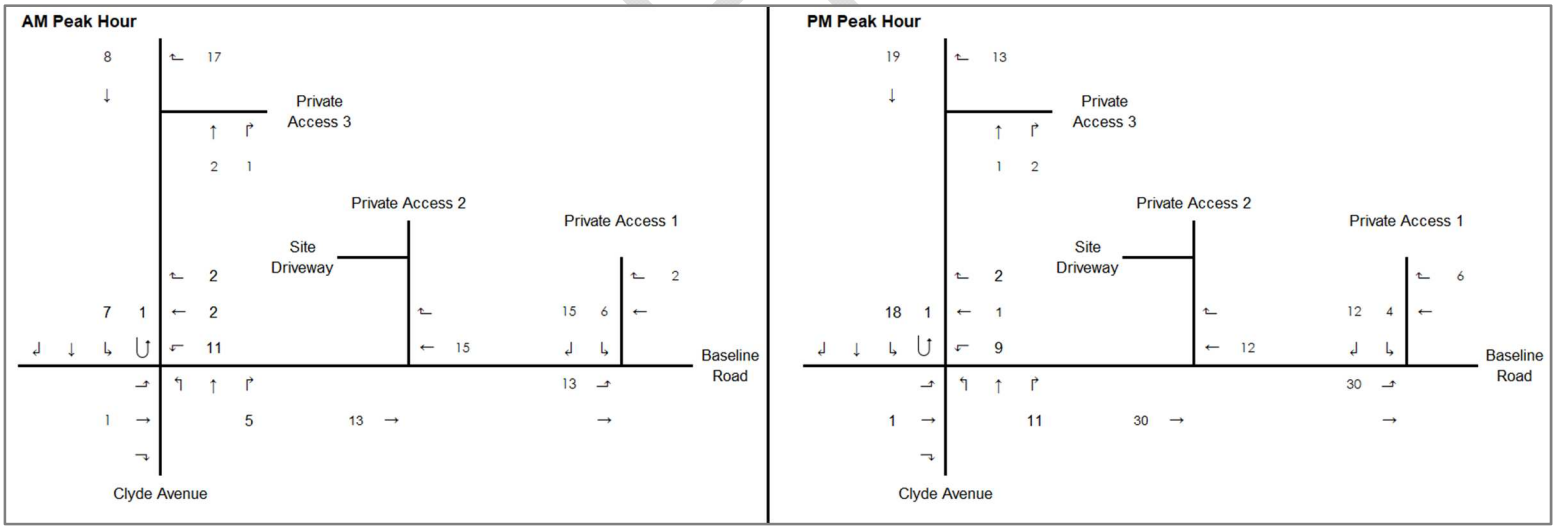
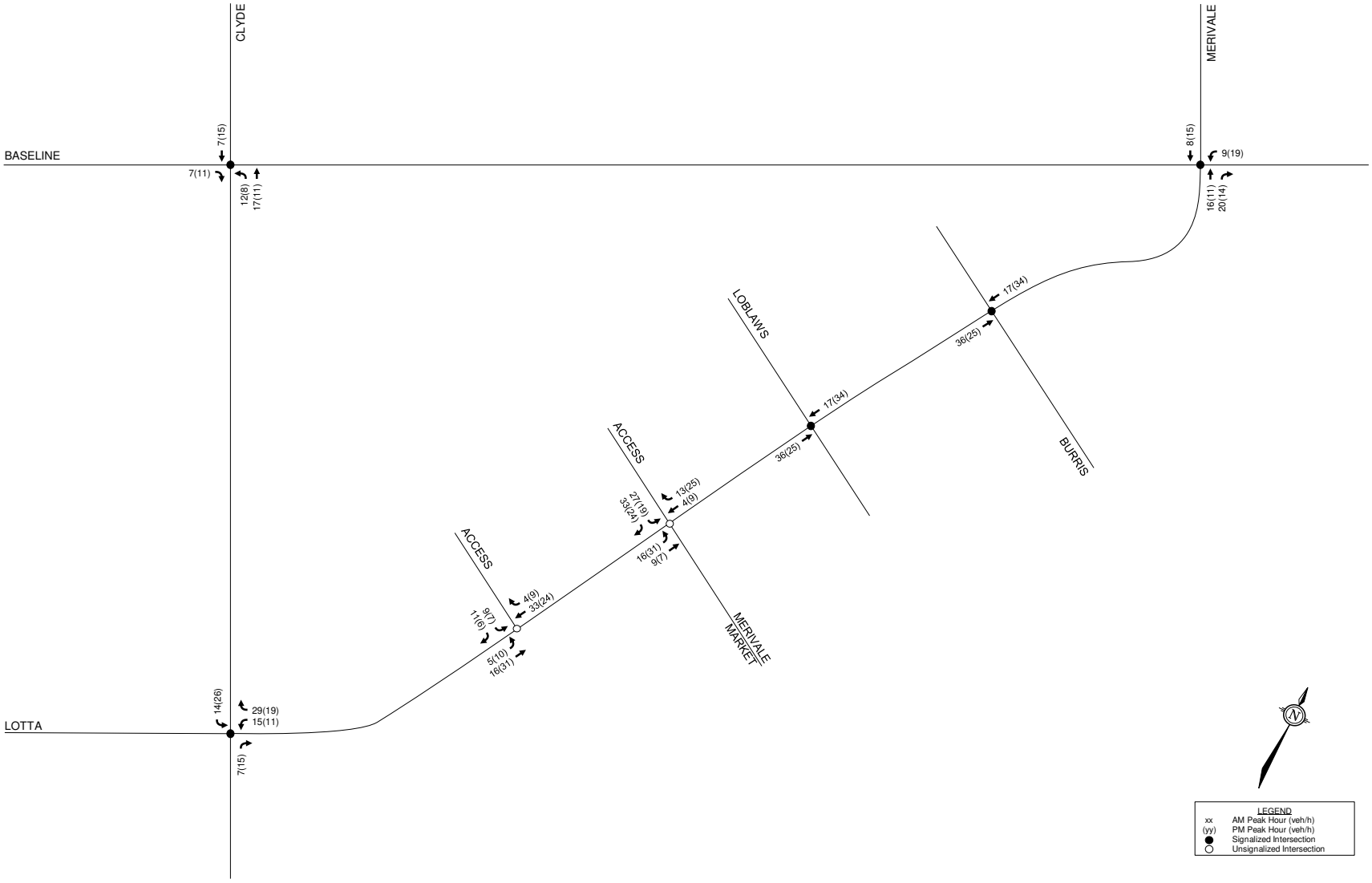


Figure 5: 2031 Proposed Site-Generated Traffic Volumes



As shown above, a total of 32 AM and 33 PM new peak hour two-way vehicle trips are projected as a result of the proposed development.

5.2 Trip Distribution

To understand the travel patterns of the subject development, the OD Survey has been reviewed to determine the travel patterns, applied based on the build-out of Merivale. Table 16 below summarizes the distributions.

Table 16: OD Survey Distribution - Merivale

To/From	% of Trips	Via
North	40%	5% Merivale Rd, 5% Clyde Ave, 30% Hwy 417
South	10%	Merivale Rd
East	25%	10% Baseline Rd, 10% Hwy 417, 5% Capilano Dr
West	25%	10% W Hunt Club Rd, 15% Hwy 417
Total	100%	-

5.3 Trip Assignment

Using the distribution outlined above, turning movement splits, and access to major transportation infrastructure, the trips generated by the site have been assigned to the study area road network. Figure 11 illustrates the new site generated volumes.

Figure 11: New Site Generated Auto Volumes

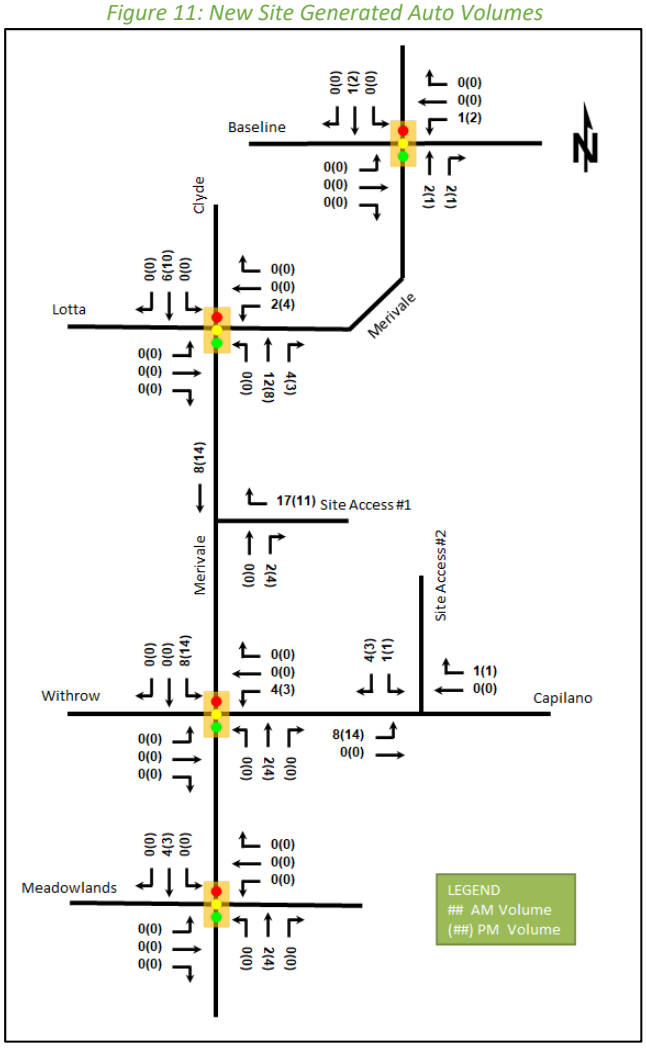
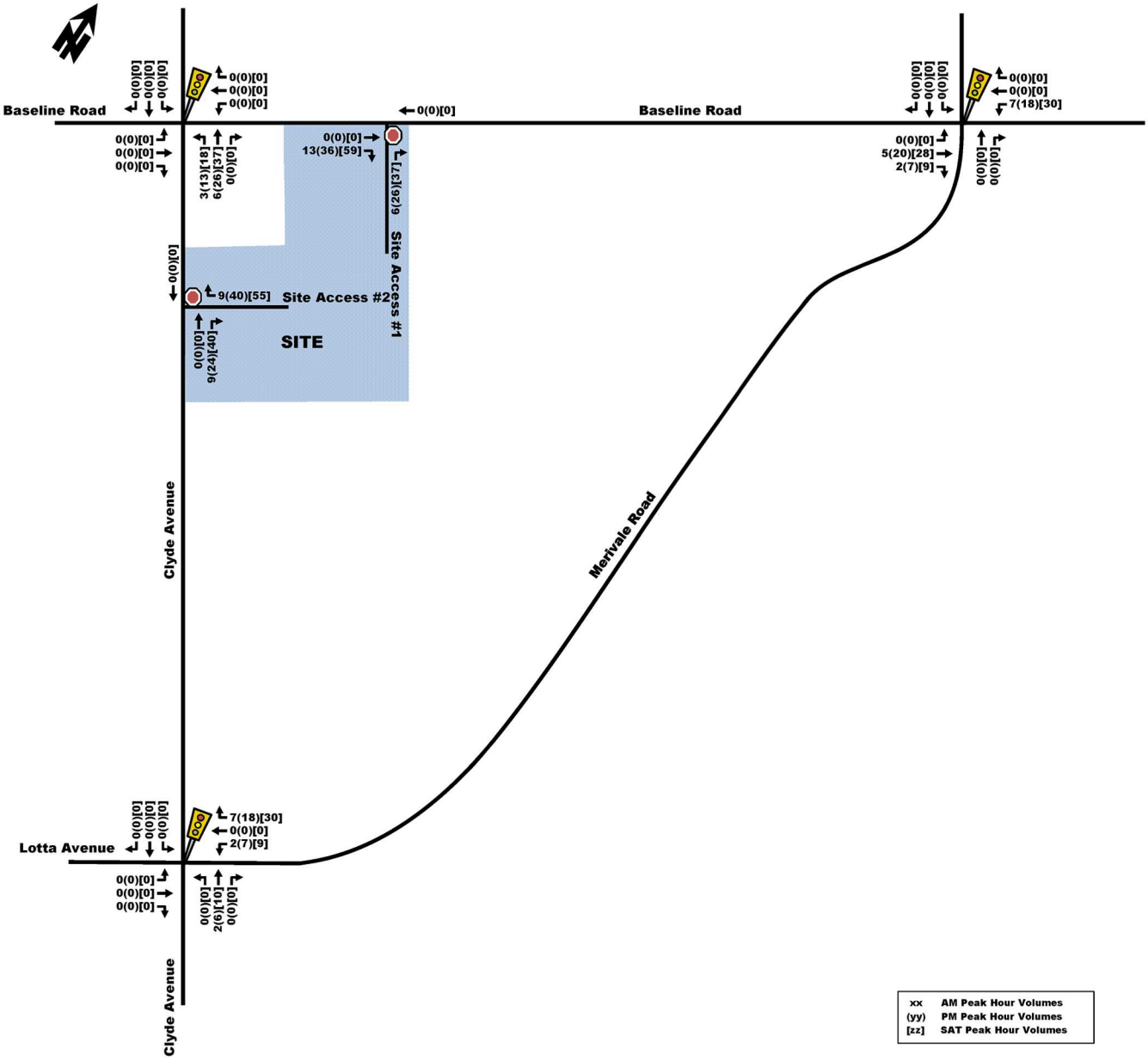


Figure 8: Site Generated Traffic Volumes (Full Build-Out)

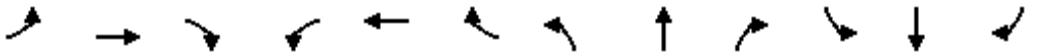


3.4. PROJECTED TRAFFIC VOLUMES

The background traffic volumes were combined with the site traffic to determine the weekday AM, PM, and Saturday peak hour total traffic forecasts. The future total traffic volumes for the 2020, and 2025 horizon years are shown in Figure 9, and Figure 10 respectively.

Appendix H:

Background Synchro Analysis



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	74	21	359	37	65	34	760	823	23	578	14
Future Volume (vph)	25	74	21	359	37	65	34	760	823	23	578	14
Satd. Flow (prot)	1695	1715	0	3288	1596	0	1695	3390	1517	1695	3372	0
Flt Permitted	0.950			0.950			0.396			0.315		
Satd. Flow (perm)	1689	1715	0	3247	1596	0	696	3390	1481	561	3372	0
Satd. Flow (RTOR)		10			62				823		2	
Lane Group Flow (vph)	25	95	0	359	102	0	34	760	823	23	592	0
Turn Type	Prot	NA		Prot	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2		2	6		
Detector Phase	7	4		3	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	11.8	33.8		11.2	33.2		30.0	30.0	30.0	30.0	30.0	
Total Split (s)	33.0	34.0		33.0	34.0		63.0	63.0	63.0	63.0	63.0	
Total Split (%)	25.4%	26.2%		25.4%	26.2%		48.5%	48.5%	48.5%	48.5%	48.5%	
Yellow Time (s)	3.0	3.0		3.7	3.7		3.7	3.7	3.7	3.7	3.7	
All-Red Time (s)	3.8	3.8		2.5	2.5		2.3	2.3	2.3	2.3	2.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.8	6.8		6.2	6.2		6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
Act Effct Green (s)	7.5	14.5		19.4	31.5		77.1	77.1	77.1	77.1	77.1	
Actuated g/C Ratio	0.06	0.11		0.15	0.24		0.59	0.59	0.59	0.59	0.59	
v/c Ratio	0.26	0.47		0.73	0.24		0.08	0.38	0.68	0.07	0.30	
Control Delay	64.4	54.5		61.8	18.2		7.3	7.4	6.5	15.8	15.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	1.1	0.0	0.0	
Total Delay	64.4	54.5		61.8	18.2		7.3	7.4	7.6	15.8	15.0	
LOS	E	D		E	B		A	A	A	B	B	
Approach Delay		56.6			52.1			7.5			15.0	
Approach LOS		E			D			A			B	
Queue Length 50th (m)	6.3	21.2		45.8	8.7		1.1	20.6	7.9	2.2	35.1	
Queue Length 95th (m)	15.3	34.0		59.6	20.2		m2.1	21.1	253.8	9.0	65.6	
Internal Link Dist (m)		214.0			445.3			280.9			385.6	
Turn Bay Length (m)	40.0			95.0			85.0			80.0		
Base Capacity (vph)	341	366		677	445		412	2010	1213	332	2000	
Starvation Cap Reductn	0	0		0	0		0	0	181	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	0.07	0.26		0.53	0.23		0.08	0.38	0.80	0.07	0.30	

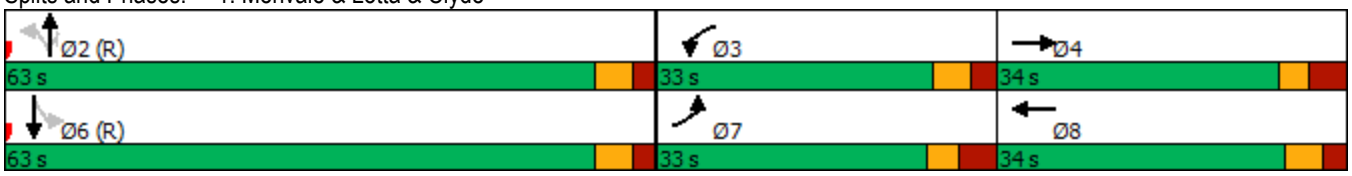
Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 9 (7%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

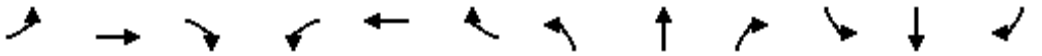
Maximum v/c Ratio: 0.73

Intersection Signal Delay: 18.5	Intersection LOS: B
Intersection Capacity Utilization 90.9%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 1: Merivale & Lotta & Clyde





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	16	20	31	10	35	19	1583	35	35	946	5
Future Volume (vph)	38	16	20	31	10	35	19	1583	35	35	946	5
Satd. Flow (prot)	1695	1621	0	1695	1576	0	1695	3390	1517	1695	3390	1517
Flt Permitted	0.728			0.734			0.283			0.115		
Satd. Flow (perm)	1299	1621	0	1304	1576	0	504	3390	1472	205	3390	1471
Satd. Flow (RTOR)		20			35				86			86
Lane Group Flow (vph)	38	36	0	31	45	0	19	1583	35	35	946	5
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	43.2	43.2		43.2	43.2		11.1	33.1	33.1	11.1	33.1	33.1
Total Split (s)	43.0	43.0		43.0	43.0		12.0	75.0	75.0	12.0	75.0	75.0
Total Split (%)	33.1%	33.1%		33.1%	33.1%		9.2%	57.7%	57.7%	9.2%	57.7%	57.7%
Yellow Time (s)	3.0	3.0		3.0	3.0		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	4.2	4.2		4.2	4.2		2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2	7.2		7.2	7.2		6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	15.3	15.3		15.3	15.3		101.0	98.8	98.8	102.4	101.2	101.2
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.78	0.76	0.76	0.79	0.78	0.78
v/c Ratio	0.25	0.17		0.20	0.21		0.04	0.61	0.03	0.15	0.36	0.00
Control Delay	52.3	27.4		50.7	20.4		5.1	7.6	0.1	5.2	6.7	0.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.3	27.4		50.7	20.4		5.1	7.6	0.1	5.2	6.7	0.0
LOS	D	C		D	C		A	A	A	A	A	A
Approach Delay		40.2			32.8			7.4			6.6	
Approach LOS		D			C			A			A	
Queue Length 50th (m)	9.4	3.9		7.7	2.4		0.4	29.6	0.0	0.8	13.6	0.0
Queue Length 95th (m)	16.3	11.4		14.0	11.2		m2.0	149.2	m0.1	m6.5	84.0	m0.0
Internal Link Dist (m)		182.8			218.9			60.6			280.9	
Turn Bay Length (m)				35.0					15.0	100.0		
Base Capacity (vph)	357	460		359	459		446	2575	1138	229	2639	1164
Starvation Cap Reductn	0	0		0	0		0	19	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.08		0.09	0.10		0.04	0.62	0.03	0.15	0.36	0.00

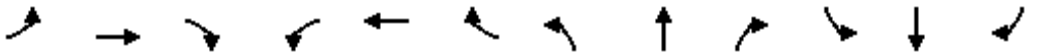
Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 116 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 8.7	Intersection LOS: A
Intersection Capacity Utilization 68.8%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 2: Merivale & Withrow/Capilano



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	6	3	13	0	90	6	1445	27	123	904	3
Future Volume (vph)	24	6	3	13	0	90	6	1445	27	123	904	3
Satd. Flow (prot)	1695	1684	0	0	1695	1517	1695	3379	0	3288	3390	0
Flt Permitted	0.749				0.752		0.950			0.950		
Satd. Flow (perm)	1317	1684	0	0	1331	1476	1688	3379	0	3284	3390	0
Satd. Flow (RTOR)		3				36		2				
Lane Group Flow (vph)	24	9	0	0	13	90	6	1472	0	123	907	0
Turn Type	Perm	NA		Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		4			8	1	5	2		1	6	
Permitted Phases	4			8		8						
Detector Phase	4	4		8	8	1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	35.5	35.5		35.5	35.5	11.7	11.7	31.2		11.7	31.2	
Total Split (s)	36.0	36.0		36.0	36.0	13.0	13.0	81.0		13.0	81.0	
Total Split (%)	27.7%	27.7%		27.7%	27.7%	10.0%	10.0%	62.3%		10.0%	62.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2	3.0	3.0	2.5		3.0	2.5	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5			6.5	6.7	6.7	6.2		6.7	6.2	
Lead/Lag						Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	
Act Effct Green (s)	17.6	17.6			17.6	21.8	6.0	91.3		8.3	106.1	
Actuated g/C Ratio	0.14	0.14			0.14	0.17	0.05	0.70		0.06	0.82	
v/c Ratio	0.13	0.04			0.07	0.32	0.08	0.62		0.59	0.33	
Control Delay	46.4	34.7			44.2	25.8	60.2	8.8		80.9	4.0	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	46.4	34.7			44.2	25.8	60.2	8.8		80.9	4.0	
LOS	D	C			D	C	E	A		F	A	
Approach Delay		43.2			28.1			9.0			13.2	
Approach LOS		D			C			A			B	
Queue Length 50th (m)	5.9	1.5			3.2	11.5	1.4	65.3		16.6	10.3	
Queue Length 95th (m)	12.4	5.9			8.3	22.3	m1.7	m87.2		#31.3	34.1	
Internal Link Dist (m)		58.9			208.4			286.8			128.3	
Turn Bay Length (m)										100.0		
Base Capacity (vph)	298	384			302	279	83	2373		209	2766	
Starvation Cap Reductn	0	0			0	0	0	0		0	0	
Spillback Cap Reductn	0	0			0	0	0	27		0	0	
Storage Cap Reductn	0	0			0	0	0	0		0	0	
Reduced v/c Ratio	0.08	0.02			0.04	0.32	0.07	0.63		0.59	0.33	

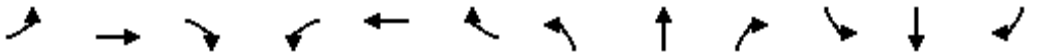
Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 108 (83%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 11.8	Intersection LOS: B
Intersection Capacity Utilization 77.5%	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: Merivale & Emerald Plaza



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	353	380	122	83	227	209	90	1255	85	93	762	111
Future Volume (vph)	353	380	122	83	227	209	90	1255	85	93	762	111
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	3390	1517	1695	3390	1517
Flt Permitted	0.400			0.516			0.292			0.109		
Satd. Flow (perm)	705	3390	1474	915	3390	1469	518	3390	1471	194	3390	1468
Satd. Flow (RTOR)			130			130			134			134
Lane Group Flow (vph)	353	380	122	83	227	209	90	1255	85	93	762	111
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.5	30.5	30.5	11.5	30.5	30.5	11.0	38.0	38.0	11.0	38.0	38.0
Total Split (s)	23.0	33.0	33.0	23.0	33.0	33.0	11.0	63.0	63.0	11.0	63.0	63.0
Total Split (%)	17.7%	25.4%	25.4%	17.7%	25.4%	25.4%	8.5%	48.5%	48.5%	8.5%	48.5%	48.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	39.0	23.4	23.4	26.9	16.9	16.9	71.2	63.9	63.9	72.0	64.3	64.3
Actuated g/C Ratio	0.30	0.18	0.18	0.21	0.13	0.13	0.55	0.49	0.49	0.55	0.49	0.49
v/c Ratio	1.05	0.62	0.33	0.33	0.52	0.69	0.26	0.75	0.11	0.47	0.45	0.14
Control Delay	102.1	53.6	8.5	35.5	55.8	32.1	14.6	31.5	0.9	29.2	18.2	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	102.1	53.6	8.5	35.5	55.8	32.1	14.6	31.5	0.9	29.2	18.2	3.3
LOS	F	D	A	D	E	C	B	C	A	C	B	A
Approach Delay		67.2			43.0			28.6			17.6	
Approach LOS		E			D			C			B	
Queue Length 50th (m)	~91.2	49.3	0.0	16.0	29.7	19.5	8.7	129.3	0.0	7.7	46.2	0.1
Queue Length 95th (m)	#109.8	62.1	14.1	26.0	39.4	43.4	19.3	178.9	2.2	24.4	40.4	6.1
Internal Link Dist (m)		169.3			250.3			97.3			286.8	
Turn Bay Length (m)	100.0		120.0	130.0		105.0	85.0		95.0	140.0		175.0
Base Capacity (vph)	337	710	411	334	691	402	350	1665	790	196	1675	793
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.05	0.54	0.30	0.25	0.33	0.52	0.26	0.75	0.11	0.47	0.45	0.14

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 115 (88%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.05

Intersection Signal Delay: 36.5	Intersection LOS: D
Intersection Capacity Utilization 95.2%	ICU Level of Service F
Analysis Period (min) 15	

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

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

Splits and Phases: 5: Merivale & Meadowlands

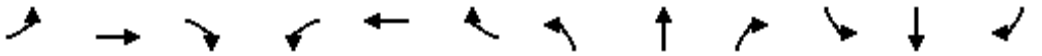
Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↕			↕	
Traffic Vol, veh/h	2	0	12	0	0	1	2	1598	6	1	1014	13
Future Vol, veh/h	2	0	12	0	0	1	2	1598	6	1	1014	13
Conflicting Peds, #/hr	0	0	2	2	0	0	11	0	15	15	0	11
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	0	12	0	0	1	2	1598	6	1	1014	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1837	2657	527	2131	2660	817	1038	0	0	1619	0	0
Stage 1	1034	1034	-	1620	1620	-	-	-	-	-	-	-
Stage 2	803	1623	-	511	1040	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	47	22	496	28	22	320	665	-	-	398	-	-
Stage 1	248	308	-	107	160	-	-	-	-	-	-	-
Stage 2	343	160	-	514	306	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	45	21	491	26	21	316	659	-	-	393	-	-
Mov Cap-2 Maneuver	147	101	-	84	101	-	-	-	-	-	-	-
Stage 1	239	303	-	103	153	-	-	-	-	-	-	-
Stage 2	332	153	-	498	301	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.2	16.4	0.1	0
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	659	-	-	368	316	393	-	-
HCM Lane V/C Ratio	0.003	-	-	0.038	0.003	0.003	-	-
HCM Control Delay (s)	10.5	0.1	-	15.2	16.4	14.2	0	-
HCM Lane LOS	B	A	-	C	C	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	43	35	832	119	158	71	833	617	67	713	27
Future Volume (vph)	32	43	35	832	119	158	71	833	617	67	713	27
Satd. Flow (prot)	1695	1646	0	3288	1614	0	1695	3390	1517	1695	3365	0
Flt Permitted	0.950			0.950			0.242			0.196		
Satd. Flow (perm)	1688	1646	0	3250	1614	0	428	3390	1445	350	3365	0
Satd. Flow (RTOR)		28			46				581		3	
Lane Group Flow (vph)	32	78	0	832	277	0	71	833	617	67	740	0
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2		2	6		
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.8	33.8		11.2	33.2		10.3	30.0	30.0	10.3	30.0	
Total Split (s)	44.0	34.0		44.0	34.0		12.0	41.0	41.0	12.0	41.0	
Total Split (%)	33.6%	26.0%		33.6%	26.0%		9.2%	31.3%	31.3%	9.2%	31.3%	
Yellow Time (s)	3.0	3.0		3.7	3.7		3.3	3.7	3.7	3.3	3.7	
All-Red Time (s)	3.8	3.8		2.5	2.5		2.0	2.3	2.3	2.0	2.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.8	6.8		6.2	6.2		5.3	6.0	6.0	5.3	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	8.0	16.8		36.1	46.7		58.9	52.4	52.4	58.9	52.3	
Actuated g/C Ratio	0.06	0.13		0.28	0.36		0.45	0.40	0.40	0.45	0.40	
v/c Ratio	0.31	0.33		0.92	0.46		0.27	0.61	0.67	0.29	0.55	
Control Delay	65.9	35.5		61.6	28.2		26.3	38.0	8.5	27.0	36.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	65.9	35.5		61.6	28.2		26.3	38.0	8.5	27.0	36.5	
LOS	E	D		E	C		C	D	A	C	D	
Approach Delay		44.3			53.3			25.5			35.7	
Approach LOS		D			D			C			D	
Queue Length 50th (m)	8.1	12.5		105.7	49.4		9.4	91.2	5.8	8.9	78.0	
Queue Length 95th (m)	18.4	24.7		#137.8	64.5		22.9	#147.1	50.7	21.8	118.3	
Internal Link Dist (m)		214.0			445.3			280.9			385.6	
Turn Bay Length (m)	40.0			95.0			85.0			80.0		
Base Capacity (vph)	481	363		948	605		262	1355	926	230	1345	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.07	0.21		0.88	0.46		0.27	0.61	0.67	0.29	0.55	

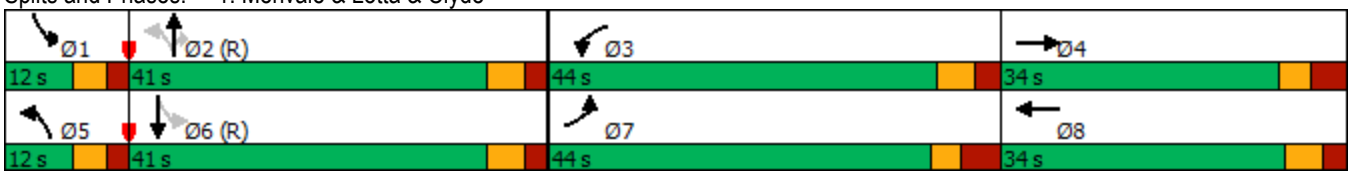
Intersection Summary
Cycle Length: 131
Actuated Cycle Length: 131
Offset: 98 (75%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated

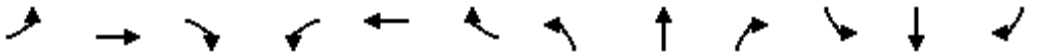
Maximum v/c Ratio: 0.92

Intersection Signal Delay: 37.1	Intersection LOS: D
Intersection Capacity Utilization 74.8%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 1: Merivale & Lotta & Clyde





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	8	26	62	14	52	39	1593	30	78	1654	64
Future Volume (vph)	31	8	26	62	14	52	39	1593	30	78	1654	64
Satd. Flow (prot)	1695	1554	0	1695	1550	0	1695	3390	1517	1695	3390	1517
Flt Permitted	0.714			0.735			0.090			0.097		
Satd. Flow (perm)	1265	1554	0	1301	1550	0	161	3390	1420	173	3390	1433
Satd. Flow (RTOR)		26			52				86			86
Lane Group Flow (vph)	31	34	0	62	66	0	39	1593	30	78	1654	64
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	43.2	43.2		43.2	43.2		11.1	33.1	33.1	11.1	33.1	33.1
Total Split (s)	44.0	44.0		44.0	44.0		14.0	72.0	72.0	14.0	72.0	72.0
Total Split (%)	33.8%	33.8%		33.8%	33.8%		10.8%	55.4%	55.4%	10.8%	55.4%	55.4%
Yellow Time (s)	3.0	3.0		3.0	3.0		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	4.2	4.2		4.2	4.2		2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2	7.2		7.2	7.2		6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	20.7	20.7		20.7	20.7		93.8	89.6	89.6	95.3	90.4	90.4
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.72	0.69	0.69	0.73	0.70	0.70
v/c Ratio	0.15	0.13		0.30	0.23		0.20	0.68	0.03	0.37	0.70	0.06
Control Delay	43.1	17.6		47.6	15.4		7.0	10.8	0.1	12.2	20.2	1.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.1	17.6		47.6	15.4		7.0	10.9	0.1	12.2	20.2	1.7
LOS	D	B		D	B		A	B	A	B	C	A
Approach Delay		29.7			31.0			10.6			19.2	
Approach LOS		C			C			B			B	
Queue Length 50th (m)	7.6	1.9		15.5	3.4		1.1	43.3	0.0	3.3	111.2	0.0
Queue Length 95th (m)	14.0	9.6		23.9	13.6		m4.0	#184.8	m0.0	13.9	#262.0	4.2
Internal Link Dist (m)		182.8			218.9			60.6			280.9	
Turn Bay Length (m)				35.0					15.0	100.0		
Base Capacity (vph)	358	458		368	476		210	2337	1005	223	2357	1022
Starvation Cap Reductn	0	0		0	0		0	25	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	19	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.07		0.17	0.14		0.19	0.69	0.03	0.35	0.71	0.06

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 76 (58%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 15.9	Intersection LOS: B
Intersection Capacity Utilization 83.0%	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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Merivale & Withrow/Capilano

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	16	20	64	1	196	18	1274	40	241	1439	241
Future Volume (vph)	45	16	20	64	1	196	18	1274	40	241	1439	241
Satd. Flow (prot)	1695	1605	0	0	1700	1517	1695	3367	0	3288	3302	0
Flt Permitted	0.715				0.703		0.950			0.950		
Satd. Flow (perm)	1259	1605	0	0	1228	1476	1692	3367	0	3247	3302	0
Satd. Flow (RTOR)		20				40		4			23	
Lane Group Flow (vph)	45	36	0	0	65	196	18	1314	0	241	1680	0
Turn Type	Perm	NA		Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		4			8	1	5	2		1	6	
Permitted Phases	4			8		8						
Detector Phase	4	4		8	8	1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	35.5	35.5		35.5	35.5	11.7	11.7	31.2		11.7	31.2	
Total Split (s)	36.0	36.0		36.0	36.0	17.0	17.0	77.0		17.0	77.0	
Total Split (%)	27.7%	27.7%		27.7%	27.7%	13.1%	13.1%	59.2%		13.1%	59.2%	
Yellow Time (s)	3.3	3.3		3.3	3.3	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2	3.0	3.0	2.5		3.0	2.5	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5			6.5	6.7	6.7	6.2		6.7	6.2	
Lead/Lag						Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	
Act Effct Green (s)	18.0	18.0			18.0	28.9	7.0	82.8		13.0	97.8	
Actuated g/C Ratio	0.14	0.14			0.14	0.22	0.05	0.64		0.10	0.75	
v/c Ratio	0.26	0.15			0.38	0.54	0.20	0.61		0.73	0.67	
Control Delay	49.8	25.6			54.4	34.9	67.7	6.6		70.2	11.2	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	49.8	25.6			54.4	34.9	67.7	6.6		70.2	11.2	
LOS	D	C			D	C	E	A		E	B	
Approach Delay		39.0			39.8			7.4			18.6	
Approach LOS		D			D			A			B	
Queue Length 50th (m)	11.0	3.8			16.2	33.1	4.8	28.1		32.9	45.0	
Queue Length 95th (m)	20.2	12.3			27.2	48.9	m6.8	38.1		#56.7	94.9	
Internal Link Dist (m)		58.9			208.4			286.8			128.3	
Turn Bay Length (m)										100.0		
Base Capacity (vph)	285	379			278	363	134	2146		329	2489	
Starvation Cap Reductn	0	0			0	0	0	0		0	49	
Spillback Cap Reductn	0	0			0	0	0	40		0	0	
Storage Cap Reductn	0	0			0	0	0	0		0	0	
Reduced v/c Ratio	0.16	0.09			0.23	0.54	0.13	0.62		0.73	0.69	

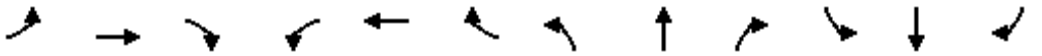
Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 65 (50%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 16.5	Intersection LOS: B
Intersection Capacity Utilization 86.3%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 4: Merivale & Emerald Plaza



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	163	307	154	182	492	169	195	1188	102	215	1097	283
Future Volume (vph)	163	307	154	182	492	169	195	1188	102	215	1097	283
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	3390	1517	1695	3390	1517
Flt Permitted	0.232			0.460			0.149			0.089		
Satd. Flow (perm)	407	3390	1416	795	3390	1433	264	3390	1384	159	3390	1412
Satd. Flow (RTOR)			154			169			134			283
Lane Group Flow (vph)	163	307	154	182	492	169	195	1188	102	215	1097	283
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.5	30.5	30.5	11.5	30.5	30.5	11.0	38.0	38.0	11.0	38.0	38.0
Total Split (s)	19.0	31.0	31.0	19.0	31.0	31.0	17.0	59.0	59.0	21.0	63.0	63.0
Total Split (%)	14.6%	23.8%	23.8%	14.6%	23.8%	23.8%	13.1%	45.4%	45.4%	16.2%	48.5%	48.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	34.5	22.5	22.5	34.8	22.6	22.6	66.8	55.9	55.9	73.9	59.4	59.4
Actuated g/C Ratio	0.27	0.17	0.17	0.27	0.17	0.17	0.51	0.43	0.43	0.57	0.46	0.46
v/c Ratio	0.72	0.52	0.41	0.61	0.84	0.44	0.76	0.82	0.15	0.82	0.71	0.35
Control Delay	52.1	52.0	10.3	43.9	65.1	10.2	37.6	38.9	2.1	57.1	31.1	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.1	52.0	10.3	43.9	65.1	10.2	37.6	38.9	2.1	57.1	31.1	7.6
LOS	D	D	B	D	E	B	D	D	A	E	C	A
Approach Delay		41.7			49.5			36.2			30.4	
Approach LOS		D			D			D			C	
Queue Length 50th (m)	30.9	37.5	0.0	34.9	64.0	0.0	23.0	144.3	0.0	36.0	89.1	1.0
Queue Length 95th (m)	#51.3	52.0	18.1	54.4	83.2	19.1	#55.1	174.3	5.5	#76.8	106.0	30.4
Internal Link Dist (m)		169.3			250.3			97.3			286.8	
Turn Bay Length (m)	100.0		120.0	130.0		105.0	85.0		95.0	140.0		175.0
Base Capacity (vph)	233	638	391	301	638	407	260	1456	670	271	1548	799
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.48	0.39	0.60	0.77	0.42	0.75	0.82	0.15	0.79	0.71	0.35

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 61 (47%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 37.4	Intersection LOS: D
Intersection Capacity Utilization 95.1%	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.

Splits and Phases: 5: Merivale & Meadowlands

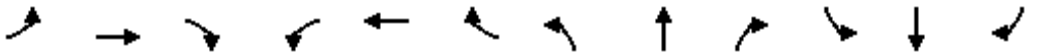
Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↕			↕	
Traffic Vol, veh/h	3	0	15	3	0	7	16	1589	39	1	1832	23
Future Vol, veh/h	3	0	15	3	0	7	16	1589	39	1	1832	23
Conflicting Peds, #/hr	0	0	0	0	0	0	27	0	45	45	0	27
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	0	15	3	0	7	16	1589	39	1	1832	23

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2700	3578	955	2604	3570	859	1882	0	0	1673	0	0
Stage 1	1873	1873	-	1686	1686	-	-	-	-	-	-	-
Stage 2	827	1705	-	918	1884	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	10	5	259	12	6	300	315	-	-	380	-	-
Stage 1	74	120	-	98	149	-	-	-	-	-	-	-
Stage 2	332	145	-	292	118	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	5	2	253	6	2	289	308	-	-	366	-	-
Mov Cap-2 Maneuver	24	37	-	34	36	-	-	-	-	-	-	-
Stage 1	31	117	-	41	62	-	-	-	-	-	-	-
Stage 2	140	60	-	275	115	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	49.8	50.5	4.8	0
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	308	-	-	98	89	366	-	-
HCM Lane V/C Ratio	0.052	-	-	0.184	0.112	0.003	-	-
HCM Control Delay (s)	17.3	4.8	-	49.8	50.5	14.9	0	-
HCM Lane LOS	C	A	-	E	F	B	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.6	0.4	0	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	74	21	374	37	94	34	760	830	37	578	14
Future Volume (vph)	25	74	21	374	37	94	34	760	830	37	578	14
Satd. Flow (prot)	1695	1715	0	3288	1573	0	1695	3390	1517	1695	3372	0
Flt Permitted	0.950			0.950			0.395			0.314		
Satd. Flow (perm)	1689	1715	0	3247	1573	0	695	3390	1481	559	3372	0
Satd. Flow (RTOR)		10			89				830		2	
Lane Group Flow (vph)	25	95	0	374	131	0	34	760	830	37	592	0
Turn Type	Prot	NA		Prot	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2		2	6		
Detector Phase	7	4		3	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	11.8	33.8		11.2	33.2		30.0	30.0	30.0	30.0	30.0	
Total Split (s)	33.0	34.0		33.0	34.0		63.0	63.0	63.0	63.0	63.0	
Total Split (%)	25.4%	26.2%		25.4%	26.2%		48.5%	48.5%	48.5%	48.5%	48.5%	
Yellow Time (s)	3.0	3.0		3.7	3.7		3.7	3.7	3.7	3.7	3.7	
All-Red Time (s)	3.8	3.8		2.5	2.5		2.3	2.3	2.3	2.3	2.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.8	6.8		6.2	6.2		6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
Act Effct Green (s)	7.5	14.5		20.0	32.2		76.4	76.4	76.4	76.4	76.4	
Actuated g/C Ratio	0.06	0.11		0.15	0.25		0.59	0.59	0.59	0.59	0.59	
v/c Ratio	0.26	0.47		0.74	0.29		0.08	0.38	0.68	0.11	0.30	
Control Delay	64.4	54.5		61.4	15.6		7.4	7.6	6.8	16.7	15.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	1.1	0.0	0.0	
Total Delay	64.4	54.5		61.4	15.6		7.4	7.6	7.9	16.7	15.3	
LOS	E	D		E	B		A	A	A	B	B	
Approach Delay		56.6			49.6			7.7			15.4	
Approach LOS		E			D			A			B	
Queue Length 50th (m)	6.3	21.2		47.7	9.1		1.2	22.0	9.7	3.8	35.5	
Queue Length 95th (m)	15.3	34.0		61.5	22.2		m2.1	23.4	256.7	13.0	66.3	
Internal Link Dist (m)		214.0			445.3			280.9			385.6	
Turn Bay Length (m)	40.0			95.0			85.0			80.0		
Base Capacity (vph)	341	366		677	464		408	1993	1212	328	1983	
Starvation Cap Reductn	0	0		0	0		0	0	178	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	0.07	0.26		0.55	0.28		0.08	0.38	0.80	0.11	0.30	

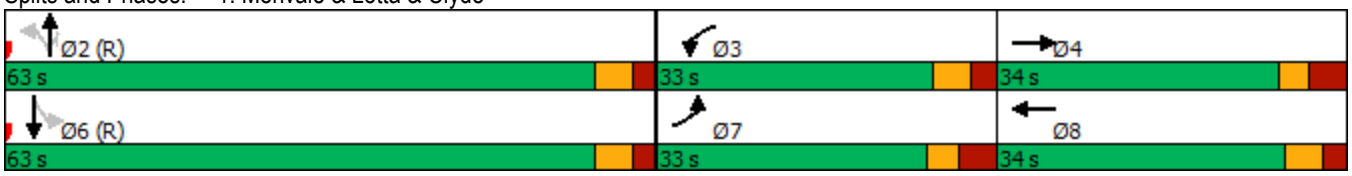
Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 9 (7%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 18.8	Intersection LOS: B
Intersection Capacity Utilization 91.3%	ICU Level of Service F
Analysis Period (min) 15	

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

Splits and Phases: 1: Merivale & Lotta & Clyde



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	16	20	31	10	35	19	1590	35	35	961	5
Future Volume (vph)	38	16	20	31	10	35	19	1590	35	35	961	5
Satd. Flow (prot)	1695	1621	0	1695	1576	0	1695	3390	1517	1695	3390	1517
Flt Permitted	0.728			0.734			0.278			0.114		
Satd. Flow (perm)	1299	1621	0	1304	1576	0	495	3390	1472	203	3390	1471
Satd. Flow (RTOR)		20			35				86			86
Lane Group Flow (vph)	38	36	0	31	45	0	19	1590	35	35	961	5
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	43.2	43.2		43.2	43.2		11.1	33.1	33.1	11.1	33.1	33.1
Total Split (s)	43.0	43.0		43.0	43.0		12.0	75.0	75.0	12.0	75.0	75.0
Total Split (%)	33.1%	33.1%		33.1%	33.1%		9.2%	57.7%	57.7%	9.2%	57.7%	57.7%
Yellow Time (s)	3.0	3.0		3.0	3.0		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	4.2	4.2		4.2	4.2		2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2	7.2		7.2	7.2		6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	15.3	15.3		15.3	15.3		101.0	98.8	98.8	102.4	101.2	101.2
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.78	0.76	0.76	0.79	0.78	0.78
v/c Ratio	0.25	0.17		0.20	0.21		0.04	0.62	0.03	0.15	0.36	0.00
Control Delay	52.3	27.4		50.7	20.4		5.1	7.6	0.1	5.1	6.7	0.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.3	27.4		50.7	20.4		5.1	7.6	0.1	5.1	6.7	0.0
LOS	D	C		D	C		A	A	A	A	A	A
Approach Delay		40.2			32.8			7.5			6.6	
Approach LOS		D			C			A			A	
Queue Length 50th (m)	9.4	3.9		7.7	2.4		0.4	29.7	0.0	0.8	13.6	0.0
Queue Length 95th (m)	16.3	11.4		14.0	11.2		m2.0	151.7	m0.0	m6.3	86.3	m0.0
Internal Link Dist (m)		182.8			218.9			60.6			280.9	
Turn Bay Length (m)				35.0					15.0	100.0		
Base Capacity (vph)	357	460		359	459		439	2575	1138	228	2639	1164
Starvation Cap Reductn	0	0		0	0		0	18	0	0	0	0
Spillback Cap Reductn	4	0		0	4		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.08		0.09	0.10		0.04	0.62	0.03	0.15	0.36	0.00

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 116 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 8.7	Intersection LOS: A
Intersection Capacity Utilization 69.0%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 2: Merivale & Withrow/Capilano

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	6	3	13	0	90	6	1452	27	123	919	3
Future Volume (vph)	24	6	3	13	0	90	6	1452	27	123	919	3
Satd. Flow (prot)	1695	1684	0	0	1695	1517	1695	3379	0	3288	3390	0
Flt Permitted	0.749				0.752		0.950			0.950		
Satd. Flow (perm)	1317	1684	0	0	1331	1476	1688	3379	0	3284	3390	0
Satd. Flow (RTOR)		3				36		2				
Lane Group Flow (vph)	24	9	0	0	13	90	6	1479	0	123	922	0
Turn Type	Perm	NA		Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		4			8	1	5	2		1	6	
Permitted Phases	4			8		8						
Detector Phase	4	4		8	8	1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	35.5	35.5		35.5	35.5	11.7	11.7	31.2		11.7	31.2	
Total Split (s)	36.0	36.0		36.0	36.0	13.0	13.0	81.0		13.0	81.0	
Total Split (%)	27.7%	27.7%		27.7%	27.7%	10.0%	10.0%	62.3%		10.0%	62.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2	3.0	3.0	2.5		3.0	2.5	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5			6.5	6.7	6.7	6.2		6.7	6.2	
Lead/Lag						Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	
Act Effct Green (s)	17.6	17.6			17.6	21.8	6.0	91.3		8.3	106.1	
Actuated g/C Ratio	0.14	0.14			0.14	0.17	0.05	0.70		0.06	0.82	
v/c Ratio	0.13	0.04			0.07	0.32	0.08	0.62		0.59	0.33	
Control Delay	46.4	34.7			44.2	25.8	60.8	8.8		80.9	4.1	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	46.4	34.7			44.2	25.8	60.8	8.8		80.9	4.1	
LOS	D	C			D	C	E	A		F	A	
Approach Delay		43.2			28.1			9.0			13.2	
Approach LOS		D			C			A			B	
Queue Length 50th (m)	5.9	1.5			3.2	11.5	1.4	65.4		16.5	10.3	
Queue Length 95th (m)	12.4	5.9			8.3	22.3	m1.7	m87.3		#31.7	36.1	
Internal Link Dist (m)		58.9			208.4			286.8			128.3	
Turn Bay Length (m)										100.0		
Base Capacity (vph)	298	384			302	279	83	2373		209	2766	
Starvation Cap Reductn	0	0			0	0	0	0		0	0	
Spillback Cap Reductn	0	0			0	0	0	29		0	0	
Storage Cap Reductn	0	0			0	0	0	0		0	0	
Reduced v/c Ratio	0.08	0.02			0.04	0.32	0.07	0.63		0.59	0.33	

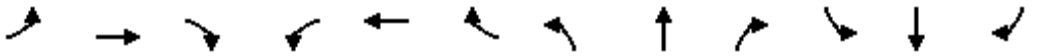
Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 108 (83%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 11.8	Intersection LOS: B
Intersection Capacity Utilization 77.7%	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: Merivale & Emerald Plaza



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	353	380	122	83	227	209	90	1262	85	93	777	111
Future Volume (vph)	353	380	122	83	227	209	90	1262	85	93	777	111
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	3390	1517	1695	3390	1517
Flt Permitted	0.400			0.516			0.286			0.107		
Satd. Flow (perm)	705	3390	1474	915	3390	1469	508	3390	1471	191	3390	1468
Satd. Flow (RTOR)			130			130			134			134
Lane Group Flow (vph)	353	380	122	83	227	209	90	1262	85	93	777	111
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.5	30.5	30.5	11.5	30.5	30.5	11.0	38.0	38.0	11.0	38.0	38.0
Total Split (s)	23.0	33.0	33.0	23.0	33.0	33.0	11.0	63.0	63.0	11.0	63.0	63.0
Total Split (%)	17.7%	25.4%	25.4%	17.7%	25.4%	25.4%	8.5%	48.5%	48.5%	8.5%	48.5%	48.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	39.0	23.4	23.4	26.9	16.9	16.9	71.2	63.8	63.8	72.0	64.3	64.3
Actuated g/C Ratio	0.30	0.18	0.18	0.21	0.13	0.13	0.55	0.49	0.49	0.55	0.49	0.49
v/c Ratio	1.05	0.62	0.33	0.33	0.52	0.69	0.26	0.76	0.11	0.48	0.46	0.14
Control Delay	102.1	53.6	8.5	35.5	55.8	32.1	14.7	31.7	0.9	29.9	18.7	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	102.1	53.6	8.5	35.5	55.8	32.1	14.7	31.7	0.9	29.9	18.7	3.2
LOS	F	D	A	D	E	C	B	C	A	C	B	A
Approach Delay		67.2			43.0			28.8			18.0	
Approach LOS		E			D			C			B	
Queue Length 50th (m)	~91.2	49.3	0.0	16.0	29.7	19.5	8.7	130.7	0.0	7.8	51.9	0.3
Queue Length 95th (m)	#109.8	62.1	14.1	26.0	39.4	43.4	19.3	180.4	2.2	24.7	40.7	5.5
Internal Link Dist (m)		169.3			250.3			97.3			286.8	
Turn Bay Length (m)	100.0		120.0	130.0		105.0	85.0		95.0	140.0		175.0
Base Capacity (vph)	337	710	411	334	691	402	345	1664	790	195	1675	793
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.05	0.54	0.30	0.25	0.33	0.52	0.26	0.76	0.11	0.48	0.46	0.14

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 115 (88%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.05

Intersection Signal Delay: 36.6	Intersection LOS: D
Intersection Capacity Utilization 95.4%	ICU Level of Service F
Analysis Period (min) 15	

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

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

Splits and Phases: 5: Merivale & Meadowlands

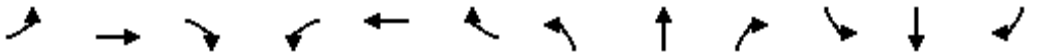
Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↕			↕	
Traffic Vol, veh/h	2	0	12	0	0	1	2	1605	6	1	1029	13
Future Vol, veh/h	2	0	12	0	0	1	2	1605	6	1	1029	13
Conflicting Peds, #/hr	0	0	2	2	0	0	11	0	15	15	0	11
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	0	12	0	0	1	2	1605	6	1	1029	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1856	2679	534	2146	2682	821	1053	0	0	1626	0	0
Stage 1	1049	1049	-	1627	1627	-	-	-	-	-	-	-
Stage 2	807	1630	-	519	1055	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	45	22	491	27	22	318	657	-	-	396	-	-
Stage 1	243	303	-	106	159	-	-	-	-	-	-	-
Stage 2	341	158	-	508	301	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	43	21	486	25	21	314	651	-	-	391	-	-
Mov Cap-2 Maneuver	144	100	-	83	100	-	-	-	-	-	-	-
Stage 1	234	298	-	102	152	-	-	-	-	-	-	-
Stage 2	330	151	-	492	296	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.3	16.5	0.2	0
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	651	-	-	363	314	391	-	-
HCM Lane V/C Ratio	0.003	-	-	0.039	0.003	0.003	-	-
HCM Control Delay (s)	10.5	0.2	-	15.3	16.5	14.2	0	-
HCM Lane LOS	B	A	-	C	C	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	43	35	843	119	177	71	833	632	93	713	27
Future Volume (vph)	32	43	35	843	119	177	71	833	632	93	713	27
Satd. Flow (prot)	1695	1646	0	3288	1607	0	1695	3390	1517	1695	3365	0
Flt Permitted	0.950			0.950			0.251			0.177		
Satd. Flow (perm)	1689	1646	0	3250	1607	0	444	3390	1445	316	3365	0
Satd. Flow (RTOR)		28			52				595		3	
Lane Group Flow (vph)	32	78	0	843	296	0	71	833	632	93	740	0
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2		2	6		
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.8	33.8		11.2	33.2		10.3	30.0	30.0	10.3	30.0	
Total Split (s)	44.0	34.0		44.0	34.0		12.0	41.0	41.0	12.0	41.0	
Total Split (%)	33.6%	26.0%		33.6%	26.0%		9.2%	31.3%	31.3%	9.2%	31.3%	
Yellow Time (s)	3.0	3.0		3.7	3.7		3.3	3.7	3.7	3.3	3.7	
All-Red Time (s)	3.8	3.8		2.5	2.5		2.0	2.3	2.3	2.0	2.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.8	6.8		6.2	6.2		5.3	6.0	6.0	5.3	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	8.0	16.8		36.3	46.9		57.0	49.3	49.3	59.2	52.1	
Actuated g/C Ratio	0.06	0.13		0.28	0.36		0.44	0.38	0.38	0.45	0.40	
v/c Ratio	0.31	0.33		0.93	0.49		0.27	0.65	0.69	0.42	0.55	
Control Delay	65.9	35.5		62.5	28.4		26.4	39.9	9.0	30.1	36.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	65.9	35.5		62.5	28.4		26.4	39.9	9.0	30.1	36.6	
LOS	E	D		E	C		C	D	A	C	D	
Approach Delay		44.3			53.7			26.5			35.8	
Approach LOS		D			D			C			D	
Queue Length 50th (m)	8.1	12.5		107.5	53.0		9.4	93.0	6.1	12.5	78.0	
Queue Length 95th (m)	18.4	24.7		#140.9	68.6		22.9	#147.1	52.4	28.4	118.3	
Internal Link Dist (m)		214.0			445.3			280.9			385.6	
Turn Bay Length (m)	40.0			95.0			85.0			80.0		
Base Capacity (vph)	481	363		948	608		262	1275	915	223	1341	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.07	0.21		0.89	0.49		0.27	0.65	0.69	0.42	0.55	

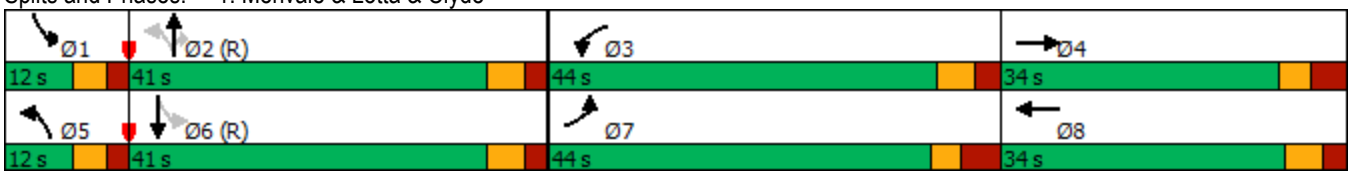
Intersection Summary
Cycle Length: 131
Actuated Cycle Length: 131
Offset: 98 (75%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated

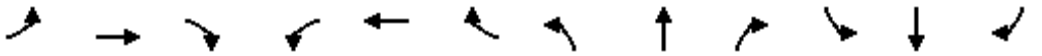
Maximum v/c Ratio: 0.93

Intersection Signal Delay: 37.8	Intersection LOS: D
Intersection Capacity Utilization 76.4%	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: 1: Merivale & Lotta & Clyde





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	8	26	62	14	52	39	1608	30	78	1665	64
Future Volume (vph)	31	8	26	62	14	52	39	1608	30	78	1665	64
Satd. Flow (prot)	1695	1554	0	1695	1550	0	1695	3390	1517	1695	3390	1517
Flt Permitted	0.714			0.735			0.088			0.095		
Satd. Flow (perm)	1265	1554	0	1301	1550	0	157	3390	1420	170	3390	1433
Satd. Flow (RTOR)		26			52				86			86
Lane Group Flow (vph)	31	34	0	62	66	0	39	1608	30	78	1665	64
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	43.2	43.2		43.2	43.2		11.1	33.1	33.1	11.1	33.1	33.1
Total Split (s)	44.0	44.0		44.0	44.0		14.0	72.0	72.0	14.0	72.0	72.0
Total Split (%)	33.8%	33.8%		33.8%	33.8%		10.8%	55.4%	55.4%	10.8%	55.4%	55.4%
Yellow Time (s)	3.0	3.0		3.0	3.0		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	4.2	4.2		4.2	4.2		2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2	7.2		7.2	7.2		6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	20.7	20.7		20.7	20.7		93.8	89.6	89.6	95.3	90.4	90.4
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.72	0.69	0.69	0.73	0.70	0.70
v/c Ratio	0.15	0.13		0.30	0.23		0.21	0.69	0.03	0.37	0.71	0.06
Control Delay	43.1	17.6		47.6	15.4		7.1	10.9	0.1	12.4	20.3	1.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.1	17.6		47.6	15.4		7.1	11.0	0.1	12.4	20.3	1.7
LOS	D	B		D	B		A	B	A	B	C	A
Approach Delay		29.7			31.0			10.7			19.3	
Approach LOS		C			C			B			B	
Queue Length 50th (m)	7.6	1.9		15.5	3.4		1.1	43.6	0.0	3.3	112.9	0.0
Queue Length 95th (m)	14.0	9.6		23.9	13.6		m4.0	#209.3	m0.0	13.9	#265.1	4.2
Internal Link Dist (m)		182.8			218.9			60.6			280.9	
Turn Bay Length (m)				35.0					15.0	100.0		
Base Capacity (vph)	358	458		368	476		207	2337	1005	221	2357	1022
Starvation Cap Reductn	0	0		0	0		0	25	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	20	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.07		0.17	0.14		0.19	0.70	0.03	0.35	0.71	0.06

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 76 (58%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 16.0	Intersection LOS: B
Intersection Capacity Utilization 83.3%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 2: Merivale & Withrow/Capilano

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	16	20	64	1	196	18	1289	40	241	1450	241
Future Volume (vph)	45	16	20	64	1	196	18	1289	40	241	1450	241
Satd. Flow (prot)	1695	1605	0	0	1700	1517	1695	3367	0	3288	3305	0
Flt Permitted	0.715				0.703		0.950			0.950		
Satd. Flow (perm)	1259	1605	0	0	1228	1476	1692	3367	0	3248	3305	0
Satd. Flow (RTOR)		20				39		4			23	
Lane Group Flow (vph)	45	36	0	0	65	196	18	1329	0	241	1691	0
Turn Type	Perm	NA		Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		4			8	1	5	2		1	6	
Permitted Phases	4			8		8						
Detector Phase	4	4		8	8	1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	35.5	35.5		35.5	35.5	11.7	11.7	31.2		11.7	31.2	
Total Split (s)	36.0	36.0		36.0	36.0	17.0	17.0	77.0		17.0	77.0	
Total Split (%)	27.7%	27.7%		27.7%	27.7%	13.1%	13.1%	59.2%		13.1%	59.2%	
Yellow Time (s)	3.3	3.3		3.3	3.3	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2	3.0	3.0	2.5		3.0	2.5	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5			6.5	6.7	6.7	6.2		6.7	6.2	
Lead/Lag						Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	
Act Effct Green (s)	18.0	18.0			18.0	28.9	7.0	82.8		13.0	97.8	
Actuated g/C Ratio	0.14	0.14			0.14	0.22	0.05	0.64		0.10	0.75	
v/c Ratio	0.26	0.15			0.38	0.54	0.20	0.62		0.73	0.68	
Control Delay	49.8	25.6			54.4	35.2	67.4	6.5		70.2	11.2	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	49.8	25.6			54.4	35.2	67.4	6.6		70.2	11.2	
LOS	D	C			D	D	E	A		E	B	
Approach Delay		39.0			39.9			7.4			18.6	
Approach LOS		D			D			A			B	
Queue Length 50th (m)	11.0	3.8			16.2	33.4	4.9	28.2		32.9	45.6	
Queue Length 95th (m)	20.2	12.3			27.2	49.1	m6.8	38.1		#56.8	95.3	
Internal Link Dist (m)		58.9			208.4			286.8			128.3	
Turn Bay Length (m)										100.0		
Base Capacity (vph)	285	379			278	362	134	2146		329	2491	
Starvation Cap Reductn	0	0			0	0	0	0		0	48	
Spillback Cap Reductn	0	0			0	0	0	44		0	0	
Storage Cap Reductn	0	0			0	0	0	0		0	0	
Reduced v/c Ratio	0.16	0.09			0.23	0.54	0.13	0.63		0.73	0.69	

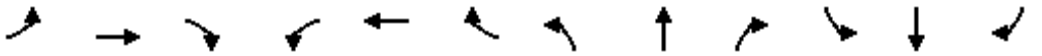
Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 65 (50%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 16.4	Intersection LOS: B
Intersection Capacity Utilization 86.6%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 4: Merivale & Emerald Plaza



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	163	307	154	182	492	169	195	1203	102	215	1108	283
Future Volume (vph)	163	307	154	182	492	169	195	1203	102	215	1108	283
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	3390	1517	1695	3390	1517
Flt Permitted	0.232			0.460			0.145			0.084		
Satd. Flow (perm)	407	3390	1416	795	3390	1433	257	3390	1384	150	3390	1412
Satd. Flow (RTOR)			154			169			134			283
Lane Group Flow (vph)	163	307	154	182	492	169	195	1203	102	215	1108	283
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.5	30.5	30.5	11.5	30.5	30.5	11.0	38.0	38.0	11.0	38.0	38.0
Total Split (s)	19.0	31.0	31.0	19.0	31.0	31.0	17.0	59.0	59.0	21.0	63.0	63.0
Total Split (%)	14.6%	23.8%	23.8%	14.6%	23.8%	23.8%	13.1%	45.4%	45.4%	16.2%	48.5%	48.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	34.5	22.5	22.5	34.8	22.6	22.6	66.8	55.7	55.7	73.9	59.3	59.3
Actuated g/C Ratio	0.27	0.17	0.17	0.27	0.17	0.17	0.51	0.43	0.43	0.57	0.46	0.46
v/c Ratio	0.72	0.52	0.41	0.61	0.84	0.44	0.77	0.83	0.15	0.83	0.72	0.35
Control Delay	52.1	52.0	10.3	43.9	65.1	10.2	38.8	39.6	2.1	58.5	31.4	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.1	52.0	10.3	43.9	65.1	10.2	38.8	39.6	2.1	58.5	31.4	7.6
LOS	D	D	B	D	E	B	D	D	A	E	C	A
Approach Delay		41.7			49.5			37.0			30.8	
Approach LOS		D			D			D			C	
Queue Length 50th (m)	30.9	37.5	0.0	34.9	64.0	0.0	23.0	147.1	0.0	36.6	90.5	1.0
Queue Length 95th (m)	#51.3	52.0	18.1	54.4	83.2	19.1	#56.6	177.6	5.5	#79.0	106.8	30.6
Internal Link Dist (m)		169.3			250.3			97.3			286.8	
Turn Bay Length (m)	100.0		120.0	130.0		105.0	85.0		95.0	140.0		175.0
Base Capacity (vph)	233	638	391	301	638	407	257	1453	669	268	1546	798
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.48	0.39	0.60	0.77	0.42	0.76	0.83	0.15	0.80	0.72	0.35

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 61 (47%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 37.8	Intersection LOS: D
Intersection Capacity Utilization 95.6%	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.

Splits and Phases: 5: Merivale & Meadowlands

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↕			↕	
Traffic Vol, veh/h	3	0	15	3	0	7	16	1604	39	1	1843	23
Future Vol, veh/h	3	0	15	3	0	7	16	1604	39	1	1843	23
Conflicting Peds, #/hr	0	0	0	0	0	0	27	0	45	45	0	27
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	0	15	3	0	7	16	1604	39	1	1843	23

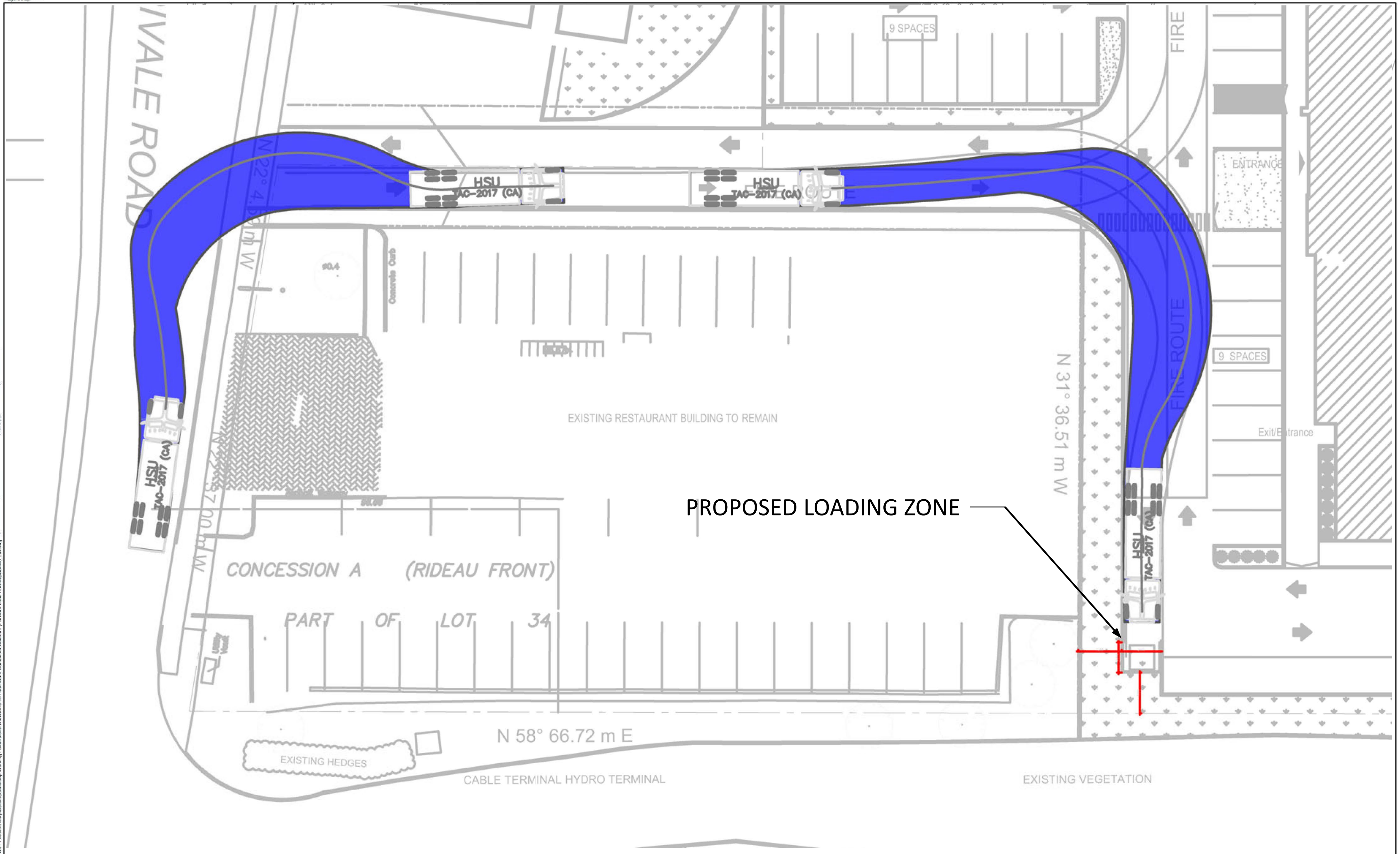
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2718	3604	960	2625	3596	867	1893	0	0	1688	0	0
Stage 1	1884	1884	-	1701	1701	-	-	-	-	-	-	-
Stage 2	834	1720	-	924	1895	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	10	5	257	12	5	296	312	-	-	375	-	-
Stage 1	73	118	-	95	146	-	-	-	-	-	-	-
Stage 2	329	143	-	290	117	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	5	2	251	5	2	285	305	-	-	361	-	-
Mov Cap-2 Maneuver	21	32	-	28	32	-	-	-	-	-	-	-
Stage 1	26	115	-	34	52	-	-	-	-	-	-	-
Stage 2	118	50	-	273	114	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	55.4	59.4	5.4	0
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	305	-	-	89	76	361	-	-
HCM Lane V/C Ratio	0.052	-	-	0.202	0.132	0.003	-	-
HCM Control Delay (s)	17.5	5.4	-	55.4	59.4	15	0	-
HCM Lane LOS	C	A	-	F	F	C	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.7	0.4	0	-	-

Appendix I:

Truck Turning Movements



PARSONS®

N

Legend

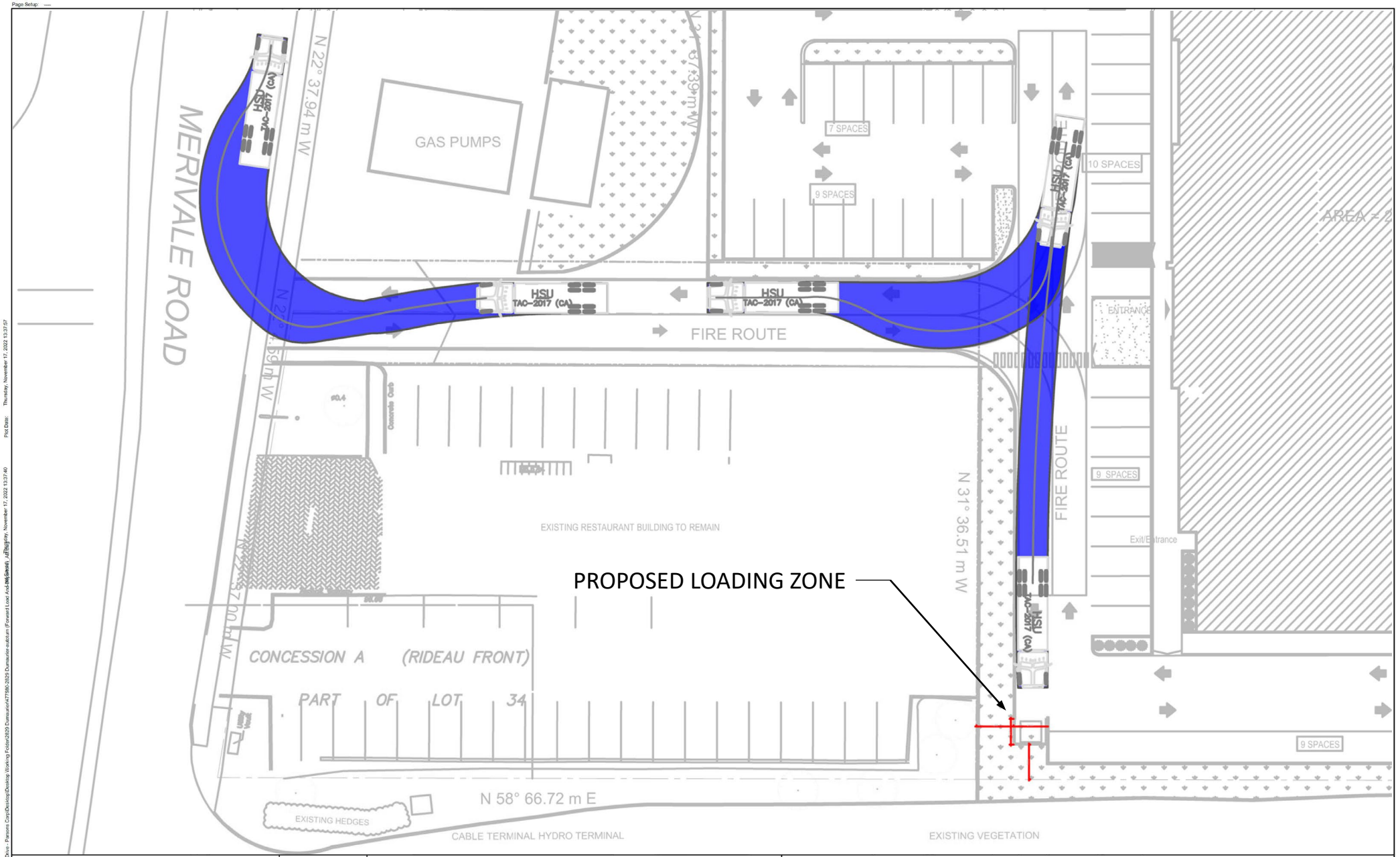
HSU

	mm
Width	: 2600
Track	: 2600
Lock to Lock Time	: 6.0
Steering Angle	: 40.0

NOTE: The location of utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned. The contractor shall prove the location of utilities and shall be responsible for adequate protection from damage.

Not to Scale

Drawing Description	HSU Movement In to Garbage Loading Bay		
Client	1545A Merivale Road	Date 11-28-2022	Figure Number 1
Project Number	478377	Project Description	



PARSONS®

NOTE: The location of utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned. The contractor shall prove the location of utilities and shall be responsible for adequate protection from damage.

N

Legend

HSU

Not to Scale

Drawing Description: HSU Movement Out of Garbage Loading Bay		
Client: 1545A Merivale Road	Date: 11-28-2022	Figure Number: 2
Project Number: 478377	Project Description:	

AREA = 27,620 SQ FT

FIRE ROUTE

ENTRANCE

9 SPACES

N 31° 36.51 m W

REMAIN

Exit/Entrance

EXISTING TREE

Exit

Exit

15 SPACES

N 31° 78.12 m W

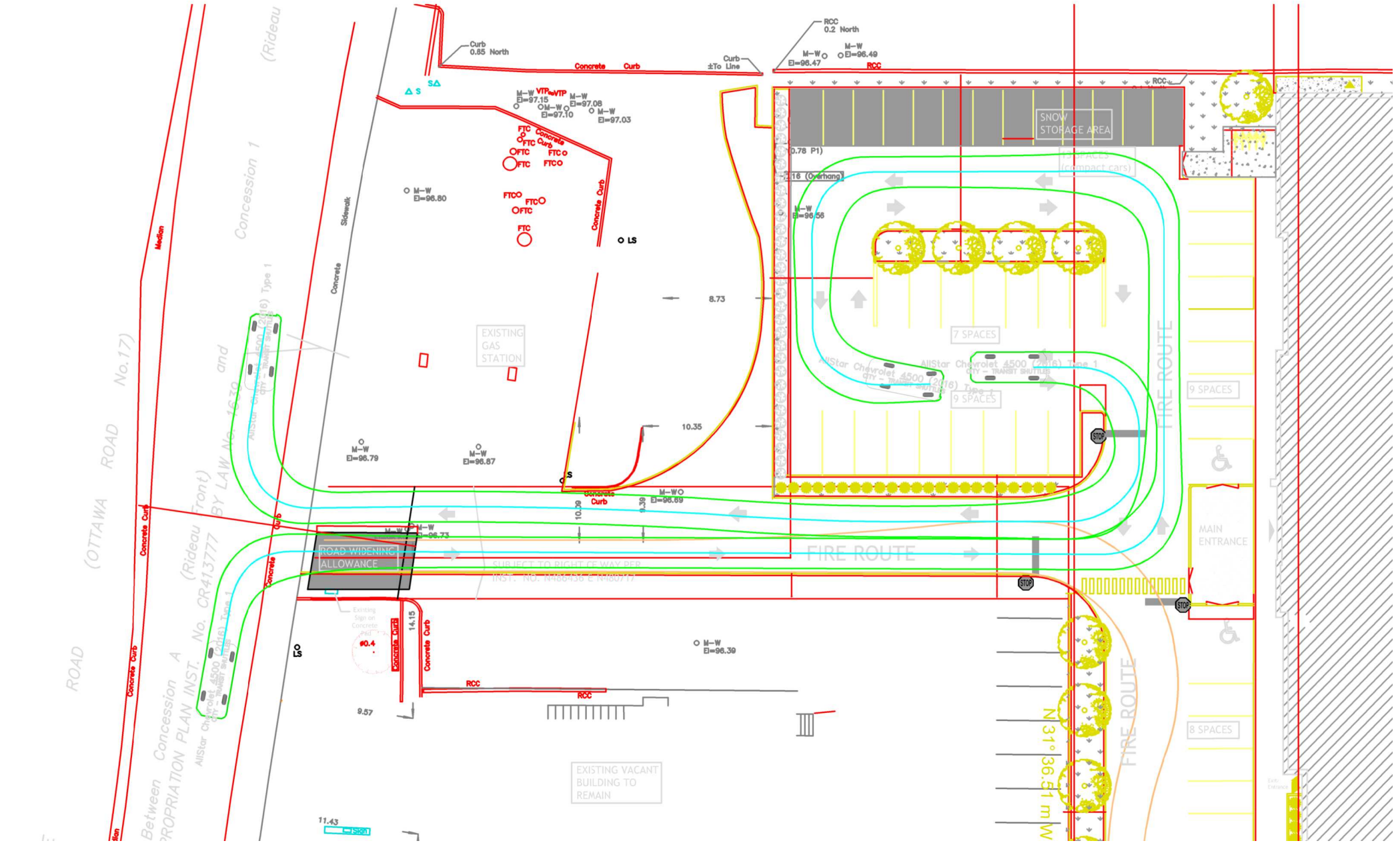
9 SPACES

6" HIGH CURB TYPICAL

N 58° 72.89 m E

EXISTING VEGETATION

Allstar Chevrole 4500 Transit Shuttle Bus



Appendix J:

MMLOS Analysis for Adjacent Road Segments

Multi-Modal Level of Service - Segments Form

Consultant	**Parsons**	**Project**	**478377**
Scenario	**1545A Merivale Road**	**Date**	**26-Oct-22**
Comments			

SEGMENTS		**Street A**	Merivale Rd	Section	Mitigation	Section	Section	Section	Section	Section	Section
			1	2	3	4	5	6	7	8	9
Pedestrian	Sidewalk Width Boulevard Width		1.5 m 0.5 - 2 m		≥ 2 m > 2 m						
	Avg Daily Curb Lane Traffic Volume		> 3000		> 3000						
	Operating Speed On-Street Parking		> 60 km/h no		≤ 30 km/h no						
	Exposure to Traffic PLoS	**-**	**E**	-	**A**	-	-	-	-	-	-
	Effective Sidewalk Width										
	Pedestrian Volume										
	Crowding PLoS		-	-	-	-	-	-	-	-	-
	Level of Service		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Bicycle	Type of Cycling Facility	**F**	Mixed Traffic		Curbside Bike Lane						
	Number of Travel Lanes		4-5 lanes total		2 ea. dir. (w median)						
	Operating Speed		≥ 60 km/h		>50 to 70 km/h						
	# of Lanes & Operating Speed LoS		**F**	-	**C**	-	-	-	-	-	-
	Bike Lane (+ Parking Lane) Width				≥ 1.8 m						
	Bike Lane Width LoS		-	-	**A**	-	-	-	-	-	-
	Bike Lane Blockages				Rare						
	Blockage LoS		-	-	**A**	-	-	-	-	-	-
	Median Refuge Width (no median = < 1.8 m)		< 1.8 m refuge		< 1.8 m refuge						
	No. of Lanes at Unsignalized Crossing		≤ 3 lanes		≤ 3 lanes						
	Sidestreet Operating Speed		>40 to 50 km/h		>40 to 50 km/h						
	Unsignalized Crossing - Lowest LoS		**B**	-	**B**	-	-	-	-	-	-
	Level of Service		**F**	**-**	**C**	**-**	**-**	**-**	**-**	**-**	**-**
Transit	Facility Type	**D**	Mixed Traffic								
	Friction or Ratio Transit:Posted Speed		Vt/Vp ≥ 0.8								
	Level of Service		**D**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Truck	Truck Lane Width	**A**	> 3.7 m								
	Travel Lanes per Direction		> 1								
	Level of Service		**A**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Appendix K:

Transportation Demand Management (TDM)

TDM-Supportive Development Design and Infrastructure Checklist:
Non-Residential Developments (office, institutional, retail or industrial)

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: *Non-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	☑ building located as close as possible based on parcel
BASIC	1.1.2	Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	☑ entrance straight line to road and aisle
BASIC	1.1.3	Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	☑ modern design
	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)*	☑ not within 600m, but does provide sidewalk connectivity to Merivale and transit routes
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)*	☑ Direct sidewalk from entrance to Merivale Road

	TDM-supportive design & infrastructure measures: *Non-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)*	☑ Sidewalks to meet City Standards
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)*	☑ Sidewalks to meet City Standards
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)*	☑ Internal sidewalk connects to existing facilities on Merivale Road
BASIC	1.2.6	Provide safe, direct and attractive walking routes from building entrances to nearby transit stops	☑ Sidewalk connects to Merivale which has transit routes
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: *Non-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)*	☑ Bike racks proposed outdoors on northwest end of building
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)*	☑ meets bike parking minimums
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)*	☑ all horizontal parking
BASIC	2.1.4	Provide bicycle parking spaces equivalent to the expected number of commuter cyclists (assuming the cycling mode share target is met), plus the expected peak number of customer/visitor cyclists	☐
BETTER	2.1.5	Provide bicycle parking spaces equivalent to the expected number of commuter and customer/visitor cyclists, plus an additional buffer (e.g. 25 percent extra) to encourage other cyclists and ensure adequate capacity in peak cycling season	☐
	2.2	**Secure bicycle parking**	
REQUIRED	2.2.1	Where more than 50 bicycle parking spaces are provided for a single office 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)*	☑ Less than 50 bike parking spaces
BETTER	2.2.2	Provide secure bicycle parking spaces equivalent to the expected number of commuter cyclists (assuming the cycling mode share target is met)	☐
	2.3	**Shower & change facilities**	
BASIC	2.3.1	Provide shower and change facilities for the use of active commuters	☐
BETTER	2.3.2	In addition to shower and change facilities, provide dedicated lockers, grooming stations, drying racks and laundry facilities for the use of active commuters	☐
	2.4	**Bicycle repair station**	
BETTER	2.4.1	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)	☐

	TDM-supportive design & infrastructure measures: *Non-residential developments*		Check if completed & add descriptions, explanations or plan/drawing references
	3.	**TRANSIT**	
	3.1	**Customer amenities**	
BASIC	3.1.1	Provide shelters, lighting and benches at any on-site transit stops	☐
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	☐
BETTER	3.1.3	Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	☐
	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	☐
	4.2	**Carpool parking**	
BASIC	4.2.1	Provide signed parking spaces for carpools in a priority location close to a major building entrance, sufficient in number to accommodate the mode share target for carpools	☐
BETTER	4.2.2	At large developments, provide spaces for carpools in a separate, access-controlled parking area to simplify enforcement	☐
	5.	**CARSHARING & BIKESHARING**	
	5.1	**Carshare parking spaces**	
BETTER	5.1.1	Provide carshare parking spaces in permitted non-residential zones, occupying either required or provided parking spaces *(see Zoning By-law Section 94)*	☐
	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	☐

		TDM-supportive design & infrastructure measures: *Non-residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	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	☐ Car parking meets bylaw
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	Separate short-term and long-term parking areas using signage or physical barriers, to permit access controls and simplify enforcement (i.e. to discourage employees from parking in visitor spaces, and vice versa)	☑ underground parking proposed for staff. Surface parking proposed as hourly paid rate.
	7.	**OTHER**	
	7.1	**On-site amenities to minimize off-site trips**	
BETTER	7.1.1	Provide on-site amenities to minimize mid-day or mid-commute errands	☐

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	☑ Area maps to be included at 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	☑ Transit schedules to be included 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)	☑ Paid hourly parking proposed

		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	☑ Travel option package to be provided to employees
		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	☐

Appendix L:

MMLOS Analysis for Signalized Intersections

Multi-Modal Level of Service - Intersections Form

Consultant	Parsons	**Project**	478377
Scenario	1545A Merivale Road	**Date**	Oct. 26, 2022
Comments			

Unlocked Rows for Replicating

INTERSECTIONS		Clyde/Merivale				Capilano/Merivale				Emerald Plaza/Merivale				Meadowland/Merivale			
Crossing Side		NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
Pedestrian	Lanes	7	8	7	7	10+	9	7	6	8	8	7	7	8	8	7	7
	Median	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	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	Protected	Protected	Protected/ Permissive	Protected/ Permissive	Permissive	Permissive	Protected/ Permissive	Protected/ Permissive	Permissive	Permissive	Protected	Protected	Protected/ Permissive	Protected/ Permissive	Protected/ Permissive	Protected/ Permissive
	Conflicting Right Turns	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	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
	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 allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed
	Ped Signal Leading Interval?	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
	Right Turn Channel	No Channel	Conventional with Receiving Lane	Conventional with Receiving Lane	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	Conv'tl without Receiving Lane	Conventional with Receiving Lane	Conv'tl without Receiving Lane	Conventional with Receiving Lane
	Corner Radius	10-15m	>25m	>25m	10-15m	5-10m	5-10m	5-10m	5-10m	10-15m	10-15m	10-15m	10-15m	15-25m	15-25m	15-25m	15-25m
	Crosswalk Type	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	Std transverse markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Std transverse markings	Std transverse markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings
	PETSI Score	**12**	**-6**	**2**	**4**	**-41**	**-25**	**8**	**21**	**-9**	**-9**	**12**	**12**	**-7**	**-10**	**9**	**6**
	Ped. Exposure to Traffic LoS	**F**	**F**	**F**	**F**	**#N/A**	**#N/A**	**F**	**F**	**F**	**F**	**F**	**F**	**F**	**F**	**F**	**F**
	Cycle Length	130	130	130	130	130	130	130	130	130	130	130	130	130	130	130	130
	Effective Walk Time	27	27	24	24	36	36	27	27	29	29	25	25	24	24	32	32
	Average Pedestrian Delay	**41**	**41**	**43**	**43**	**34**	**34**	**41**	**41**	**39**	**39**	**42**	**42**	**43**	**43**	**37**	**37**
	Pedestrian Delay LoS	**E**	**E**	**E**	**E**	**D**	**D**	**E**	**E**	**D**	**D**	**E**	**E**	**E**	**E**	**D**	**D**
	Level of Service	**F**	**F**	**F**	**F**	**#N/A**	**#N/A**	**F**	**F**	**F**	**F**	**F**	**F**	**F**	**F**	**F**	**F**
		F				**#N/A**				**F**				**F**			
Approach From		NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
Bicycle	Bicycle Lane Arrangement on Approach	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic
	Right Turn Lane Configuration	≤ 50 m	> 50 m	≤ 50 m	≤ 50 m	> 50 m	≤ 50 m	≤ 50 m	≤ 50 m	≤ 50 m	≤ 50 m	≤ 50 m	≤ 50 m	> 50 m	> 50 m	> 50 m	> 50 m
	Right Turning Speed	≤ 25 km/h	>25 km/h	>25 km/h	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h	>25 km/h	>25 km/h	>25 km/h	>25 km/h
	Cyclist relative to RT motorists	**D**	**F**	**E**	**D**	**F**	**D**	**D**	**D**	**D**	**D**	**D**	**D**	**F**	**F**	**F**	**F**
	Separated or Mixed Traffic	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**
	Left Turn Approach	≥ 2 lanes crossed	≥ 2 lanes crossed	One lane crossed	One lane crossed	≥ 2 lanes crossed	≥ 2 lanes crossed	One lane crossed	One lane crossed	≥ 2 lanes crossed	≥ 2 lanes crossed	One lane crossed	One lane crossed	≥ 2 lanes crossed	≥ 2 lanes crossed	≥ 2 lanes crossed	≥ 2 lanes crossed
	Operating Speed	≥ 60 km/h	≥ 60 km/h	≥ 60 km/h	≥ 60 km/h	≥ 60 km/h	≥ 60 km/h	> 40 to ≤ 50 km/h	> 40 to ≤ 50 km/h	≥ 60 km/h	≥ 60 km/h	> 40 to ≤ 50 km/h	> 40 to ≤ 50 km/h	≥ 60 km/h	≥ 60 km/h	≥ 60 km/h	≥ 60 km/h
	Left Turning Cyclist	**F**	**F**	**F**	**F**	**F**	**F**	**D**	**D**	**F**	**F**	**D**	**D**	**F**	**F**	**F**	**F**
	Level of Service	**F**	**F**	**F**	**F**	**F**	**F**	**D**	**D**	**F**	**F**	**D**	**D**	**F**	**F**	**F**	**F**
		F				**F**				**F**				**F**			
Transit	Average Signal Delay	> 40 sec	> 40 sec	≤ 10 sec		≤ 20 sec	≤ 30 sec			≤ 20 sec	≤ 20 sec			> 40 sec	≤ 40 sec	> 40 sec	> 40 sec
	Level of Service	**F**	**F**	**B**	**-**	**C**	**D**	**-**	**-**	**C**	**C**	**-**	**-**	**F**	**E**	**F**	**F**
		F				**D**				**C**				**F**			
Truck	Effective Corner Radius	10 - 15 m	> 15 m	> 15 m	10 - 15 m	< 10 m	< 10 m	< 10 m	< 10 m	10 - 15 m	10 - 15 m	10 - 15 m	10 - 15 m	> 15 m	> 15 m	> 15 m	> 15 m
	Number of Receiving Lanes on Departure from Intersection		≥ 2	≥ 2	≥ 2			≥ 2	≥ 2			≥ 2	≥ 2			≥ 2	≥ 2
	Level of Service	**-**	**A**	**A**	**B**	**-**	**-**	**D**	**D**	**-**	**-**	**B**	**B**	**-**	**-**	**A**	**A**
		B				**D**				**B**				**A**			
Auto	Volume to Capacity Ratio																
	Level of Service	**-**				**-**				**-**				**-**			

Appendix M:

Future 2023 Synchro Analysis

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	25	74	21	364	37	65	8	34	767	824	23	601
Future Volume (vph)	25	74	21	364	37	65	8	34	767	824	23	601
Satd. Flow (prot)	1695	1715	0	3288	1596	0	0	1695	3390	1517	1695	3375
Flt Permitted	0.950			0.950				0.384			0.311	
Satd. Flow (perm)	1689	1715	0	3247	1596	0	0	676	3390	1481	553	3375
Satd. Flow (RTOR)		10			62					824		2
Lane Group Flow (vph)	25	95	0	364	102	0	0	42	767	824	23	615
Turn Type	Prot	NA		Prot	NA		Perm	Perm	NA	Perm	Perm	NA
Protected Phases	7	4		3	8				2			6
Permitted Phases							2	2		2	6	
Detector Phase	7	4		3	8		2	2	2	2	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.8	33.8		11.2	33.2		30.0	30.0	30.0	30.0	30.0	30.0
Total Split (s)	33.0	34.0		33.0	34.0		63.0	63.0	63.0	63.0	63.0	63.0
Total Split (%)	25.4%	26.2%		25.4%	26.2%		48.5%	48.5%	48.5%	48.5%	48.5%	48.5%
Yellow Time (s)	3.0	3.0		3.7	3.7		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.8	3.8		2.5	2.5		2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8	6.8		6.2	6.2			6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	7.5	14.5		19.6	31.8			76.8	76.8	76.8	76.8	76.8
Actuated g/C Ratio	0.06	0.11		0.15	0.24			0.59	0.59	0.59	0.59	0.59
v/c Ratio	0.26	0.47		0.73	0.23			0.11	0.38	0.68	0.07	0.31
Control Delay	64.4	54.5		61.6	18.0			24.6	21.9	12.9	16.0	15.3
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.2	0.0	0.0
Total Delay	64.4	54.5		61.6	18.0			24.6	21.9	13.1	16.0	15.3
LOS	E	D		E	B			C	C	B	B	B
Approach Delay		56.6			52.0				17.5			15.3
Approach LOS		E			D				B			B
Queue Length 50th (m)	6.3	21.2		46.5	8.7			4.7	47.1	31.4	2.3	36.9
Queue Length 95th (m)	15.3	34.0		60.2	20.1			m13.5	92.8	115.0	9.0	68.6
Internal Link Dist (m)		214.0			445.3				280.9			385.6
Turn Bay Length (m)	40.0			95.0				85.0			80.0	
Base Capacity (vph)	341	366		677	447			399	2003	1212	326	1995
Starvation Cap Reductn	0	0		0	0			0	0	50	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	0.07	0.26		0.54	0.23			0.11	0.38	0.71	0.07	0.31

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 98 (75%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	14
Future Volume (vph)	14
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Satd. Flow (RTOR)	
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

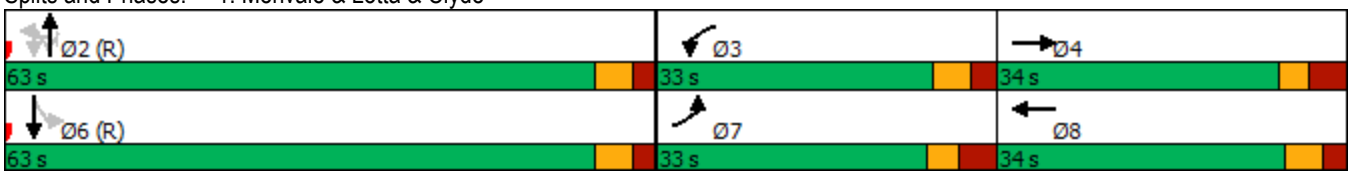
Intersection Summary

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 24.3	Intersection LOS: C
Intersection Capacity Utilization 90.9%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 1: Merivale & Lotta & Clyde



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	16	20	34	10	35	19	1598	35	35	976	5
Future Volume (vph)	38	16	20	34	10	35	19	1598	35	35	976	5
Satd. Flow (prot)	1695	1621	0	1695	1576	0	1695	3390	1517	1695	3390	1517
Flt Permitted	0.728			0.734			0.272			0.112		
Satd. Flow (perm)	1299	1621	0	1304	1576	0	485	3390	1472	200	3390	1471
Satd. Flow (RTOR)		20			35				86			86
Lane Group Flow (vph)	38	36	0	34	45	0	19	1598	35	35	976	5
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	43.2	43.2		43.2	43.2		11.1	33.1	33.1	11.1	33.1	33.1
Total Split (s)	43.0	43.0		43.0	43.0		12.0	75.0	75.0	12.0	75.0	75.0
Total Split (%)	33.1%	33.1%		33.1%	33.1%		9.2%	57.7%	57.7%	9.2%	57.7%	57.7%
Yellow Time (s)	3.0	3.0		3.0	3.0		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	4.2	4.2		4.2	4.2		2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2	7.2		7.2	7.2		6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	15.3	15.3		15.3	15.3		101.0	98.8	98.8	102.4	101.2	101.2
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.78	0.76	0.76	0.79	0.78	0.78
v/c Ratio	0.25	0.17		0.22	0.21		0.04	0.62	0.03	0.16	0.37	0.00
Control Delay	52.3	27.4		51.4	20.4		3.5	5.3	0.0	9.1	10.2	0.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.3	27.4		51.4	20.4		3.5	5.4	0.0	9.1	10.2	0.0
LOS	D	C		D	C		A	A	A	A	B	A
Approach Delay		40.2			33.8			5.2			10.1	
Approach LOS		D			C			A			B	
Queue Length 50th (m)	9.4	3.9		8.4	2.4		0.3	25.7	0.0	2.2	34.3	0.0
Queue Length 95th (m)	16.3	11.4		15.0	11.2		m1.4	42.9	m0.0	m5.7	120.5	m0.0
Internal Link Dist (m)		182.8			218.9			60.6			280.9	
Turn Bay Length (m)				35.0					15.0	100.0		
Base Capacity (vph)	357	460		359	459		431	2575	1138	226	2639	1164
Starvation Cap Reductn	0	0		0	0		0	36	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.08		0.09	0.10		0.04	0.63	0.03	0.15	0.37	0.00

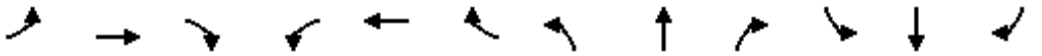
Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 116 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 8.7	Intersection LOS: A
Intersection Capacity Utilization 69.2%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 2: Merivale & Withrow/Capilano



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	6	3	13	0	90	6	1499	27	123	944	3
Future Volume (vph)	24	6	3	13	0	90	6	1499	27	123	944	3
Satd. Flow (prot)	1695	1684	0	0	1695	1517	1695	3379	0	3288	3390	0
Flt Permitted	0.749				0.752		0.950			0.950		
Satd. Flow (perm)	1317	1684	0	0	1331	1476	1688	3379	0	3284	3390	0
Satd. Flow (RTOR)		3				32		2				
Lane Group Flow (vph)	24	9	0	0	13	90	6	1526	0	123	947	0
Turn Type	Perm	NA		Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		4			8	1	5	2		1	6	
Permitted Phases	4			8		8						
Detector Phase	4	4		8	8	1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	35.5	35.5		35.5	35.5	11.7	11.7	31.2		11.7	31.2	
Total Split (s)	36.0	36.0		36.0	36.0	13.0	13.0	81.0		13.0	81.0	
Total Split (%)	27.7%	27.7%		27.7%	27.7%	10.0%	10.0%	62.3%		10.0%	62.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2	3.0	3.0	2.5		3.0	2.5	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5			6.5	6.7	6.7	6.2		6.7	6.2	
Lead/Lag						Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	
Act Effct Green (s)	17.6	17.6			17.6	21.8	6.0	91.3		8.3	106.1	
Actuated g/C Ratio	0.14	0.14			0.14	0.17	0.05	0.70		0.06	0.82	
v/c Ratio	0.13	0.04			0.07	0.33	0.08	0.64		0.59	0.34	
Control Delay	46.4	34.7			44.2	27.4	69.0	13.4		82.4	4.0	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	46.4	34.7			44.2	27.4	69.0	13.5		82.4	4.0	
LOS	D	C			D	C	E	B		F	A	
Approach Delay		43.2			29.5			13.7			13.0	
Approach LOS		D			C			B			B	
Queue Length 50th (m)	5.9	1.5			3.2	12.3	1.4	150.2		16.5	22.2	
Queue Length 95th (m)	12.4	5.9			8.3	23.2	m1.6	m197.1		#31.3	29.2	
Internal Link Dist (m)		58.9			208.4			286.8			128.3	
Turn Bay Length (m)										100.0		
Base Capacity (vph)	298	384			302	276	83	2373		209	2766	
Starvation Cap Reductn	0	0			0	0	0	0		0	0	
Spillback Cap Reductn	0	0			0	0	0	20		0	0	
Storage Cap Reductn	0	0			0	0	0	0		0	0	
Reduced v/c Ratio	0.08	0.02			0.04	0.33	0.07	0.65		0.59	0.34	

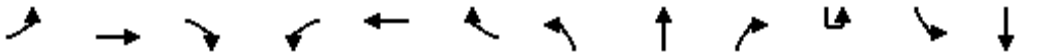
Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 108 (83%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 14.4	Intersection LOS: B
Intersection Capacity Utilization 79.0%	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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Merivale & Emerald Plaza



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	360	380	122	83	227	212	90	1265	85	34	94	765
Future Volume (vph)	360	380	122	83	227	212	90	1265	85	34	94	765
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	3390	1517	0	1695	3390
Flt Permitted	0.400			0.516			0.306				0.089	
Satd. Flow (perm)	705	3390	1474	915	3390	1469	543	3390	1471	0	159	3390
Satd. Flow (RTOR)			130			130			134			
Lane Group Flow (vph)	360	380	122	83	227	212	90	1265	85	0	128	765
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	custom	pm+pt	NA
Protected Phases	7	4		3	8		5	2			1	6
Permitted Phases	4		4	8		8	2		2	1	6	
Detector Phase	7	4	4	3	8	8	5	2	2	1	1	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	5.0	10.0
Minimum Split (s)	11.5	30.5	30.5	11.5	30.5	30.5	11.0	38.0	38.0	11.0	11.0	38.0
Total Split (s)	23.0	33.0	33.0	23.0	33.0	33.0	11.0	63.0	63.0	11.0	11.0	63.0
Total Split (%)	17.7%	25.4%	25.4%	17.7%	25.4%	25.4%	8.5%	48.5%	48.5%	8.5%	8.5%	48.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.0		6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	None	C-Max
Act Effct Green (s)	39.0	23.4	23.4	26.9	16.9	16.9	68.0	60.7	60.7		74.9	64.3
Actuated g/C Ratio	0.30	0.18	0.18	0.21	0.13	0.13	0.52	0.47	0.47		0.58	0.49
v/c Ratio	1.07	0.62	0.33	0.33	0.52	0.70	0.26	0.80	0.11		0.58	0.46
Control Delay	107.9	53.6	8.5	35.5	55.8	32.9	14.8	34.9	0.9		42.4	35.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	107.9	53.6	8.5	35.5	55.8	32.9	14.8	34.9	0.9		42.4	35.2
LOS	F	D	A	D	E	C	B	C	A		D	D
Approach Delay		69.9			43.3			31.6				33.5
Approach LOS		E			D			C				C
Queue Length 50th (m)	~95.5	49.3	0.0	16.0	29.7	20.3	8.7	140.6	0.0		20.5	63.1
Queue Length 95th (m)	#114.1	62.1	14.1	26.0	39.4	44.3	19.3	181.1	2.2		#60.4	129.0
Internal Link Dist (m)		169.3			250.3			97.3				286.8
Turn Bay Length (m)	100.0		120.0	130.0		105.0	85.0		95.0		140.0	
Base Capacity (vph)	337	710	411	334	691	402	348	1581	757		220	1675
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0		0	0
Reduced v/c Ratio	1.07	0.54	0.30	0.25	0.33	0.53	0.26	0.80	0.11		0.58	0.46

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 61 (47%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	113
Future Volume (vph)	113
Satd. Flow (prot)	1517
Flt Permitted	
Satd. Flow (perm)	1468
Satd. Flow (RTOR)	134
Lane Group Flow (vph)	113
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Detector Phase	6
Switch Phase	
Minimum Initial (s)	10.0
Minimum Split (s)	38.0
Total Split (s)	63.0
Total Split (%)	48.5%
Yellow Time (s)	3.7
All-Red Time (s)	2.3
Lost Time Adjust (s)	0.0
Total Lost Time (s)	6.0
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Recall Mode	C-Max
Act Effct Green (s)	64.3
Actuated g/C Ratio	0.49
v/c Ratio	0.14
Control Delay	12.6
Queue Delay	0.0
Total Delay	12.6
LOS	B
Approach Delay	
Approach LOS	
Queue Length 50th (m)	2.4
Queue Length 95th (m)	29.4
Internal Link Dist (m)	
Turn Bay Length (m)	175.0
Base Capacity (vph)	793
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.14

Intersection Summary

Maximum v/c Ratio: 1.07

Intersection Signal Delay: 42.3	Intersection LOS: D
Intersection Capacity Utilization 102.6%	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: 5: Merivale & Meadowlands

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	14	0	0	15	0	1603	58	0	1046	15
Future Vol, veh/h	0	0	14	0	0	15	0	1603	58	0	1046	15
Conflicting Peds, #/hr	0	0	2	2	0	0	11	0	15	15	0	11
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	14	0	0	15	0	1603	58	0	1046	15

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	544	-	-	846	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	483	0	0	306	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	478	-	-	302	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.8	17.5	0	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	478	302	-	-
HCM Lane V/C Ratio	-	-	0.029	0.05	-	-
HCM Control Delay (s)	-	-	12.8	17.5	-	-
HCM Lane LOS	-	-	B	C	-	-
HCM 95th %tile Q(veh)	-	-	0.1	0.2	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	32	43	35	833	119	158	35	71	851	622	67	721
Future Volume (vph)	32	43	35	833	119	158	35	71	851	622	67	721
Satd. Flow (prot)	1695	1646	0	3288	1614	0	0	1695	3390	1517	1695	3365
Flt Permitted	0.950			0.950				0.218			0.195	
Satd. Flow (perm)	1688	1646	0	3250	1614	0	0	385	3390	1445	348	3365
Satd. Flow (RTOR)		28			46					573		3
Lane Group Flow (vph)	32	78	0	833	277	0	0	106	851	622	67	748
Turn Type	Prot	NA		Prot	NA		custom	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	7	4		3	8			5	2		1	6
Permitted Phases							5	2		2	6	
Detector Phase	7	4		3	8		5	5	2	2	1	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	5.0	10.0	10.0	5.0	10.0
Minimum Split (s)	11.8	33.8		11.2	33.2		10.3	10.3	30.0	30.0	10.3	30.0
Total Split (s)	44.0	34.0		44.0	34.0		12.0	12.0	41.0	41.0	12.0	41.0
Total Split (%)	33.6%	26.0%		33.6%	26.0%		9.2%	9.2%	31.3%	31.3%	9.2%	31.3%
Yellow Time (s)	3.0	3.0		3.7	3.7		3.3	3.3	3.7	3.7	3.3	3.7
All-Red Time (s)	3.8	3.8		2.5	2.5		2.0	2.0	2.3	2.3	2.0	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8	6.8		6.2	6.2			5.3	6.0	6.0	5.3	6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	8.0	16.8		36.1	46.7			59.6	52.3	52.3	56.9	49.2
Actuated g/C Ratio	0.06	0.13		0.28	0.36			0.45	0.40	0.40	0.43	0.38
v/c Ratio	0.31	0.33		0.92	0.46			0.42	0.63	0.68	0.30	0.59
Control Delay	65.9	35.5		61.7	28.2			29.6	38.3	9.2	27.3	38.3
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	0.0
Total Delay	65.9	35.5		61.7	28.2			29.6	38.3	9.2	27.3	38.3
LOS	E	D		E	C			C	D	A	C	D
Approach Delay		44.3			53.3				26.2			37.4
Approach LOS		D			D				C			D
Queue Length 50th (m)	8.1	12.5		105.9	49.4			14.4	93.8	8.0	8.9	81.2
Queue Length 95th (m)	18.4	24.7		#138.1	64.5			32.0	#152.5	56.4	21.8	119.8
Internal Link Dist (m)		214.0			445.3				280.9			385.6
Turn Bay Length (m)	40.0			95.0				85.0			80.0	
Base Capacity (vph)	481	363		948	605			254	1354	921	225	1265
Starvation Cap Reductn	0	0		0	0			0	0	0	0	0
Spillback Cap Reductn	0	0		0	0			0	0	0	0	0
Storage Cap Reductn	0	0		0	0			0	0	0	0	0
Reduced v/c Ratio	0.07	0.21		0.88	0.46			0.42	0.63	0.68	0.30	0.59

Intersection Summary
Cycle Length: 131
Actuated Cycle Length: 131
Offset: 98 (75%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	27
Future Volume (vph)	27
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Satd. Flow (RTOR)	
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

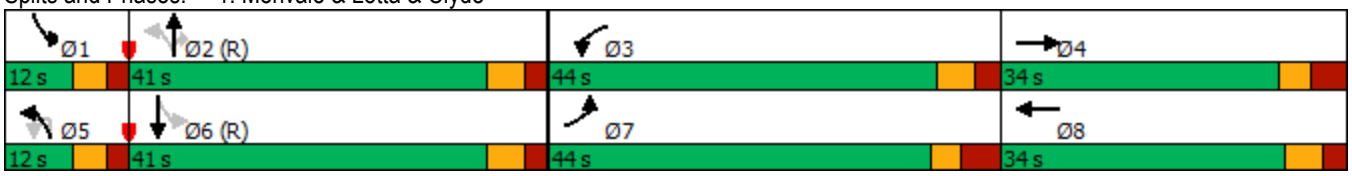
Intersection Summary

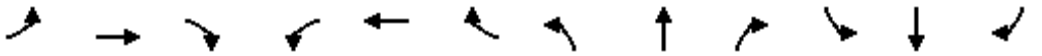
Maximum v/c Ratio: 0.92

Intersection Signal Delay: 37.6	Intersection LOS: D
Intersection Capacity Utilization 75.3%	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: 1: Merivale & Lotta & Clyde





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	8	26	63	14	52	39	1651	32	78	1682	64
Future Volume (vph)	31	8	26	63	14	52	39	1651	32	78	1682	64
Satd. Flow (prot)	1695	1554	0	1695	1550	0	1695	3390	1517	1695	3390	1517
Flt Permitted	0.714			0.735			0.085			0.087		
Satd. Flow (perm)	1265	1554	0	1301	1550	0	152	3390	1420	155	3390	1433
Satd. Flow (RTOR)		26			52				86			86
Lane Group Flow (vph)	31	34	0	63	66	0	39	1651	32	78	1682	64
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	43.2	43.2		43.2	43.2		11.1	33.1	33.1	11.1	33.1	33.1
Total Split (s)	44.0	44.0		44.0	44.0		14.0	72.0	72.0	14.0	72.0	72.0
Total Split (%)	33.8%	33.8%		33.8%	33.8%		10.8%	55.4%	55.4%	10.8%	55.4%	55.4%
Yellow Time (s)	3.0	3.0		3.0	3.0		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	4.2	4.2		4.2	4.2		2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2	7.2		7.2	7.2		6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	20.7	20.7		20.7	20.7		93.7	89.6	89.6	95.3	90.4	90.4
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.72	0.69	0.69	0.73	0.70	0.70
v/c Ratio	0.15	0.13		0.30	0.23		0.21	0.71	0.03	0.39	0.71	0.06
Control Delay	43.0	17.6		47.7	15.4		7.2	11.8	0.1	13.2	20.5	1.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.0	17.6		47.7	15.4		7.2	11.8	0.1	13.2	20.6	1.7
LOS	D	B		D	B		A	B	A	B	C	A
Approach Delay		29.7			31.2			11.5			19.6	
Approach LOS		C			C			B			B	
Queue Length 50th (m)	7.5	1.9		15.7	3.4		1.1	45.6	0.0	3.3	115.5	0.0
Queue Length 95th (m)	14.0	9.6		24.3	13.6		m4.0	#260.3	m0.0	13.9	#269.8	4.2
Internal Link Dist (m)		182.8			218.9			60.6			280.9	
Turn Bay Length (m)				35.0					15.0	100.0		
Base Capacity (vph)	358	458		368	476		204	2336	1005	211	2357	1022
Starvation Cap Reductn	0	0		0	0		0	18	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	24	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.07		0.17	0.14		0.19	0.71	0.03	0.37	0.72	0.06

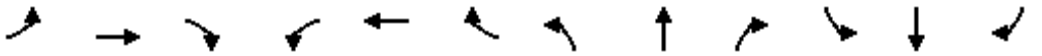
Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 76 (58%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 16.4	Intersection LOS: B
Intersection Capacity Utilization 83.9%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 2: Merivale & Withrow/Capilano



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	16	20	64	1	196	18	1295	40	241	1469	241
Future Volume (vph)	45	16	20	64	1	196	18	1295	40	241	1469	241
Satd. Flow (prot)	1695	1605	0	0	1700	1517	1695	3371	0	3288	3306	0
Flt Permitted	0.715				0.703		0.950			0.950		
Satd. Flow (perm)	1259	1605	0	0	1228	1476	1692	3371	0	3248	3306	0
Satd. Flow (RTOR)		20				38		4			22	
Lane Group Flow (vph)	45	36	0	0	65	196	18	1335	0	241	1710	0
Turn Type	Perm	NA		Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		4			8	1	5	2		1	6	
Permitted Phases	4			8		8						
Detector Phase	4	4		8	8	1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	35.5	35.5		35.5	35.5	11.7	11.7	31.2		11.7	31.2	
Total Split (s)	36.0	36.0		36.0	36.0	17.0	17.0	77.0		17.0	77.0	
Total Split (%)	27.7%	27.7%		27.7%	27.7%	13.1%	13.1%	59.2%		13.1%	59.2%	
Yellow Time (s)	3.3	3.3		3.3	3.3	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2	3.0	3.0	2.5		3.0	2.5	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5			6.5	6.7	6.7	6.2		6.7	6.2	
Lead/Lag						Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	
Act Effct Green (s)	18.0	18.0			18.0	28.9	7.0	82.8		13.0	97.8	
Actuated g/C Ratio	0.14	0.14			0.14	0.22	0.05	0.64		0.10	0.75	
v/c Ratio	0.26	0.15			0.38	0.54	0.20	0.62		0.73	0.69	
Control Delay	49.8	25.6			54.4	35.4	66.4	7.0		70.1	11.4	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	49.8	25.6			54.4	35.4	66.4	7.1		70.1	11.4	
LOS	D	C			D	D	E	A		E	B	
Approach Delay		39.0			40.1			7.8			18.7	
Approach LOS		D			D			A			B	
Queue Length 50th (m)	11.0	3.8			16.2	33.6	4.8	32.5		32.8	46.4	
Queue Length 95th (m)	20.2	12.3			27.2	49.3	m6.3	41.6		m#57.0	#97.9	
Internal Link Dist (m)		58.9			208.4			286.8			128.3	
Turn Bay Length (m)										100.0		
Base Capacity (vph)	285	379			278	362	134	2148		329	2491	
Starvation Cap Reductn	0	0			0	0	0	0		0	50	
Spillback Cap Reductn	0	0			0	0	0	55		0	0	
Storage Cap Reductn	0	0			0	0	0	0		0	0	
Reduced v/c Ratio	0.16	0.09			0.23	0.54	0.13	0.64		0.73	0.70	

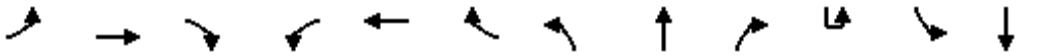
Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 65 (50%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 16.6	Intersection LOS: B
Intersection Capacity Utilization 87.2%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 4: Merivale & Emerald Plaza



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	166	307	154	182	492	170	195	1191	102	14	217	1105
Future Volume (vph)	166	307	154	182	492	170	195	1191	102	14	217	1105
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	3390	1517	0	1695	3390
Flt Permitted	0.232			0.460			0.148				0.083	
Satd. Flow (perm)	407	3390	1416	795	3390	1433	262	3390	1384	0	148	3390
Satd. Flow (RTOR)			154			130			134			
Lane Group Flow (vph)	166	307	154	182	492	170	195	1191	102	0	231	1105
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	custom	pm+pt	NA
Protected Phases	7	4		3	8		5	2			1	6
Permitted Phases	4		4	8		8	2		2	1	6	
Detector Phase	7	4	4	3	8	8	5	2	2	1	1	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	5.0	10.0
Minimum Split (s)	11.5	30.5	30.5	11.5	30.5	30.5	11.0	38.0	38.0	11.0	11.0	38.0
Total Split (s)	19.0	31.0	31.0	19.0	31.0	31.0	17.0	59.0	59.0	21.0	21.0	63.0
Total Split (%)	14.6%	23.8%	23.8%	14.6%	23.8%	23.8%	13.1%	45.4%	45.4%	16.2%	16.2%	48.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.0		6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	None	C-Max
Act Effct Green (s)	34.6	22.5	22.5	34.8	22.6	22.6	65.9	54.9	54.9		74.7	59.3
Actuated g/C Ratio	0.27	0.17	0.17	0.27	0.17	0.17	0.51	0.42	0.42		0.57	0.46
v/c Ratio	0.73	0.52	0.41	0.61	0.84	0.48	0.77	0.83	0.15		0.86	0.71
Control Delay	53.0	52.0	10.3	43.8	65.1	18.1	38.5	40.2	2.1		62.2	31.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	53.0	52.0	10.3	43.8	65.1	18.1	38.5	40.2	2.1		62.2	31.4
LOS	D	D	B	D	E	B	D	D	A		E	C
Approach Delay		42.0			51.0			37.4				31.5
Approach LOS		D			D			D				C
Queue Length 50th (m)	31.5	37.5	0.0	34.9	64.0	8.7	23.0	145.0	0.0		40.5	91.2
Queue Length 95th (m)	#52.9	52.0	18.1	54.4	83.2	29.9	#55.5	175.0	5.5		#89.9	106.6
Internal Link Dist (m)		169.3			250.3			97.3				286.8
Turn Bay Length (m)	100.0		120.0	130.0		105.0	85.0		95.0		140.0	
Base Capacity (vph)	233	638	391	301	638	375	258	1431	661		272	1546
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.71	0.48	0.39	0.60	0.77	0.45	0.76	0.83	0.15		0.85	0.71

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 61 (47%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	289
Future Volume (vph)	289
Satd. Flow (prot)	1517
Flt Permitted	
Satd. Flow (perm)	1412
Satd. Flow (RTOR)	289
Lane Group Flow (vph)	289
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Detector Phase	6
Switch Phase	
Minimum Initial (s)	10.0
Minimum Split (s)	38.0
Total Split (s)	63.0
Total Split (%)	48.5%
Yellow Time (s)	3.7
All-Red Time (s)	2.3
Lost Time Adjust (s)	0.0
Total Lost Time (s)	6.0
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Recall Mode	C-Max
Act Effct Green (s)	59.3
Actuated g/C Ratio	0.46
v/c Ratio	0.36
Control Delay	7.6
Queue Delay	0.0
Total Delay	7.6
LOS	A
Approach Delay	
Approach LOS	
Queue Length 50th (m)	1.0
Queue Length 95th (m)	30.8
Internal Link Dist (m)	
Turn Bay Length (m)	175.0
Base Capacity (vph)	801
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.36

Intersection Summary

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 38.5	Intersection LOS: D
Intersection Capacity Utilization 96.3%	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.

Splits and Phases: 5: Merivale & Meadowlands

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	18	0	0	51	0	1609	57	0	1846	39
Future Vol, veh/h	0	0	18	0	0	51	0	1609	57	0	1846	39
Conflicting Peds, #/hr	0	0	0	0	0	0	27	0	45	45	0	27
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	18	0	0	51	0	1609	57	0	1846	39

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	970	-	-	878	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	253	0	0	291	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	247	-	-	280	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20.7	20.7	0	0
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	247	280	-	-
HCM Lane V/C Ratio	-	-	0.073	0.182	-	-
HCM Control Delay (s)	-	-	20.7	20.7	-	-
HCM Lane LOS	-	-	C	C	-	-
HCM 95th %tile Q(veh)	-	-	0.2	0.7	-	-

Appendix N:

Future 2028 Synchro Analysis

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	25	74	21	379	37	94	8	34	767	831	37	601
Future Volume (vph)	25	74	21	379	37	94	8	34	767	831	37	601
Satd. Flow (prot)	1695	1715	0	3288	1573	0	0	1695	3390	1517	1695	3375
Flt Permitted	0.950			0.950				0.383			0.310	
Satd. Flow (perm)	1689	1715	0	3247	1573	0	0	674	3390	1481	552	3375
Satd. Flow (RTOR)		10			89					831		2
Lane Group Flow (vph)	25	95	0	379	131	0	0	42	767	831	37	615
Turn Type	Prot	NA		Prot	NA		Perm	Perm	NA	Perm	Perm	NA
Protected Phases	7	4		3	8				2			6
Permitted Phases							2	2		2	6	
Detector Phase	7	4		3	8		2	2	2	2	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.8	33.8		11.2	33.2		30.0	30.0	30.0	30.0	30.0	30.0
Total Split (s)	33.0	34.0		33.0	34.0		63.0	63.0	63.0	63.0	63.0	63.0
Total Split (%)	25.4%	26.2%		25.4%	26.2%		48.5%	48.5%	48.5%	48.5%	48.5%	48.5%
Yellow Time (s)	3.0	3.0		3.7	3.7		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.8	3.8		2.5	2.5		2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8	6.8		6.2	6.2			6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	7.5	14.5		20.2	32.3			76.3	76.3	76.3	76.3	76.3
Actuated g/C Ratio	0.06	0.11		0.16	0.25			0.59	0.59	0.59	0.59	0.59
v/c Ratio	0.26	0.47		0.74	0.29			0.11	0.39	0.69	0.11	0.31
Control Delay	64.4	54.5		61.5	15.5			25.0	22.3	13.1	16.8	15.6
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.2	0.0	0.0
Total Delay	64.4	54.5		61.5	15.5			25.0	22.3	13.3	16.8	15.6
LOS	E	D		E	B			C	C	B	B	B
Approach Delay		56.6			49.7				17.8			15.6
Approach LOS		E			D				B			B
Queue Length 50th (m)	6.3	21.2		48.4	9.1			4.8	48.0	32.2	3.8	37.5
Queue Length 95th (m)	15.3	34.0		62.3	22.1			m13.2	92.9	116.6	13.1	69.2
Internal Link Dist (m)		214.0			445.3				280.9			385.6
Turn Bay Length (m)	40.0			95.0				85.0			80.0	
Base Capacity (vph)	341	366		677	465			395	1989	1212	323	1980
Starvation Cap Reductn	0	0		0	0			0	0	54	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	0.07	0.26		0.56	0.28			0.11	0.39	0.72	0.11	0.31

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 98 (75%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	14
Future Volume (vph)	14
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Satd. Flow (RTOR)	
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

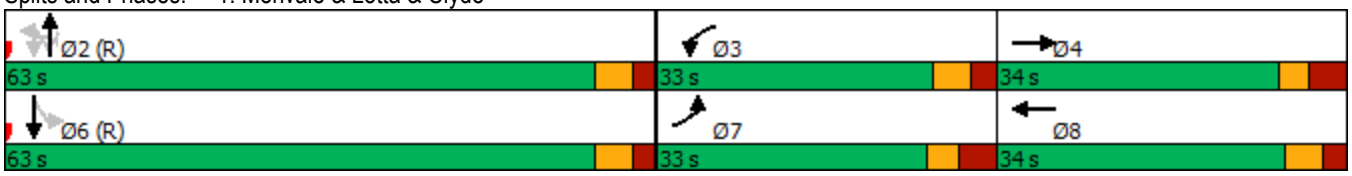
Intersection Summary

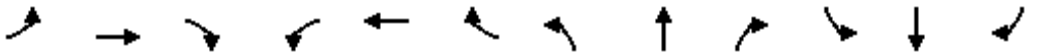
Maximum v/c Ratio: 0.74

Intersection Signal Delay: 24.5	Intersection LOS: C
Intersection Capacity Utilization 91.4%	ICU Level of Service F
Analysis Period (min) 15	

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

Splits and Phases: 1: Merivale & Lotta & Clyde





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	16	20	34	10	35	19	1605	35	35	991	5
Future Volume (vph)	38	16	20	34	10	35	19	1605	35	35	991	5
Satd. Flow (prot)	1695	1621	0	1695	1576	0	1695	3390	1517	1695	3390	1517
Flt Permitted	0.728			0.734			0.268			0.111		
Satd. Flow (perm)	1299	1621	0	1304	1576	0	477	3390	1472	198	3390	1471
Satd. Flow (RTOR)		20			35				86			86
Lane Group Flow (vph)	38	36	0	34	45	0	19	1605	35	35	991	5
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	43.2	43.2		43.2	43.2		11.1	33.1	33.1	11.1	33.1	33.1
Total Split (s)	43.0	43.0		43.0	43.0		12.0	75.0	75.0	12.0	75.0	75.0
Total Split (%)	33.1%	33.1%		33.1%	33.1%		9.2%	57.7%	57.7%	9.2%	57.7%	57.7%
Yellow Time (s)	3.0	3.0		3.0	3.0		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	4.2	4.2		4.2	4.2		2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2	7.2		7.2	7.2		6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	15.3	15.3		15.3	15.3		101.0	98.8	98.8	102.4	101.2	101.2
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.78	0.76	0.76	0.79	0.78	0.78
v/c Ratio	0.25	0.17		0.22	0.21		0.04	0.62	0.03	0.16	0.38	0.00
Control Delay	52.3	27.4		51.4	20.4		3.5	5.4	0.1	9.3	10.5	0.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.3	27.4		51.4	20.4		3.5	5.5	0.1	9.3	10.5	0.0
LOS	D	C		D	C		A	A	A	A	B	A
Approach Delay		40.2			33.8			5.3			10.4	
Approach LOS		D			C			A			B	
Queue Length 50th (m)	9.4	3.9		8.4	2.4		0.3	25.8	0.0	2.3	36.5	0.0
Queue Length 95th (m)	16.3	11.4		15.0	11.2		m1.4	44.0	m0.0	m5.8	123.4	m0.0
Internal Link Dist (m)		182.8			218.9			60.6			280.9	
Turn Bay Length (m)				35.0					15.0	100.0		
Base Capacity (vph)	357	460		359	459		426	2575	1138	224	2639	1164
Starvation Cap Reductn	0	0		0	0		0	36	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.08		0.09	0.10		0.04	0.63	0.03	0.16	0.38	0.00

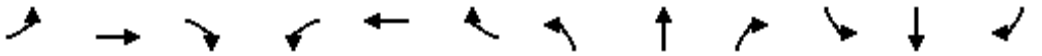
Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 116 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 8.9	Intersection LOS: A
Intersection Capacity Utilization 69.4%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 2: Merivale & Withrow/Capilano



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	6	3	13	0	90	6	1506	27	123	959	3
Future Volume (vph)	24	6	3	13	0	90	6	1506	27	123	959	3
Satd. Flow (prot)	1695	1684	0	0	1695	1517	1695	3379	0	3288	3390	0
Flt Permitted	0.749				0.752		0.950			0.950		
Satd. Flow (perm)	1317	1684	0	0	1331	1476	1688	3379	0	3284	3390	0
Satd. Flow (RTOR)		3				31		2				
Lane Group Flow (vph)	24	9	0	0	13	90	6	1533	0	123	962	0
Turn Type	Perm	NA		Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		4			8	1	5	2		1	6	
Permitted Phases	4			8		8						
Detector Phase	4	4		8	8	1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	35.5	35.5		35.5	35.5	11.7	11.7	31.2		11.7	31.2	
Total Split (s)	36.0	36.0		36.0	36.0	13.0	13.0	81.0		13.0	81.0	
Total Split (%)	27.7%	27.7%		27.7%	27.7%	10.0%	10.0%	62.3%		10.0%	62.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2	3.0	3.0	2.5		3.0	2.5	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5			6.5	6.7	6.7	6.2		6.7	6.2	
Lead/Lag						Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	
Act Effct Green (s)	17.6	17.6			17.6	21.8	6.0	91.3		8.3	106.1	
Actuated g/C Ratio	0.14	0.14			0.14	0.17	0.05	0.70		0.06	0.82	
v/c Ratio	0.13	0.04			0.07	0.33	0.08	0.65		0.59	0.35	
Control Delay	46.4	34.7			44.2	27.8	69.2	13.4		82.5	3.9	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	46.4	34.7			44.2	27.8	69.2	13.4		82.5	3.9	
LOS	D	C			D	C	E	B		F	A	
Approach Delay		43.2			29.8			13.6			12.8	
Approach LOS		D			C			B			B	
Queue Length 50th (m)	5.9	1.5			3.2	12.6	1.4	151.5		16.5	22.2	
Queue Length 95th (m)	12.4	5.9			8.3	23.4	m1.6	m198.7		#31.3	29.3	
Internal Link Dist (m)		58.9			208.4			286.8			128.3	
Turn Bay Length (m)										100.0		
Base Capacity (vph)	298	384			302	275	83	2373		209	2766	
Starvation Cap Reductn	0	0			0	0	0	0		0	0	
Spillback Cap Reductn	0	0			0	0	0	21		0	0	
Storage Cap Reductn	0	0			0	0	0	0		0	0	
Reduced v/c Ratio	0.08	0.02			0.04	0.33	0.07	0.65		0.59	0.35	

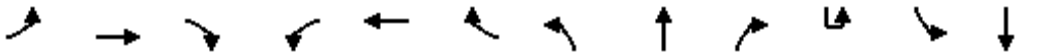
Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 108 (83%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 14.3	Intersection LOS: B
Intersection Capacity Utilization 79.2%	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: Merivale & Emerald Plaza



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	360	380	122	83	227	212	90	1272	85	34	94	780
Future Volume (vph)	360	380	122	83	227	212	90	1272	85	34	94	780
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	3390	1517	0	1695	3390
Flt Permitted	0.400			0.516			0.300				0.086	
Satd. Flow (perm)	705	3390	1474	915	3390	1469	533	3390	1471	0	153	3390
Satd. Flow (RTOR)			130			130			134			
Lane Group Flow (vph)	360	380	122	83	227	212	90	1272	85	0	128	780
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	custom	pm+pt	NA
Protected Phases	7	4		3	8		5	2			1	6
Permitted Phases	4		4	8		8	2		2	1	6	
Detector Phase	7	4	4	3	8	8	5	2	2	1	1	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	5.0	10.0
Minimum Split (s)	11.5	30.5	30.5	11.5	30.5	30.5	11.0	38.0	38.0	11.0	11.0	38.0
Total Split (s)	23.0	33.0	33.0	23.0	33.0	33.0	11.0	63.0	63.0	11.0	11.0	63.0
Total Split (%)	17.7%	25.4%	25.4%	17.7%	25.4%	25.4%	8.5%	48.5%	48.5%	8.5%	8.5%	48.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.0		6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	None	C-Max
Act Effct Green (s)	39.0	23.4	23.4	26.9	16.9	16.9	67.8	60.4	60.4		75.0	64.3
Actuated g/C Ratio	0.30	0.18	0.18	0.21	0.13	0.13	0.52	0.46	0.46		0.58	0.49
v/c Ratio	1.07	0.62	0.33	0.33	0.52	0.70	0.26	0.81	0.11		0.58	0.47
Control Delay	107.9	53.6	8.5	35.5	55.8	32.9	14.9	35.3	0.9		42.8	35.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	107.9	53.6	8.5	35.5	55.8	32.9	14.9	35.3	0.9		42.8	35.5
LOS	F	D	A	D	E	C	B	D	A		D	D
Approach Delay		69.9			43.3			32.0				33.8
Approach LOS		E			D			C				C
Queue Length 50th (m)	~95.5	49.3	0.0	16.0	29.7	20.3	8.7	142.2	0.0		20.9	65.2
Queue Length 95th (m)	#114.1	62.1	14.1	26.0	39.4	44.3	19.3	182.6	2.2		#61.9	131.3
Internal Link Dist (m)		169.3			250.3			97.3				286.8
Turn Bay Length (m)	100.0		120.0	130.0		105.0	85.0		95.0		140.0	
Base Capacity (vph)	337	710	411	334	691	402	343	1576	755		220	1675
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0		0	0
Reduced v/c Ratio	1.07	0.54	0.30	0.25	0.33	0.53	0.26	0.81	0.11		0.58	0.47

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 61 (47%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	113
Future Volume (vph)	113
Satd. Flow (prot)	1517
Flt Permitted	
Satd. Flow (perm)	1468
Satd. Flow (RTOR)	134
Lane Group Flow (vph)	113
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Detector Phase	6
Switch Phase	
Minimum Initial (s)	10.0
Minimum Split (s)	38.0
Total Split (s)	63.0
Total Split (%)	48.5%
Yellow Time (s)	3.7
All-Red Time (s)	2.3
Lost Time Adjust (s)	0.0
Total Lost Time (s)	6.0
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Recall Mode	C-Max
Act Effct Green (s)	64.3
Actuated g/C Ratio	0.49
v/c Ratio	0.14
Control Delay	12.5
Queue Delay	0.0
Total Delay	12.5
LOS	B
Approach Delay	
Approach LOS	
Queue Length 50th (m)	2.4
Queue Length 95th (m)	29.4
Internal Link Dist (m)	
Turn Bay Length (m)	175.0
Base Capacity (vph)	793
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.14

Intersection Summary

Maximum v/c Ratio: 1.07

Intersection Signal Delay: 42.5	Intersection LOS: D
Intersection Capacity Utilization 102.8%	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: 5: Merivale & Meadowlands

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	14	0	0	15	0	1610	58	0	1061	15
Future Vol, veh/h	0	0	14	0	0	15	0	1610	58	0	1061	15
Conflicting Peds, #/hr	0	0	2	2	0	0	11	0	15	15	0	11
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	14	0	0	15	0	1610	58	0	1061	15

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	551	-	-	849	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	478	0	0	304	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	473	-	-	300	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.8	17.6	0	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	473	300	-	-
HCM Lane V/C Ratio	-	-	0.03	0.05	-	-
HCM Control Delay (s)	-	-	12.8	17.6	-	-
HCM Lane LOS	-	-	B	C	-	-
HCM 95th %tile Q(veh)	-	-	0.1	0.2	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	32	43	35	844	119	177	35	71	851	637	93	721
Future Volume (vph)	32	43	35	844	119	177	35	71	851	637	93	721
Satd. Flow (prot)	1695	1646	0	3288	1607	0	0	1695	3390	1517	1695	3365
Flt Permitted	0.950			0.950				0.226			0.176	
Satd. Flow (perm)	1689	1646	0	3250	1607	0	0	400	3390	1445	314	3365
Satd. Flow (RTOR)		28			52					587		3
Lane Group Flow (vph)	32	78	0	844	296	0	0	106	851	637	93	748
Turn Type	Prot	NA		Prot	NA		custom	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	7	4		3	8			5	2		1	6
Permitted Phases							5	2		2	6	
Detector Phase	7	4		3	8		5	5	2	2	1	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	5.0	10.0	10.0	5.0	10.0
Minimum Split (s)	11.8	33.8		11.2	33.2		10.3	10.3	30.0	30.0	10.3	30.0
Total Split (s)	44.0	34.0		44.0	34.0		12.0	12.0	41.0	41.0	12.0	41.0
Total Split (%)	33.6%	26.0%		33.6%	26.0%		9.2%	9.2%	31.3%	31.3%	9.2%	31.3%
Yellow Time (s)	3.0	3.0		3.7	3.7		3.3	3.3	3.7	3.7	3.3	3.7
All-Red Time (s)	3.8	3.8		2.5	2.5		2.0	2.0	2.3	2.3	2.0	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8	6.8		6.2	6.2			5.3	6.0	6.0	5.3	6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	8.0	16.8		36.3	46.9			57.9	49.3	49.3	57.3	49.0
Actuated g/C Ratio	0.06	0.13		0.28	0.36			0.44	0.38	0.38	0.44	0.37
v/c Ratio	0.31	0.33		0.93	0.49			0.42	0.67	0.70	0.43	0.59
Control Delay	65.9	35.5		62.5	28.4			29.6	40.2	9.7	30.5	38.5
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	0.0
Total Delay	65.9	35.5		62.5	28.4			29.6	40.2	9.7	30.5	38.5
LOS	E	D		E	C			C	D	A	C	D
Approach Delay		44.3			53.6				27.3			37.6
Approach LOS		D			D				C			D
Queue Length 50th (m)	8.1	12.5		107.7	53.0			14.4	95.5	8.3	12.5	81.2
Queue Length 95th (m)	18.4	24.7		#141.4	68.6			32.0	#152.5	58.6	28.4	119.8
Internal Link Dist (m)		214.0			445.3				280.9			385.6
Turn Bay Length (m)	40.0			95.0				85.0			80.0	
Base Capacity (vph)	481	363		948	609			255	1274	909	218	1260
Starvation Cap Reductn	0	0		0	0			0	0	0	0	0
Spillback Cap Reductn	0	0		0	0			0	0	0	0	0
Storage Cap Reductn	0	0		0	0			0	0	0	0	0
Reduced v/c Ratio	0.07	0.21		0.89	0.49			0.42	0.67	0.70	0.43	0.59

Intersection Summary
Cycle Length: 131
Actuated Cycle Length: 131
Offset: 98 (75%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	27
Future Volume (vph)	27
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Satd. Flow (RTOR)	
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

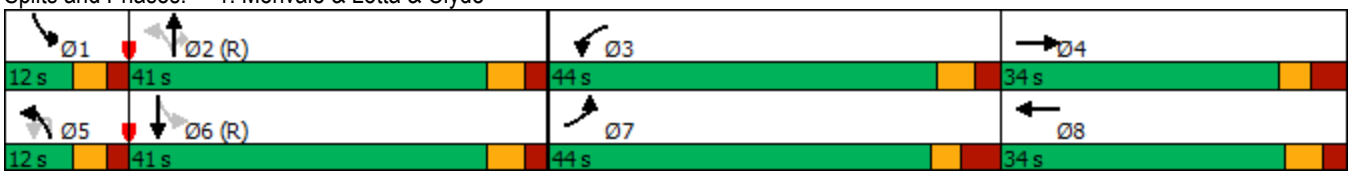
Intersection Summary

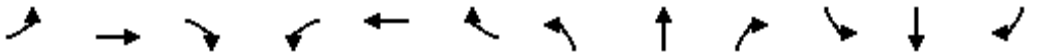
Maximum v/c Ratio: 0.93

Intersection Signal Delay: 38.3	Intersection LOS: D
Intersection Capacity Utilization 76.9%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 1: Merivale & Lotta & Clyde





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	8	26	63	14	52	39	1666	32	78	1693	64
Future Volume (vph)	31	8	26	63	14	52	39	1666	32	78	1693	64
Satd. Flow (prot)	1695	1554	0	1695	1550	0	1695	3390	1517	1695	3390	1517
Flt Permitted	0.714			0.735			0.083			0.084		
Satd. Flow (perm)	1265	1554	0	1301	1550	0	148	3390	1420	150	3390	1433
Satd. Flow (RTOR)		26			52				86			86
Lane Group Flow (vph)	31	34	0	63	66	0	39	1666	32	78	1693	64
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	43.2	43.2		43.2	43.2		11.1	33.1	33.1	11.1	33.1	33.1
Total Split (s)	44.0	44.0		44.0	44.0		14.0	72.0	72.0	14.0	72.0	72.0
Total Split (%)	33.8%	33.8%		33.8%	33.8%		10.8%	55.4%	55.4%	10.8%	55.4%	55.4%
Yellow Time (s)	3.0	3.0		3.0	3.0		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	4.2	4.2		4.2	4.2		2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2	7.2		7.2	7.2		6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	20.7	20.7		20.7	20.7		93.7	89.6	89.6	95.3	90.4	90.4
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.72	0.69	0.69	0.73	0.70	0.70
v/c Ratio	0.15	0.13		0.30	0.23		0.21	0.71	0.03	0.40	0.72	0.06
Control Delay	43.0	17.6		47.7	15.4		7.2	11.9	0.1	13.6	20.7	1.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.0	17.6		47.7	15.4		7.2	11.9	0.1	13.6	20.7	1.7
LOS	D	B		D	B		A	B	A	B	C	A
Approach Delay		29.7			31.2			11.6			19.7	
Approach LOS		C			C			B			B	
Queue Length 50th (m)	7.5	1.9		15.7	3.4		1.1	45.9	0.0	3.3	116.8	0.0
Queue Length 95th (m)	14.0	9.6		24.3	13.6		m3.9	#264.2	m0.0	13.9	#272.9	4.2
Internal Link Dist (m)		182.8			218.9			60.6			280.9	
Turn Bay Length (m)				35.0					15.0	100.0		
Base Capacity (vph)	358	458		368	476		202	2336	1005	208	2357	1022
Starvation Cap Reductn	0	0		0	0		0	17	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	26	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.07		0.17	0.14		0.19	0.72	0.03	0.38	0.73	0.06

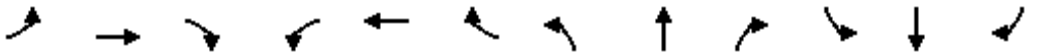
Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 76 (58%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 16.6	Intersection LOS: B
Intersection Capacity Utilization 84.2%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 2: Merivale & Withrow/Capilano



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	16	20	64	1	196	18	1310	40	241	1480	241
Future Volume (vph)	45	16	20	64	1	196	18	1310	40	241	1480	241
Satd. Flow (prot)	1695	1605	0	0	1700	1517	1695	3371	0	3288	3306	0
Flt Permitted	0.715				0.703		0.950			0.950		
Satd. Flow (perm)	1259	1605	0	0	1228	1476	1692	3371	0	3249	3306	0
Satd. Flow (RTOR)		20				37		4			22	
Lane Group Flow (vph)	45	36	0	0	65	196	18	1350	0	241	1721	0
Turn Type	Perm	NA		Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		4			8	1	5	2		1	6	
Permitted Phases	4			8		8						
Detector Phase	4	4		8	8	1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	35.5	35.5		35.5	35.5	11.7	11.7	31.2		11.7	31.2	
Total Split (s)	36.0	36.0		36.0	36.0	17.0	17.0	77.0		17.0	77.0	
Total Split (%)	27.7%	27.7%		27.7%	27.7%	13.1%	13.1%	59.2%		13.1%	59.2%	
Yellow Time (s)	3.3	3.3		3.3	3.3	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2	3.0	3.0	2.5		3.0	2.5	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5			6.5	6.7	6.7	6.2		6.7	6.2	
Lead/Lag						Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	
Act Effct Green (s)	18.0	18.0			18.0	28.9	7.0	82.8		13.0	97.8	
Actuated g/C Ratio	0.14	0.14			0.14	0.22	0.05	0.64		0.10	0.75	
v/c Ratio	0.26	0.15			0.38	0.54	0.20	0.63		0.73	0.69	
Control Delay	49.8	25.6			54.4	35.7	66.4	7.0		70.0	11.5	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	49.8	25.6			54.4	35.7	66.4	7.0		70.0	11.5	
LOS	D	C			D	D	E	A		E	B	
Approach Delay		39.0			40.3			7.8			18.7	
Approach LOS		D			D			A			B	
Queue Length 50th (m)	11.0	3.8			16.2	33.8	4.8	32.6		32.8	46.8	
Queue Length 95th (m)	20.2	12.3			27.2	49.5	m6.3	41.6		m#56.2	#100.1	
Internal Link Dist (m)		58.9			208.4			286.8			128.3	
Turn Bay Length (m)										100.0		
Base Capacity (vph)	285	379			278	361	134	2148		329	2491	
Starvation Cap Reductn	0	0			0	0	0	0		0	49	
Spillback Cap Reductn	0	0			0	0	0	58		0	0	
Storage Cap Reductn	0	0			0	0	0	0		0	0	
Reduced v/c Ratio	0.16	0.09			0.23	0.54	0.13	0.65		0.73	0.70	

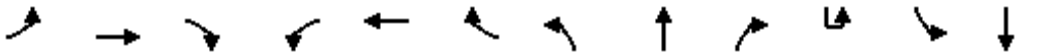
Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 65 (50%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 16.6	Intersection LOS: B
Intersection Capacity Utilization 87.5%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 4: Merivale & Emerald Plaza



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	166	307	154	182	492	170	195	1206	102	14	217	1116
Future Volume (vph)	166	307	154	182	492	170	195	1206	102	14	217	1116
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	3390	1517	0	1695	3390
Flt Permitted	0.232			0.460			0.144				0.078	
Satd. Flow (perm)	407	3390	1416	795	3390	1433	255	3390	1384	0	139	3390
Satd. Flow (RTOR)			154			130			134			
Lane Group Flow (vph)	166	307	154	182	492	170	195	1206	102	0	231	1116
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	custom	pm+pt	NA
Protected Phases	7	4		3	8		5	2			1	6
Permitted Phases	4		4	8		8	2		2	1	6	
Detector Phase	7	4	4	3	8	8	5	2	2	1	1	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	5.0	10.0
Minimum Split (s)	11.5	30.5	30.5	11.5	30.5	30.5	11.0	38.0	38.0	11.0	11.0	38.0
Total Split (s)	19.0	31.0	31.0	19.0	31.0	31.0	17.0	59.0	59.0	21.0	21.0	63.0
Total Split (%)	14.6%	23.8%	23.8%	14.6%	23.8%	23.8%	13.1%	45.4%	45.4%	16.2%	16.2%	48.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.0		6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	None	C-Max
Act Effct Green (s)	34.6	22.5	22.5	34.8	22.6	22.6	65.9	54.8	54.8		74.7	59.2
Actuated g/C Ratio	0.27	0.17	0.17	0.27	0.17	0.17	0.51	0.42	0.42		0.57	0.46
v/c Ratio	0.73	0.52	0.41	0.61	0.84	0.48	0.78	0.84	0.15		0.87	0.72
Control Delay	53.0	52.0	10.3	43.8	65.1	18.1	39.8	41.0	2.2		64.3	31.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	53.0	52.0	10.3	43.8	65.1	18.1	39.8	41.0	2.2		64.3	31.6
LOS	D	D	B	D	E	B	D	D	A		E	C
Approach Delay		42.0			51.0			38.2				32.0
Approach LOS		D			D			D				C
Queue Length 50th (m)	31.5	37.5	0.0	34.9	64.0	8.7	23.0	147.7	0.0		41.7	92.6
Queue Length 95th (m)	#52.9	52.0	18.1	54.4	83.2	29.9	#57.1	178.3	5.5		#92.0	107.5
Internal Link Dist (m)		169.3			250.3			97.3				286.8
Turn Bay Length (m)	100.0		120.0	130.0		105.0	85.0		95.0		140.0	
Base Capacity (vph)	233	638	391	301	638	375	255	1428	660		267	1544
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.71	0.48	0.39	0.60	0.77	0.45	0.76	0.84	0.15		0.87	0.72

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 61 (47%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	289
Future Volume (vph)	289
Satd. Flow (prot)	1517
Flt Permitted	
Satd. Flow (perm)	1412
Satd. Flow (RTOR)	289
Lane Group Flow (vph)	289
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Detector Phase	6
Switch Phase	
Minimum Initial (s)	10.0
Minimum Split (s)	38.0
Total Split (s)	63.0
Total Split (%)	48.5%
Yellow Time (s)	3.7
All-Red Time (s)	2.3
Lost Time Adjust (s)	0.0
Total Lost Time (s)	6.0
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Recall Mode	C-Max
Act Effct Green (s)	59.2
Actuated g/C Ratio	0.46
v/c Ratio	0.36
Control Delay	7.6
Queue Delay	0.0
Total Delay	7.6
LOS	A
Approach Delay	
Approach LOS	
Queue Length 50th (m)	1.0
Queue Length 95th (m)	31.0
Internal Link Dist (m)	
Turn Bay Length (m)	175.0
Base Capacity (vph)	800
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.36

Intersection Summary

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 38.9	Intersection LOS: D
Intersection Capacity Utilization 96.8%	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.

Splits and Phases: 5: Merivale & Meadowlands

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	18	0	0	51	0	1624	57	0	1857	39
Future Vol, veh/h	0	0	18	0	0	51	0	1624	57	0	1857	39
Conflicting Peds, #/hr	0	0	0	0	0	0	27	0	45	45	0	27
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	18	0	0	51	0	1624	57	0	1857	39

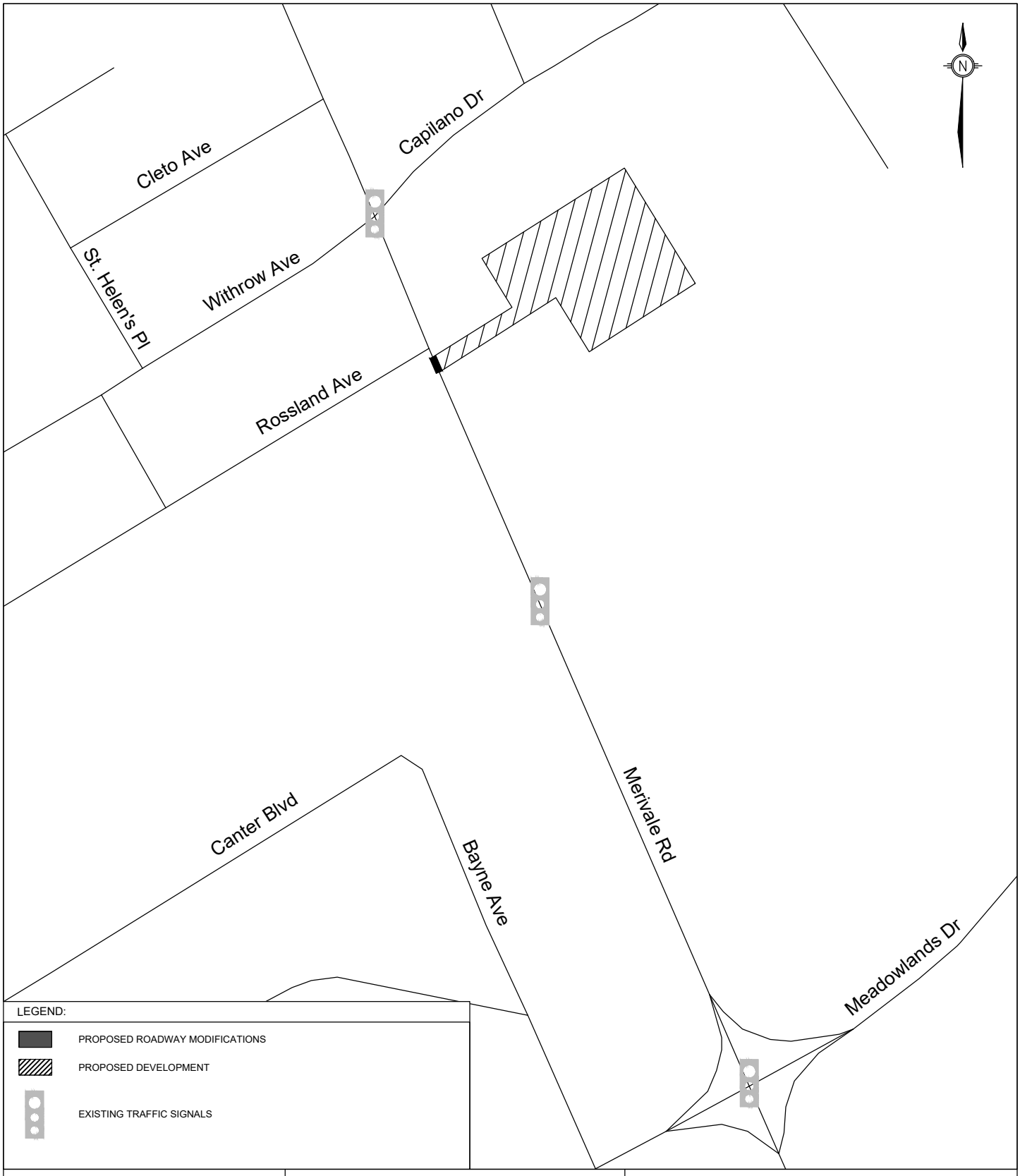
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	975	-	-	886	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	251	0	0	288	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	245	-	-	277	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20.9	20.9	0	0
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	245	277	-	-
HCM Lane V/C Ratio	-	-	0.073	0.184	-	-
HCM Control Delay (s)	-	-	20.9	20.9	-	-
HCM Lane LOS	-	-	C	C	-	-
HCM 95th %tile Q(veh)	-	-	0.2	0.7	-	-

Appendix O:

RMA and Functional Plan Drawings



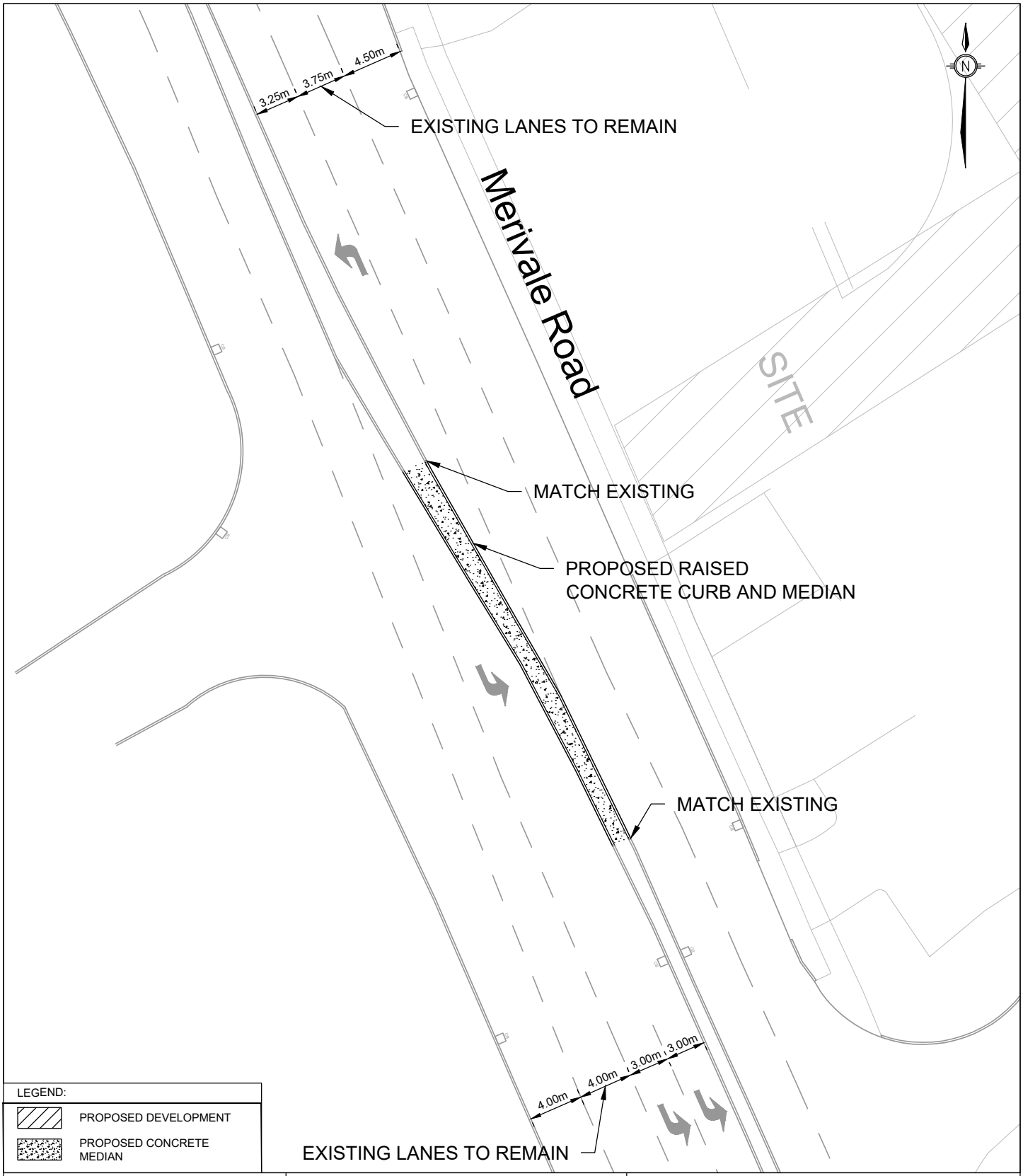
TRANSPORTATION SERVICES DEPT

KEY PLAN

1545 MERIVALE ROAD

Transportation Engineering Services Branch

Approved By: --	Drawing No.: RMA-2023-TPD-XXX-A
Completed By: PARSONS	
Scale: N.T.S.	Date: MAY 2023



LEGEND:

PROPOSED DEVELOPMENT

PROPOSED CONCRETE MEDIAN

Ottawa

TRANSPORTATION SERVICES DEPT

PROPOSED ROADWAY MODIFICATIONS

1545 MERIVALE ROAD

Transportation Engineering Services Branch

Approved By: --	Drawing No.: RMA-2023-TPD-XXX-B
Completed By: PARSONS	
Scale: N.T.S.	Date: MAY 2023

1545 Merivale Road

Proposed Concrete Median

Functional Design

PARSONS

478377	Dwg. No. 001
Sheet 1 of 1	
Des.	Chk'd.
Dwn. AEB	Chk'd.

Scale: HORIZONTAL
0m 2.5 5 10

NOTE: The location of utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned. The contractor shall prove the location of utilities and shall be responsible for adequate protection from damage.

REVISIONS

No.	Description	By	Date (dd/mm/yy)
01	Issued for City Review	AEB	20/05/23

SITE

Merivale Road

CB

4.50m
3.75m
3.25m

EXISTING LANES TO REMAIN

REMOVE EXISTING DEPRESSED CONCRETE CURB AND MEDIAN

PROPOSED RAISED CONCRETE CURB AND MEDIAN (AS PER SC10.1)

MATCH EXISTING RAISED CONCRETE CURB AND MEDIAN

3.00m
3.00m
4.00m
4.00m

EXISTING LANES TO REMAIN