Canadian Rental Development Services Inc.

910 March Road

Transportation Impact Assessment

CGH TRANSPORTATION

910 March Road

Transportation Impact Assessment

Step 1 Screening Report

Step 2 Scoping Report

Step 3 Forecasting Report

Step 4 Strategy Report

Prepared for:

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July 2023

PN: 2021-073

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1 Screening

This study has been prepared according to the City of Ottawa's 2017 Transportation Impact Assessment (TIA) Guidelines. Accordingly, a Step 1 Screening Form has been prepared and is included as Appendix A, along with the Certification Form for the TIA Study PM. As shown in the Screening Form, a TIA is required including the Network Impact Component. This study has been prepared to support the zoning by-law amendment.

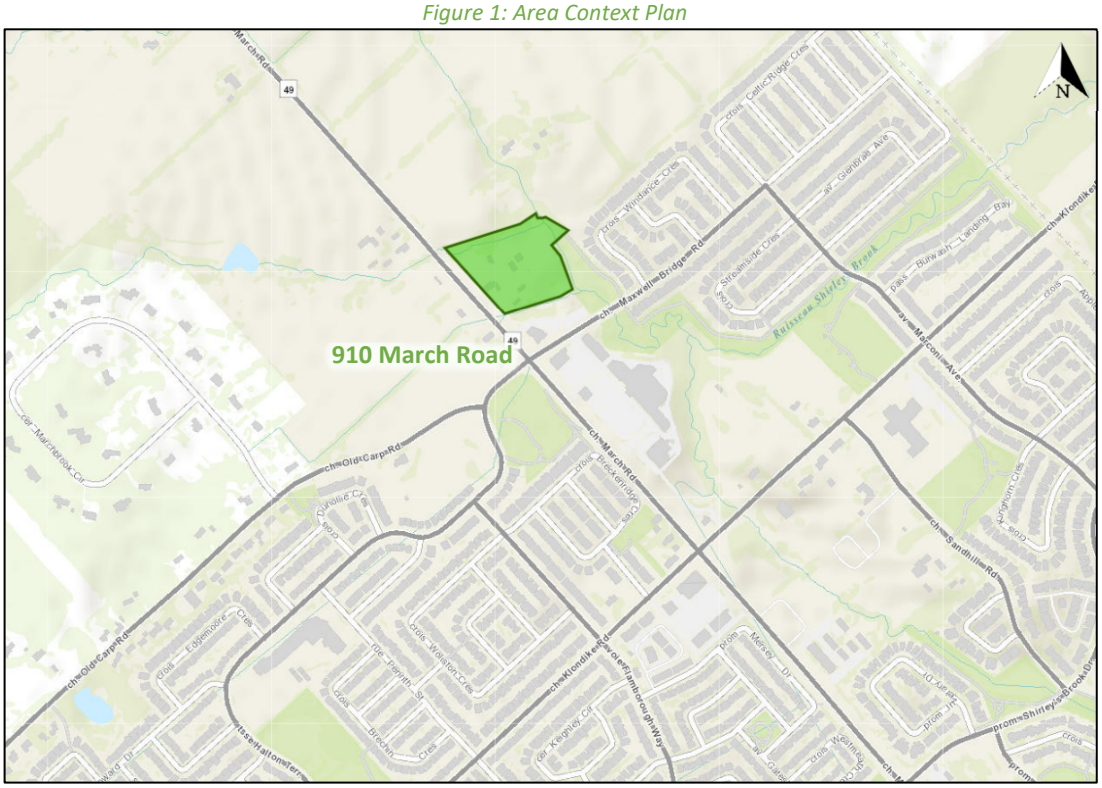
The previous outdated TIA completed for a commercial site application at 910 March Road, as well as traffic studies in this study area will be used as reference documents. Additionally, a TIA for 910 March Road, dated December 2022, has been submitted to support the zoning by-law amendment for this site, and this report serves as an update to that document and addresses the received comments on the December 2022 submission from City of Ottawa staff. As a result of the review process, additional comments and analysis have been produced for the City of Ottawa in the form of comment-response documents which are shown in Appendix B and have been used as additional reference material. Additionally, an RMA was completed for the previous TIA produced for 910 March Road and has been updated appropriately to support this submission.

2 Existing and Planned Conditions

2.1 Proposed Development

The subject property, located at 910 March Road, is currently zoned as Rural [Ru] and Development Reserve [DR]. The proposed mixed-use development is multi-leveled with areas of one, two, three, four, five, six, seven, eight, and nine storeys. A total of 390 residential units and 501 square metres of ground floor commercial space over three units are proposed, and a total of 568 vehicle parking stalls will be provided, 541 spaces provided underground, and 27 spaces provided above ground. The proposed plan includes a full movement access on March Road located approximately 215 metres north of the signalized intersection of Maxwell Bridge Road. The anticipated full build-out and occupancy horizon is 2028 with construction occurring in a single phase. Figure 1 illustrates the study area context. Figure 2 illustrates the proposed concept plan.

Figure 1: Area Context Plan



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: May 30, 2022

Figure 2: Concept Plan

CIVIL PLAN - 2023/03/23
LANDSCAPING PLAN- 2023/03/22
RMA-2023/01/27

FUTURE RESIDENTIAL

RESIDENTIAL

OPEN SPACE

ENVIRONMENTAL PROTECTION

FUTURE COMMERCIAL MIXED-USE

DRIVE-THROUGH RESTAURANT

MCDONALD'S

MARCH ROAD

NOVATECH CLOSE

TRIBUTARY 2

TRIBUTARY 3

TRIBUTARY 4

SETBACK FROM CENTERLINE OF WATERCOURSE : 20m

SETBACK FROM TOP OF SLOPE : 10m

COMMON TERRACE (POOL ROOF 1ST FLOOR)

COMMON TERRACE 1ST FLOOR

CHANG. ROOM

GYM

LOUNGE

LOBBY

STUDIO

COMMERCIAL #1

COMMERCIAL #2

COMMERCIAL #3

PARTY ROOM

COMMERCIAL AREA ENTRANCE

PEDESTRIAN PATHWAY

MAIN LOBBY ENTRANCE

EXIT & MOVERS PASSAGE

LOBBY ACCESS

ELEVATOR LOBBY

STAIR A

STAIR B

STAIR C

STAIR D

STAIR E

STAIR F

STAIR G

DOUBLE HEIGHT

HEATED ENTRY TO GARAGE RAMP

GARAGE ACCESS

MOVING AISLE

FRONT YARD SETBACK

300 (MIN.)

41320

40065

59230

65805

50465

82766

13356

14876

11560

12651

17440

14790

24000

6100

7100

7500

3500

4000

3351

6805

1500

6015

8057

7800

1525

R 7000

R 1500

3750

8350

2000

SITE PLAN

1 : 400

GRAPHIC SCALE: 1:300

0 1 2 3 4 5 10 20 30

NOTES LIST

# NOTE	DESCRIPTION
1	TOP OF BANK /ORDINARY HIGHT WATER MARK
2	EXISTING MUNICIPAL MUP/TRAIL
3	EXISTING UTILITY POLE TO BE REMOVED
4	UNDERGROUND PARKING P1 OUTLINE
5	GROUND FLOOR OUTLINE
6	2ND FLOOR - OUTLINE
7	NEW SIDEWALK
8	EXISTING TRIBUTARIES
9	RETAINING WALL
10	EXISTING UTILITY POLE
11	OVERHEAD WIRES
12	PRIVATE BALCONY
13	PRIVATE TERRACE
15	BIKE RACK
16	EXISTING FIRE HYDRANT
18	P2 LEVEL - OUTLINE
19	DEPRESSED CURB
21	P3 LEVEL - OUTLINE
22	COMMERCIAL TERRACE
23	CANOPY PROFILE
24	WATER TANK ACCESS
26	FIRE DEPARTMENT CONNECTION
27	THE ROAD WIDENING LIMITS

LINE TYPE LEGEND

- PROPERTY LINE
- REQUIRED SETBACKS
- SETBACKS AS PER PROPOSED ZONING

SURFACE LEGEND

- PAVING (ON-SLAB) LARGE PATIO TILES
- CONCRETE PAVING
- STONE BALLAST ROOF
- TURF
- NATIVE SOIL / RIPARIAN SEED
- HEAVY DUTY PAVEMENT
- EXISTING BUILDING
- BARRIER FREE UNLOADING SPACE

SITE STATISTICS

LOT AREA	**27 156 m²**
FOOTPRINT	**7 293 m²**
CONSTRUCTION AREA ABOVE GROUND	**44 758 m²**
CONSTRUCTION AREA UNDERGROUND (BUILDING & PARKING)	**30 352 m²**
GROSS FLOOR AREA (ABOVE + BELOW GRADE)	**75 110 m²**

SITE STATISTICS AS PER ZONING BY-LAW

GROSS FLOOR AREA **AS PER ZONING BY-LAW** (ABOVE + BELOW GRADE)	**40 128 m²**
RESIDENTIEL GROSS FLOOR **AREA AS PER ZONING BY-LAW**	**39 627 m²**
COMMERCIAL GROSS FLOOR **AREA AS PER ZONING BY-LAW**	**501 m²**

910 MARCH ROAD - NUMBER OF UNITS

P1 PARKING LEVEL	13	UNITS
1ST FLOOR LEVEL	42	UNITS
2ND FLOOR LEVEL	62	UNITS
3RD FLOOR LEVEL	62	UNITS
4TH FLOOR LEVEL	51	UNITS
5TH FLOOR LEVEL	48	UNITS
6TH FLOOR LEVEL	41	UNITS
7TH FLOOR LEVEL	35	UNITS
8TH FLOOR LEVEL	19	UNITS
9TH FLOOR LEVEL	17	UNITS
TOTAL	390	UNITS

NUMBER OF PARKING SPACES

1 Residents (parking space / dwelling unit) Dwelling units in a mixed-use building, Area C or D		**390**
0.2 Visitors (parking space / dwelling unit)		**79**
Commercial parking (3.4 X 100SQM REQ) *THIS IS THE COUNT OF EXTERIOR PARKING		**18**
TOTAL PARKING REQUIRED		**487** (MIN REQ.)
TOTAL PARKING PROVIDED INCLUDED BARRIER FREE PARKING		**568** (PROVIDED)
MINIMUM BARRIER FREE PARKING REQUIRED	12 SPACES REQUIRED (6 TYPE A & 6 TYPE B)	**12**

910 MARCH ROAD

CITY OTTAWA ZONING BY-LAW 2008-250
GM[XXXX] H(32)
PROPOSED MID-RISE MIXED-USE DEVELOPMENT

ZONING PROVISION	REQUIRED	PROPOSED
GENERAL MIXED-USE ZONE PROVISIONS		
PERMITTED USES	RESIDENTIAL; COMMERCIAL	RESIDENTIAL; COMMERCIAL
FRONT YARD SETBACK (MIN. / MAX.)	3 m	6 m
REAR YARD SETBACK (MIN.)	7.5 m WHERE ABUTTING A RESIDENTIAL ZONE	> 7.5 m
INTERIOR SIDE YARD SETBACK (MIN.)	5 m FOR MIXED USE BUILDING ABUTTING A RESIDENTIAL ZONE NO MINIMUM IN ALL OTHER CASES	> 5 m 11.5 m / 40 m
FLOOR SPACE INDEX (MAX.)	2	1,1
BUILDING HEIGHT (MAX.)	32 m	32 m
LANDSCAPED AREA (MIN. WIDTH ABUTTING A STREET)	3 m	6.01 m
PARKING PROVISIONS (AREA C & AREA D)		
BICYCLE PARKING SPACES - RESIDENTIAL (MIN.)	0.5 PER DWELLING UNIT = **195**	**195**
BICYCLE PARKING SPACES - NON-RESIDENTIAL (MIN.)	1 PER 250 m2 GFA RETAIL = **3**	**3**
TOTAL PRIVATE AMENITY AREA (MIN.)	6 m2 PER DWELLING UNIT = **2 346** m²	**2 346** m²
COMMUNAL AMENITY AREA (MIN.)	50% OF REQUIRED TOTAL AMENITY ARE **1173** m²	**1173** m²
WATERCOURSE SETBACK (MIN.)	I) FOR TRIBUTARIES 2 AND 3 (NORTH AND EAST): 20 m TO CENTERLINE OF WATERCOURSE II) FOR TRIBUTARY 4 (SOUTH): 10 m TO TOP OF SLOPE	I) FOR TRIBUTARIES 2 AND 3 (NORTH AND EAST): 20 m TO CENTERLINE OF WATERCOURSE II) FOR TRIBUTARY 4 (SOUTH): 10 m TO TOP OF SLOPE

NOTES GÉNÉRALES General Notes

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COMPANY NAME

910 MARCH ROAD

EMPLACEMENT Location
910 MARCH ROAD

NO PROJET No.
12712.00

NO	RELEASE	DATE (aa-mm-jj)
0	ISSUED FOR ZONING	2023.01.26
1.A	ISSUED FOR SITE PLAN	2023.03.29

Preliminary DO NOT USE FOR CONSTRUCTION

DESSINÉ PAR Drawn by
Z.S

VÉRIFIÉ PAR Checked
K.P.

DATE (aa.mm.jj)
23/07/18

ÉCHELLE Scale
Comme indiqué

TITRE DU DESSIN Drawing Title
1ST FLOOR SITE PLAN

PREVIOUS REVISION: 1.3
CURRENT REVISION: 1.4
RÉVISION Revision

NO. DESSIN Dwg Number
1.4 **A060**

2.2 Existing Conditions

2.2.1 Area Road Network

March Road: March Road is a City of Ottawa arterial road with a fluctuating cross-section and a posted speed limit of 80 km/h. South of Klondike Road, March Road has a six-lane cross-section with bike lanes, sidewalks, and curbs and gutters on both sides of the road. Approximately 125 metres north of Klondike Road, March Road becomes a five-lane road with bike lanes, sidewalks, and curbs and gutters on both sides of the road. Approximately 140 metres south of Halton Terrace / Maxwell Bridge Road, March Road becomes a four-lane road with bike lanes, sidewalks, and curbs and gutters on both sides of the road. March Road gradually decreases to a two-lane cross-section with gravel shoulders and no pedestrian or cycling infrastructure starting approximately 110 metres north of Halton Terrace / Maxwell Bridge Road. The Ottawa Official Plan reserves a 44.5 metre right of way. March Road is designated as a trucking route within the Study Area.

Halton Terrace / Maxwell Bridge Road: Halton Terrace / Maxwell Bridge Road is a City of Ottawa collector road that has a two-lane cross-section, and a posted speed-limit of 40 km/h. Halton Terrace / Maxwell Bridge Road has curbs and gutters, as well as sidewalks within the Study Area. Halton Terrace / Maxwell Bridge Road has a measured 24.5 metre right-of-way and is not designated as a trucking route.

Klondike Road: Klondike Road is a City of Ottawa collector road that has a three-lane cross-section to the west of March Road and a two-lane cross-section to the east of March Road, as well as a posted speed limit of 50 km/h. Sidewalks and curbs and gutters are present on both sides of the road. To the east of March Road, Klondike Road has bike lanes on the south side. The Ottawa Official Plan reserves a 24.0 metre right-of-way. Klondike Road is not a designated trucking route.

2.2.2 Existing Intersections

The existing key signalized intersections within one kilometre of the site have been summarized below:

March Road at Halton Terrace / Maxwell Bridge Road	The intersection of Maxwell Bridge Road / Halton Terrace at March Road is a signalized intersection with auxiliary left-turn lanes on all four approaches. The northbound and southbound approaches both have two through lanes, an auxiliary right-turn lane and at grade cycling lanes between the through lane and the right turn lane. Both the eastbound and westbound approaches have a shared through / right-turn lane. Pedestrian crossings are provided at each leg. No turn restrictions were noted.
March Road at Klondike Road	The intersection of Klondike Road at March Road is a signalized intersection. The northbound approach consists of two auxiliary left-turn lanes, two through lanes and a shared through / right-turn lane. The westbound approach is made up of an auxiliary left-turn lane and a shared through / right-turn lane. The southbound approach consists of an auxiliary left-turn lane, a through lane and a shared through / right-turn lane. The eastbound approach consists of an auxiliary left-turn lane, a through lane and a channelized right-turn lane. Pedestrian crossings are provided at each leg. No turn restrictions were noted.

2.2.3 Existing Driveways

Existing driveways are located along March Road within 200 metres of the proposed site access. All existing driveways are residential accesses and driveways to existing and future residential developments with the exception of the McDonald's driveway approximately 50 metres north of Maxwell Bridge Road / Halton Terrace.

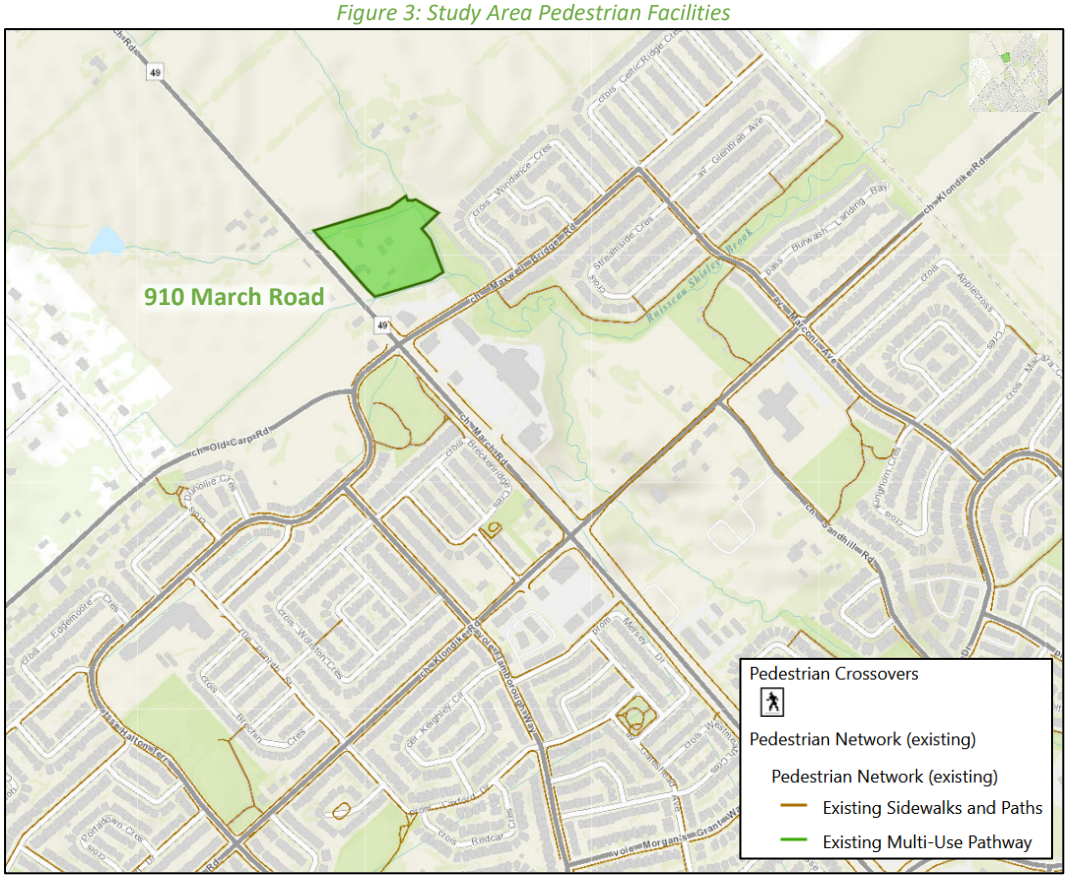
2.2.4 Cycling and Pedestrian Facilities

Sidewalks are provided along both sides of Maxwell Bridge Road / Halton Terrace, on March Road with the exception of the two-lane cross-section segment, and Klondike Road west of March Road. A multi-use pathway is provided on Klondike Road east of March Road. The cycling network consists of bike lanes on March Road with the exception of the two-lane segment which has paved shoulders. Cycle tracks are provided along Maxwell Bridge Road between March Road and Sandhill Road.

March Road will be considered a spine route, and both Klondike Road and Halton Terrace will be considered local cycling routes within the Study Area during the ultimate horizon. A gravel pathway is anticipated to connect the northeast side of the proposed development to Maxwell Bridge Road and the adjacent residential development to the southeast.

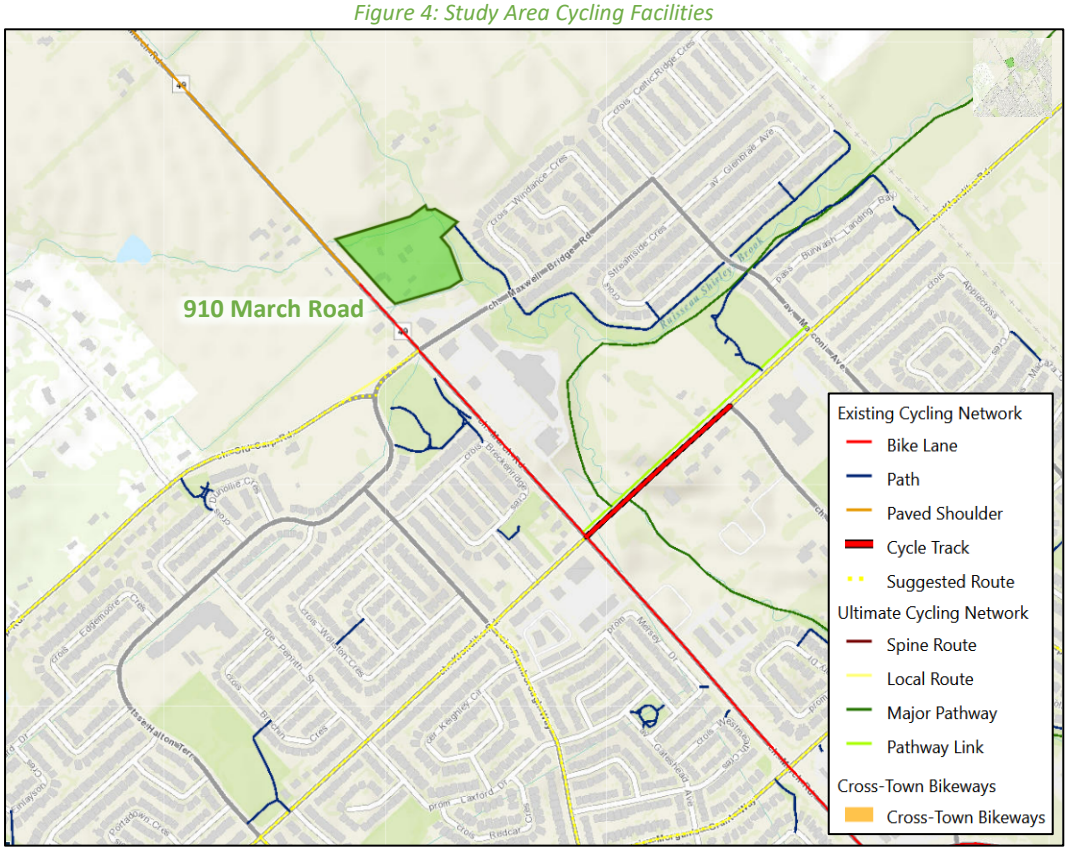
Figure 3 illustrates the pedestrian facilities in the study area and Figure 4 illustrates the cycling facilities.

Figure 3: Study Area Pedestrian Facilities



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: May 30, 2022

Figure 4: Study Area Cycling Facilities



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: May 30, 2022

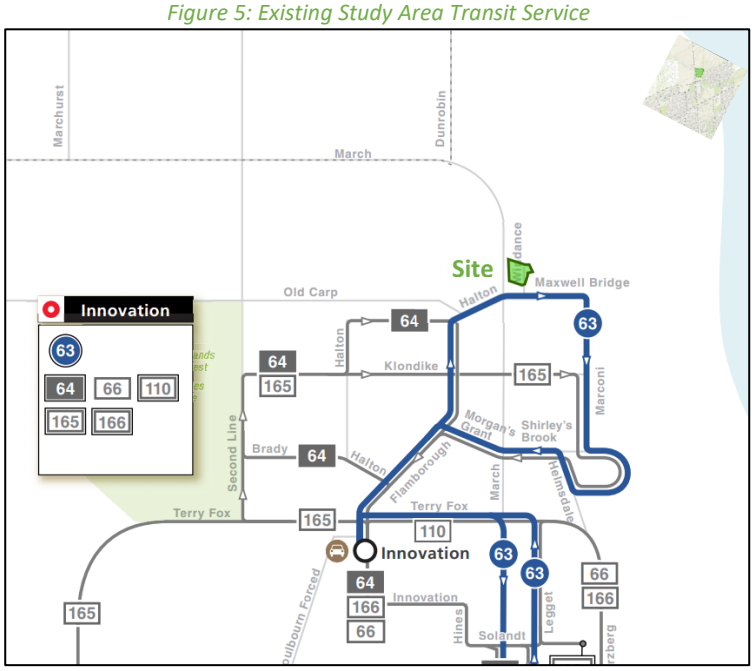
2.2.5 Existing Transit

Within the study area, the routes #63 and #165 are the only routes present within the Study Area. Route #63 has two stops on Maxwell Bridge Road, east of March Road and route #165 has two stops on Klondike Road to the east of March Road and two stops on Klondike Road to the west of March Road. The frequencies of these routes within the proximity of the proposed site currently are:

- Route #63— every 15 minutes in peak periods and every 30 minutes in off-peak periods.
- Route #165— every hour in the midday and evening

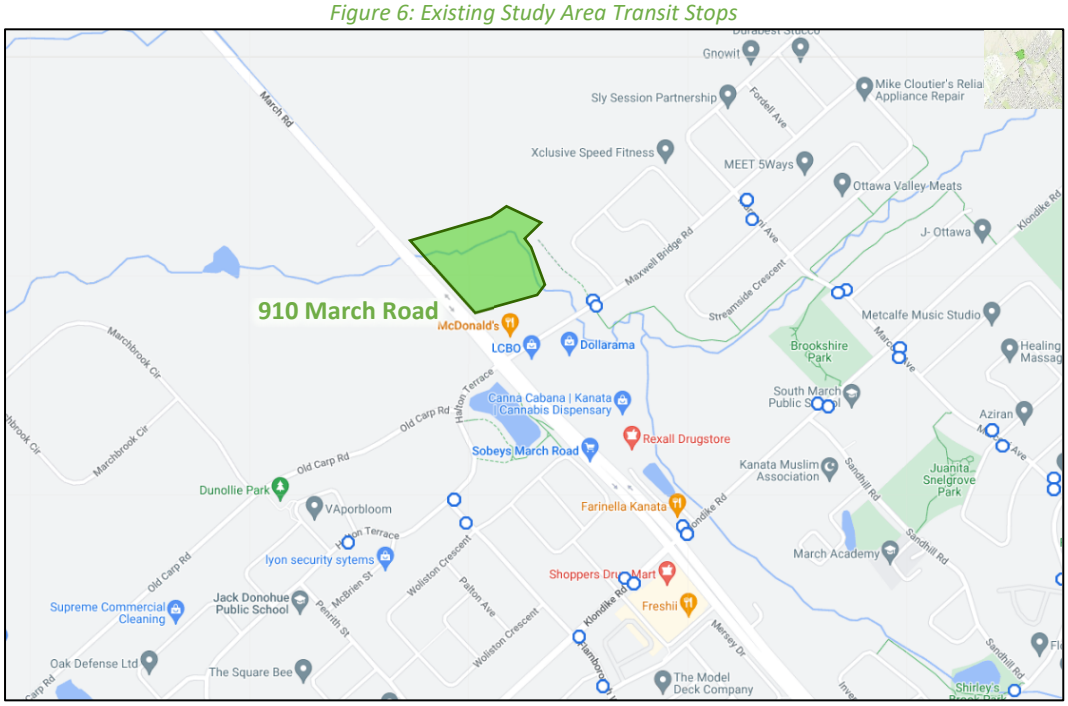
Figure 5 illustrates the transit system map in the study area and Figure 6 illustrates nearby transit stops.

Figure 5: Existing Study Area Transit Service



Source: http://www.octranspo.com/ Accessed: May 30, 2022

Figure 6: Existing Study Area Transit Stops



Source: http://www.octranspo.com/ Accessed: Accessed: May 30, 2022

2.2.6 Existing Area Traffic Management Measures

Within the Study Area, traffic management measures are present on Maxwell Bridge Road approximately 200 metres east of March Road and on Halton Terrace beginning approximately 150 metres west of March Road. Both locations are designated as traffic calming zones using signage and pavement markings and is implemented via flexible in-road traffic calming signs.

2.2.7 Existing Peak Hour Travel Demand

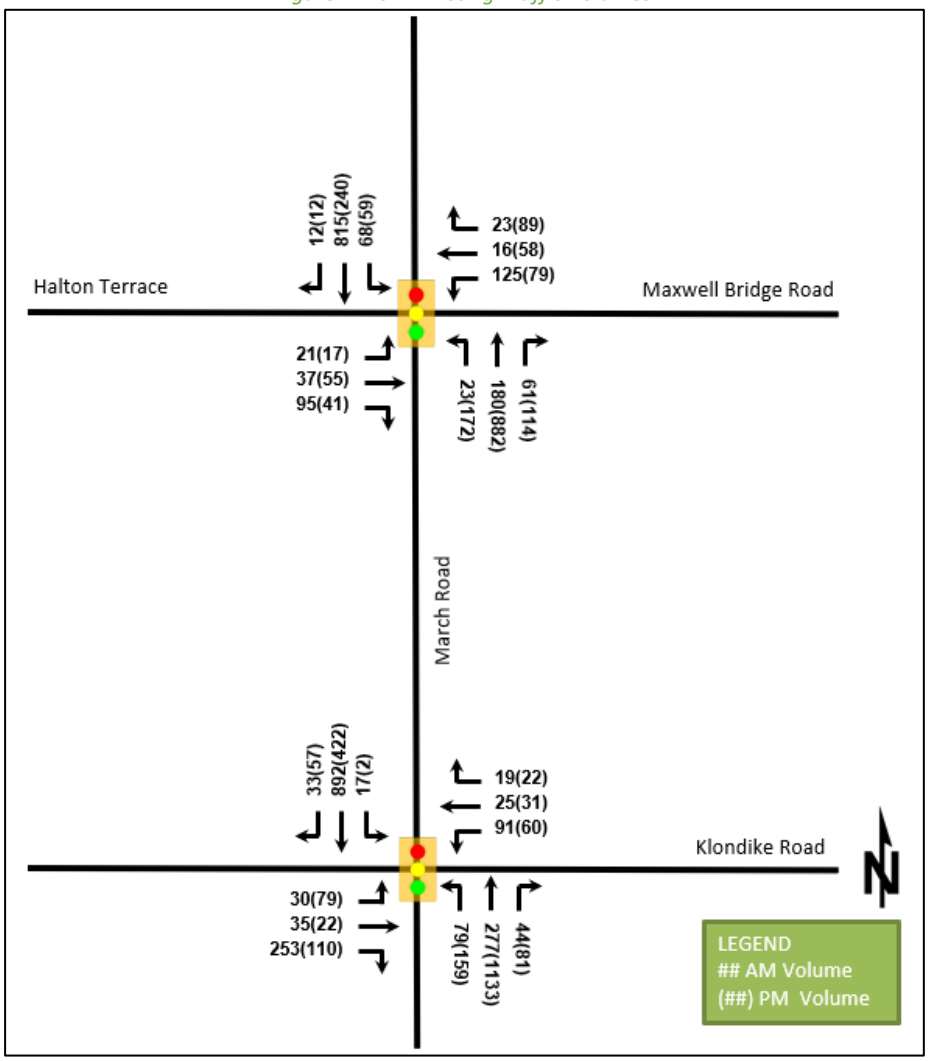
Existing turning movement counts were acquired from the City of Ottawa for the existing study area key intersections. Turning movement count data can be found in Appendix C. Table 1 summarizes the intersection count dates.

Table 1: Intersection Count Date

Intersection	Count Date
March Road at Halton Terrace / Maxwell Bridge Road	Wednesday, March 4, 2020
March Road at Klondike Road	Wednesday, March 4, 2020

As shown above, the turning movement count data has been collected in 2020 and as such, a compound annual background growth rate of 0.50% has been applied to the northbound and southbound through movements along March Road in order to reflect a 2022 existing horizon. This growth rate is consistent with the Kanata North CDP TMP. Figure 7 illustrates the resulting 2022 existing horizon traffic volumes.

Figure 7: 2022 Existing Traffic Volumes



Additionally, as pedestrian and cyclist volumes were included in the study area intersection counts, these volumes have been compiled and are illustrated in Figure 8 and Figure 9, respectively.

Figure 8: Existing Pedestrian Volumes

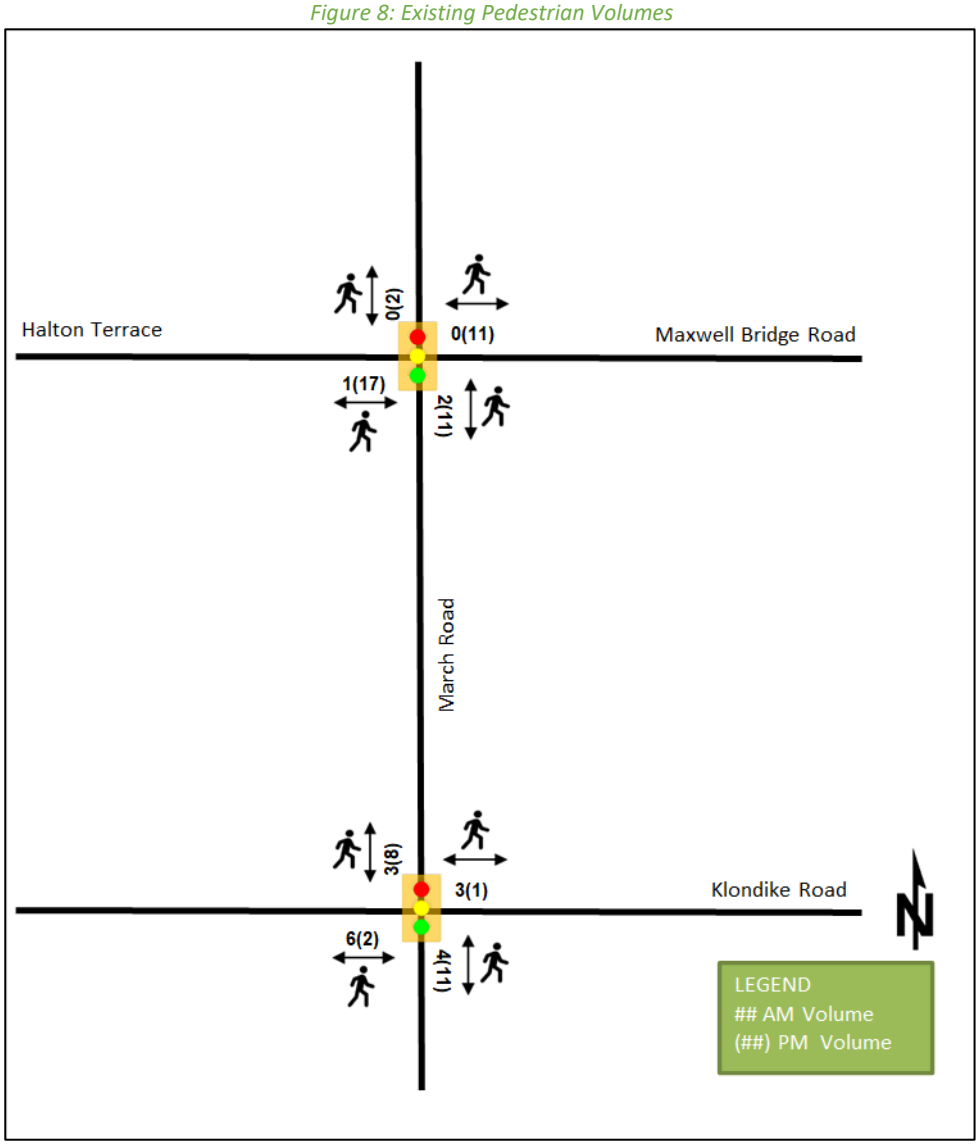
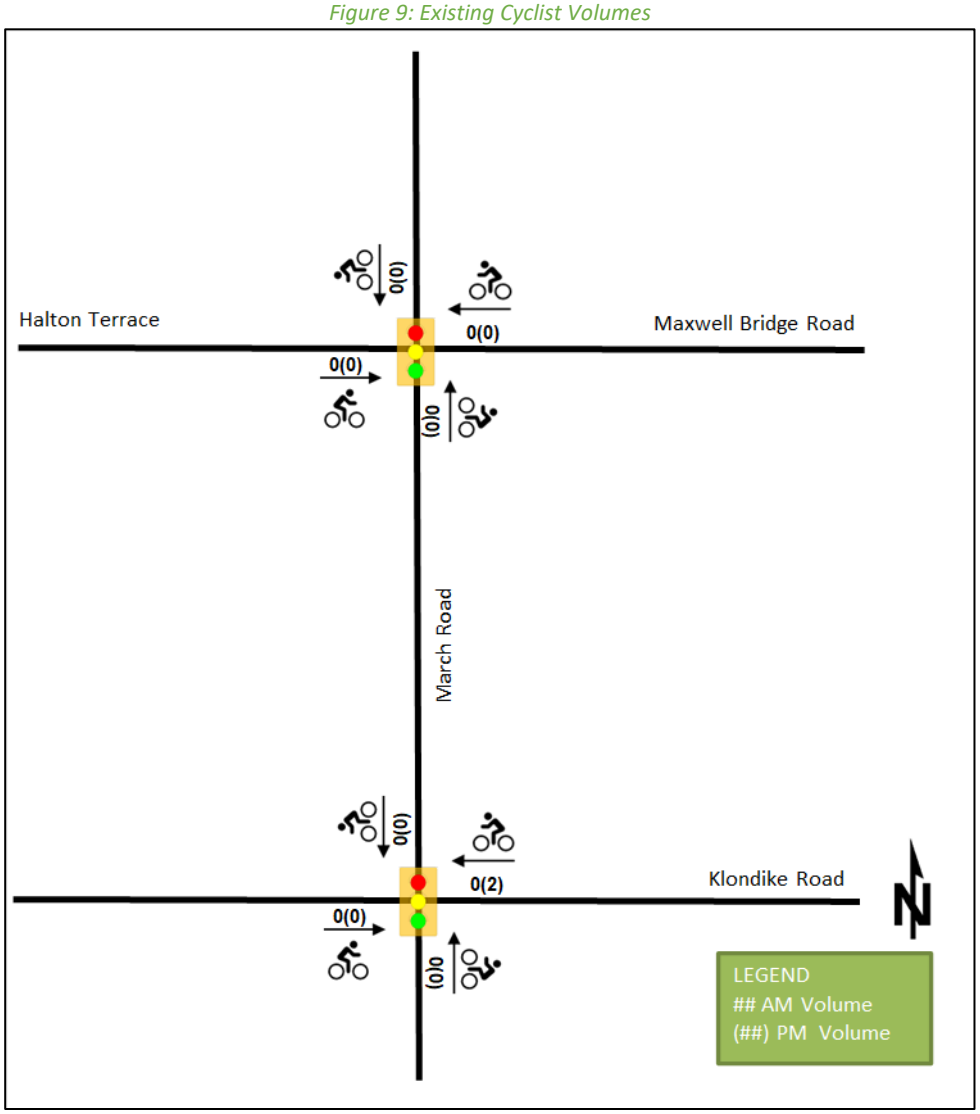


Figure 9: Existing Cyclist Volumes



2.2.8 Collision Analysis

Collision data have been acquired from the City of Ottawa open data website (data.ottawa.ca) for five years prior to the commencement of this TIA for the surrounding study are road network. Table 2 summarizes the collision types and conditions in the study area, Figure 10 illustrates the intersections and segments analyzed, and Table 3 summarizes the total collisions for each of these locations. Collision data is included in Appendix D.

Table 2: Study Area Collision Summary, 2016-2020

		Number	%
Total Collisions		**86**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	16	19%
	Property Damage Only	70	81%
Initial Impact Type	**Angle**	9	10%
	Rear end	23	27%
	Sideswipe	15	17%
	Turning Movement	12	14%
	SMV Unattended	1	1%

		Number	%
Total Collisions		**86**	**100%**
	SMV Other	25	29%
	Other	1	1%
Road Surface Condition	**Dry**	41	48%
	Wet	18	21%
	Loose Snow	13	15%
	Slush	5	6%
	Packed Snow	4	5%
	Ice	5	6%
Pedestrian Involved		2	2%
Cyclists Involved		1	1%

Figure 10: Representation of Study Area Collision Records

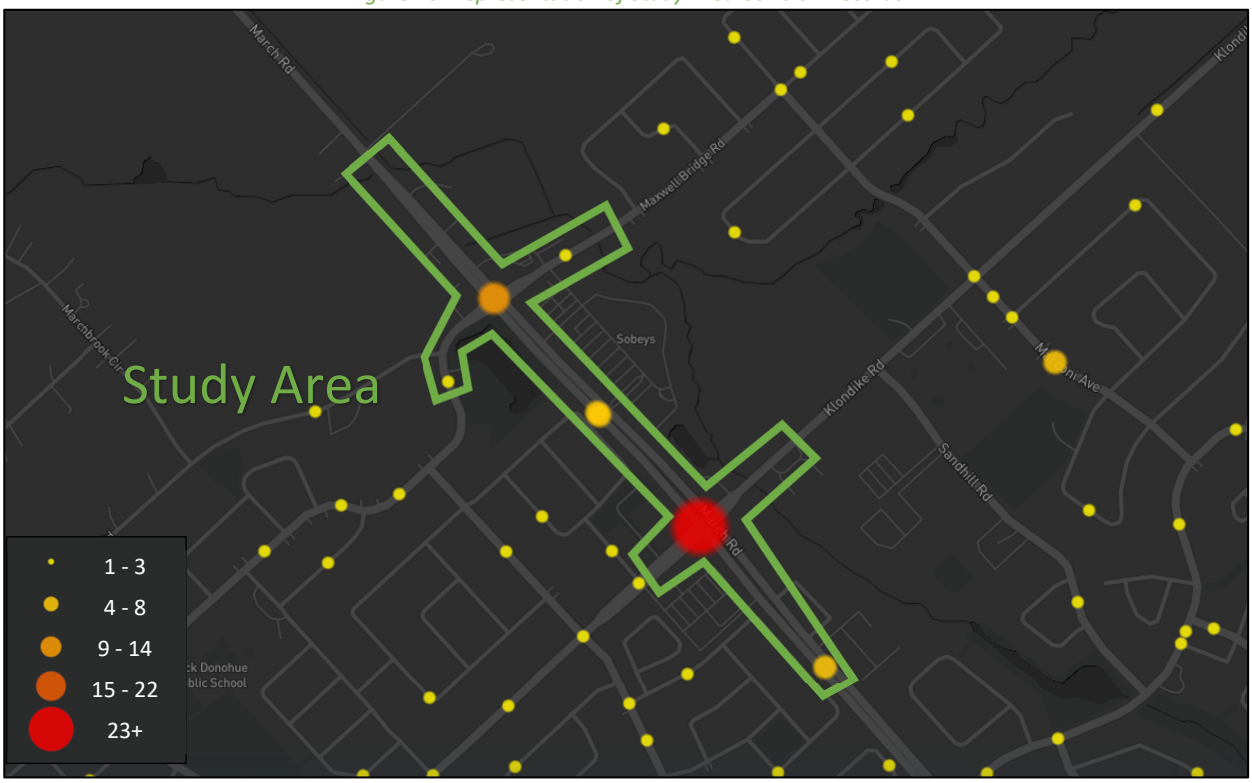


Table 3: Summary of Collision Locations, 2016-2020

	Number	%
Intersections / Segments	**86**	**100%**
Klondike Road @ March Road	26	30%
March Road btwn Halton Terrace / Maxwell Bridge Road & Maxwell Road	24	28%
Halton Terrace / Maxwell Bridge Road @ March Road	16	19%
March Road btwn Klondike Road & Morgan's Grant Way	7	8%
March Road btwn Halton Terrace / Maxwell Bridge Road & Klondike Road	5	6%
250 N of Klondike Road @ March Road	4	5%
Halton Terrace btwn continuation of Halton Terrace & Old Carp Road	2	2%
Maxwell Bridge Road btwn March Road & Windance Crescent	2	2%

Within the study area, the intersection of Klondike Road at March Road and Halton Terrace / Maxwell Bridge Road at March Road and segment of March Road between Halton Terrace / Maxwell Bridge Road and Maxwell Road

are noted to have experienced higher collisions than other locations. Table 4, Table 5, and Table 6 summarize the collision types and conditions for each location.

Table 4: Klondike Road at March Road Collision Summary

		Number	%
Total Collisions		**26**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	6	23%
	Property Damage Only	20	77%
Initial Impact Type	**Angle**	5	19%
	Rear end	9	35%
	Sideswipe	4	15%
	Turning Movement	3	12%
	SMV Other	5	19%
Road Surface Condition	**Dry**	14	54%
	Wet	2	8%
	Loose Snow	6	23%
	Slush	1	4%
	Packed Snow	1	4%
	Ice	2	8%
Pedestrian Involved		1	4%
Cyclists Involved		0	0%

The Klondike Road at March Road intersection had a total of 26 collisions during the 2016-2020 time period, with 20 involving property damage only and the remaining six having non-fatal injuries. The collision types are most represented by the rear end impact type with nine collisions, followed by five collisions each for the angle and SMV other and with the remaining four collision as sideswipe and three as turning movement. Weather/road conditions are considered to be a contributing factor for 46% of the collisions at this location.

Table 5: Segment of March Road between Halton Terrace / Maxwell Bridge Road and Klondike Road Collision Summary

		Number	%
Total Collisions		**24**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	2	8%
	Property Damage Only	22	92%
Initial Impact Type	**Rear end**	4	17%
	Sideswipe	3	13%
	Turning Movement	2	8%
	SMV Other	15	63%
Road Surface Condition	**Dry**	10	42%
	Wet	8	33%
	Loose Snow	4	17%
	Slush	1	4%
	Packed Snow	1	4%
Pedestrian Involved		0	0%
Cyclists Involved		0	0%

The segment of March Road between Halton Terrace / Maxwell Bridge Road and Maxwell Road had a total of 24 collisions during the 2016-2020 time period, with 22 involving property damage only and the remaining two having non-fatal injuries. The collision types are most represented by the SMV other impact type with 15 collisions, followed by rear end with four, sideswipe with three, and with the remaining collision types represented by the

turning movement impact type. Weather/road conditions are considered to be a contributing factor for 58% of the collisions at this location.

Table 6: Halton Terrace / Maxwell Bridge Road at March Road Collision Summary

		Number	%
Total Collisions		**16**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	4	25%
	Property Damage Only	12	75%
Initial Impact Type	**Angle**	3	19%
	Rear end	2	13%
	Sideswipe	3	19%
	Turning Movement	6	38%
	SMV Other	1	6%
	Other	1	6%
Road Surface Condition	**Dry**	6	38%
	Wet	5	31%
	Loose Snow	3	19%
	Ice	2	13%
Pedestrian Involved		1	6%
Cyclists Involved		1	6%

The Halton Terrace / Maxwell Bridge Road at March Road intersection had a total of 16 collisions during the 2016-2020 time period, with twelve involving property damage only and the remaining four having non-fatal injuries. The collision types are most represented by turning movement with six collisions, followed by sideswipe and angle each with three collisions, rear end with two, and with the remaining collision types represented by SMV other and other. Weather/road conditions are considered to be a contributing factor for 62% of the collisions at this location.

2.3 Planned Conditions

2.3.1 Changes to the Area Transportation Network

The subject development is just outside the Kanata North CDP Urban Expansion Area, however March Road north of Maxwell Bridge Road / Halton Terrace is within the Kanata North CDP area. As such, this portion of March Road is subject to the planning polices outlined in the CDP. The CDP proposes that March Road remain an Arterial Road with a median Bus Rapid (BRT) facility, following the results of the Environmental Assessment (EA) completed for March Road. The widening of March Road, and the extension of a Bus Rapid Transit facility within the Study Area is considered in the City of Ottawa TMP Ultimate Network. Both interim and ultimate widening scenarios of March Road have been proposed in the Kanata North CDP and can be seen in Appendix E. The interim scenario is the widening of March Road to four lanes and the ultimate scenario considers the widening of March Road to accommodate the extension of the Median BRT system. As the timing of both of these improvements to March Road is unknown and neither transportation infrastructure upgrade is included in the City of Ottawa's 2031 Affordable Network, it has been assumed that they will occur beyond the proposed development's future analysis horizons. This assumption has been confirmed by the City of Ottawa as part of the comments provided on the former 910 March Road Forecasting Report for the previously proposed development. These comments can be found in Appendix B.

The Ottawa Official Plan, Ottawa Transportation Master Plan, Ottawa Pedestrian Plan, and the Ottawa Cycling Plan have also been used to identify changes to the area transportation network. The resulting changes to the road, pedestrian, and cycling network in the Study Area due to these plans are outlined below:

- As part of the 2031 Affordable Road Network, Klondike Road between March Road and Sandhill Road will be urbanized from a rural to an urban road cross-section. The original timing of this improvement was between 2014 to 2019. As these changes do not appear to be implemented, the timing of this is currently unknown.
- As part of the 2031 Affordable Network, March Road between Carling Avenue and Maxwell Bridge Road will be considered a Transit Signal Priority corridor (Isolated Measures). As a result, transit signal priority and queue jump lanes will be implemented. The exact timing of this is not clear.
- As part of the 2031 Ultimate Cycling Network, within the Study Area March Road will be considered a spine route, and both Klondike Road to the west of March Road, and Halton Terrace will be considered local routes. The exact timing of these have not been made clear.

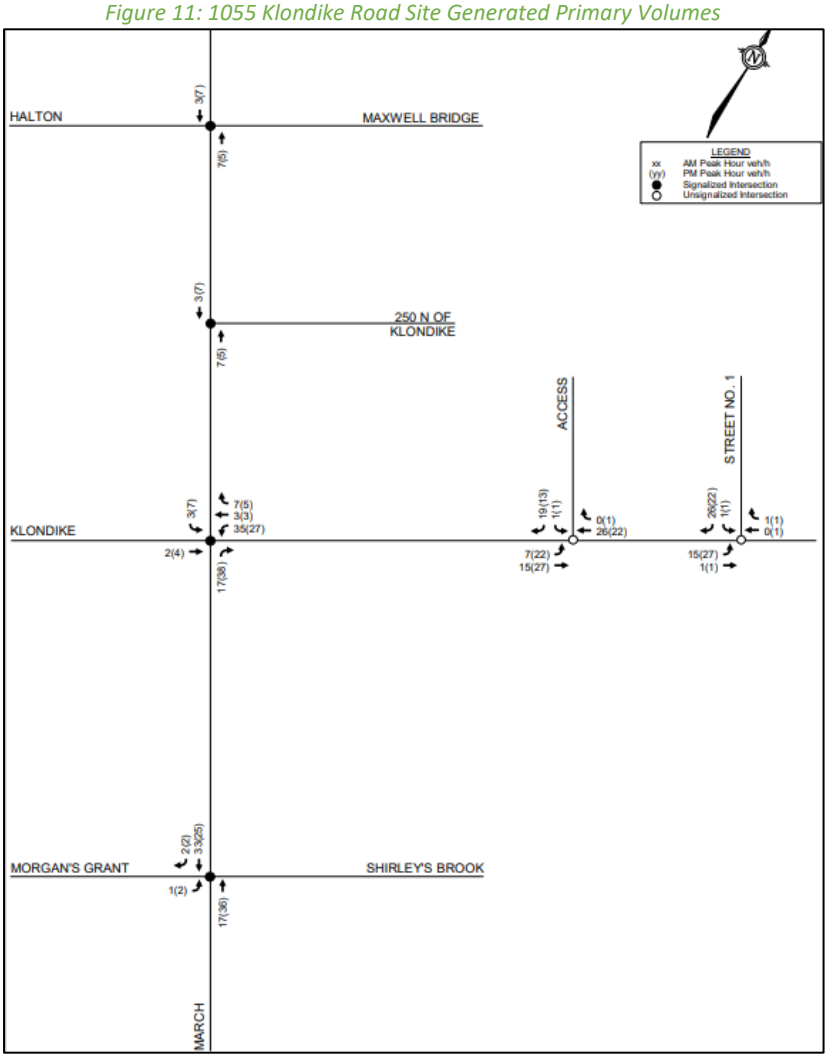
Additionally, it is assumed that as part of the proposed development, the existing pedestrian facilities which terminate north of Maxwell Bridge Road / Halton Terrace will be extended along the frontage of the proposed development along the east side of March Road upon full-build out of the development. As per comments received from the City of Ottawa, no upgraded cycling infrastructure has been proposed along the frontage of the site. As such the existing paved shoulder that acts as a bike lane will be maintained and no protected crossings at the proposed site access intersection shall be provided.

2.3.2 Other Study Area Developments

A few development applications were available for the adjacent properties as listed on the City's Development Application Search tool:

- 1055 Klondike Road – A residential subdivision made up of 12 semi-detached dwellings, 46 townhouse units, 56 apartment units, and additional space designated for development. The development is anticipated to be built out in 2024 and the anticipated primary trip generation from this site can be seen in Figure 11 and is an excerpt from the 1055 Klondike Road Transportation Impact Assessment prepared by Novatech.

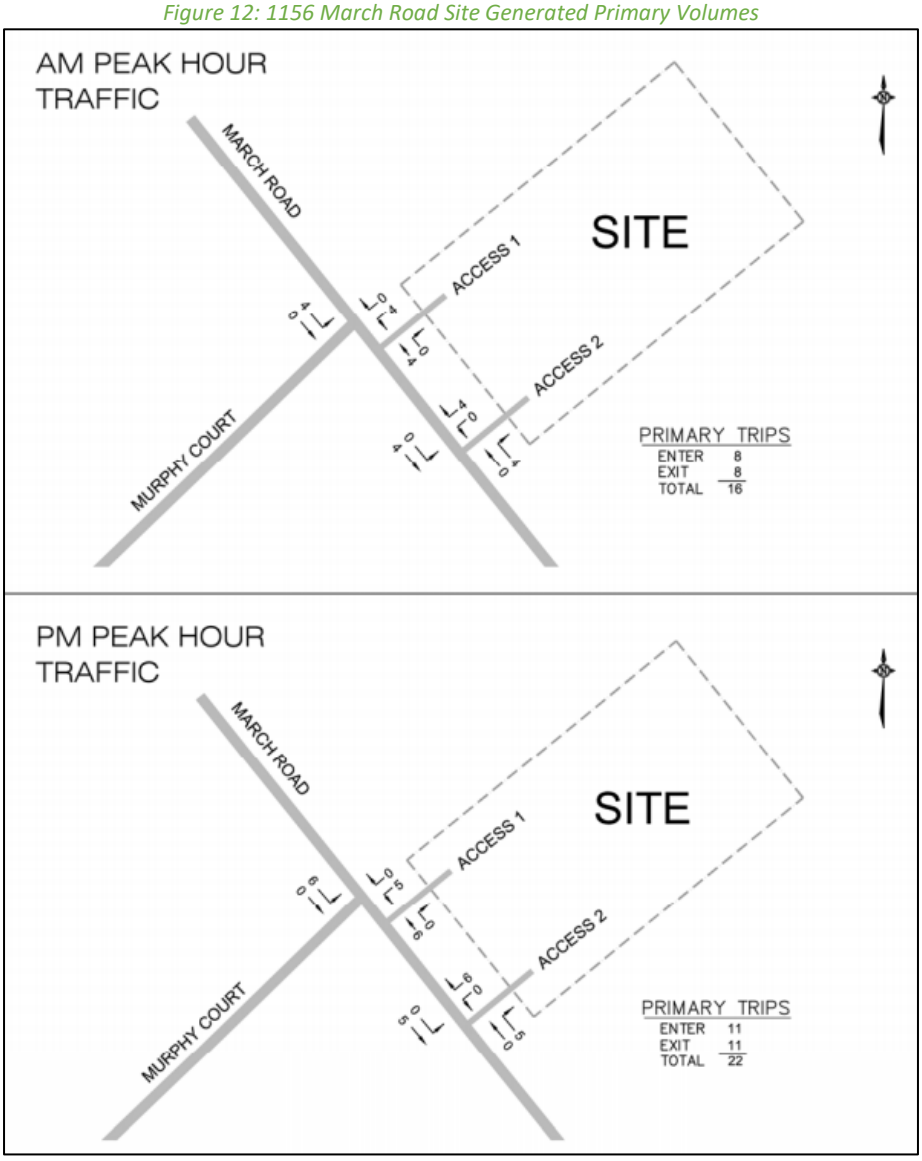
Figure 11: 1055 Klondike Road Site Generated Primary Volumes



Source: 1055 Klondike Road TIA (Novatech., 2021)

- 1156 / 1170 March Road – A gasoline service centre with eight fuelling pumps and a convenience store. The originally anticipated full-build out year was 2017. As this construction on this development does not appear to have begun yet, it will be assumed to be built-out before the future horizon year of 2028 to ensure it is considered. The anticipated primary trip generation from this site can be seen in Figure 12 and is an excerpt from the Mr. Gas Service Centre-1156 March Road Transportation Brief prepared by D.J. Halpenny & Associates Ltd.

Figure 12: 1156 March Road Site Generated Primary Volumes

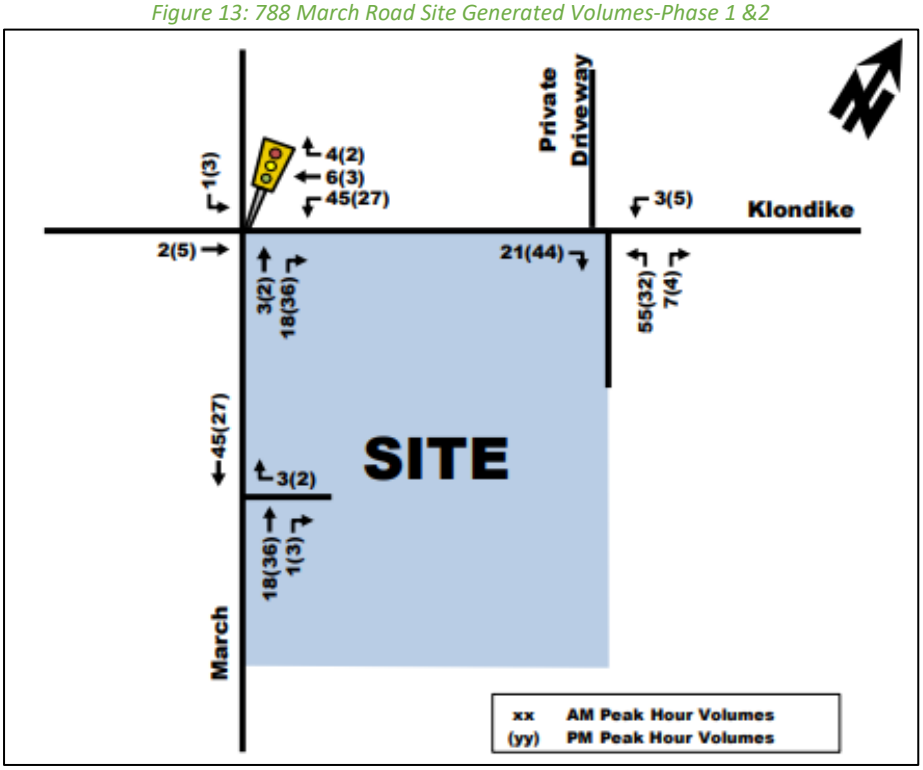


Source: 1156 March Road TIA Strategy Report (D.J. Halpenny & Associates Ltd., 2016)

- 1104 Halton Terrace – The proposed development includes 86 apartments. The development is anticipated to be built out in 2024 and is anticipated to generate 17AM and 17PM new two-way peak-hour auto trips. As such, the trip generation trigger for a full TIA was not met, and no volume figures were produced. The impact of the trips generated by this development is expected to be captured by the application of a background growth rate. (Novatech, 2021)
- 1050 Klondike Road – The proposed development includes a single residential stacked dwelling block composed of 9 dwelling units. No TIA is available at this time, however given the small number of proposed dwelling units, the impact of the trips generated by this development is expected to be captured by the application of a background growth rate.
- 788 March Road – A two-phase residential development proposing 95 residential units upon the completion of the first phase (2021) and an additional 101 residential units upon build-out of the second phase (2023). As this construction of the first phase of this development does not appear to have begun

yet, it will be assumed to be built-out before the future horizon year of 2028 to ensure it is considered. A total of approximately 270 vehicle parking spaces are proposed. The anticipated trip generation from this site for Phase 1 and Phase 2 can be seen in Figure 13, and is an excerpt from the 788 March Road Draft Transportation Impact Assessment prepared by Parsons. A final version of the report has not been made available.

Figure 13: 788 March Road Site Generated Volumes-Phase 1 &2

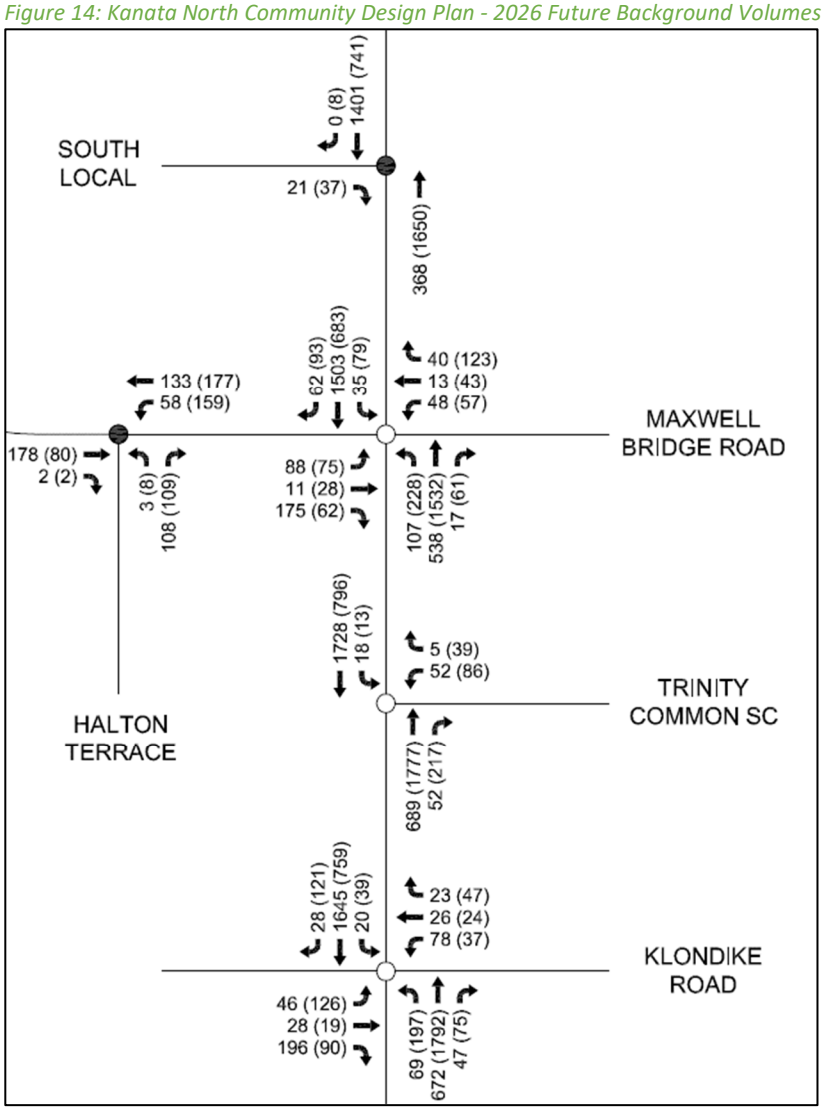


Source: 788 March Road TIA Strategy Report (Parsons, 2018)

- 1015 March Road –1015 March Road is proposed to subdivide the Subject Site to consist of one future mixed-use block, one future institutional block, and will extend a Street to March Road. No TIA is available at this time, and so the impact of the trips generated by this development is expected to be captured by the application of a background growth rate.

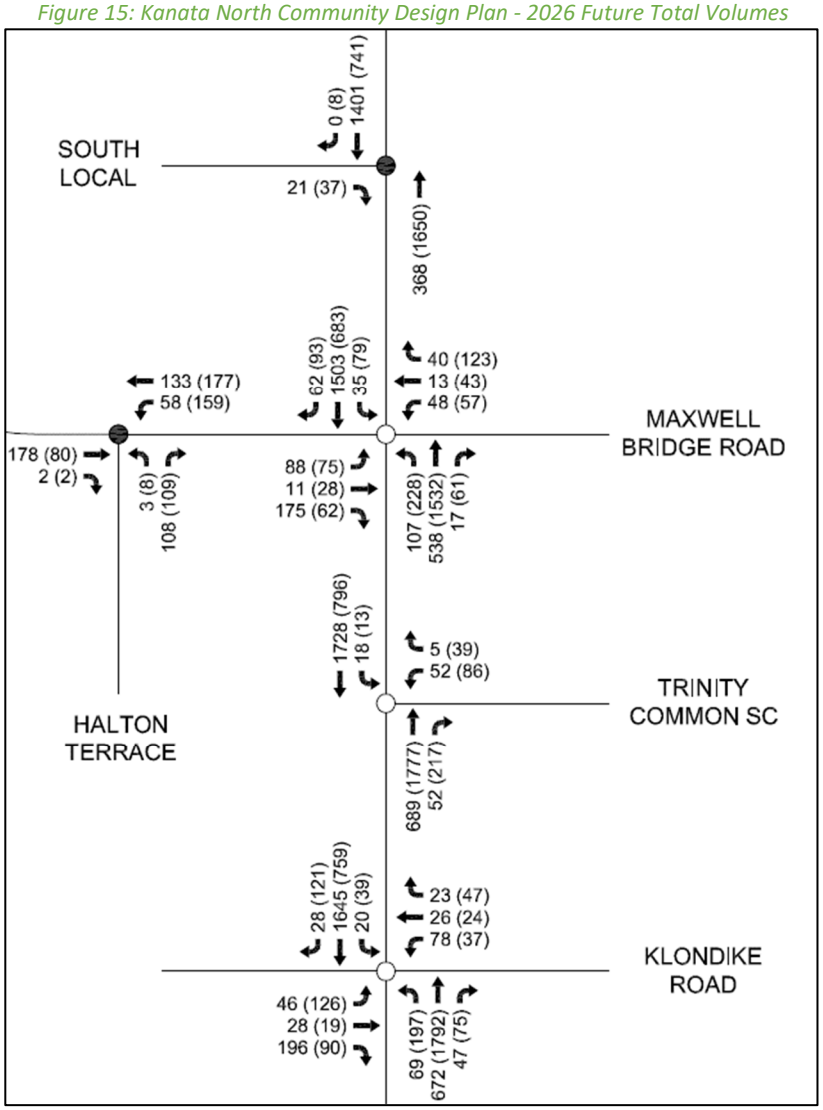
The Kanata North Community Design Plan outlines the proposed community-wide land-use framework for the Kanata North Urban Expansion Area. Various proposed developments are considered as part of the design plan and have been broken into four quadrants (northeastern, southeastern, southwestern, and northwestern). The Kanata North Community Design Plan -TMP – prepared by Novatech identifies the site-generated traffic of all four quadrants on the surrounding area road network and assumes a full build-out year of 2026. Excerpts from the TMP can be seen in Figure 14 and Figure 15 depicting the 2026 Future Background Volumes and the 2026 Future Total Volumes, respectively.

Figure 14: Kanata North Community Design Plan - 2026 Future Background Volumes



Source: Kanata North Community Design Plan - TMP (Novatech, 2016)

Figure 15: Kanata North Community Design Plan - 2026 Future Total Volumes



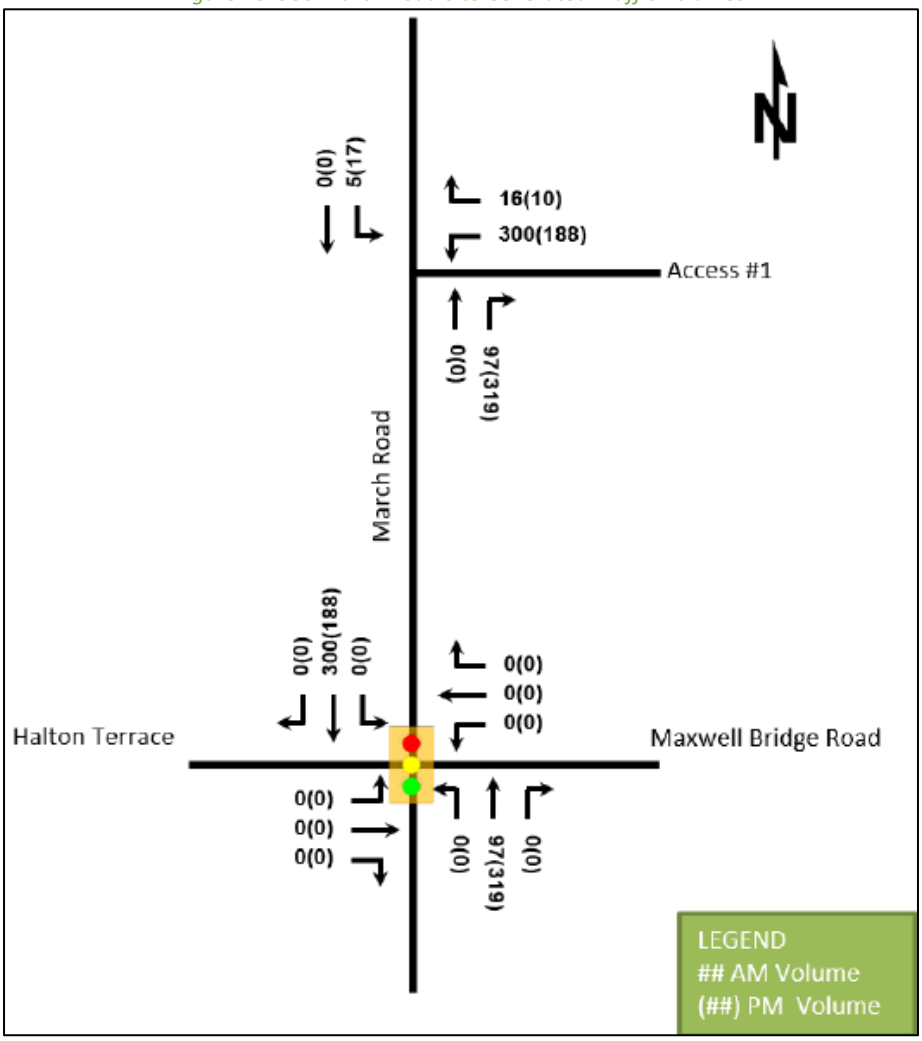
Source: Kanata North Community Design Plan - TMP (Novatech, 2016)

At this time, active development applications are available for all quadrants, and therefore the site generated traffic for these quadrants will be determined based on the Transportation Impact Assessments for these development areas where available.

The other development quadrants are explored in further detail below:

- 936 March Road - Considered the southeast portion of the Kanata North Urban Expansion Area Proposed to include approximately 900 residential units split between townhomes and detached units. The full build-out of this development is expected by 2023. The anticipated trip generation from this site can be seen in Figure 16 and is an excerpt from the 936 March Road Transportation Impact Assessment prepared by CGH Transportation.

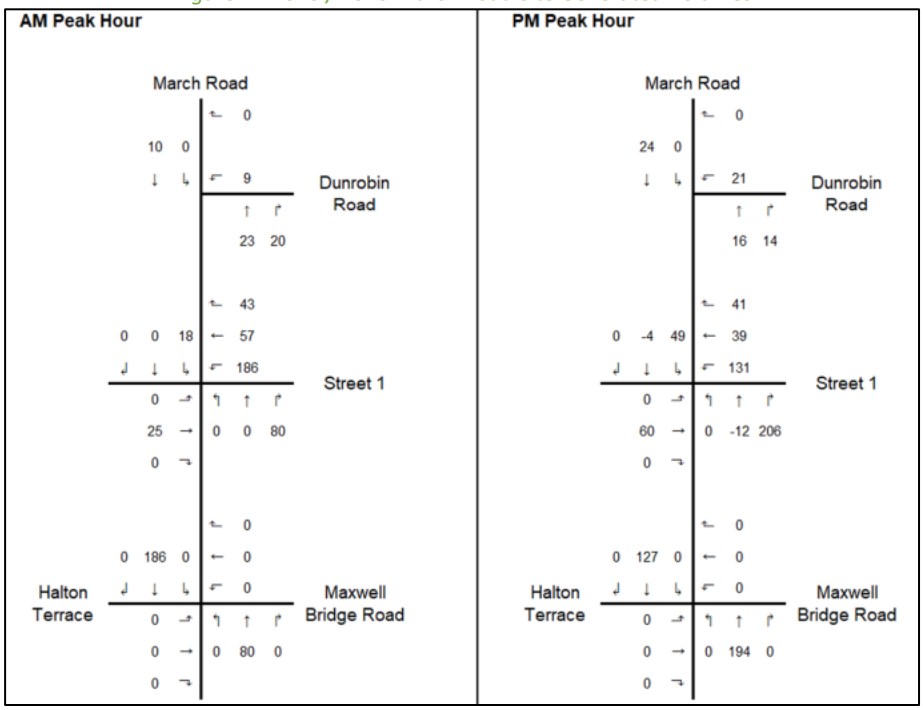
Figure 16: 936 March Road Site Generated Traffic Volumes



Source: 936 March Road (CGH Transportation, 2020)

- 1020 / 1070 March Road – Considered the northeast portion of the Kanata North Urban Expansion Area. A subdivision proposed to include 297 single family homes, 315 townhouses, 116 apartment units, an elementary school, and 80, 000 ft^2 of specialty retail. Full build-out of this development is expected by 2031. No phasing information is available. The anticipated trip generation from this site can be seen in Figure 17 and is an excerpt from 1020 and 1070 March Road Transportation Impact Assessment-Strategy Report prepared by Stantec.

Figure 17:1020 / 1070 March Road Site Generated Volumes



Source: 1020 and 1070 March Road TIA Strategy Report (Stantec, 2020)

- 1053 / 1075 / 1145 March Road – Considered the northwest portion of the Kanata North Urban Expansion Area. Proposed to include 295 single detached dwellings, 314 townhouse dwellings, 216 multi-unit dwellings. Full build-out of this development is expected by 2026. Site generated volumes diagrams are not available as part of the TIA, however the report indicates that the volumes presented in the Kanata North Community Design Plan – TMP prepared by Novatech can be used to determine a conservative estimate of the traffic generated by the proposed development at 1053 / 1075 / 1145 March Road. The 2026 future background volumes and the 2026 future total volumes seen in Figure 14 and Figure 15 will therefore be used to calculate the site generated traffic.
- 927 March Road – Considered the southwest portion of the Kanata North Urban Expansion Area. 927 March Road is proposed to be a residential subdivision with 35 single family homes, 78 townhouses, 1,838 apartment units, and 6,100 m^2 of specialty retail constructed in seven phases. Phase One to Phase Four is expected to be built by 2028, and it includes two mid-rise residential buildings with 600 units, SWM pond block, 33 townhouse units, 28 singles units, and three low-rise residential apartments with 336 units. Phase Five and Six is expected to be built by 2032, and it includes four low-rise residential apartments with 554 units.

  Full build-out of this development is expected by 2034. As such, the Phase One to Phase Four site traffic generated by 927 March Road will be considered in the future analysis horizons of 2028 and Phase One to Phase Six will be considered in the future analysis horizons of 2033 within this report. (Stantec, 2020)

3 Study Area and Time Periods

3.1 Study Area

The study area will include the intersections of March Road at Halton Terrace / Maxwell Bridge Road, March Road at Klondike Road, and March Road at the site access.

The boundary road will be March Road and no screenlines are present within proximity to the site.

3.2 Time Periods

As the proposed development is composed of residential and commercial uses, the AM and PM peak hours will be examined.

3.3 Horizon Years

The anticipated build-out year is 2028. As a result, the full build-out plus five years horizon year is 2033.

4 Exemption Review

Table 7 summarizes the exemptions for this TIA.

Table 7: Exemption Review

Module	Element	Explanation	Exempt/Required
Design Review Component			
4.1 Development Design	4.1.2 Circulation and Access	Only required for site plans	Required at Site Plan Application
	4.1.3 New Street Networks	Only required for plans of subdivision	Exempt
4.2 Parking	4.2.1 Parking Supply	Only required for site plans	Required at Site Plan Application
	4.2.2 Spillover Parking	Only required for site plans where parking supply is 15% below unconstrained demand	Exempt. May be required at Site Plan Application
Network Impact Component			
4.5 Transportation Demand Management	All Elements	Not required for site plans expected to have fewer than 60 employees and/or students on location at any given time	Required
4.6 Neighbourhood 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	Exempt
4.8 Network Concept		Only required when proposed development generates more than 200 person-trips during the peak hour in excess of equivalent volume permitted by established zoning	Exempt

5 Development-Generated Travel Demand

5.1 Mode Shares

Examining the mode shares recommended in the TRANS Trip Generation Manual (2020) for the subject district and derived from the most recent National Capital Region Origin-Destination survey (OD Survey), the existing average district mode shares by land use for Kanata/Stittsville and other rural districts have been summarized in Table 8 and Table 9, respectively. Since the development location is just above the Kanata/Stittsville district, an average mode share of Kanata/Stittsville and other rural districts was used and has been summarized in Table 10.

Table 8: TRANS Trip Generation Manual Recommended Mode Shares – Kanata/Stittsville

Travel Mode	Multi-Unit (High-Rise)		Commercial Generator	
	AM	PM	AM	PM
Auto Driver	43%	55%	81%	73%
Auto Passenger	26%	19%	12%	22%
Transit	28%	21%	5%	1%
Cycling	0%	0%	0%	0%
Walking	4%	5%	2%	4%
Total	**100%**	**100%**	**100%**	**100%**

Table 9: TRANS Trip Generation Manual Recommended Mode Shares – Other Rural Districts

Travel Mode	Multi-Unit (High-Rise)		Commercial Generator	
	AM	PM	AM	PM
Auto Driver	63%	64%	87%	80%
Auto Passenger	15%	18%	9%	14%
Transit	19%	16%	0%	1%
Cycling	0%	0%	0%	2%
Walking	3%	1%	3%	4%
Total	**100%**	**100%**	**100%**	**100%**

Table 10: Applied Mode Shares – Average

Travel Mode	Multi-Unit (High-Rise)		Commercial Generator	
	AM	PM	AM	PM
Auto Driver	53%	60%	84%	76%
Auto Passenger	20%	19%	11%	18%
Transit	24%	19%	3%	1%
Cycling	0%	0%	0%	1%
Walking	3%	2%	2%	4%
Total	**100%**	**100%**	**100%**	**100%**

5.2 Trip Generation

This TIA has been prepared using the vehicle and person trip rates for the residential dwellings using the TRANS Trip Generation Manual (2020) and the vehicle trip rates and derived person trip rates for commercial component from the ITE Trip Generation Manual 11th Edition using the City-prescribed conversion factor of 1.28. Table 11 summarizes the person trip rates for the proposed residential land uses for each peak period and the person trip rates for the non-residential land uses by peak hour.

Table 11: Trip Generation Person Trip Rates by Peak Period

Land Use	Land Use Code	Peak Period	Vehicle Trip Rate	Person Trip Rates
Multi-Unit (High-Rise)	221 & 222 (TRANS)	AM	-	0.80
		PM	-	0.90
Strip Retail Plaza (<40k)	822 (ITE)	AM	2.36	3.02
		PM	6.59	8.44

Using the above person trip rates, the total person trip generation has been estimated. Table 12 summarizes the total person trip generation for the residential land uses and for the non-residential land uses.

Table 12: Total Residential Person Trip Generation by Peak Hour

Land Use	Units/GFA	AM Peak Period			PM Peak Period		
		In	Out	Total	In	Out	Total
Multi-Unit (High-Rise)	390 units	48	107	155	90	65	155
Strip Retail Plaza (<40k)	5393 sq ft	10	7	17	24	24	48

Internal capture rates from the ITE Trip Generation Handbook 3rd Edition have been assigned to the development's retail component for mixed-use developments. The rates summarized in Table 13 represent the percentage of trips to/from the retail use based on the residential component.

Table 13: Internal Capture Rates

Land Use	AM		PM	
	In	Out	In	Out
Residential to/from Strip Retail Plaza (<40k)	17%	14%	10%	26%

Where applicable, pass-by trips have been accounted for. The pass-by rate has been selected using ITE Trip Generation Manual 11th Edition. As land use 822 (Strip Retail Plaza) does not have a pass-by trip percentage provided, pass-by trip rates from land use 820 (Shopping Centre), and land use 821 (Shopping Plaza) were both considered. The pass-by rate for land use 821 was selected as it is more similar to land use 822. The average pass-by trip percentages for the PM peak period was taken from this table as pass-by trips are not expected in the AM peak period for retail land uses. For the residential land uses, a pass-by rate has not been applied as they are unlikely to attract pass-by trips. The rates used for the retail land use has been summarized in Table 14, as per the ITE Trip Generation Manual.

Table 14: Land Use Pass-by Rates

Land Use	Pass-by Rate	
	AM	PM
Strip Retail Plaza	-	40%

Using the above mode share targets for the internal capture and pass-by rates, and the person trip rates, the person trips by mode have been projected. Trip generation by peak hour has been forecasted using the prescribed peak period conversion factors presented in the TRANS Trip Generation Manual (2020) for the residential component. Table 15 summarizes the residential trip generation and the non-residential trip generation by mode and peak hour.

Table 15: Trip Generation by Mode

Travel Mode		AM Peak Hour				PM Peak Hour			
		Mode Share	In	Out	Total	Mode Share	In	Out	Total
Multi-Unit (High-Rise)	Auto Driver	**53%**	24	55	79	**60%**	53	38	91
	Auto Passenger	**20%**	9	21	30	**19%**	17	12	29
	Transit	**24%**	13	28	41	**19%**	18	13	31
	Cycling	**0%**	0	0	0	**0%**	0	0	0
	Walking	**4%**	2	3	5	**3%**	2	2	4
	Total	**100%**	**48**	**107**	**155**	**100%**	**90**	**65**	**155**
Strip Retail Plaza (<40k)	Auto Driver	**84%**	7	5	12	**76%**	7	4	11
	Auto Passenger	**11%**	1	1	2	**18%**	4	3	7
	Transit	**3%**	0	0	0	**1%**	0	0	0
	Cycling	**0%**	0	0	0	**1%**	0	0	0
	Walking	**3%**	0	0	0	**4%**	1	1	2
	Internal Capture	*varies*	*-2*	*-1*	*-3*	*varies*	*-2*	*-6*	*-8*
	Pass-by	*0%*	*0*	*0*	*0*	*40%*	*-10*	*-10*	*-20*
	Total	**100%**	**8**	**6**	**14**	**100%**	**12**	**8**	**20**
Total	Auto Driver	-	31	60	91	-	60	42	102
	Auto Passenger	-	10	22	32	-	21	15	36
	Transit	-	13	28	41	-	18	13	31
	Cycling	-	0	0	0	-	0	0	0
	Walking	-	2	3	5	-	3	3	6
	Total	**100%**	**56**	**113**	**169**	**100%**	**102**	**73**	**175**

As shown above, a total of 91 AM and 102 PM new peak hour two-way vehicle trips are projected as a result of the proposed development.

5.3 Trip Distribution

To understand the travel patterns of the subject development, the OD Survey has been reviewed to determine the travel patterns, and these patterns were applied based on the build-out of Kanata/Stittsville as it is considered reflective of future plans for the surrounding area. Table 16 below summarizes the distributions.

Table 16: OD Survey Distribution – Kanata/Stittsville

To/From	Residential % of Trips
North	5%
South	50%
East	40%
West	5%
Total	**100%**

5.4 Trip Assignment

Using the distribution outlined above, turning movement splits, and access to major transportation infrastructure, the pass-by trips and trips generated by the site have been assigned to the Study Area road network.

To assign the pass-by trips to the accesses, a ratio of southbound trips as a portion of all traffic on March Road, and northbound trips as a portion of all traffic on March Road was developed. It was determined that 72% of the total traffic is southbound and 28% is northbound in the AM peak period and 35% of the total traffic is southbound and 65% is northbound in the peak periods. Using these percentages, the traffic volumes have been logically

distributed to the access points. Figure 18 and Figure 19 illustrate the forecasted pass-by trip volumes and new site generation auto volumes, respectively.

Figure 18: Pass-By Trip Volumes

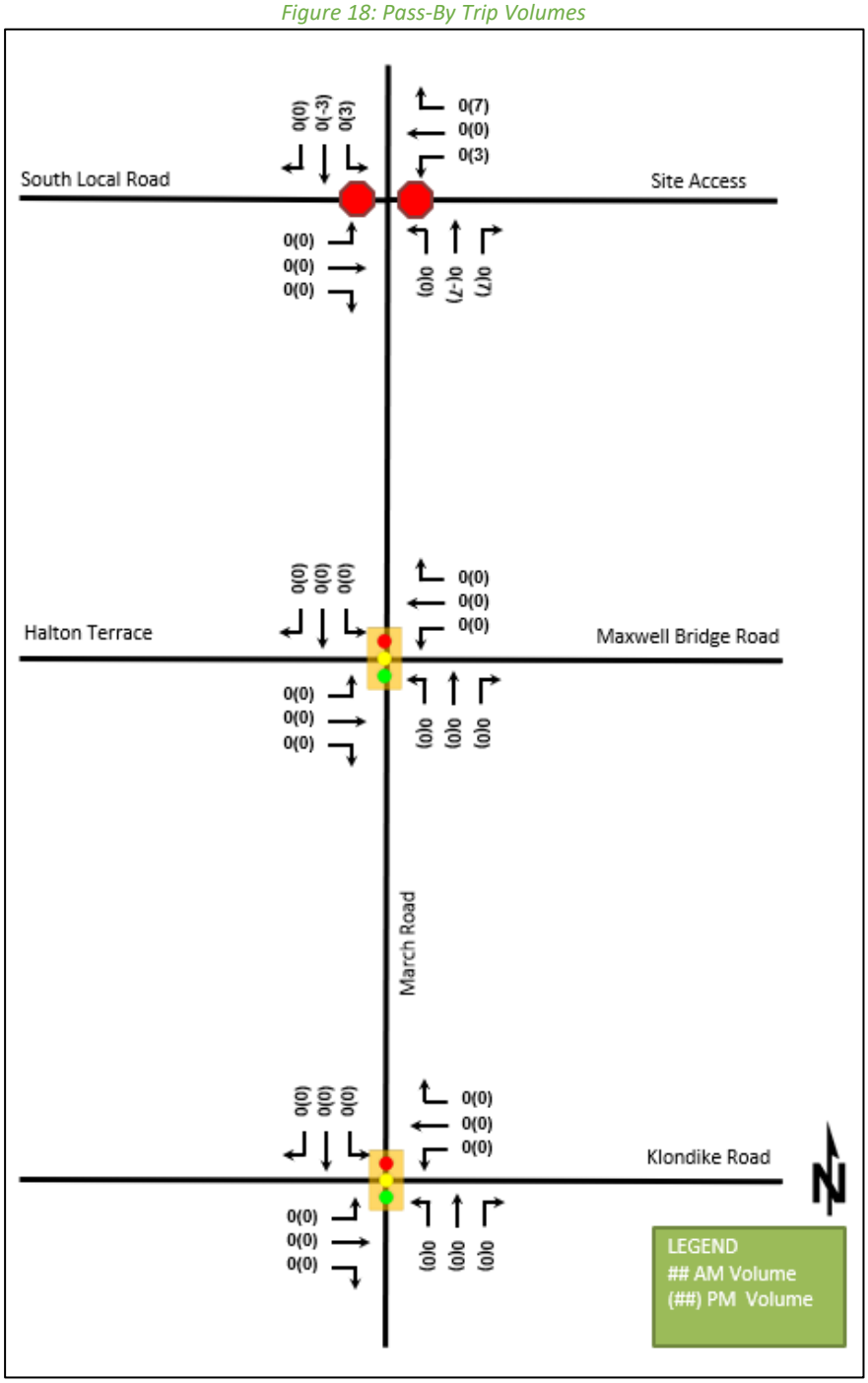


Figure 19: New Site Generation Auto Volumes

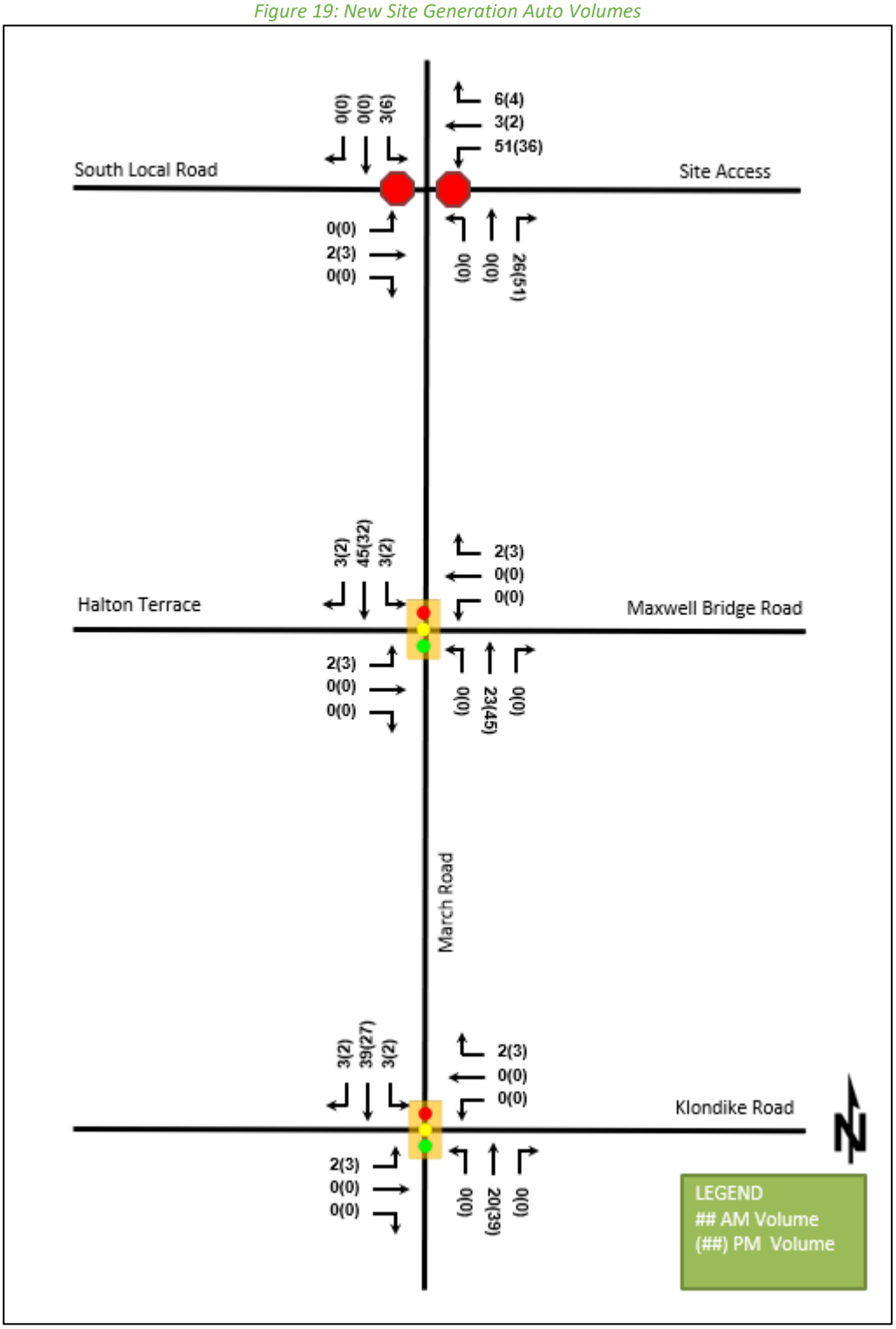
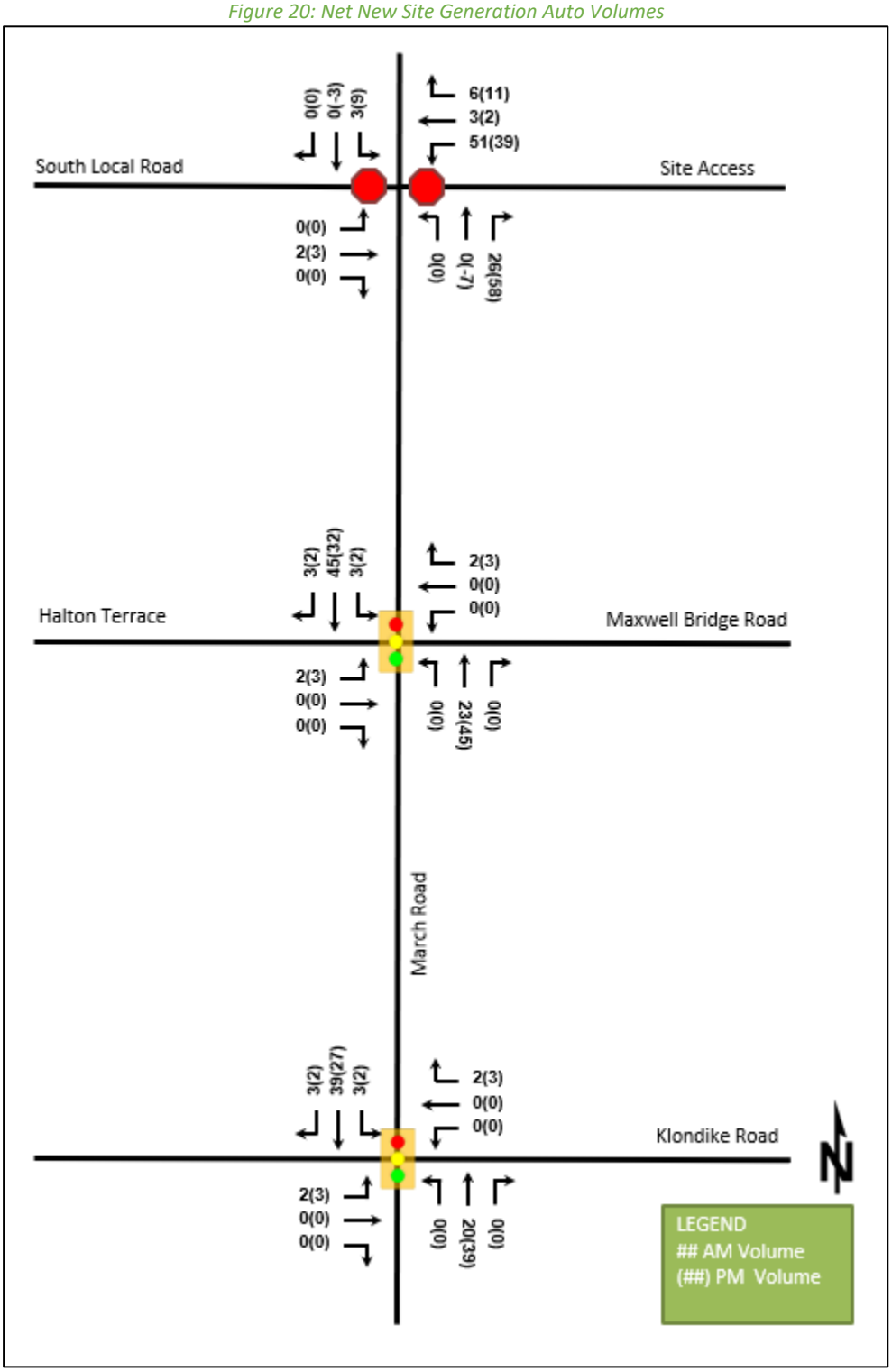


Figure 20: Net New Site Generation Auto Volumes



6 Background Network Travel Demands

6.1 Transportation Network Plans

The transportation network plans were discussed in Section 2.3.1. The Kanata North CDP has determined the required March Road interim and ultimate cross-sections. Both cross-sections, as shown in Appendix E, include two traffic lanes, cycling lanes, and sidewalks, both northbound and southbound. The ultimate cross-section also includes a centreline bus rapid transitway. Additionally, Klondike Road between March Road and Sandhill Road will be urbanized and the implementation of a Transit Signal Priority corridor (isolated measures) on March Road between Carling Avenue and Maxwell Bridge Road are indicated by the City of Ottawa 2031 Affordable Road Network. As the timing of this is currently unknown, this is assumed to occur beyond the proposed development's future analysis horizons.

The additional connectivity provided by the future bicycle spine route along March Road and the local routes along Klondike Road to the west of March Road and Halton Terrace will improve the active mode network but is not anticipated to significantly impact the modal shares used in the future trip generation.

It is noted that in the City of Ottawa 2021 Official Plan indicates a 48-metre right-of-way on March Road between Klondike Road and 230 metres north of Maxwell Bridge Road. As a result, a 48-metre right-of-way has been protected for on the updated plan.

6.2 Background Growth and Other Developments

An annual compound growth rate of 0.5% has been used to determine the background growth. The growth rate has been applied to the through volumes along March Road only. This growth rate is consistent with the Kanata North CDP TMP.

The background developments explicitly considered in the background conditions (Section 6.2) include:

- 1055 Klondike Road
- 1156/1170 March Road
- 788 March Road
- 936 March Road
- 1053/1075/1145 March Road
- 927 March Road

It is noted that these background development volumes are likely overstated ad are actually lower than what has been used as the majority of background traffic volume projections considered were developed prior to the publishing of the TRANS Trip Generation Manual (2020). This is because the majority of the trip generation rates from the 2020 manual are lower than the TRANS trip generation rates previously used. No reductions to these volumes were applied.

Figure 21 illustrates the 2028 future background volumes, and Figure 22 illustrates the 2033 future background volumes.

Figure 21: 2028 Future Background Volumes

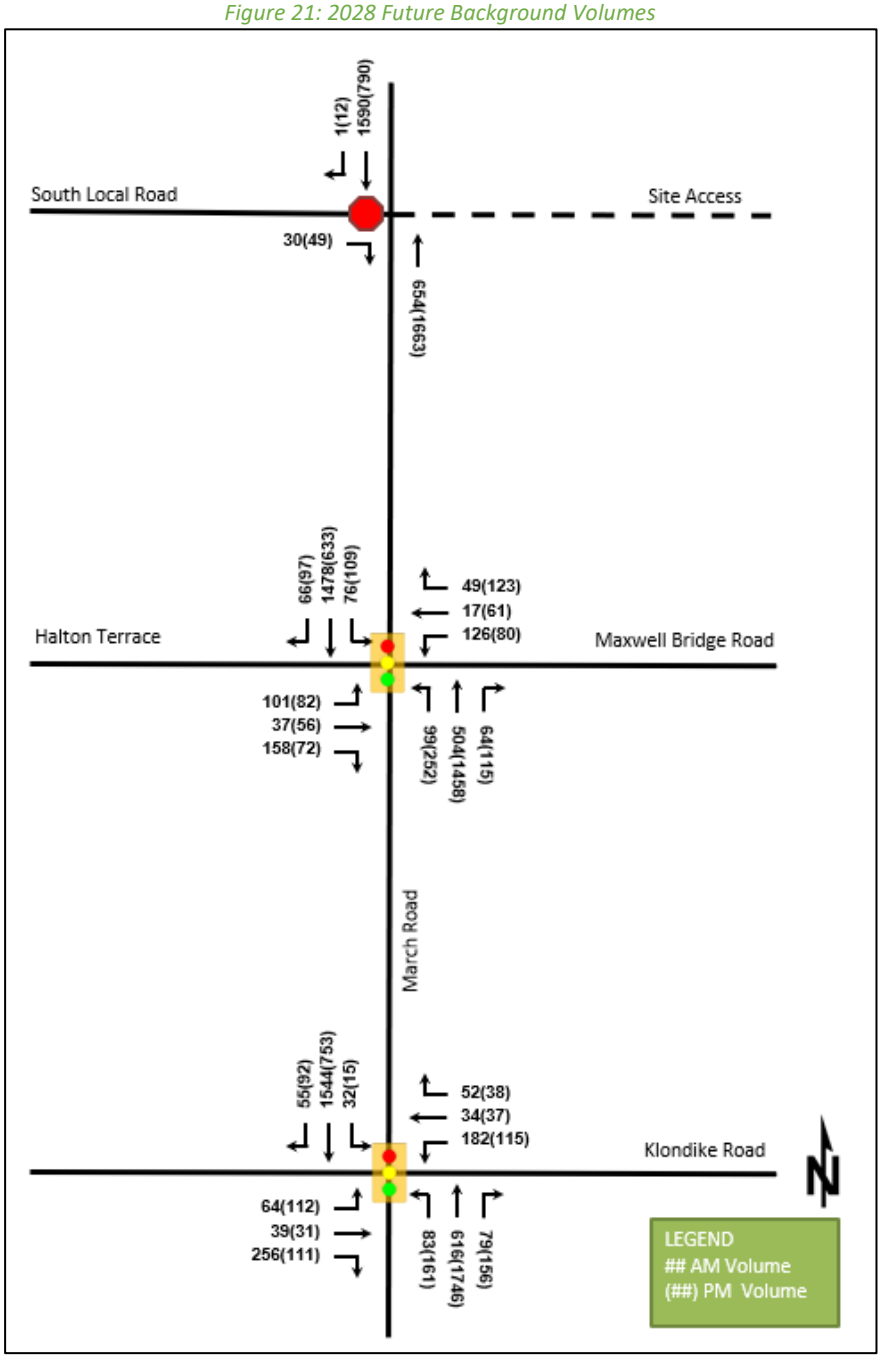
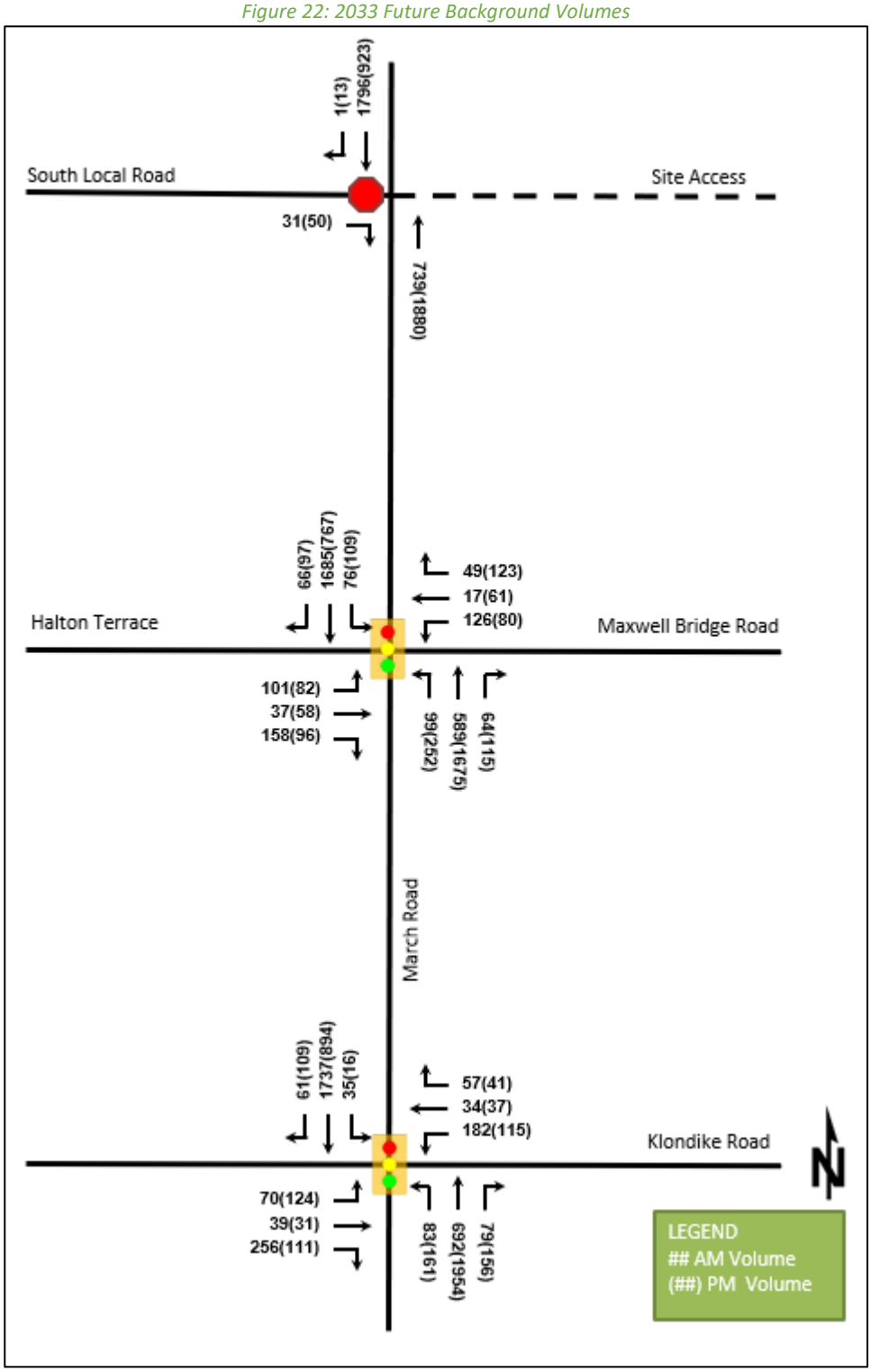


Figure 22: 2033 Future Background Volumes



7 Demand Rationalization

As documented in Section 17.2.1, the existing conditions within the Study Area are not indicative of any capacity issues. Changes in traffic volumes between existing and future conditions will come from the applied 0.5%

background growth rate, the 1055 Klondike Road development, the 1156/1170 March Road development, the 788 March Road development, the 936 March Road development, the 1053/1075/1145 March Road development, the southwestern development in the Kanata North Community Design Plan, and the net new auto trips from the proposed development within this report. The trip generation of this development is consistent with expected modal shares as can be seen in Section 5.1.

It is also noted that turning movements to and from the South Local Road change between future background and future total conditions as the South Local Road is expected to operate as a right-in / right-out access in the future background conditions and is expected to operate as a four-legged full movement intersection in the future total conditions.

The future total 2028 volumes are illustrated in Figure 23 and the future total 2033 volumes are illustrated in Figure 24.

Figure 23: 2028 Future Total Volumes

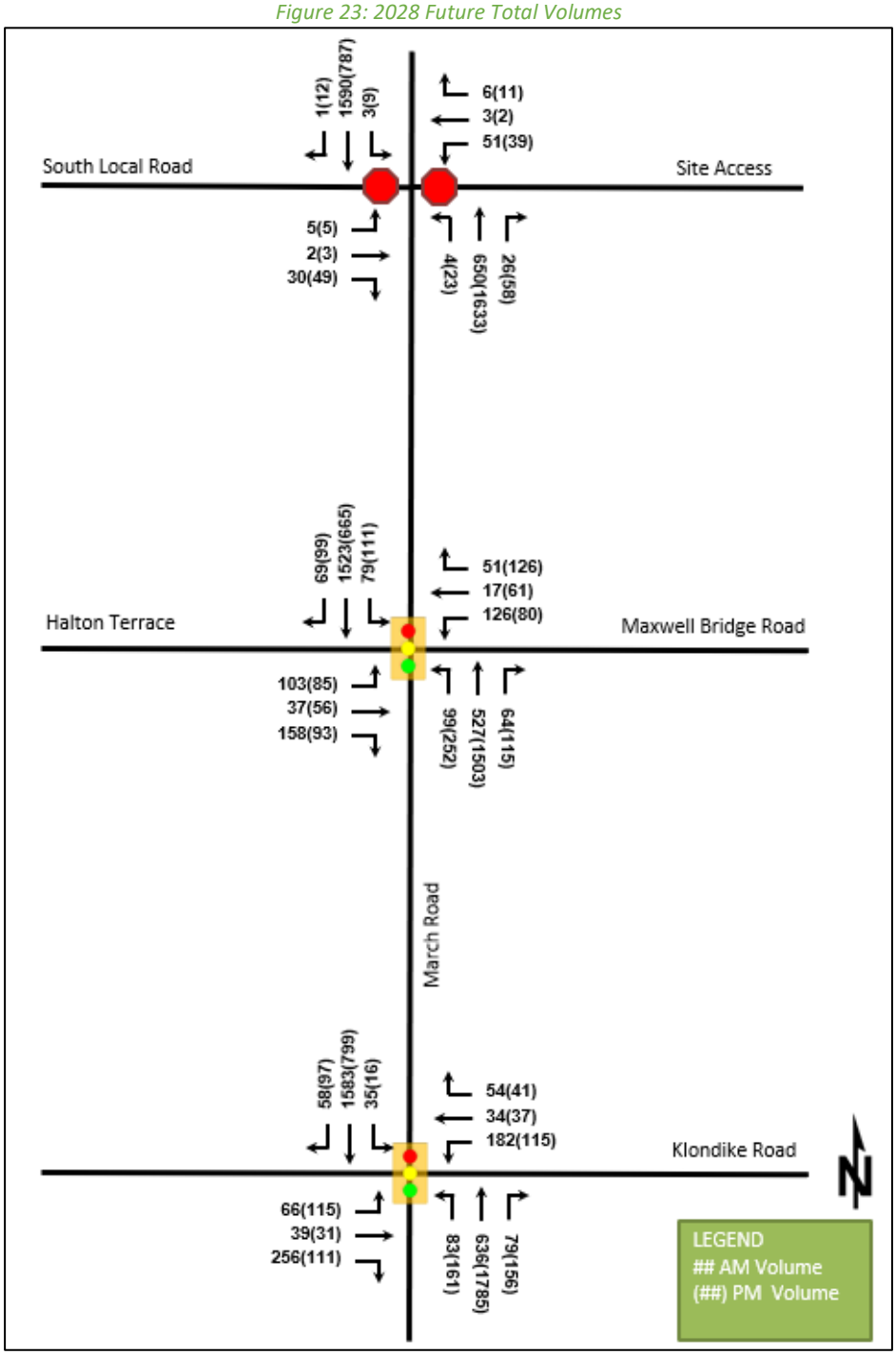
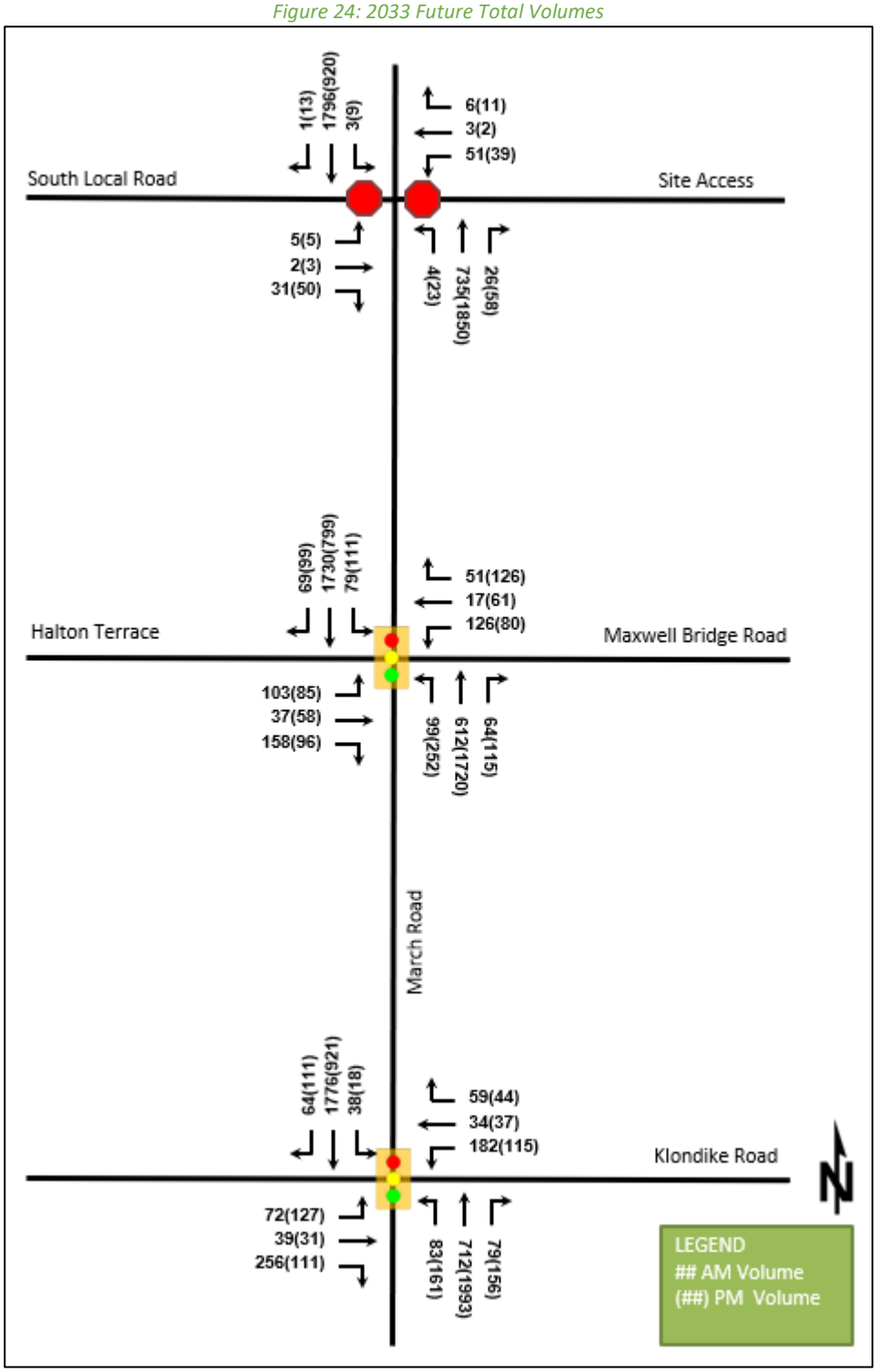


Figure 24: 2033 Future Total Volumes



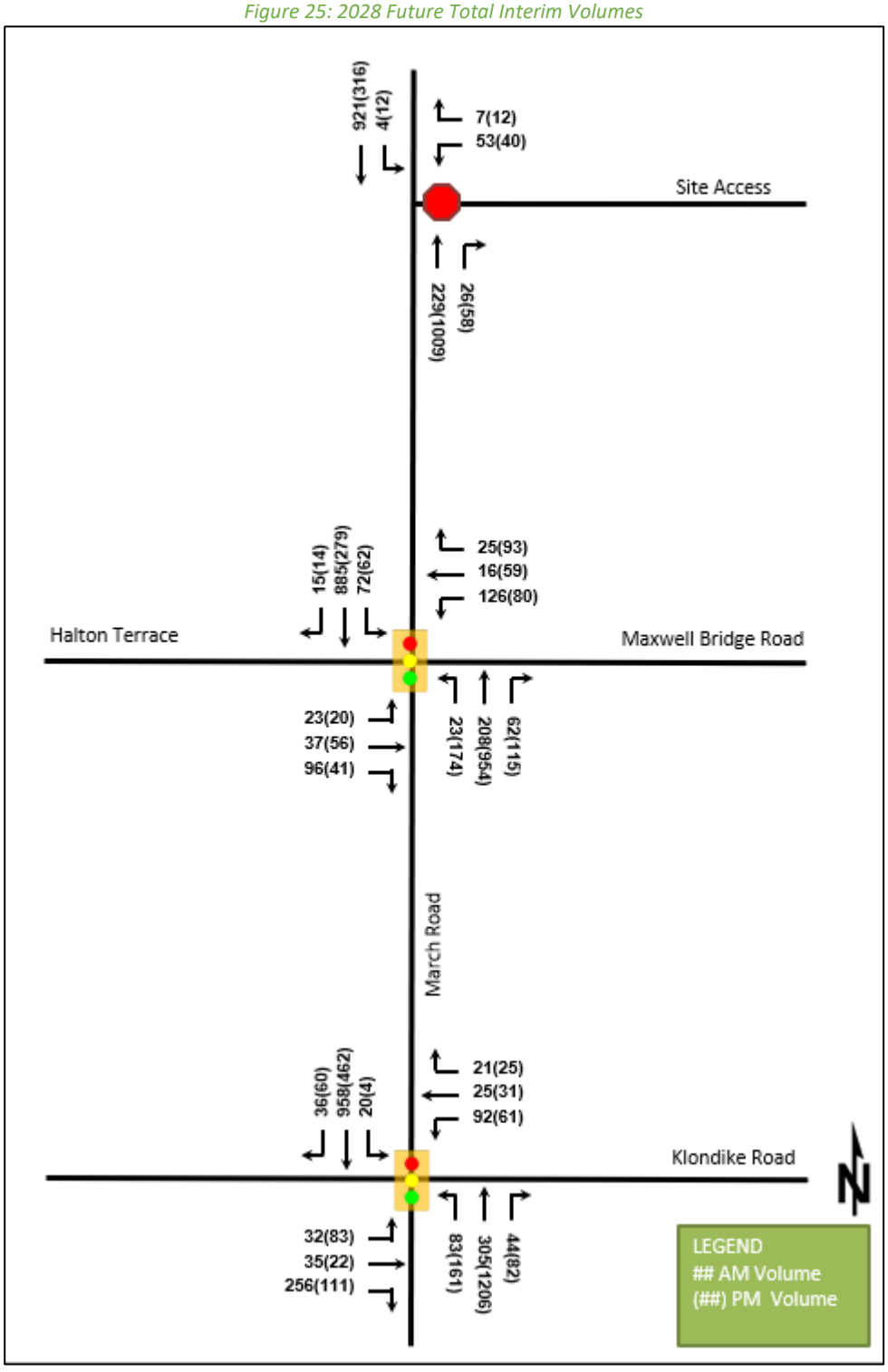
7.1 2028 Interim Year

A significant increase in volumes at the Study Area intersections has been noted between the existing and future background analysis horizons as a result of the future background developments proposed as part of the Kanata North CDP area to the north of the subject development. While the build-out of the developments that make up this area have been accounted for based on build-out horizons indicated in their respective TIAs, as well as the

Kanata North CDP TMP, some of these horizons are not considered realistic. As such, a portion of the background development volumes considered in both the future analysis horizons may not actually be realized in these horizons. As mentioned in Section 6.2 above, it is also noted that these background development volumes are likely overstated and are actually lower than what has been used as the majority of background traffic volume projections considered were developed prior to the publishing of the TRANS Trip Generation Manual (2020). This is because the majority of the trip generation rates from the 2020 manual are lower than the TRANS trip generation rates previously used.

Given the uncertainty surrounding the timing of surrounding roadway developments, and the timing of future plans to widen March Road as well as to implement BRT facilities, and interim analysis horizon has been developed. This interim analysis horizon assumes no background developments have been built in the 2028 future analysis horizon, and as such consists of the 2022 existing volumes grown to a 2028 horizon, as well as the subject development's site generated traffic. Figure 25 illustrates the resulting 2028 interim future total volumes and Section 17.2.5 below summarizes the operational analysis of the site access intersection as an unsignalized intersection with stop-control on the east leg. As the site access is shown to operate well with no LOS F movements or v/c ratios greater than 1.0, should the surrounding background developments be built-out on a realistic timeline as opposed to what has been proposed in their respective TIA's, the access intersection will not require any intersection configuration changes from an operational perspective in the 2028 future analysis horizon. Based on the volumes and analysis of the 2028 future total interim horizons, a monitoring plan, summarized in Section 8 below, has been developed to identify when intersection configuration changes to the site access intersection will be required.

Figure 25: 2028 Future Total Interim Volumes



8 Monitoring Plan

8.1 Rationale

In order to determine when the site access should be reconfigured to become a right-in / right-out site access intersection on March Road, a monitoring plan to track on-site traffic volumes and determine on-site vehicle delays following the completion of the proposed development has been developed. Rather than immediately reconfiguring the site access as a right-in / right-out intersection, monitoring the level of service for the entire intersection will better determine when intersection reconfiguration is justified. As previously discussed, projected build-outs of the surrounding background developments may not be realistic, and the trips rates used to develop background development site generated traffic may be outdated and overly conservative. As such, the reconfiguration of the access intersection may not be required at the time of the subject development's build-out, and the access should be monitored to best determine when to modify the site access from the proposed full-movement stop-controlled access to a right-in right-out access.

8.2 Monitoring Activities

To monitor the traffic volumes and experienced level of service at the subject intersection, traffic count monitoring is to occur annually. Commencing the year of full build-out, the intersection traffic counts, and information will be collected over an eight-hour period on a weekday, recording both the AM and PM peak hours. Yearly monitoring is to occur for five years past the build-out (2028-2033), or until the completion of the proposed bus rapid transit (BRT) line currently planned for March Road, which will result in the implementation of a median along March Road, resulting in the site access intersection becoming a right-in/right-out intersection. The annual traffic volume monitoring is to be conducted by a third-party traffic monitoring company and paid for by the developer. Each year, the results of the monitoring activities will be submitted to the City of Ottawa in the form of a yearly memo, updated annually to determine when to reconfigure the intersection.

8.3 Evaluation

The expected timeline for the monitoring plan will be from the year of full build-out for the proposed development, currently estimated to be 2028, until the end of the five-year horizon of 2033, or until the completion of the proposed March Road BRT line should this occur prior to 2033. Upon the completion of the proposed BRT line, the intersection will be converted from a full-movement access to a right-in/right-out access. Should the monitoring plan annual memo determine the level of service at the intersection of March Road and Site Access / South Local Road to be a level of service of 'F' a right-in/right-out access will be recommended and deemed warranted. Ultimately, the decision of when to reconfigure the access intersection will be the responsibility of the City of Ottawa, should the annual memo identify that it is warranted. After the five-year horizon in 2033 is reached, if a level of service of F at the intersection is not reached, it is assumed that the monitoring of the intersection will become the responsibility of the City of Ottawa as part of ongoing monitoring and planning of the proposed March Road BRT line.

8.4 Remediation

If the outcome of the monitoring plan deems that the reconfiguration of the intersection is warranted within the five-year horizon period (2028-2033) in which the monitoring is the responsibility of the developer, the site access will be reconfigured to accommodate a right-in right-out movement by installing a concrete median along March Road at the site access intersection, along with appropriate signage. Should the level of service experienced at the intersection justify the intersection's reconfiguration, a concrete median and appropriate signage will be installed. If the previously mentioned condition is met within the five-year horizon period following the full build-out of the proposed development, the developer will assume responsibility for the installation of the median and signs, after

which it is assumed that responsibility will be transferred to the City of Ottawa. Following the five-year monitoring period by the developer, the responsibility for monitoring the intersection will become that of the City of Ottawa until reconfiguration is warranted, or until the completion of the proposed March Road BRT which will result in the intersection being reconfigured as a right-in/right-out intersection.

9 Development Design

9.1 Design for Sustainable Modes

The proposed development will provide both indoor garage vehicle and bicycle parking for residents and visitors, and outdoor vehicle parking for visitors and those utilizing the retail portion of the development.

The proposed development fronts directly onto future pedestrian and bicycle facilities on March Road. These facilities will provide access to the surrounding Study Area as well as the existing transit stops surrounding the proposed development.

Additionally, the planned future Bus Rapid Transit facilities along March Road is anticipated improve transit access to and from the proposed development beyond the future study horizons.

Based on the most recent site plan, the external access from the western main lobby doors and from the north commercial entrance have a minimum walking distance to the nearest existing transit stop of approximately 445 metres. The maximum walking distance from an external access, Stairwell F, is approximately 628 metres. Currently, no planned external access is within 400 metres of an existing transit stop. The minimum distance can be improved to 245 metres from the lobby and north commercial access, and between 385 and 430 metres from Stairwell F if a future transit stop were located at the intersection of March Road and Halton Terrace/Maxwell Bridge Road.

Additionally, facilities that are supportive of sustainable modes in the City of Ottawa's TDM-supportive Development Design and Infrastructure Checklist, which are required for zoning and standard site design, will be implemented. The following additional measures will also be implemented:

- Locate building close to the street, and do not locate parking areas between the street and building entrances.
- Locate building entrances in order to minimize walking distances to sidewalks and transit facilities.
- Locate building doors and entrances to ensure visibility of pedestrians from the building.
- Provide safe, direct, and attractive walking routes from the building entrances to nearby transit stops.
- Ensure that walking routes to transit stops are secure, visible, and lighted wherever possible.
- Provide wayfinding signage for site access and egress.
- Provide lighting, landscaping, and benches along walking and cycling routes between building entrances and streets, sidewalks and trails.
- Provide a permanent bike repair station for resident/private use only.

TDM Checklists for residential and non-residential land uses can be found in Appendix F.

9.2 Circulation and Access

A site circulation assessment was completed using AutoTURN 11.0 to develop turning templates for garbage trucks and loading trucks at the moving aisle/loading bay. An HSU vehicle was used to simulate the movements of these vehicles as they manoeuvre throughout the site with key areas of assessment being the March Road site access, and the moving aisle.

Loading vehicles will enter and exit the site in a forward motion using the site access on March Road and have been tested backing into the moving aisle.

Garbage trucks will enter and exit the site in a forward motion using the site access on March Road and have been tested pulling into the moving aisle. It is noted that while the garbage room is located on Parking Level 1, garbage pick-up will occur in the moving aisle. Garbage pick-up will be pre-scheduled at the same time each week, and building staff will transport the garbage bins from the garbage room to the loading bay using a tractor. These bins will be returned to the garbage room following garbage pick-up. Move-ins and move-outs will not be scheduled during this time. Turning templates showing internal site circulation can be found in Appendix G, and turning templates showing garbage and loading vehicles at the site access can be found in the RMA package in Appendix H.

Access configuration details are included in Section 12 below.

9.3 New Street Networks

This TIA is exempt from this Module (see Table 7).

10 Parking

10.1 Parking Supply

Using the City of Ottawa Zoning By-law 2008-250, Table 101 (By-law 2018-206, By-law 2016-249), and Table 102 (By-law 2016-249), the parking requirements and provisions for the proposed development are summarized in Table 17.

Table 17: Parking Provisions

Land Use	Parking Rate	Number of Units / Gross Floor Area	Parking Required	Parking Provided
Residential	1.0 spaces / unit	390 units	390	470
Visitor	0.2 spaces / unit		78	79
Retail	3.4 / 100 m^2 GFA	501 m^2	18	19
Total Vehicle Parking			**486**	**568**
Residential (bicycle)	0.5 spaces / unit	390 units	195	195
Retail Store (bicycle)	1 / 250 m^2 GFA	501 m^2	3	3
Total Bicycle Parking			**198**	**198**

Based on the City of Ottawa Zoning By-laws, a minimum of 486 automobile parking spaces and a minimum of 198 bicycle parking spaces are required. As can be seen in Table 17, automobile parking space requirements are met in excess of 82 spaces, and bicycle parking space requirements are met exactly.

Table 18: Barrier-Free Parking Provisions

Parking Rate		**Provided Parking**	**Required Barrier-Free Parking**	**Provided Barrier-Free Parking**
Number of Parking Spaces	Minimum Number of Barrier-Free Spaces			
500+	6	568	6	12

Based on the City of Ottawa Zoning By-law 2017-301, a minimum of six barrier-free parking spaces are required for the proposed development. As shown in Table 18 above, the barrier-free parking space requirement is met in excess of six spaces.

Underground parking levels are shown in Appendix I.

10.2 Spillover Parking

This TIA is exempt from this Module (see Table 7).

11 Boundary Street Design

March Road is noted as a boundary road for the site in both the 2028 and 2033 future horizons. March Road is not considered a Complete Street and no plans currently exist to upgrade March Road within the proposed development's future analysis horizons. As discussed in Section 2.3.1, as part of the proposed development, the existing pedestrian facilities and bike lanes which terminate north of Maxwell Bridge Road / Halton Terrace will be extended along the frontage of the proposed development along the east side of March Road upon full-build out of the development. It is expected that the existing pedestrian facilities and bike lanes which terminate north of Maxwell Bridge Road / Halton Terrace will be extended along the frontage of the proposed development along the west side of March Road in conjunction with the development of the southwestern quadrant of the Kanata North Community Design Plan in time for the 2028 future horizon.

Additionally, future improvements on March Road north of Maxwell Bridge Road / Halton Terrace are expected in two stages. The first stage is the widening of March Road to four lanes and the seconds stage considers the widening of March Road to accommodate the extension of the Median BRT system as discussed in Section 2.3.1. These improvements have been proposed as part of the City of Ottawa's TMP Ultimate Network and the Kanata North CDP. As the timing of both of these improvements to March Road is unknown and neither transportation infrastructure upgrade is included in the City of Ottawa's 2031 Affordable Network, it has been assumed that they will occur beyond both of the proposed development's future analysis horizons.

The Segment Multi-Modal Level of Service (MMLOS) is broken down into the Pedestrian Level of Service (PLOS), Bicycle Level of Service (BLOS), Transit Level of Service (TLOS) and Truck Level of Service (TkLOS) and are all recorded in Table 19. As the existing, future background and future total scenarios are all different, they have been evaluated in their own MMLOS worksheets. March Road has been evaluated against the target for a developing community. The MMLOS Worksheets for each horizon can be found in Appendix J.

Table 19: Boundary Street MMLOS

<table>
<tr><th rowspan="3">Road Segment</th><th rowspan="3">Horizon</th><th colspan="8">MMLOS</th></tr>
<tr><th colspan="2">PLOS</th><th colspan="2">BLOS</th><th colspan="2">TLOS</th><th colspan="2">TkLOS</th></tr>
<tr><th>Actual</th><th>Target</th><th>Actual</th><th>Target</th><th>Actual</th><th>Target</th><th>Actual</th><th>Target</th></tr>
<tr><td rowspan="5">March Road</td><td>Existing</td><td rowspan="5">F</td><td rowspan="5">C</td><td rowspan="3">F</td><td rowspan="5">C</td><td rowspan="5">D</td><td rowspan="5">D</td><td rowspan="4">C</td><td rowspan="5">D</td></tr>
<tr><td>2028 FB</td></tr>
<tr><td>2033 FB</td></tr>
<tr><td>2028 FT</td><td>F</td></tr>
<tr><td>2033 FT</td><td>E</td><td>A</td></tr>
</table>

March Road will not meet its pedestrian LOS target due to small boulevard widths and high vehicle operating speeds, however, and will not meet its bicycle LOS target due to mixed traffic conditions on some segments of March Road and high operating speeds. Both the Transit LOS and Truck LOS targets have been met.

Future widening and transit improvements to March Road as mentioned above, are anticipated to increase connectivity, and improve the segment MMLOS along March Road. As such, no further improvements to March Road, beyond the extension of pedestrian and bicycle facilities along the frontage of the site, are recommended as a result of the boundary street MMLOS analysis.

12 Access Intersection Design

12.1 Location and Design of Access

The site is proposed to have one full-movement access on March Road located approximately 215 metres north of Maxwell Bridge Road/Halton Terrace, measured from intersection centreline to intersection centreline. As per the Transportation Association of Canada's Geometric Design Guide for Canadian Roads (TAC), typical minimum intersection spacing along minor arterials is 200 metres. This segment of March Road can be considered a minor arterial road within the Study Area as it currently has a narrow cross-section, and south of the Study Area it provides access directly to developments along March Road. Therefore, the distance between the intersection of March Road and Maxwell Bridge Road / Halton Terrace and the Site Access is acceptable. Additionally, this spacing is consistent with that of other intersections along March Road. As future infrastructure upgrades outside of the study horizons are implemented on March Road, including the implementation of the March Road BRT line, it will be upgraded to a major arterial road.

12.2 Site Access Design

An RMA and functional design are anticipated for the site access intersection. It is noted that the interim and ultimate intersection designs discussed below are based on the City of Ottawa's *Curb Return Entrances – Uncontrolled Intersections SC7.1* drawing. For the purposes of this report, the following assumptions surrounding the intersection design of the site access has been made:

Left-turn lane warrants for unsignalized intersections were examined at the site access for the 2028 interim horizon, and the 2028 and 2033 total future horizons using the MTO Geometric Design Standards for Ontario Highways, Section E. A southbound left-turn lane was found to be warranted for the 2028 future total interim horizon as well as the 2028 and 2033 future total horizons. A northbound left-turn lane at the site access intersection was also found to be warranted in the applicable 2028 and 2033 future total horizons. The left-turn lane warrant nomographs can be found in Appendix K.

For the 2028 future total interim analysis horizon, the intersection of the Site Access and March Road has been assumed to be a three-legged intersection. The northbound approach will consist of a through lane and an auxiliary right-turn lane, the westbound approach will be made up of a shared left-turn / right-turn lane, and the southbound approach will consist of an auxiliary left-turn lane and a through lane. Additionally, pedestrian facilities are anticipated to be extended along the proposed development's frontage on the east side of March Road, and cycling facilities are anticipated to use the existing paved shoulder that acts as a bike lane. This paved shoulder will be maintained and no protected crossings at the proposed site access intersection will be provided. This intersection configuration represents the interim access intersection design that will provide access to the subject development until the monitoring plan indicates reconfiguration is required, or until the March Road BRT is constructed.

For the ultimate intersection configuration, discussed in the 2028 and 2033 future total operational analysis below, the site access intersection has been assumed to be a right-in/right-out intersection with stop-control on the minor leg. The South Local Road will also become a right-in/right-out intersection with stop-control on the minor leg and will serve as an access to the southwestern development quadrant discussed in the Kanata North

Community Design Plan. The South Local Road is anticipated to have both pedestrian and cycling facilities. The northbound approach will consist of a through lane, and an auxiliary right-turn lane, the westbound approach will be made up of a right-turn lane, the southbound approach is assumed to consist of a shared through / right-turn lane, and the eastbound approach will consist of a right-turn lane. Additionally, pedestrian facilities are anticipated to be extended along the proposed development's frontage on the east side of March Road, and cycling facilities are anticipated to use the existing paved shoulder that acts as a bike lane. This paved shoulder will be maintained and no protected crossings at the proposed site access intersection will be provided. Pedestrian and cycling lanes are anticipated to be extended along the west side of March Road in conjunction with the development of the southwestern quadrant of the Kanata North Community Design Plan. This intersection configuration represents the ultimate access intersection design. It is noted that the RMA does not consider the design of the South Local Road as the design of these elements should be determined as part of the development application process for the southwestern quadrant of the Kanata North Community Design Plan.

The preliminary minimum storage and taper lengths for the proposed southbound left-turn lane for the interim intersection design, using the Transportation Association of Canada's (TAC) Geometric Design Guide, is summarized in Table 20 and further discussed below.

Table 20: Interim and Ultimate SBL - Preliminary Minimum Design Criteria

Design Standard	Design Speed	Storage	Parallel Lane	Taper Ratio	Taper	Total Lane Length
TAC	90 km/h	15 m (min.)	95 m	27:1	95 m	205 m

Using Transportation Association of Canada's Geometric Design Guide for Canadian Roads (TAC) the storage, parallel lane, and taper lengths were determined for a 90 km/h design speed. For the purposes of determining the taper length it was assumed that this left-turn lane would be constructed as a left-turn on the left side of the centreline with a 3.5 metre turning lane width. The parallel lane length was calculated based on the following formula (TAC Formula 2.5.1):

$$d_b = 0.039\frac{V^2}{a}$$

Where:

$$d_b = Braking\ Distance\ (m)$$
$$V = Design\ Speed\ (^{km}/_{h})$$
$$a = Deceleration\ rate\ (^{m}/_{s^2}) = 3.4\ \ ^{m}/_{s^2}$$

No intersections or driveways are currently planned within the parallel lane or taper length of the left-turn lane that will be negatively impacted by its implementation.

As such, based on TAC design guidelines, the southbound left-turn lane at the site access should be a minimum of 205 metres long with a storage lane of 15 metres, an approximate parallel lane of 95 metres and an approximate taper of 95 metres for the interim intersection design.

The northbound right-turn lane shown in both the interim and ultimate intersection design has been designed with a 15-metre storage, a 35-metre parallel lane length, and a 15 metre taper. As a result of the distance between

the site access intersection and Halton Terrace / Maxwell Bridge Road, the parallel lane length and the taper length are less than what would ideally be proposed.

The measured throat length of the site access intersection is approximately 32 metres. According to Transportation Association of Canada's Geometric Design Guide for Canadian Roads (TAC), Table 8.9.3, the suggested minimum clear throat length for major driveways, for a development of this size, would require a throat length based on each land use and is summarized in the Table 21 below.

Table 21: Throat Length by Land Use

Land Use*	Development Size (units or sq.m.)	Required Clear Throat Length (m)
Apartments	390 units	40
Shopping Centre	501 sq.m.	15

*Note: Not all land uses are represented in Table 8.9.3. Where an exact match was not available, a reasonable assumption of a comparable land use was used.

As shown above, the provided site access throat length is less than the required 40 metres of throat length. A throat length of 32 metres will accommodate approximately 4.5 queued passenger vehicles based on an assumed seven metre passenger vehicle. Additionally, it is noted that the first point of vehicle conflict within the site is an internal driveway to 13 outdoor vehicle parking spaces and is therefore not anticipated to have many vehicles turning into and out of this internal driveway. As such, vehicles are expected to be able to travel into the site without being impacted by the internal driveway. Given the ability for 4.5 queued passenger vehicles to be accommodated within the provided throat length, as well as the internal driveway having a low number of vehicles turning in and out of the driveway, the provided throat length of 32 metres is considered sufficient.

Further intersection geometry details for both the interim and ultimate intersection designs are shown in the RMA prepared to support the interim and ultimate intersection designs which can be found in Appendix H.

13 Transportation Demand Management

Transportation Demand Management measures are implemented to encourage the use of non-auto modes of travel. This is aimed at reducing the reliance on single occupant auto trips in the City of Ottawa. The proposed development adheres to the City's TDM principles by facilitating connections to adjacent pedestrian, cycling, and transit facilities.

The following measures consistent with the TDM Checklists for non-residential land uses, included in Appendix F, could be implemented to ensure that the travel mode shares are achieved.

- Designate an internal coordinator, or contract with an external coordinator.
- Provide online links to local area maps with walking/cycling access routes, if available, on the building website.
- Provide online links to OC Transpo information on the building website.
- Offer PRESTO cards preloaded with one monthly transit pass on first round of resident move-in. Further details will be determined through Site Plan Conditions.
- Unbundle parking cost from monthly rent.
- Provide a multimodal travel option information package to new residents.

14 Neighbourhood Traffic Management

This TIA is exempt from this Module (see Table 7).

15 Transit

In Section 5.2, the trip generation by mode was estimated, including the number of transit trips that will be generated by the proposed development. Table 22 summarizes the transit trip generation for the multi-unit (high-rise) residential portion of the proposed development, and Table 23 summarizes the transit trip generation for the strip retail plaza portion of the proposed development.

Table 22: Trip Generation by Transit Mode – Multi-Unit (High-Rise)

Travel Mode	AM Peak Hour				PM Peak Hour			
	Mode Share	In	Out	Total	Mode Share	In	Out	Total
Transit	24%	13	28	41	19%	18	13	31

Table 23: Trip Generation by Transit Mode - Strip Retail Plaza (<40k)

Travel Mode	AM Peak Hour				PM Peak Hour			
	Mode Share	In	Out	Total	Mode Share	In	Out	Total
Transit	3%	0	0	0	1%	0	0	0

Route #63 and #165 are expected to provide adequate transit capacity to support the increase in travel demand by the proposed development. It is recommended that OC Transpo provide additional transit capacity only as needed once the development is completed. It is expected that once the March Road BRT is constructed, that the transit trips generated but the proposed development would increase. This change in transit mode share has not been examined herein as the BRT is not included in the City of Ottawa TMP 2031 Affordable Network.

16 Review of Network Concept

This TIA is exempt from this Module (see Table 7).

17 Intersection Design

17.1 Intersection Control

The intersection methods of control for March Road at Halton Terrace / Maxwell Bridge Road and March Road at Klondike Road will remain consistent with existing methods of control at both future horizons.

17.2 Intersection Design

To understand the intersection design, an MMLOS analysis of existing, 2028 future horizon, and 2033 future horizon demands is required. The existing and future segment MMLOS has been discussed in Section 11. The following sections will discuss the vehicle LOS at Study Area intersections. Synchro (Version 11) was used to model the Study Area intersections. This will be followed by a discussion of the intersection MMLOS for other modes.

As required by the City of Ottawa, the level of service at signalized intersections is based on the v/c ratio calculations for individual lane movements and HCM v/c calculations for the overall intersection, and average delay for unsignalized intersections. The Heavy Vehicle percentage (HV %) has been calculated for each turning movement at the Study Area intersection. All Heavy Vehicle percentages calculated to be less than 2% were entered into the Synchro model as 2% in order to produce a conservative analysis. These calculations are shown in Appendix L. All parameters have been coded using the City of Ottawa's TIA Guidelines and default parameters.

17.2.1 Existing Conditions

The existing intersection volumes have been analyzed to establish a baseline condition and determine the impact of the subject development as well as the surrounding background developments on the Study Area road network.

Table 24 summarizes the existing intersection operations. Appendix M contains the 2022 Existing Conditions Synchro Worksheets.

Table 24: Existing Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
March Road at Halton Terrace / Maxwell Bridge Road ***Signalized***	EBL	A	0.11	40.0	11.1	A	0.18	48.5	10.8
	EBT/R	A	0.44	17.6	24.7	A	0.48	39.8	32.0
	WBL	D	0.81	80.0	50.7	B	0.61	66.7	35.3
	WBT/R	A	0.16	21.7	12.8	B	0.64	39.5	41.3
	NBL	A	0.07	7.2	5.3	A	0.25	5.4	21.4
	NBT	A	0.11	11.0	18.7	A	0.44	11.0	83.3
	NBR	A	0.08	1.2	3.1	A	0.13	2.0	7.7
	SBL	A	0.10	6.4	11.6	A	0.17	5.7	8.2
	SBT	A	0.42	12.8	87.7	A	0.13	10.4	22.9
	SBR	A	0.01	0.0	0.0	A	0.01	0.0	0.0
	Overall	**A**	**0.50**	**20.5**	**-**	**A**	**0.47**	**17.2**	**-**
March Road at Klondike Road ***Signalized***	EBL	A	0.19	42.0	14.8	A	0.52	56.4	33.1
	EBT	A	0.13	41.1	16.7	A	0.08	42.3	12.2
	EBR	B	0.69	24.8	47.8	A	0.36	10.0	15.5
	WBL	B	0.66	73.6	41.7	A	0.56	72.7	30.8
	WBT/R	A	0.24	34.4	17.6	A	0.34	39.5	20.9
	NBL	A	0.41	63.0	19.5	A	0.57	63.4	33.6
	NBT/R	A	0.12	9.7	22.2	A	0.40	9.6	84.9
	SBL	A	0.24	64.9	12.8	A	0.03	60.0	3.3
	SBT/R	A	0.36	15.4	72.6	A	0.19	13.8	34.2
	Overall	**A**	**0.44**	**25.7**	**-**	**A**	**0.49**	**21.3**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 0.90
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

As shown above, during both the AM and PM peak hours, the study area intersections operate well with no capacity issues noted.

17.2.2 2028 Future Background

The 2028 future background intersection volumes and other development traffic has been analyzed to allow a comparison between the future volumes with and without the proposed development. Table 25 summarizes the 2028 background intersection operations. The intersection of the South Local Road and March Road is considered as part of the 2028 future background horizon and has been analyzed as a right-in right-out unsignalized intersection as indicated in the Kanata North Community Design Plan. The South Local Road will form the west leg of the site access intersection to be considered in the future total analysis horizons. Appendix N contains the 2028 Future Background Synchro sheets.

Table 25: 2028 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
March Road at Halton Terrace / Maxwell Bridge Road ***Signalized***	EBL	A	0.48	51.0	35.8	D	0.88	114.9	#39.0
	EBT/R	A	0.51	14.9	26.6	A	0.53	34.3	32.8
	WBL	E	0.93	109.8	#51.4	B	0.61	67.5	32.6
	WBT/R	A	0.23	16.8	14.3	B	0.67	36.7	42.4
	NBL	A	0.49	16.9	18.4	A	0.45	7.7	29.2
	NBT	A	0.27	12.3	46.8	B	0.70	18.5	176.8
	NBR	A	0.07	1.1	2.5	A	0.12	3.5	10.3
	SBL	A	0.13	7.0	11.8	A	0.42	10.6	12.9
	SBT	C	0.76	23.3	#218.9	A	0.31	13.1	59.3
	SBR	A	0.08	1.3	3.1	A	0.11	2.9	7.8
	Overall	**C**	**0.77**	**23.8**	**-**	**C**	**0.72**	**20.7**	**-**
March Road at Klondike Road ***Signalized***	EBL	A	0.25	35.8	21.6	A	0.48	47.9	38.1
	EBT	A	0.09	32.5	14.7	A	0.08	37.9	13.7
	EBR	A	0.52	17.6	40.3	A	0.27	8.1	13.8
	WBL	C	0.78	71.4	65.5	B	0.68	73.3	46.1
	EBT/R	A	0.28	21.1	20.0	A	0.31	29.6	21.8
	NBL	A	0.39	63.0	18.8	A	0.55	63.5	31.2
	NBT/R	A	0.28	17.7	54.4	B	0.65	18.5	165.7
	SBL	A	0.35	67.5	18.3	A	0.17	62.9	11.0
	SBT/R	B	0.65	26.4	151.1	A	0.34	18.5	62.3
	Overall	**B**	**0.67**	**27.9**	**-**	**B**	**0.70**	**23.8**	**-**
March Road at South Local Road ***Unsignalized***	EBR	E	0.23	40.1	6.0	C	0.13	15.7	3.0
	NBT	-	-	-	-	-	-	-	-
	SBT/R	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**0.5**	**-**	**A**	**-**	**0.3**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 1.00
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

With the background growth and background development volumes, the westbound left-turn movement at the intersection of March Road at Halton Terrace/Maxwell Bridge Road during the AM peak may be subject to high delays and extended queues. It is noted that at both the intersections of March Road at Halton Terrace/Maxwell Bridge Road and March Road at Klondike Road, extended southbound through queues may occur in the AM peak, and extended northbound queues may occur in the PM peak. At the intersection of March Road at the South Local Road, the eastbound right-turn is shown to operate with a LOS E in the AM peak. This can be attributed to the high delay on the eastbound right-turn resulting from the high southbound through volumes.

17.2.3 2033 Future Background

The 2033 future background intersection volumes and other development traffic has been analyzed to allow a comparison between the future volumes with and without the proposed development. Table 26 summarizes the 2033 background intersection operations. The intersection of the South Local Road and March Road is considered as part of the 2028 future background horizon and has been analyzed as a right-in right-out unsignalized intersection as indicated in the Kanata North Community Design Plan. The South Local Road will form the west leg of the site access intersection to be considered in the future total analysis horizons. Appendix O contains the 2033 Future Background Synchro sheets.

Table 26: 2033 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
March Road at Halton Terrace / Maxwell Bridge Road ***Signalized***	EBL	A	0.48	51.0	35.8	D	0.88	114.9	#39.0
	EBT/R	A	0.51	14.9	26.6	B	0.61	35.3	37.1
	WBL	E	0.93	109.8	#51.4	C	0.71	81.2	33.6
	WBT/R	A	0.23	16.8	14.3	B	0.67	36.7	42.4
	NBL	A	0.60	35.1	27.6	A	0.51	8.8	29.2
	NBT	A	0.31	12.7	55.8	C	0.80	22.1	#246.8
	NBR	A	0.07	1.1	2.5	A	0.12	3.5	10.3
	SBL	A	0.14	7.1	11.8	A	0.51	21.3	23.4
	SBT	D	0.86	28.0	#272.5	A	0.38	14.0	74.1
	SBR	A	0.08	1.3	3.1	A	0.11	2.9	7.8
	Overall	**D**	**0.86**	**26.7**	**-**	**C**	**0.80**	**23.1**	**-**
March Road at Klondike Road ***Signalized***	EBL	A	0.28	36.5	23.2	A	0.53	50.1	41.4
	EBT	A	0.09	32.5	14.7	A	0.08	37.9	13.7
	EBR	A	0.52	17.9	41.8	A	0.27	8.1	13.8
	WBL	C	0.78	71.4	65.5	B	0.68	73.3	46.1
	EBT/R	A	0.29	20.3	20.7	A	0.33	29.0	22.1
	NBL	A	0.39	63.0	18.8	A	0.55	63.5	31.8
	NBT/R	A	0.31	18.4	61.7	C	0.72	20.4	197.9
	SBL	A	0.37	67.9	19.2	A	0.18	63.2	11.5
	SBT/R	C	0.73	28.6	#180.5	A	0.40	19.5	76.0
	Overall	**C**	**0.72**	**29.0**	**-**	**C**	**0.76**	**24.8**	**-**
March Road at South Local Road ***Unsignalized***	EBR	**F**	**0.31**	**57.1**	**9.1**	C	0.16	18.2	3.8
	NBT	-	-	-	-	-	-	-	-
	SBT/R	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**0.7**	**-**	**A**	**-**	**0.3**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 1.00
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

With the addition of background growth and other development traffic to reflect the 2033 horizon, the existing intersections are anticipated to operate with similar operational characteristics to the 2028 future background conditions.

The westbound left-turn movement at the intersection of March Road at Halton Terrace/Maxwell Bridge Road during the AM peak may be subject to high delays and extended queues. It is noted that at both the intersections of March Road at Halton Terrace/Maxwell Bridge Road and March Road at Klondike Road, extended southbound through queues may occur in the AM peak, and extended northbound queues may occur in the PM peak.

With the additional background development traffic and growth, the eastbound right-turn at the intersection of March Road at the South Local Road, is shown to operate with a LOS F in the AM peak. This can be attributed to the high delay on the eastbound right-turn resulting from the high southbound through volumes.

17.2.4 2028 Future Total

The 2028 future total intersection volumes, including the site generated traffic and other development traffic, have been analyzed to understand the impact of the subject development in the Study Area intersections Table 27 summarizes the 2028 future total intersection operations. Appendix P contains the 2028 Future Total Synchro sheets.

Table 27: 2028 Future Total Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
March Road at Halton Terrace / Maxwell Bridge Road ***Signalized***	EBL	A	0.49	51.5	36.3	D	0.89	**116.5**	**#39.8**
	EBT/R	A	0.51	14.9	26.6	A	0.58	33.2	35.3
	WBL	E	0.93	**109.8**	**#51.4**	B	0.67	74.3	33.1
	WBT/R	A	0.23	16.7	14.5	B	0.66	35.9	42.7
	NBL	A	0.51	19.4	20.6	A	0.47	8.1	29.8
	NBT	A	0.28	12.4	49.4	C	0.73	19.7	190.1
	NBR	A	0.07	1.1	2.5	A	0.12	3.6	10.5
	SBL	A	0.14	7.0	12.1	A	0.45	12.8	15.4
	SBT	C	0.78	24.1	**#230.7**	A	0.33	13.6	63.4
	SBR	A	0.08	1.5	3.7	A	0.11	3.1	8.3
	Overall	**C**	**0.79**	**25.4**	-	**C**	**0.74**	**21.9**	-
March Road at Klondike Road ***Signalized***	EBL	A	0.26	36.0	22.0	A	0.49	48.5	38.7
	EBT	A	0.09	32.5	14.7	A	0.08	37.9	13.7
	EBR	A	0.52	17.8	41.5	A	0.27	8.1	13.8
	WBL	C	0.78	71.4	65.5	B	0.68	73.3	46.1
	EBT/R	A	0.28	20.8	20.2	A	0.33	29.0	22.1
	NBL	A	0.39	63.0	18.8	A	0.55	63.5	31.2
	NBT/R	A	0.29	18.0	56.5	B	0.66	18.9	171.6
	SBL	A	0.37	67.9	19.2	A	0.18	63.2	11.5
	SBT/R	B	0.67	26.9	157.1	A	0.36	18.8	66.6
	Overall	**C**	**0.68**	**29.4**	-	**C**	**0.71**	**25.0**	-
March Road at Site Access / South Local Road ***Unsignalized***	EBL/T/R	**F**	0.47	**85.1**	14.4	**F**	0.55	**76.1**	19.8
	WBL/T/R	**F**	**2.50**	**1024.2**	57.0	**F**	**2.74**	**1206.6**	52.4
	NBL	A	0.01	13.8	0.0	A	0.03	9.5	0.8
	NBT	-	-	-	-	-	-	-	-
	NBR	-	-	-	-	-	-	-	-
	SBL	A	0.00	8.9	0.0	B	0.02	14.8	0.8
	SBT/R	-	-	-	-	-	-	-	-
	Overall	**D**	**-**	**27.3**	**-**	**D**	**-**	**25.6**	**-**
Mitigation – Right-In/Right-Out									
March Road at Site Access / South Local Road Right-In Right-Out	*EBR*	*E*	*0.28*	*42.2*	*8.4*	*C*	*0.15*	*16.1*	*3.8*
	WBR	*B*	*0.13*	*13.9*	*3.0*	***F***	*0.45*	*59.1*	*15.2*
	NBT	-	-	-	-	-	-	-	-
	NBR								
	SBT/R	-	-	-	-	-	-	-	-
	Overall	***A***	**-**	***1.0***	**-**	***A***	**-**	***1.5***	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 1.00
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

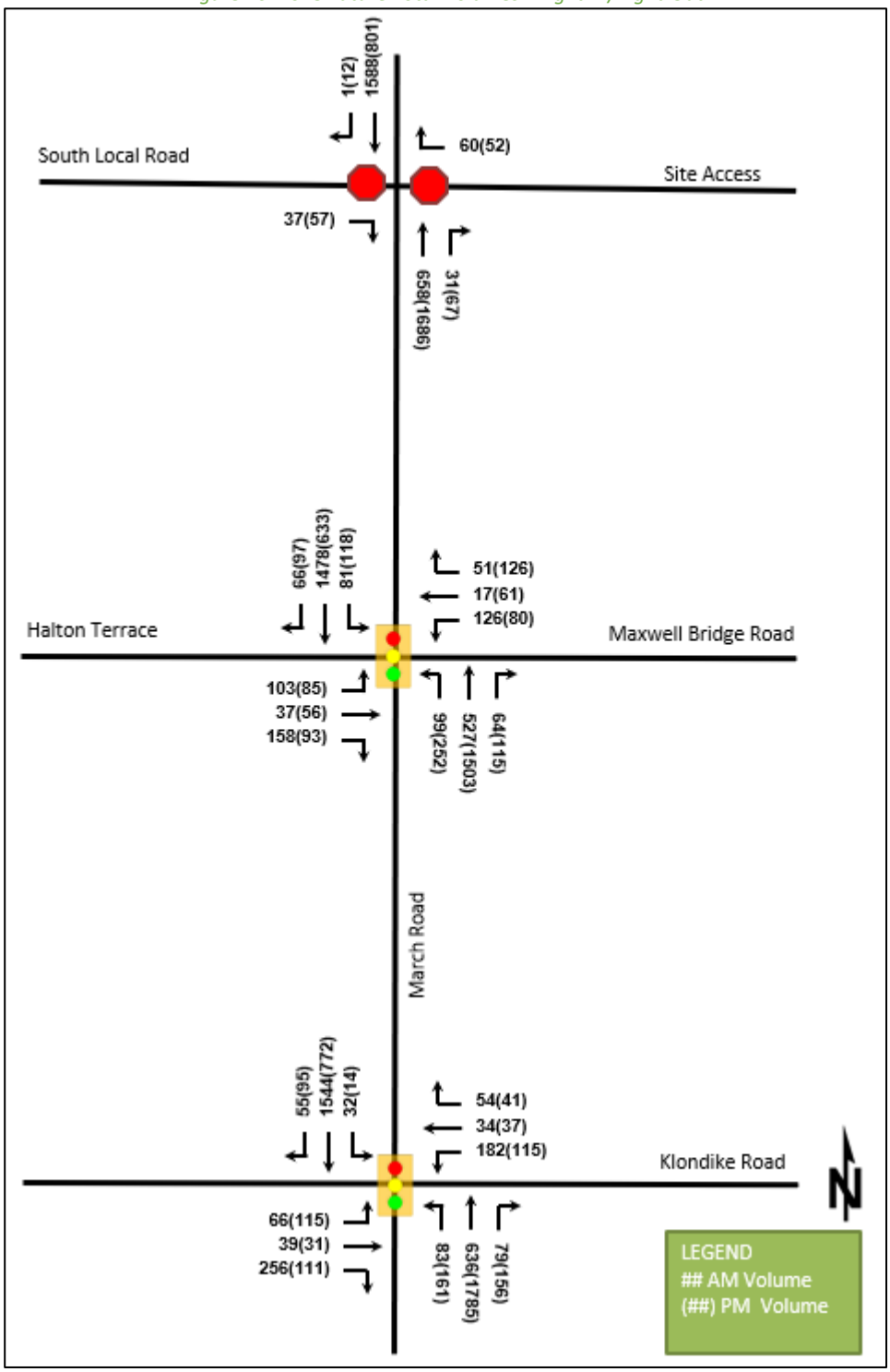
With the addition of site generated traffic, the network intersection operations for the 2028 future total horizon operate similarly to the 2028 future background conditions expect for the March Road at Site Access / South Local Road intersection.

The intersection of March Road at Site Access / South Local Road has been analyzed as a stop-controlled intersection. This intersection has a shared left-turn / through / right-turn lane on both the east and west legs of the intersection, the north leg of the intersection consist of an auxiliary left-turn lane and a through lane, and the south leg of the intersection consists of an auxiliary left-turn lane, aa through lane, and an auxiliary right-turn lane.

Multiple movements in both the AM and PM Peak hour may be subject to high delays and extended queues. As such, the reconfiguration of March Road at Site Access / South Local Road as a right-in/right-out intersection has been considered as a mitigation measure.

Upon reconfiguring the intersection as a right-in/right-out intersection, the intersection of March Road at Site Access / South Local Road operates well in both the AM and PM peak hours. The design of this intersection is consistent with ultimate intersection configuration discussed in Section 12.2 above. Based on the operational analysis, reconfiguring the site access intersection is recommended to improve the level of service at the intersection. This mitigation measure is consistent with the future geometry of the intersection following the completion of the March Road BRT or in the case that the monitoring plan identifies the need for this reconfiguration. The future total volumes for the 2028 horizon considering the right-in right-out mitigation measure are illustrated in Figure 26.

Figure 26: 2028 Future Total Volumes - Right-In/Right-Out



17.2.5 2028 Future Total – Interim Horizon

The 2028 future total interim intersection volumes, including the site generated traffic and excluding the other development traffic, have been analyzed to understand the impact of the subject development on the Study Area intersections. Table 28 summarizes the 2028 future total interim intersection operations. Appendix Q contains the 2028 Future Total Interim Synchro sheets.

Table 28: 2028 Future Total Interim Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
March Road at Halton Terrace / Maxwell Bridge Road ***Signalized***	EBL	A	0.12	41.9	11.4	A	0.19	50.5	11.5
	EBT/R	A	0.43	18.5	23.8	A	0.48	40.2	29.8
	WBL	C	0.77	76.0	46.5	A	0.57	65.5	32.8
	WBT/R	A	0.16	22.4	12.3	B	0.64	39.3	38.4
	NBL	A	0.06	6.5	4.5	A	0.24	5.0	18.5
	NBT	A	0.11	10.1	18.4	A	0.46	10.7	80.1
	NBR	A	0.07	0.8	2.1	A	0.12	1.9	7.0
	SBL	A	0.09	5.8	10.3	A	0.15	5.1	7.3
	SBT	A	0.40	11.6	80.8	A	0.13	9.7	22.6
	SBR	A	0.02	0.0	0.0	A	0.02	0.0	0.0
	Overall	**B**	**0.47**	**19.0**	**-**	**B**	**0.48**	**16.7**	**-**
March Road at Klondike Road ***Signalized***	EBL	A	0.19	43.0	14.6	A	0.56	60.6	32.3
	EBT	A	0.12	41.7	15.4	A	0.08	42.8	11.8
	EBR	B	0.64	20.3	39.4	A	0.34	10.3	15.0
	WBL	B	0.64	73.6	39.1	A	0.54	72.5	28.8
	EBT/R	A	0.24	34.4	16.9	A	0.36	39.5	20.1
	NBL	A	0.39	63.0	18.8	A	0.56	63.7	31.2
	NBT/R	A	0.12	9.5	21.4	A	0.40	9.4	81.4
	SBL	A	0.25	65.1	13.3	A	0.06	60.8	4.8
	SBT/R	A	0.35	14.6	68.0	A	0.19	13.3	32.9
	Overall	**C**	**0.41**	**24.8**	**-**	**C**	**0.50**	**20.9**	**-**
March Road at Site Access ***Unsignalized***	WBL/R	D	0.25	25.4	7.6	D	0.29	32.5	8.4
	NBT	-	-	-	-	-	-	-	-
	NBR	-	-	-	-	-	-	-	-
	SBL	A	0.00	7.8	0.0	A	0.02	10.6	0.8
	SBT	-	-	-	-	-	-	-	
	Overall	**A**	**-**	**1.2**	**-**	**A**	**-**	**1.3**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 1.00
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

With the addition of background growth, excluding explicit background development traffic, and the subject site generated trips to reflect the 2028 future total interim horizon, the study area intersections are anticipated to operate with similar operational characteristics to the existing conditions. The site access intersection has been analyzed as an unsignalized right-in/right-out intersection and is based on the interim intersection design discussed above. The site access intersection is shown to operate well without high delays or queues.

17.2.6 2033 Future Total

The 2033 future total intersection volumes, including the site generated traffic and other development traffic, have been analyzed to understand the impact of the subject development in the Study Area intersections. Table 29 summarizes the 2033 future total intersection operations. Appendix R contains the 2033 Future Total Synchro sheets.

Table 29: 2033 Future Total Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
March Road at Halton Terrace / Maxwell Bridge Road ***Signalized***	EBL	A	0.49	51.3	36.3	D	0.89	**116.5**	**#39.8**
	EBT/R	A	0.51	14.9	26.6	A	0.59	34.5	36.9
	WBL	E	0.93	**109.8**	**#51.4**	B	0.69	77.4	33.3
	WBT/R	A	0.23	16.7	14.5	B	0.66	35.9	42.7
	NBL	B	0.61	37.4	28.3	A	0.52	9.3	29.8
	NBT	A	0.32	12.9	58.5	D	0.83	23.7	**#261.6**
	NBR	A	0.07	1.1	2.5	A	0.12	3.6	10.5
	SBL	A	0.15	7.1	12.1	A	0.55	26.5	26.5
	SBT	D	0.88	29.5	**#284.1**	A	0.40	14.6	79.0
	SBR	A	0.08	1.5	3.7	A	0.11	3.1	8.3
	Overall	**C**	**0.87**	**28.3**	-	**C**	**0.83**	**23.7**	-
March Road at Klondike Road ***Signalized***	EBL	A	0.29	36.7	23.8	A	0.55	50.7	42.5
	EBT	A	0.09	32.5	14.7	A	0.08	37.9	13.7
	EBR	A	0.52	18.1	42.0	A	0.27	8.1	13.8
	WBL	C	0.78	71.4	65.5	B	0.68	73.3	46.1
	EBT/R	A	0.29	20.1	20.5	A	0.33	28.3	22.3
	NBL	A	0.39	63.0	18.8	A	0.55	63.5	31.2
	NBT/R	A	0.33	19.9	63.9	C	0.73	20.9	205.9
	SBL	A	0.39	68.5	20.5	A	0.20	63.4	12.5
	SBT/R	C	0.75	29.2	**#197.9**	A	0.41	19.7	78.8
	Overall	**C**	**0.73**	**30.6**	-	**C**	**0.77**	**26.1**	-
March Road at Site Access / South Local Road ***Unsignalized***	EBL/T/R	**F**	0.70	**164.9**	22.0	**F**	**0.98**	**226.1**	35.0
	WBL/T/R	**F**	**4.29**	**2022.4**	63.8	**F**	**5.2**	**2627.4**	59.3
	NBL	C	0.01	15.6	0.0	B	0.03	10.1	0.8
	NBT	-	-	-	-	-	-	-	-
	NBR	-	-	-	-	-	-	-	-
	SBL	A	0.00	8.9	0.0	C	0.03	16.9	0.8
	SBT/R	-	-	-	-	-	-	-	-
	Overall	**E**	**-**	**47.9**	-	**F**	**-**	**50.3**	-
Mitigation – Right-In Right-Out									
March Road at Site Access / South Local Road Right-In Right-Out	*EBR*	***F***	*0.38*	*61.6*	*11.4*	*C*	*0.18*	*18.8*	*5.3*
	WBR	*C*	*0.15*	*15.1*	*3.8*	***F***	*0.61*	*96.8*	*21.3*
	NBT	-	-	-	-	-	-	-	-
	NBR								
	SBT/R	-	-	-	-	-	-	-	-
	Overall	***A***	**-**	***1.2***	-	***A***	**-**	***2.0***	-

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 1.00
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

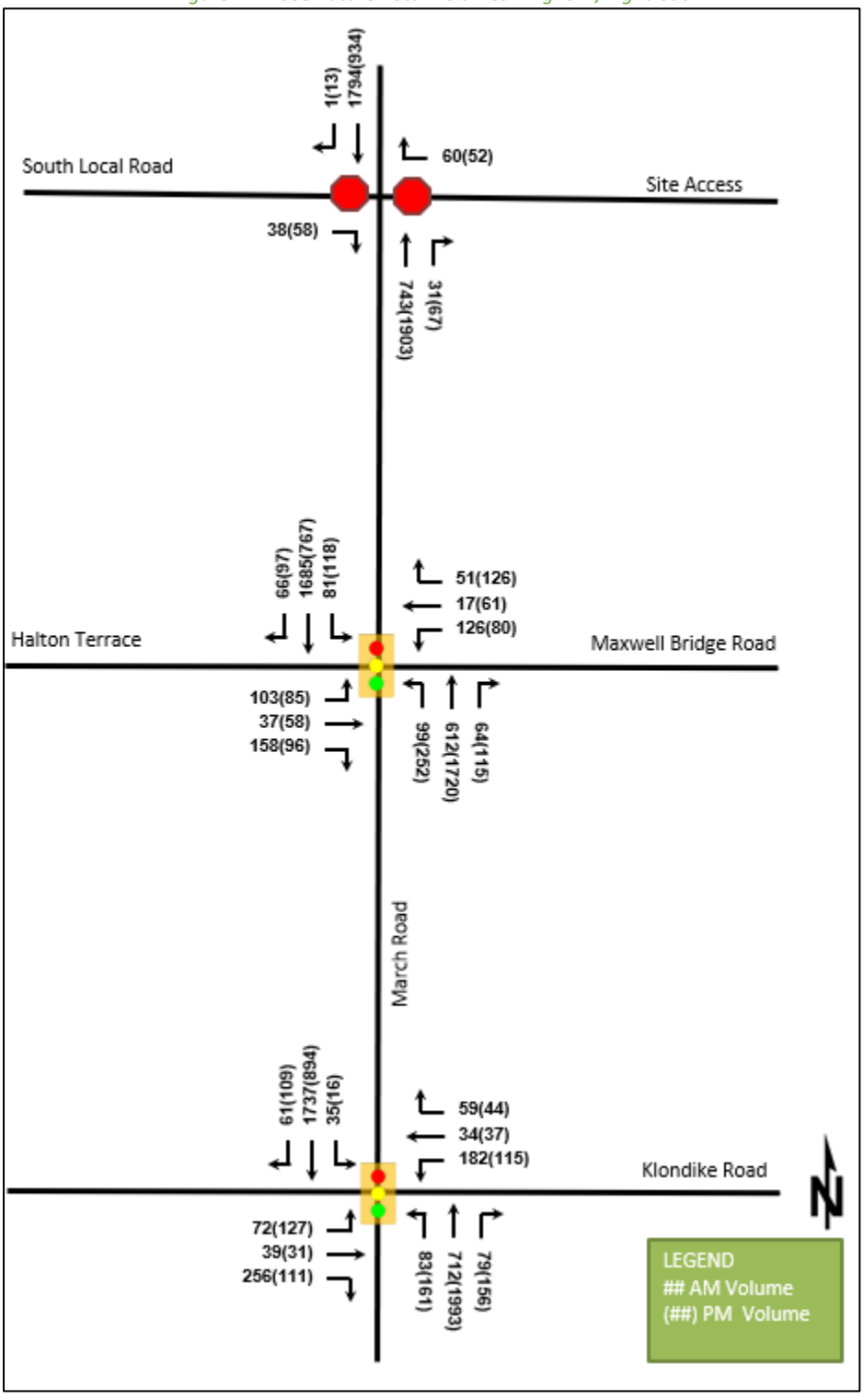
With the addition of site generated traffic, the network intersection operations for the 2033 future total horizon operate similarly to the 2033 future background conditions expect for the March Road at Site Access / South Local Road intersection.

The intersection of March Road at Site Access / South Local Road has been analyzed as a stop-controlled intersection with a single outbound lane as the westbound leg of the intersection. This intersection has a shared left-turn / through / right-turn lane on both the east and west legs of the intersection, the north leg of the intersection consist of an auxiliary left-turn lane and a through lane, and the south leg of the intersection consists

of an auxiliary left-turn lane, aa through lane, and an auxiliary right-turn lane. Multiple movements in both the AM and PM Peak hour may be subject to high delays and extended queues. As such, the reconfiguration of March Road at Site Access / South Local Road as a right-in/right-out intersection has been considered as a mitigation measure.

Upon reconfiguring the intersection as a right-in/right-out intersection, the intersection of March Road at Site Access / South Local Road operates well in both the AM and PM peak hours. The design of this intersection is consistent with ultimate intersection configuration discussed in Section 12.2 above. Based on the operational analysis, reconfiguring the site access intersection is recommended to improve the level of service at the intersection. This mitigation measure is consistent with the future geometry of the intersection following the completion of the March Road BRT or in the case that the monitoring plan identifies the need for this reconfiguration. The future total volumes for the 2033 horizon considering the right-in/right-out mitigation measure is illustrated in Figure 27.

Figure 27: 2033 Future Total Volumes - Right-in/Right-out



17.2.7 Intersection MMLOS

Intersection MMLOS is only undertaken at signalized intersections. The two signalized intersections considered in this study are March Road at Halton Terrace / Maxwell Bridge Road, and March Road at Klondike Road.

Table 30 summarizes the MMLOS analysis for these two signalized intersections in the Study Area for the existing and future horizons. The analysis is based on the developing community policy area. The MMLOS worksheets have been provided in Appendix J.

Table 30: Study Area Intersection MMLOS Analysis—All Horizons

Intersection	Horizon	Pedestrian LOS		Bicycle LOS		Transit LOS		Truck LOS		Auto LOS	
		PLOS	Target	BLOS	Target	TLOS	Target	TrLOS	Target	ALOS	Target
March Road & Halton Terrace / Maxwell Bridge Road	Existing	**F**	C	**F**	B	**F**	D	**E**	D	C	D
	2028 FB										
	2028 FT									C	
	2033 FB										
	2033 FT										
March Road & Klondike Road	Existing	**F**		**F**		**F**		E		B	
	2028 FB										
	2028 FT									C	
	2033 FB										
	2033 FT										

The pedestrian and bicycle LOS targets are not met at the network intersections due to crossing distances, permissive left and right-turns, and lack of cycling facilities in the Study Area. The bicycle LOS is not met as a result of mixed traffic conditions on some intersection legs as well as high operating speeds. The transit LOS generally fails to meet the targets at some intersections due to the intersection delays. Truck LOS is not met at most intersections due to the low number of receiving lanes, and the smaller curb radius found at the site access. Auto LOS targets are met in all analyzed horizons. This is due to the high volume to capacity ratio experienced at the intersection.

The future widening and transit improvements to March Road, are anticipated to increase connectivity and improve the segment MMLOS along March Road. As such, no further intersection improvements are recommended, beyond the extension of pedestrian and bicycle facilities along the frontage of the site, as a result of the intersection MMLOS analysis.

18 Conclusions

A. It is noted that a TIA for 910 March Road, dated December 2022, was previously submitted to support the zoning by-law amendment for this site. This report serves as an update to that submission and incorporates the received City of Ottawa comments on the December 2022 report.
B. The proposed development, located at 910 March Road, is a mixed-use development with 390 residential units and 501 square metres of ground floor commercial space. A total of 568 vehicle parking stalls and 198 bicycle parking spaces will be provided.
C. The site is proposed to have one access. The site access is located on March Road and is a full-movement access approximately 215 metres north of Maxwell Bridge Road, measured from intersection centreline to intersection centreline.
D. The site access intersection is subject to an RMA and functional design for both the interim and ultimate configurations.
E. The existing Study Area is currently served by bus routes #63, and 165.
F. The previous five years of collision history at the existing Study Area intersections has been reviewed. No patterns emerged that indicated that mitigation measures or further monitoring was required.
G. It was found that the proposed development can be anticipated to generate 91 AM, and 102 PM net new peak hour two-way vehicle trips.
H. Minimum vehicle and bicycle parking space requirements are met.
I. It was found that the road segments of March Road do not meet the majority of its MMLOS targets. As future changes to the road network are anticipated to improve the MMLOS of these segments, no resulting improvements to the boundary road is recommended.
J. Left-turn lane warrants were evaluated at the site access intersection. A southbound left-turn lane was warranted for all future total horizons. Preliminary storage and taper lengths have been designed for the southbound left-turn lane for operational analysis purposes, and have been further refined in the RMA and functional design.
K. A 2022 Existing, 2028 future background, 2033 future background, 2028 future total, 2028 future total interim, and a 2033 future total analysis horizon has been developed.
    1. The 2028 future total interim analysis horizon assumes no background developments have been built in the 2028 future analysis horizon, and as such consists of the 2022 existing volumes grown to a 2028 horizon, as well as the subject development's site generated traffic. The interim analysis horizon assumes the site access is a three-legged unsignalized intersection with stop-control on the east leg.
    2. The 2028 future total interim analysis horizon has been developed and analyzed as the surrounding background development site generated volumes are considered to be inflated and the build-out horizons are assumed to be unrealistic.
L. A monitoring plan has been developed to identify the need for reconfiguration of the site access intersection to a right-in/right-out intersection based on the overall intersection level of service, based on AM and PM peak hour traffic volumes.
M. The existing Study Area intersections operate satisfactorily during the peak hours in the existing conditions operational analysis.
N. The Study Area intersections generally operate satisfactorily during the peak hours in the 2028 future background operational analysis.
O. The Study Area intersections operate satisfactorily during the peak hours in the 2028 future total operational analysis with similar operational characteristics as the 2028 future background conditions.

The site access is shown to operate with high delays and queues. The following recommendation is the result of this analysis:

1. Reconfiguration of the site access intersection to a right-in/right-out intersection

P. The Study Area intersections operate satisfactorily during the peak hours in the 2028 future total interim analysis horizon.
    1. The 2028 future total interim analysis results were used to inform the interim functional design and RMA design of the access intersection and is recommended until reconfiguration of the access is considered warranted as a result of the monitoring plan, or BRT facilities are implemented along March Road.

Q. The existing Study Area intersections generally operate satisfactorily during the peak hours in the 2033 future background operational analysis.

R. The Study Area intersections operate satisfactorily during the peak hours in the 2033 future total operational analysis with similar operational characteristics as the 2033 future background conditions. The site access is shown to operate with high delays and queues. The following recommendation is the result of this analysis:
    1. Reconfiguration of the site access intersection to a right-in right-out intersection

S. The mitigation measures proposed in the 2028 and 2033 future total analysis results were used to inform the ultimate functional design and RMA design of the access intersection and is recommended when reconfiguration of the access is considered warranted as a result of the monitoring plan.

T. The PLOS, BLOS, TLOS, and TkLOS were evaluated at both of the signalized Study Area intersections. In most cases, the MMLOS targets were not met. No intersection alterations or mitigation measures are suggested as changes to these intersections as future improvements along March Road are expected to improve the intersection MMLOS at these locations.

The proposed development will function within the Study Area Road Network. It is recommended that, from a transportation perspective, the proposed development application process proceed.

Prepared By:

Robin Marinac, P. Eng.
437-242-5183
Robin.marinac@CGHTransportation.com

Reviewed By:

Mark Crockford, P. Eng.
905-251-4070
Mark.Crockford@CGHTransportation.com

Appendix A

TIA Screening Form and PM Certification Form

13 Markham Avenue
Ottawa ON K2G 3Z1

City of Ottawa 2017 TIA Guidelines
Step 1 - Screening Form

Date: 06-Jul-23
Project Number: 2021-073
Project Reference: 910 March Road

1.1 Description of Proposed Development	
Municipal Address	910 March Road
Description of Location	Ward 5. On the east side of March Road approximatly 150 metres north of Maxwell Bridge Road
Land Use Classification	Development Reserve Zone [DR] and Rural Zone [RU]
Development Size	390 residential units and 501 square metres of ground floor commercial space
Accesses	One full-movement access on March Road. Ultimate intersection configuration will be a right-in/right-out access
Phase of Development	Single Phase
Buildout Year	2028
TIA Requirement	Full TIA Required

1.2 Trip Generation Trigger		
Land Use Type	Townhomes or apartments	
Development Size	390	Units
Trip Generation Trigger	Yes	

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

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

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.

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

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

Dated at ___Newmarket_____ this __22__ day of _____April_____, 2020.
(City)

Name: _____Mark Crockford_____
(Please Print)

Professional Title: _____Professional Engineer_____

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

Office Contact Information (Please Print)
Address: 628 Haines Road
City / Postal Code: Newmarket / L3Y 6V5
Telephone / Extension: (905) 251-4070
E-Mail Address: Mark.Crockford@CGHTransportation.com

Appendix B

City of Ottawa Comments

Robin Marinac

From: Gervais, Josiane <josiane.gervais@ottawa.ca>
Sent: June 17, 2020 12:12 PM
To: Mark Crockford
Cc: Robin Marinac
Subject: RE: 2020-11 910 March Road Step 3 - TPM Comments

Hello Mark,

Please find comments below regarding the Forecasting Report for 910 March Rd.

Transportation Engineering Services

1. Note that the development application for 936 March Road is subject to an RMA. The proposed works include one southbound left-turn lane, one northbound right-turn lane and paved shoulders on March Road. The RMA also accommodates for a future northbound left-turn lane.
2. Provide details as to the location of Access 1 relative to the proposed signalized intersection of March Road and Street A. Confirm that Access 1 is to be signalized, otherwise access onto March Road may need to be restricted.
3. A right in/right out access to March Rd, on the west side, is proposed approximately 225m north of Halton Terrace. Comment on the proposed accesses relative to the access across the street.
4. Consider adjusting the existing/future mode shares. The gas station/convenience market is unlikely to generate many transit trips and until the KNUEA is developed, this development is more likely to exhibit characteristics from the rural west TAZ.
5. Justify the difference between 2022 and 2027 trip projections. Additionally, if only 15% of trips are to from the north and 85% from the south (consistent with the KNUEA TMP), a maximum of 15% of trips can be pass-by trips. The remainder would be primary or diverted trips and should be explicitly accounted for on the study area's road network.
6. Since the timing of the widening of March Road is unknown, it should be assumed that March Road north of Maxwell Bridge/Halton Terrace has a two-lane cross-section. Indicate how many vehicles must be diverted from the peak periods to maintain an acceptable level of service on March Road.
7. Address comments prior to the submission of the strategy report.

Traffic Signal Operations

8. Page 11 of the report should refer to v/c < 0.9.

Development Review – Transportation

9. Include Figure 2: Concept Plan.
10. The site plan depicts a 4-way signalized intersection at Site Access #1, consider if site generated traffic would undertake the westbound through movement here. What is the west leg of the intersection connecting to?
11. An RMA is required for the traffic signal proposed at Access 1.

12. The right-in/right-out access at Access 2 must be supported by physical constraints, and RMA may be required.
13. As requested by TES, address comments prior to submission of Strategy Report.

Regards,

Josiane Gervais, P.Eng.
Project Manager, Infrastructure Approvals | GPRJ Approbation des demandes d'infrastructure
Development Review Branch | Dir Examen des projets d'aménagement
City of Ottawa | Ville d'Ottawa
Tel |Tél. : 613-580- 2424 ext. | poste 21765
web | Site Web : www.ottawa.ca

File No.: D02-02-20-0050

April 24, 2023

Pascale Lépine
910 March Road Inc.

Via email: Pascale@lepinecorp.com

Subject: Zoning By-law Amendment Application – 910 March Road - Review Comments

Please find below the consolidated comments from the review of the above noted application.

1. Engineering

1.1. Comments to be provided separately.

2. Transportation

List of Drawing(s) reviewed:

- **910 March & Maxwell**, Brochure, prepared by Neuf Architects, dated January 27, 2023.

List of Report(s) reviewed:

- **910 March Road - Transportation Impact Assessment**, prepared by CGH Transportation, dated December 2022.

Transportation Engineering Services Comments:

2.1. **Road Widening / ROW Protection:** The 48-metre March Road right-of-way (ROW) protection, per Schedule C16 of the Official Plan, must be provided by the development. 48 metres is consistent with wider ROW requirements for median BRT corridors currently being developed by City staff for a more comprehensive update of arterial road ROW protections. The wider ROW requirements are driven by updated standards for the road edge zone as compared to the Kanata North CDP cross-section, including wider boulevards, cycle tracks, and sidewalks.

2.1.1. Show the ROW protection on the site plan, measured from the centreline of the road per Policy 2.1.1 (a) of Schedule C16.

2.2. **Section 7 Demand Rationalization**: Explain within Section 7 why the turning movement volumes to/from “South Local Road” change between future background and future total conditions.

2.3. **Section 9.1 Design for Sustainable Modes**: Explore options on-site to provide an east-west pathway connection between March Road and the existing north-south multi-use pathway located on the east side of the Creek Corridor. Note that this existing north-south multi-use pathway is planned to be extended northwards to connect throughout the Kanata North community per Figure 17 of the Kanata North CDP.

2.4. Per requirements of Element 4.1.1 of the TIA Guidelines, identify the actual walking distance from all exterior access doors in the proposed development to reach existing and proposed transit stops or stations.

2.5. **Section 9.2 Circulation and Access**: Please provide swept path analysis illustrating design vehicle paths for servicing, loading, and deliveries to/from and within the proposed development.

2.6. Section 10.1 Parking:The paragraph below Table 17 indicates that 588 automobile parking spaces are required, whereas Table 17 shows that 488 are required. Revise for consistency.

2.6.1. It is noted that 12 barrier free parking spaces are proposed. Please also indicate the number required per the Zoning By-law (residential) and AODA legislation (visitor and retail).

2.7. **11 Boundary Street Design**: Extension of east sidewalk on March Road adjacent to the development should include a boulevard to improve pedestrian comfort per City of Ottawa MMLOS objectives, approved arterial road cross-sections, and Kanata North CDP cross-sections.

Site Access Design, Monitoring, and Roadway Modification:

2.8. While it is acknowledged that a previous application for this site included a plan for interim access signalization (prior to median BRT implementation), the previous development also generated substantially more traffic than the current plan. With the reduction in outbound traffic expected at the site access, interim signalization is no longer supported.

2.8.1. The monitoring plan may proceed as proposed. However, if/when delay experienced at the intersection reaches level of service F, a median will be installed by the proponent to restrict the development to right-in/right-out only. The median design will require an RMA.

2.8.2. Recommend redesigning the access for a single outbound lane, which is more consistent with ultimate right-in/right-out operation.

2.8.3. Provide sight line review given the access's ultimate stop bar location at the edge of the ROW.

Traffic Engineering

2.9. The site access intersection cannot be signalized while March Road is a single lane northbound and a single lane southbound. The queueing on March is too severe, spills back into other intersections, and may cause a

safety hazard. The site access intersection may be converted to an unsignalized right-in/right-out.

2.10. Synchro analysis: Remove left turn type (protected-permissive and fully protected left turns) from all analysis as it is unwarranted

Streetlighting

2.11. No comments with the TIA for this circulation. Street lighting reserves the right to make future comments based on subsequent submissions.

2.12. Future considerations are as follows: If there are any proposed changes to the existing roadway geometry, the City of Ottawa Street Light Asset Management Group is required to provide a full street light design. Upon completion of proposed roadway geometry design changes, please submit digital Micro Station drawings with proposed roadway geometry changes to the Street Lighting Department, so that we may proceed with the detailed street light design and coordination with the Street Light maintenance provider and all necessary parties. Be advised that the applicant will be 100% responsible for all costs associated with any Street Light design as a result of the roadway geometry change.

Transit Services

2.13. No comments on this circulation. Transit Services reserves the right to make future comments based on subsequent submissions.

Development Review – Transportation

2.14. There is no funding in place for upgrading cycling infrastructure along March Road and this work would be DC eligible. As such, the upgraded cycling infrastructure proposed on March Road cannot be constructed, please update the site plan by removing the proposed cycle track. Reinstatement of existing bike lane on March Road as a result of the proposed access and turning lane will be reviewed with the functional plan submitted for the RMA.

2.15. The sidewalk must be continuous across the site access, as per City Specification 7.1.

2.16. There is currently no timeline for the March Road widening, nor the BRT implementation.

2.17. The applicant/consultant are strongly encouraged to submit the functional plan, depicting the proposed turning lanes on March Road, for staff review and comment prior to submission of the site plan application. If you choose to omit this step, all documents required for Step 5 (TIA report, drawings, and/or monitoring plan, as required), need to be included to deem an application complete. All costs and delays resulting from the choice to omit Step 4 for staff review before proceeding to Step 5 are the responsibility of the applicant.

2.18. It is acknowledged that the majority of the above comments are applicable to a Site Plan application and must be addressed at that time.

Feel free to contact Josiane Gervais, Transportation Project Manager, for follow-up questions.

3. Planning

List of Drawing(s) reviewed:

- **910 March & Maxwell**, Brochure, prepared by Neuf Architects, dated January 27, 2023.

Comments:

3.1. Will it be possible to construct the building without encroaching on the watercourse setbacks?

3.2. December 21st 5PM shadow is after sunset on that day.

3.2.1. Nearby resident on Windance has requested a more detailed shadow study to show when shadows would be cast on nearby homes.

List of Report(s) reviewed:

- **Zoning By-law Amendment Application 910 March Road - Planning Rationale**, prepared by Novatech, dated January 27, 2023.

Comments:

3.3. Distance to BRT station at Klondike varies from 600 to 800 metres. Please ensure it is consistent.

3.4. What is meant by the “Proposed concrete superstructure” referenced on pages 21-22? It is not referenced anywhere else.

3.5. An additional site-specific provision to require a certain amount of ground floor commercial is recommended.

3.6. Open Space-1 zoning is preferred for the watercourses and buffers.

3.7. While the proposed setbacks to the watercourses are consistent with the KNUEA, it is not clear what ecological restoration or enhancement is proposed along the watercourses to support a reduction in setbacks from 30m to 20m.

4. Environmental Remediation

List of Report(s) reviewed:

- **Phase II Environmental Site Assessment - 910 March Road**, prepared by Paterson Group Inc., dated November 11, 2019.
- **Phase I Environmental Site Assessment - 910 March Road**, prepared by Paterson Group Inc., dated November 5, 2019.

Comments:

4.1. The phase one ESA supporting the subject application (Paterson, Nov 2019) has passed its 18 months validity period as per the O. Reg. 153/04. An updated phase one ESA in compliance with this regulation needs to be submitted.

4.2. Please note, the submitted phase one ESA is missing the required components such as ERIS report, MECP response, HLUI response, etc. These environmental source information, as described by the regulation, needs to be included in the phase one ESA update.

5. Forestry

5.1. Please provide a Tree Conservation Report.

5.2. I have no concerns with the increased building height request.

5.3. Please confirm that existing trees along the property boundary between 910 and 886 March road can be retained and protected throughout construction. The design drawings appear to provide sufficient space.

5.4. It appears that some existing trees may be impacted along the north edge of the property. Please capture these trees in the TCR and describe the impacts/plan of action. Please maximize tree retention along this corridor as much as possible.

5.5. The new building proposal has drastically increased the surface area occupied by a structure on site. Therefore, there will be a high expectancy to maximize tree planting throughout the site to help support the city's canopy cover targets as outlined in the official plan. Specifically, the perimeter of the building should be heavily planted with large trees, and there is an excellent opportunity in the central courtyard as well, so long as underground parking does not limit tree planting opportunities. If the underground structure does limit the use of large tree species, large species should be maximized throughout all other locations.

6. Environmental

List of Report(s) reviewed:

- **Environmental Impact Statement - Zoning By-law Amendment - 910 March Road**, prepared by GEMTEC, dated December 21, 2022.

6.1. Cannot accept the recommendation in the EIS that overhangs, decks or other structures the project over the ground can go into the watercourse setback without clarification on the extent of intrusion into the watercourse setback. Recommend that this be addressed at site plan and no specific exception be provided at zoning.

6.2. Although, the setback to the watercourse should be confirmed prior to rezoning to ensure sufficient space for the planned use the current proposal does not include enough detail to allow a site specific zoning as it relates to the watercourse setbacks. The current setback is 30 m from the normal

highwater mark (top of bank in the new OP), 15 m from top of bank (top of stable slope), geotechnical limit of hazard or the floodplain, which ever is greater. The proposal suggests 20 m for tributary 2 and 3 and 10 m for tributary 4. This is not supported by environmental planning staff after reviewing the EIS and the City OP. As per our previous comments, we recommend:

6.2.1. For tributary 4, environmental planning staff recommend that the proposal match the setback implemented for the adjacent fast food restaurant property to the south, which provides a 15 m setback from top of bank. As per our comment above, intrusions into this from balconies indicated by the concept plan can be considered based in the significance of the intrusion and the condition of the riparian area.

6.2.2. For Tributary 2 and 3, the application proposes to use 20 m from centreline which is not consistent with OP policy and our understanding of the requirements of the Endangered Species Act. The application contains no proposals for improvements to the ecological condition of the 30 m setback and as such environmental planning cannot recommend a reduction of the setback from 30 m for this greenfield development.

7. Urban Design

7.1. We have reviewed the updated drawings and do not have any additional comments at this time.

8. Parkland

8.1. PFP is requesting parkland dedication in the form of cash-in-lieu of parkland (CILP).

8.2. The amount of parkland dedication required is to be calculated as per the Parkland Dedication By-law No.2022-280, as amended

For the residential uses:

Note: This By-law was amended by the Planning Act (Bill 23) on November 28 2022. For residential densities greater than 18 dwelling units per net hectare, CILP is now calculated at a rate of 1 hectare per 1000 dwelling units. The maximum amount that can be conveyed is now capped at 10% of the gross land area for sites under 5 hectares.

8.3. For the commercial uses: CILP is calculated at a rate of 2% of the gross land area.

8.4. Applicant should consider connectivity to the MUP that runs east of the property and is proposed to be extended through the most easternly jut out of the parcel.

9. Transportation Services

9.1. Construction approach – Please contact the Transportation Services Department (TMconstruction@ottawa.ca) early in the zoning process to determine the ability to construct the site and copy me on this request.

10. Community Benefits Charge

10.1. This proposal will be subject to a Community Benefits Charge in accordance with the Community Benefits Charge By-law.

10.2. See attached documentation.

11. Enbridge

11.1. Enbridge Gas Inc. does not object to the proposed application however, we reserve the right to amend our development conditions.

12. Hydro Ottawa

12.1. See attached letter

13. Mississippi Valley Conservation Authority

13.1. See attached letter

14. Ottawa-Carleton District School Board

14.1. See attached letter.

15. Councillor and Community issues

15.1. Considerable concern has been raised over site access, particularly the ability of residents to safely turn left onto March Road in the near term and that right-in/right-out configuration would be quite inconvenient for future residents

15.2. Concern has also been raised about the building height near the rear of the property causing overlook and shadow concerns for nearby residents.

15.3. Concern over impacts to the tributaries of Shirley's Brook from construction.

15.4. Concern that commercial uses would be more appropriate for the site's context.

16. For the next submission

- The next submission should address each and every one of the comments or issues, to ensure the effectiveness and consistency of the next review.
- A cover letter must be included that states how each comment was addressed in the resubmission. Please co-ordinate the numbering of each resubmission comment, or issue, with the above noted comment number.
- Plans are to be standard A1 size (594 mm x 841 mm) or Arch D size (609.6 mm x 914.4 mm) sheets, utilizing an appropriate Metric scale (1:200, 1:250, 1:300, 1:400 or 1:500).
- All addenda or revisions to any studies or plans must be provided in PDF. All PDF documents are to be unlocked and flattened.

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

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

Yours Truly,
Alex Gatien

cc.

Shika Rathnasooriya – Project Manager
Josiane Gervais – Transportation Project Manager
Matthew Hayley – Planner III Environment
Adam Palmer – Forestry
Laura Hagerman – Parks

Project Number	2021-073
Project	Lepine 910 March Road
Document	Step 4 Strategy Report
Date	31-Jul-23

Comment #	Comment	Response
	Transportation Engineering Services Comments	
1	2.1. Road Widening / ROW Protection: The 48-metre March Road right-of-way (ROW) protection, per Schedule C16 of the Official Plan, must be provided by the development. 48 metres is consistent with wider ROW requirements for median BRT corridors currently being developed by City staff for a more comprehensive update of arterial road ROW protections. The wider ROW requirements are driven by updated standards for the road edge zone as compared to the Kanata North CDP cross-section, including wider boulevards, cycle tracks, and sidewalks. 2.1.1. Show the ROW protection on the site plan, measured from the centreline of the road per Policy 2.1.1 (a) of Schedule C16.	Noted. These comments will be addressed on the updated site plan.
2	2.2 Section 7 Demand Rationalization: Explain within Section 7 why the turning movement volumes to/from "South Local Road" change between future background and future total conditions.	Noted. The "South Local Road" is expected to operate as a right-in / right-out access in the Future Background conditions, and is expected to operate as a full-movement four-legged intersection in the Future Total conditions. The change in intersection configuration is the reason for the differences in the turning movement volumes to/from "South Local Road"
3	2.3 Section 9.1 Design for Sustainable Modes: Explore options on-site to provide an east-west pathway connection between March Road and the existing north-south multi-use pathway located on the east side of the Creek Corridor. Note that this existing north-south multi-use pathway is planned to be extended northwards to connect throughout the Kanata North community per Figure 17 of the Kanata North CDP.	Noted. The environmental constraints around the Subject Site preclude consideration of any east-west connectivity between March Road and the existing MUP. As contemplated in the Kanata North CDP, pedestrian pathways should be located outside of the 40m corridors intended to protect the ecological functions of the tributaries and any habitat enhancements for Blanding's Turtle. The required protection measures for this site, including the proposed exclusionary turtle fencing along Tributaries 2 and 3, would preclude any east-west connection. The public is instead encouraged to access the existing/planned north-south pathway from Maxwell Bridge Road or Invention Boulevard in the Minto subdivision approximately 330 m north of the Subject Site. Lepine proposes to convey to the City for parkland purposes an area of approximately 890 m2 in the northeast corner of its site that enables future pathway connections as planned by the City
4	2.4 Per requirements of Element 4.1.1 of the TIA Guidelines, identify the actual walking distance from all exterior access doors in the proposed development to reach existing and proposed transit stops or stations	Noted. This has been included in the updated TIA.
5	2.5 Section 9.2 Circulation and Access: Please provide swept path analysis illustrating design vehicle paths for servicing, loading, and deliveries to/from and within the proposed development.	Noted. A swept path analysis has been performed using the required design vehicles to/from and within the proposed development. This has been included in the updated TIA.
6	2.6 Section 10.1 Parking: The paragraph below Table 17 indicates that 588 automobile parking spaces are required, whereas Table 17 shows that 488 are required. Revise for consistency. 2.6.1 It is noted that 12 barrier free parking spaces are proposed. Please also indicate the number required per the Zoning By-law (residential) and AODA legislation (visitor and retail).	2.6 - Parking requirements have been recalculated and the corresponding table and paragraph have been reviewed and are reflective of the current concept plan. 2.6.1 - The barrier free parking section has been updated and is included in updated TIA
7	2.7 Section 11 Boundary Street Design: Extension of east sidewalk on March Road adjacent to the development should include a boulevard to improve pedestrian comfort per City of Ottawa MMLOS objectives, approved arterial road cross-sections, and Kanata North CDP cross-sections.	Noted. The sidewalk has been realigned to create a 1m boulevard between it and the curb. This is shown in the RMA included in the updated TIA.

8	2.8 While it is acknowledged that a previous application for this site included a plan for interim access signalization (prior to median BRT implementation), the previous development also generated substantially more traffic than the current plan. With the reduction in outbound traffic expected at the site access, interim signalization is no longer supported. 2.8.1. The monitoring plan may proceed as proposed. However, if/when delay experienced at the intersection reaches level of service F, a median will be installed by the proponent to restrict the development to right-in/right-out only. The median design will require an RMA. 2.8.2. Recommend redesigning the access for a single outbound lane, which is more consistent with ultimate right-in/right-out operation. 2.8.3. Provide sight line review given the access's ultimate stop bar location at the edge of the ROW.	2.8 - Noted. Interim signalization will not be considered. 2.8.1 - Noted. The monitoring plan has been adjusted to reflect this as part of the updated TIA. Additionally, the ultimate RMA site access intersection design reflects this right-in/right-out condition. 2.8.2 - Noted. The access has been reconfigured to only have a single outbound lane in both the interim and ultimate RMA designs. 2.8.3 - Noted. Sightline analysis will no longer be required to satisfy this comment, as the stop bar location in both the interim and the ultimate will no longer be located at a large distance from the roadway edge by a protected crossing since the comment below (2.14) has asked for its removal. This will allow motorists to maneuver to the standard decision point location, located at roughly 4.4m from the roadway edge.
9	2.9 The site access intersection cannot be signalized while March Road is a single lane northbound and a single lane southbound. The queueing on March is too severe, spills back into other intersections, and may cause a safety hazard. The site access intersection may be converted to an unsignalized right-in/right-out.	Noted. This has been considered in the updated TIA.
10	2.10 Synchro analysis: Remove left turn type (protected-permissive and fully protected left turns) from all analysis as it is unwarranted	Noted. Synchro analysis for the updated report has been performed without these left-turn types.
11	2.14. There is no funding in place for upgrading cycling infrastructure along March Road and this work would be DC eligible. As such, the upgraded cycling infrastructure proposed on March Road cannot be constructed, please update the site plan by removing the proposed cycle track. Reinstatement of existing bike lane on March Road as a result of the proposed access and turning lane will be reviewed with the functional plan submitted for the RMA.	Noted. As requested, the existing paved shoulder that acts as a curb side on-road cycling facility shall be maintained and no protected crossing shall be provided.
12	2.15. The sidewalk must be continuous across the site access, as per City Specification 7.1.	Noted. The updated geometry includes a depressed sidewalk across the access per SC7.1.
13	2.16. There is currently no timeline for the March Road widening, nor the BRT implementation.	Noted.

Appendix C

Traffic Data

CGH TRANSPORTATION

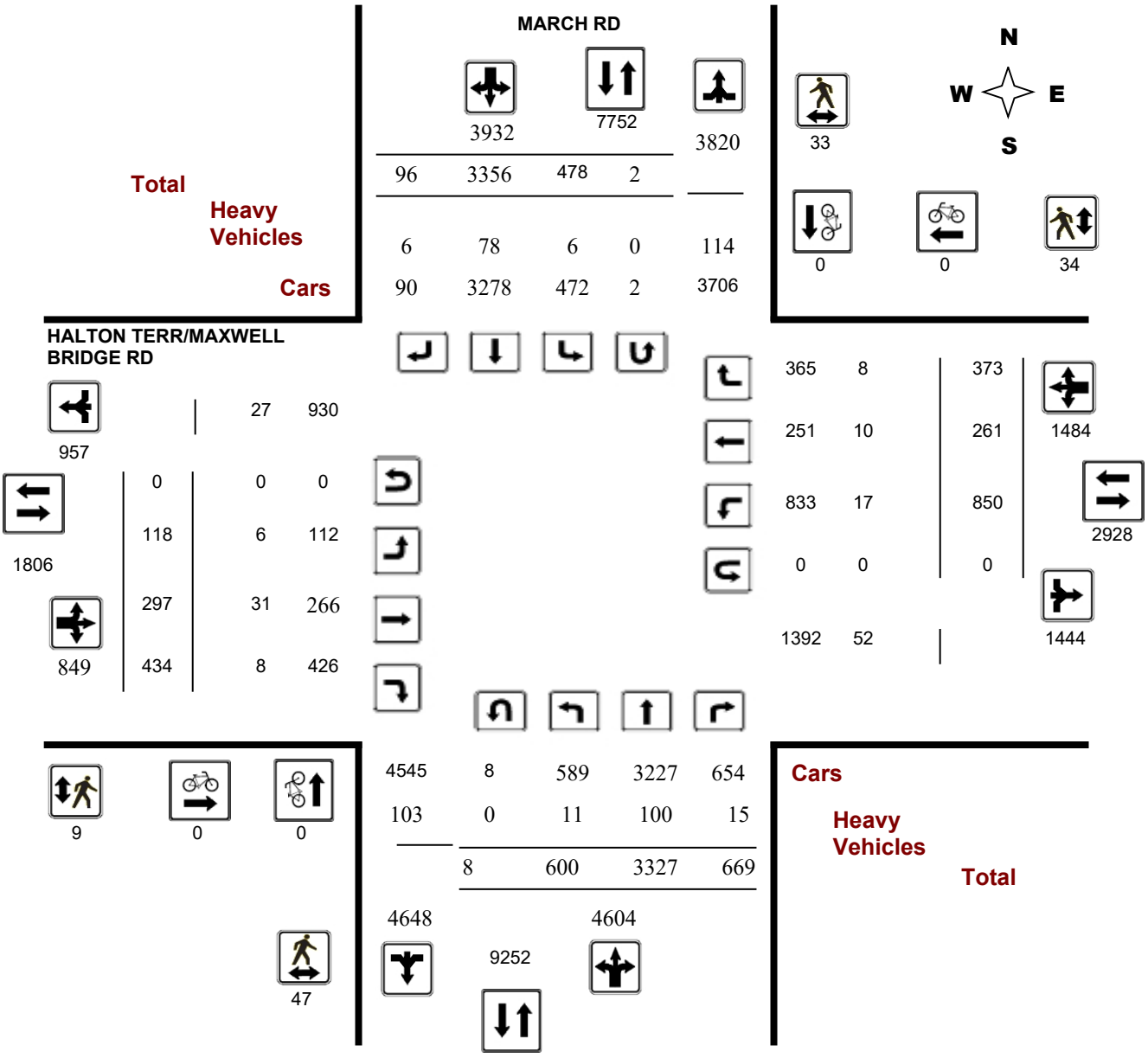
Transportation Services - Traffic Services

Turning Movement Count - Study Results

HALTON TERR/MAXWELL BRIDGE RD @ MARCH RD

Survey Date: Wednesday, March 04, 2020
Start Time: 07:00
WO No: 39372
Device: Miovision

Full Study Diagram



5472187 - WED JAN 22, 2020 - 8HRS - LORETTA

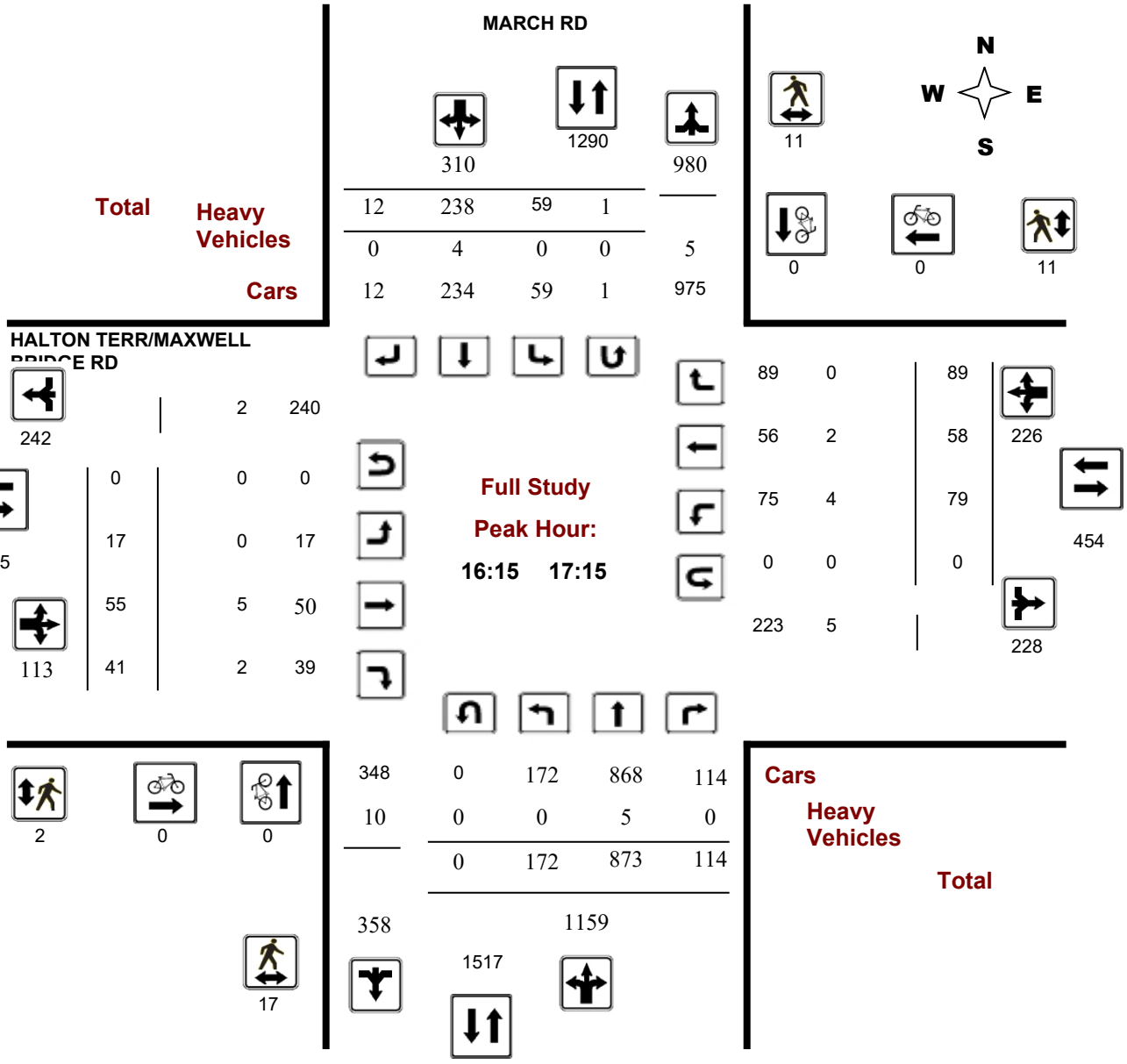
Transportation Services - Traffic Services

Turning Movement Count - Study Results

HALTON TERR/MAXWELL BRIDGE RD @ MARCH RD

Survey Date: Wednesday, March 04, 2020
Start Time: 07:00
WO No: 39372
Device: Miovision

Full Study Peak Hour Diagram



5472187 - WED JAN 22, 2020 - 8HRS - LORETTA

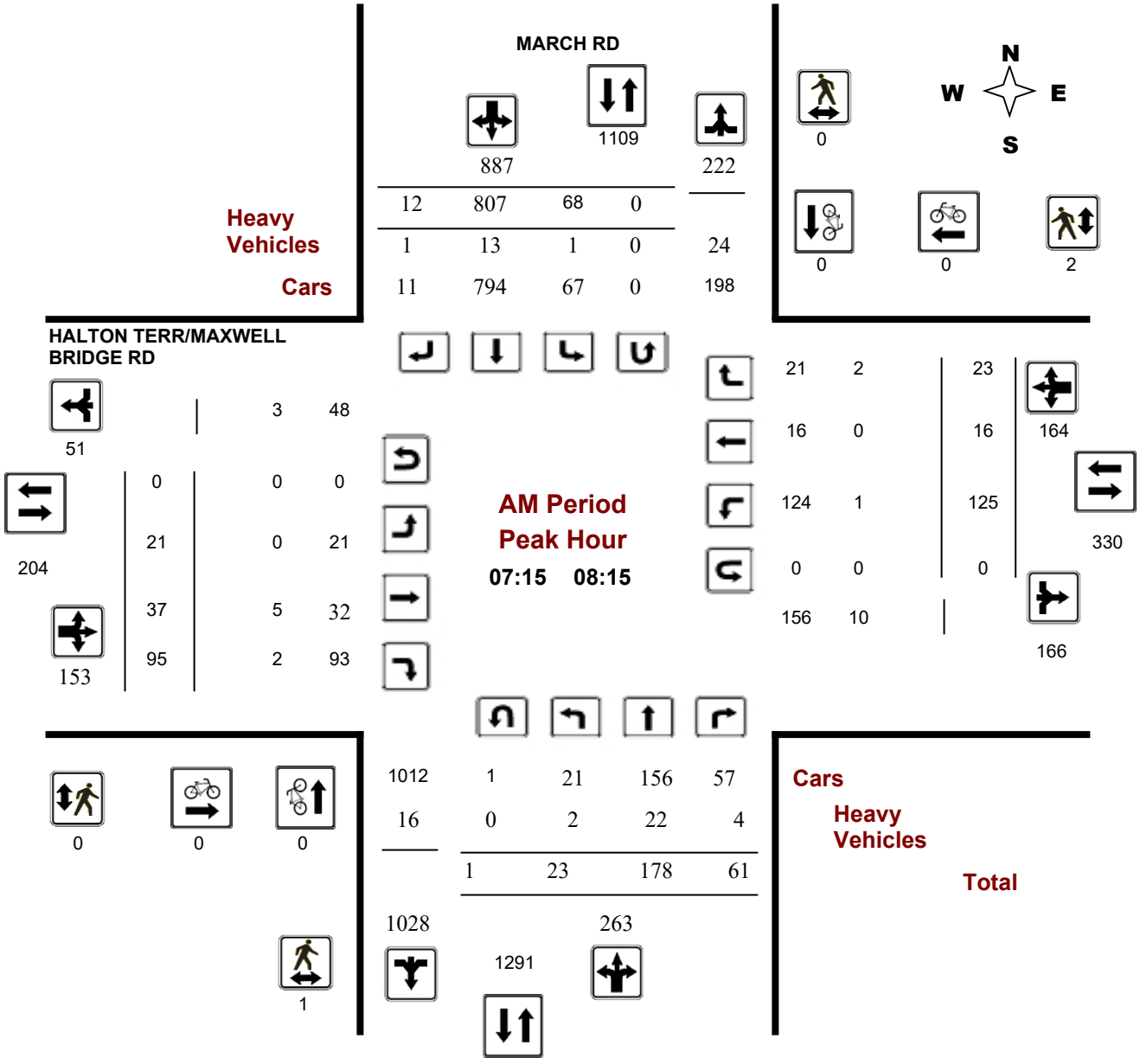
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

HALTON TERR/MAXWELL BRIDGE RD @ MARCH RD

Survey Date: Wednesday, March 04, 2020 **WO No:** 39372

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



Comments 5472187 - WED JAN 22, 2020 - 8HRS - LORETTA

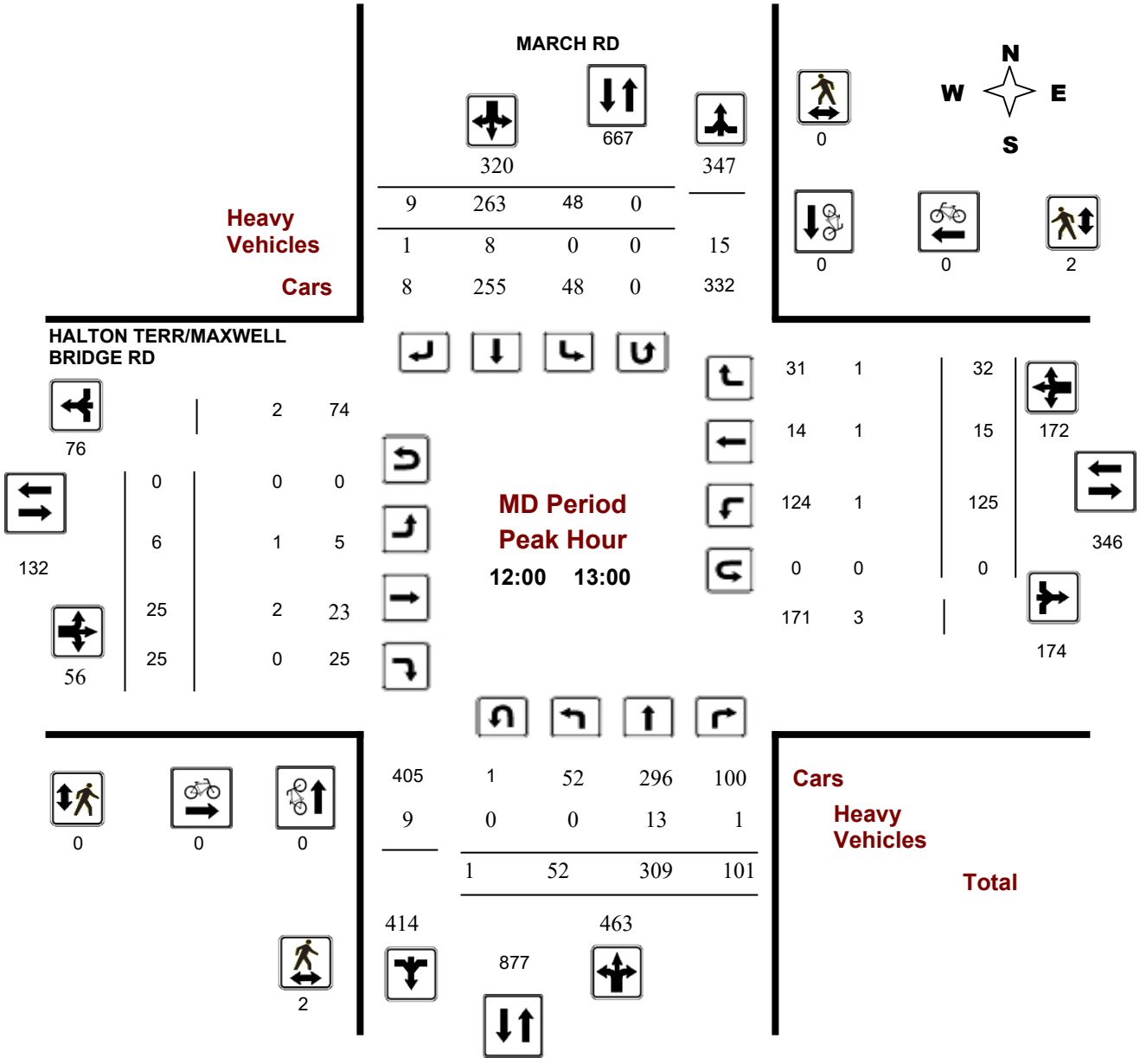
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

HALTON TERR/MAXWELL BRIDGE RD @ MARCH RD

Survey Date: Wednesday, March 04, 2020 **WO No:** 39372

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



Comments 5472187 - WED JAN 22, 2020 - 8HRS - LORETTA

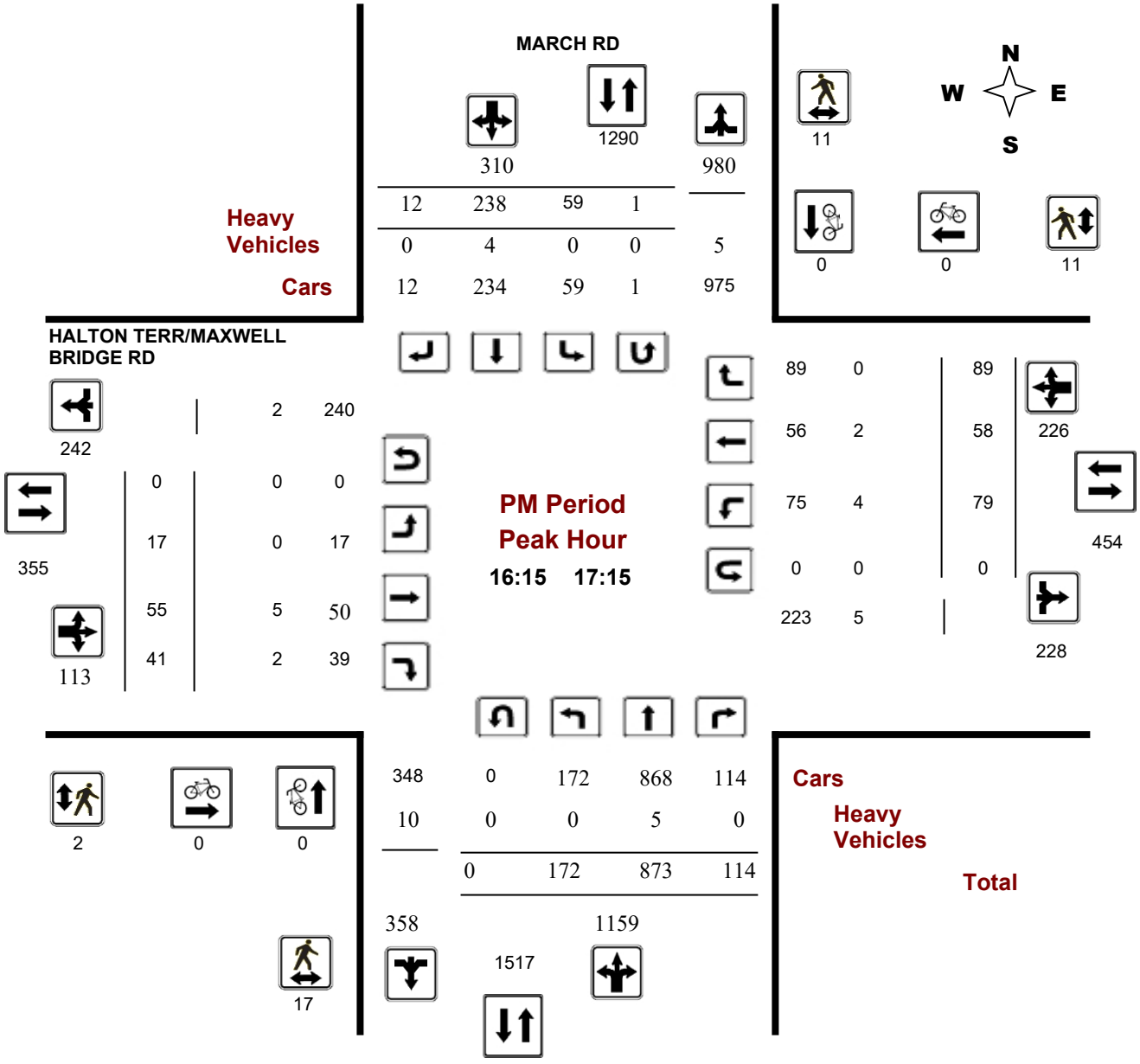
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

HALTON TERR/MAXWELL BRIDGE RD @ MARCH RD

Survey Date: Wednesday, March 04, 2020 **WO No:** 39372

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



Comments 5472187 - WED JAN 22, 2020 - 8HRS - LORETTA

Transportation Services - Traffic Services

Turning Movement Count - Study Results

HALTON TERR/MAXWELL BRIDGE RD @ MARCH RD

Survey Date: Wednesday, March 04, 2020 **WO No:** 39372

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

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, March 04, 2020

Total Observed U-Turns

Northbound: 8 Southbound: 2

Eastbound: 0 Westbound: 0

AADT Factor

1.00

	MARCH RD									HALTON TERR/MAXWELL BRIDGE RD									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	21	180	50	**251**	56	785	10	**851**	**1102**	18	36	90	**144**	122	16	23	**161**	**305**	**1407**
08:00 09:00	35	152	76	**263**	78	758	10	**846**	**1109**	21	32	83	**136**	141	24	19	**184**	**320**	**1429**
09:00 10:00	28	208	62	**298**	69	517	13	**599**	**897**	21	42	87	**150**	120	28	29	**177**	**327**	**1224**
11:30 12:30	58	268	85	**411**	52	283	9	**344**	**755**	3	24	28	**55**	115	18	27	**160**	**215**	**970**
12:30 13:30	47	287	86	**420**	43	266	7	**316**	**736**	8	21	34	**63**	109	15	28	**152**	**215**	**951**
15:00 16:00	96	608	104	**808**	58	265	19	**342**	**1150**	18	41	36	**95**	59	50	73	**182**	**277**	**1427**
16:00 17:00	156	867	101	**1124**	63	246	11	**320**	**1444**	18	51	39	**108**	70	52	88	**210**	**318**	**1762**
17:00 18:00	159	757	105	**1021**	59	236	17	**312**	**1333**	11	50	37	**98**	114	58	86	**258**	**356**	**1689**
Sub Total	600	3327	669	**4596**	478	3356	96	**3930**	**8526**	118	297	434	**849**	850	261	373	**1484**	**2333**	**10859**
U Turns				**8**				**2**	**10**				**0**				**0**	**0**	**10**
Total	600	3327	669	**4604**	478	3356	96	**3932**	**8536**	118	297	434	**849**	850	261	373	**1484**	**2333**	**10869**
EQ 12Hr	834	4625	930	**6400**	664	4665	133	**5465**	**11865**	164	413	603	**1180**	1182	363	518	**2063**	**3243**	**15108**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	786	4358	876	**6031**	626	4396	126	**5151**	**11865**	155	389	569	**1112**	1114	342	489	**1944**	**3243**	**15108**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**1**					
AVG 24Hr	1030	5709	1148	**7901**	820	5759	165	**6748**	**14649**	202	510	745	**1457**	1459	448	640	**2547**	**4004**	**18653**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.														**1.31**					

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

Transportation Services - Traffic Services

Turning Movement Count - Study Results

HALTON TERR/MAXWELL BRIDGE RD @ MARCH RD

Survey Date: Wednesday, March 04, 2020 **WO No:** 39372

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

Full Study 15 Minute Increments

		MARCH RD									HALTON TERR/MAXWELL BRIDGE RD									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	6	45	14	65	9	179	0	188	15	2	8	19	29	36	4	6	46	15	328
07:15	07:30	8	54	12	74	14	224	1	239	17	5	6	27	38	29	4	3	36	17	387
07:30	07:45	4	54	16	75	12	183	5	200	7	8	10	25	43	25	3	4	32	7	350
07:45	08:00	3	27	8	38	21	199	4	224	7	3	12	19	34	32	5	10	47	7	343
08:00	08:15	8	43	25	76	21	201	2	224	12	5	9	24	38	39	4	6	49	12	387
08:15	08:30	6	32	18	56	20	182	1	203	5	5	8	18	31	37	3	5	45	5	335
08:30	08:45	11	42	22	76	15	189	3	207	9	7	7	27	41	26	6	5	37	9	361
08:45	09:00	10	35	11	56	22	186	4	212	6	4	8	14	26	39	11	3	53	6	347
09:00	09:15	7	52	23	82	23	166	8	197	16	8	18	37	63	40	10	9	59	16	401
09:15	09:30	8	54	17	79	17	126	1	144	10	7	9	33	49	30	10	10	50	10	322
09:30	09:45	7	55	11	74	17	125	2	144	5	4	6	13	23	27	3	4	34	5	275
09:45	10:00	6	47	11	65	12	100	2	114	4	2	9	4	15	23	5	6	34	4	228
11:30	11:45	17	55	19	92	14	77	4	95	5	1	6	10	17	35	5	8	48	5	252
11:45	12:00	15	57	20	94	10	70	1	81	10	2	6	10	18	25	6	3	34	10	227
12:00	12:15	16	84	26	126	12	70	3	85	3	0	4	3	7	30	2	8	40	3	258
12:15	12:30	10	72	20	103	16	66	1	83	3	0	8	5	13	25	5	8	38	3	237
12:30	12:45	15	79	28	122	8	56	2	66	7	3	6	8	17	37	5	9	51	7	256
12:45	13:00	11	74	27	112	12	71	3	86	10	3	7	9	19	33	3	7	43	10	260
13:00	13:15	11	83	10	104	8	71	1	80	4	1	6	13	20	18	2	6	26	4	230
13:15	13:30	10	51	21	82	15	68	1	85	6	1	2	4	7	21	5	6	32	6	206
15:00	15:15	13	130	25	168	10	63	4	77	1	2	5	7	14	15	9	19	43	1	302
15:15	15:30	29	129	33	191	13	56	6	75	9	2	11	8	21	16	15	15	46	9	333
15:30	15:45	24	163	16	203	13	65	4	82	10	7	9	5	21	13	16	23	52	10	358
15:45	16:00	30	186	30	246	22	81	5	108	9	7	16	16	39	15	10	16	41	9	434
16:00	16:15	27	202	22	251	17	62	3	82	7	4	12	11	27	17	9	25	51	7	411
16:15	16:30	40	251	17	308	16	64	1	81	3	6	13	11	30	14	11	18	43	3	462
16:30	16:45	43	214	32	289	10	50	4	65	1	2	11	8	21	20	14	27	61	1	436
16:45	17:00	46	200	30	276	20	70	3	93	3	6	15	9	30	19	18	18	55	3	454
17:00	17:15	43	208	35	286	13	54	4	71	2	3	16	13	32	26	15	26	67	2	456
17:15	17:30	32	217	18	267	17	65	1	83	1	3	10	5	18	30	14	21	65	1	433
17:30	17:45	37	173	26	236	21	50	3	74	9	5	15	7	27	37	11	27	75	9	412
17:45	18:00	47	159	26	232	8	67	9	84	0	0	9	12	21	21	18	12	51	0	388
Total:		600	3327	669	4604	478	3356	96	3932	216	118	297	434	849	850	261	373	1484	216	10,869

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

HALTON TERR/MAXWELL BRIDGE RD @ MARCH RD

Survey Date: Wednesday, March 04, 2020 **WO No:** 39372

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

Full Study Cyclist Volume

Time Period		MARCH RD			HALTON TERR/MAXWELL BRIDGE RD			
		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	0	0	0	0	0	0	0
07:15	07:30	0	0	0	0	0	0	0
07:30	07:45	0	0	0	0	0	0	0
07:45	08:00	0	0	0	0	0	0	0
08:00	08:15	0	0	0	0	0	0	0
08:15	08:30	0	0	0	0	0	0	0
08:30	08:45	0	0	0	0	0	0	0
08:45	09:00	0	0	0	0	0	0	0
09:00	09:15	0	0	0	0	0	0	0
09:15	09:30	0	0	0	0	0	0	0
09:30	09:45	0	0	0	0	0	0	0
09:45	10:00	0	0	0	0	0	0	0
11:30	11:45	0	0	0	0	0	0	0
11:45	12:00	0	0	0	0	0	0	0
12:00	12:15	0	0	0	0	0	0	0
12:15	12:30	0	0	0	0	0	0	0
12:30	12:45	0	0	0	0	0	0	0
12:45	13:00	0	0	0	0	0	0	0
13:00	13:15	0	0	0	0	0	0	0
13:15	13:30	0	0	0	0	0	0	0
15:00	15:15	0	0	0	0	0	0	0
15:15	15:30	0	0	0	0	0	0	0
15:30	15:45	0	0	0	0	0	0	0
15:45	16:00	0	0	0	0	0	0	0
16:00	16:15	0	0	0	0	0	0	0
16:15	16:30	0	0	0	0	0	0	0
16:30	16:45	0	0	0	0	0	0	0
16:45	17:00	0	0	0	0	0	0	0
17:00	17:15	0	0	0	0	0	0	0
17:15	17:30	0	0	0	0	0	0	0
17:30	17:45	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0
Total		0	0	**0**	0	0	0	0

Transportation Services - Traffic Services

Turning Movement Count - Study Results

HALTON TERR/MAXWELL BRIDGE RD @ MARCH RD

Survey Date: Wednesday, March 04, 2020 **WO No:** 39372

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

Full Study Pedestrian Volume

	MARCH RD			HALTON TERR/MAXWELL BRIDGE RD			
Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	0	1	**1**	0	0	**0**	**1**
07:15 07:30	0	0	**0**	0	1	**1**	**1**
07:30 07:45	0	0	**0**	0	0	**0**	**0**
07:45 08:00	1	0	**1**	0	1	**1**	**2**
08:00 08:15	0	0	**0**	0	0	**0**	**0**
08:15 08:30	0	0	**0**	0	0	**0**	**0**
08:30 08:45	0	0	**0**	0	1	**1**	**1**
08:45 09:00	1	2	**3**	0	1	**1**	**4**
09:00 09:15	1	0	**1**	0	0	**0**	**1**
09:15 09:30	0	1	**1**	1	1	**2**	**3**
09:30 09:45	0	0	**0**	0	0	**0**	**0**
09:45 10:00	0	0	**0**	1	0	**1**	**1**
11:30 11:45	2	0	**2**	0	1	**1**	**3**
11:45 12:00	2	0	**2**	0	0	**0**	**2**
12:00 12:15	0	0	**0**	0	2	**2**	**2**
12:15 12:30	1	0	**1**	0	0	**0**	**1**
12:30 12:45	1	0	**1**	0	0	**0**	**1**
12:45 13:00	0	0	**0**	0	0	**0**	**0**
13:00 13:15	2	0	**2**	0	0	**0**	**2**
13:15 13:30	2	0	**2**	0	0	**0**	**2**
15:00 15:15	0	5	**5**	0	4	**4**	**9**
15:15 15:30	4	2	**6**	0	6	**6**	**12**
15:30 15:45	1	0	**1**	0	0	**0**	**1**
15:45 16:00	0	1	**1**	1	0	**1**	**2**
16:00 16:15	3	5	**8**	1	1	**2**	**10**
16:15 16:30	6	0	**6**	1	6	**7**	**13**
16:30 16:45	4	8	**12**	0	1	**1**	**13**
16:45 17:00	6	2	**8**	1	2	**3**	**11**
17:00 17:15	1	1	**2**	0	2	**2**	**4**
17:15 17:30	3	1	**4**	0	1	**1**	**5**
17:30 17:45	3	4	**7**	0	3	**3**	**10**
17:45 18:00	3	0	**3**	3	0	**3**	**6**
Total	47	33	**80**	9	34	**43**	**123**

5472187 - WED JAN 22, 2020 - 8HRS - LORETTA

Transportation Services - Traffic Services

Turning Movement Count - Study Results

HALTON TERR/MAXWELL BRIDGE RD @ MARCH RD

Survey Date: Wednesday, March 04, 2020 **WO No:** 39372

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

Full Study Heavy Vehicles

		MARCH RD									HALTON TERR/MAXWELL BRIDGE RD									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	1	5	3	**9**	0	6	0	**6**	**15**	0	2	0	**2**	0	0	0	**0**	**2**	**17**
07:15	07:30	2	9	2	**13**	1	3	0	**4**	**17**	0	1	2	**3**	0	0	2	**2**	**5**	**22**
07:30	07:45	0	3	1	**4**	0	3	0	**3**	**7**	0	1	0	**1**	0	0	0	**0**	**1**	**8**
07:45	08:00	0	2	0	**2**	0	4	1	**5**	**7**	0	1	0	**1**	1	0	0	**1**	**2**	**9**
08:00	08:15	0	8	1	**9**	0	3	0	**3**	**12**	0	2	0	**2**	0	0	0	**0**	**2**	**14**
08:15	08:30	0	2	0	**2**	1	2	0	**3**	**5**	0	1	0	**1**	0	0	0	**0**	**1**	**6**
08:30	08:45	0	5	1	**6**	0	3	0	**3**	**9**	0	0	0	**0**	0	1	0	**1**	**1**	**10**
08:45	09:00	0	2	0	**2**	1	3	0	**4**	**6**	0	1	0	**1**	1	1	0	**2**	**3**	**9**
09:00	09:15	2	6	0	**8**	0	7	1	**8**	**16**	1	2	2	**5**	0	1	1	**2**	**7**	**23**
09:15	09:30	1	6	1	**8**	0	2	0	**2**	**10**	1	2	2	**5**	0	0	1	**1**	**6**	**16**
09:30	09:45	0	2	0	**2**	0	3	0	**3**	**5**	0	0	0	**0**	0	0	0	**0**	**0**	**5**
09:45	10:00	0	2	0	**2**	0	2	0	**2**	**4**	0	2	0	**2**	0	0	0	**0**	**2**	**6**
11:30	11:45	0	2	0	**2**	2	1	0	**3**	**5**	0	1	0	**1**	0	1	1	**2**	**3**	**8**
11:45	12:00	0	7	1	**8**	0	2	0	**2**	**10**	0	0	0	**0**	1	0	0	**1**	**1**	**11**
12:00	12:15	0	0	0	**0**	0	3	0	**3**	**3**	0	0	0	**0**	0	0	0	**0**	**0**	**3**
12:15	12:30	0	2	0	**2**	0	1	0	**1**	**3**	0	1	0	**1**	1	0	0	**1**	**2**	**5**
12:30	12:45	0	4	1	**5**	0	2	0	**2**	**7**	0	1	0	**1**	0	1	1	**2**	**3**	**10**
12:45	13:00	0	7	0	**7**	0	2	1	**3**	**10**	1	0	0	**1**	0	0	0	**0**	**1**	**11**
13:00	13:15	1	1	0	**2**	0	2	0	**2**	**4**	1	1	0	**2**	0	0	0	**0**	**2**	**6**
13:15	13:30	1	2	0	**3**	0	2	1	**3**	**6**	0	1	0	**1**	0	0	0	**0**	**1**	**7**
15:00	15:15	0	0	0	**0**	0	1	0	**1**	**1**	0	0	0	**0**	2	0	0	**2**	**2**	**3**
15:15	15:30	0	3	1	**4**	0	5	0	**5**	**9**	0	1	0	**1**	0	1	0	**1**	**2**	**11**
15:30	15:45	1	5	1	**7**	0	3	0	**3**	**10**	1	1	0	**2**	1	1	0	**2**	**4**	**14**
15:45	16:00	1	2	1	**4**	1	2	2	**5**	**9**	0	1	0	**1**	0	0	0	**0**	**1**	**10**
16:00	16:15	1	3	0	**4**	0	3	0	**3**	**7**	1	1	0	**2**	1	1	2	**4**	**6**	**13**
16:15	16:30	0	3	0	**3**	0	0	0	**0**	**3**	0	1	0	**1**	2	2	0	**4**	**5**	**8**
16:30	16:45	0	0	0	**0**	0	1	0	**1**	**1**	0	2	1	**3**	0	0	0	**0**	**3**	**4**
16:45	17:00	0	0	0	**0**	0	3	0	**3**	**3**	0	1	0	**1**	1	0	0	**1**	**2**	**5**
17:00	17:15	0	2	0	**2**	0	0	0	**0**	**2**	0	1	1	**2**	1	0	0	**1**	**3**	**5**
17:15	17:30	0	1	0	**1**	0	0	0	**0**	**1**	0	1	0	**1**	1	0	0	**1**	**2**	**3**
17:30	17:45	0	4	1	**5**	0	4	0	**4**	**9**	0	0	0	**0**	3	0	0	**3**	**3**	**12**
17:45	18:00	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	1	0	0	**1**	**2**	**2**
Total:	None	11	100	15	**126**	6	78	6	**90**	**216**	6	31	8	**45**	17	10	8	**35**	**80**	**296**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

HALTON TERR/MAXWELL BRIDGE RD @ MARCH RD

Survey Date: Wednesday, March 04, 2020 **WO No:** 39372

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

Full Study 15 Minute U-Turn Total

Time Period		MARCH RD		HALTON TERR/MAXWELL BRIDGE RD		
		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	1	0	0	0	1
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	1	0	0	0	1
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	1	0	0	0	1
09:45	10:00	1	0	0	0	1
11:30	11:45	1	0	0	0	1
11:45	12:00	2	0	0	0	2
12:00	12:15	0	0	0	0	0
12:15	12:30	1	0	0	0	1
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	1	0	0	1
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	0	0
16:30	16:45	0	1	0	0	1
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
Total		8	2	0	0	10

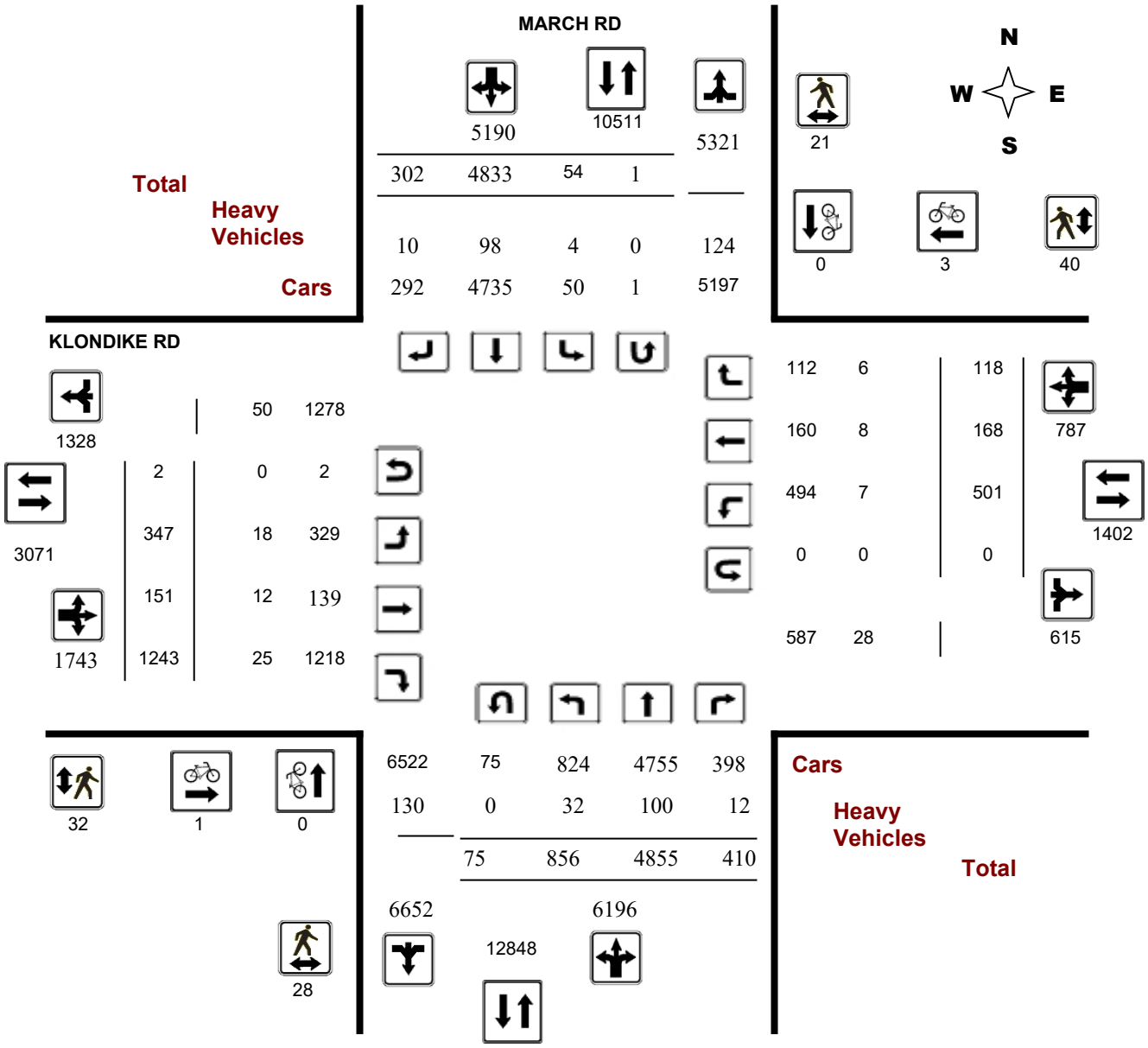
Transportation Services - Traffic Services

Turning Movement Count - Study Results

KLONDIKE RD @ MARCH RD

Survey Date: Wednesday, March 04, 2020
Start Time: 07:00
WO No: 39371
Device: Miovision

Full Study Diagram



5472186 - WED JAN 22, 2020 - 8HRS - LORETTA

Transportation Services - Traffic Services

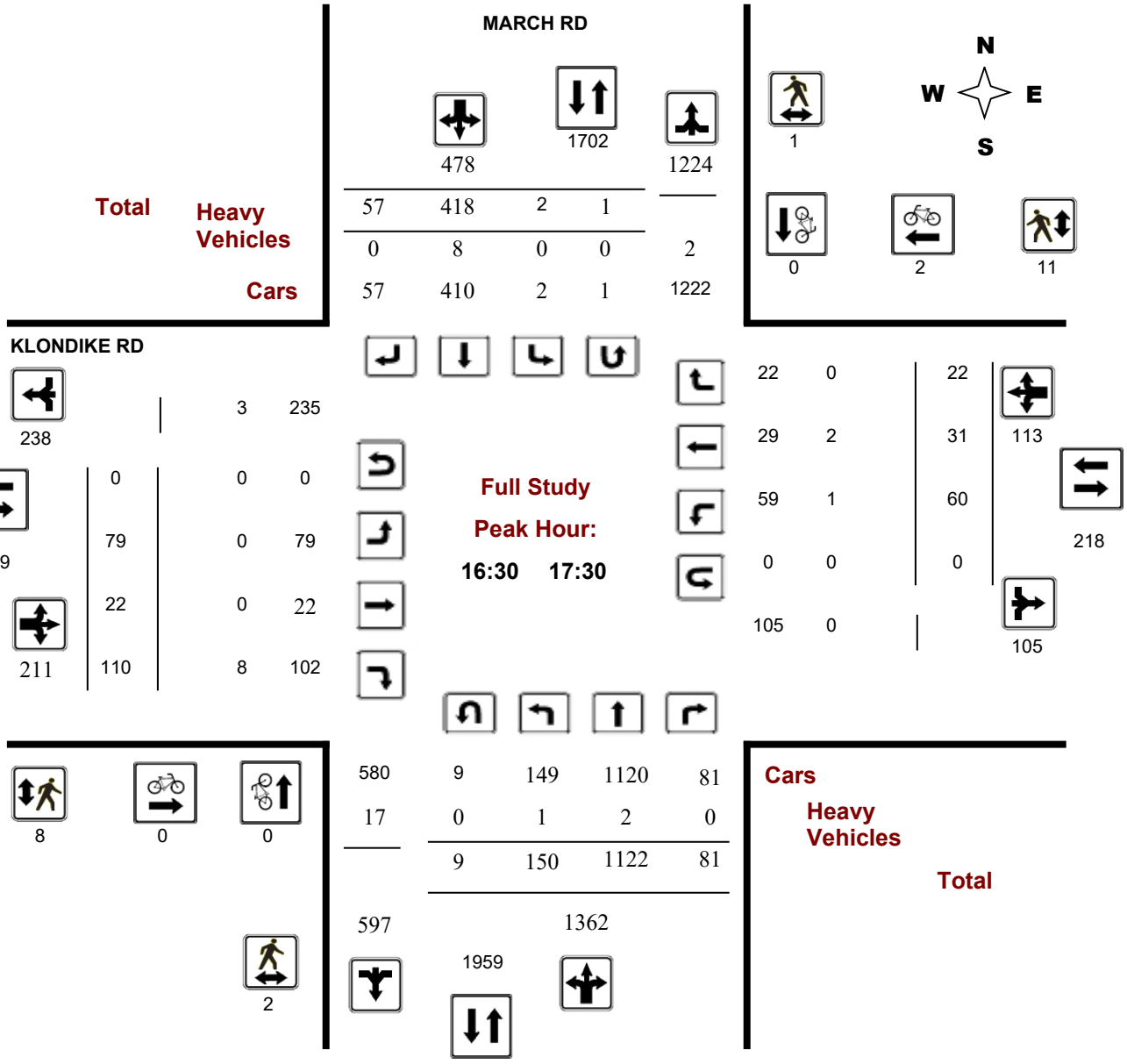
Turning Movement Count - Study Results

KLONDIKE RD @ MARCH RD

Survey Date: Wednesday, March 04, 2020 **WO No:** 39371

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

Full Study Peak Hour Diagram



5472186 - WED JAN 22, 2020 - 8HRS - LORETTA

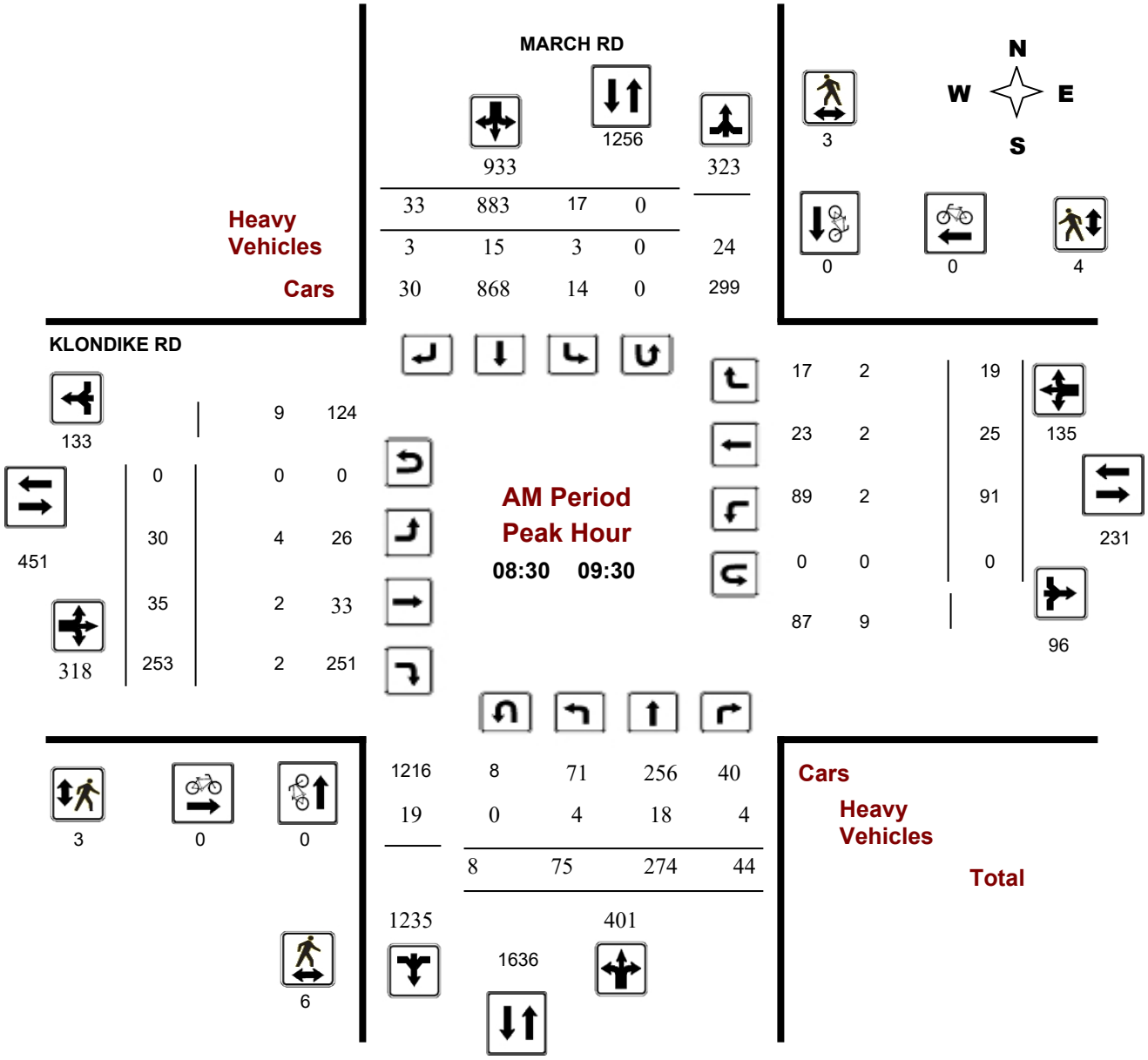
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

KLONDIKE RD @ MARCH RD

Survey Date: Wednesday, March 04, 2020 **WO No:** 39371

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



Comments 5472186 - WED JAN 22, 2020 - 8HRS - LORETTA

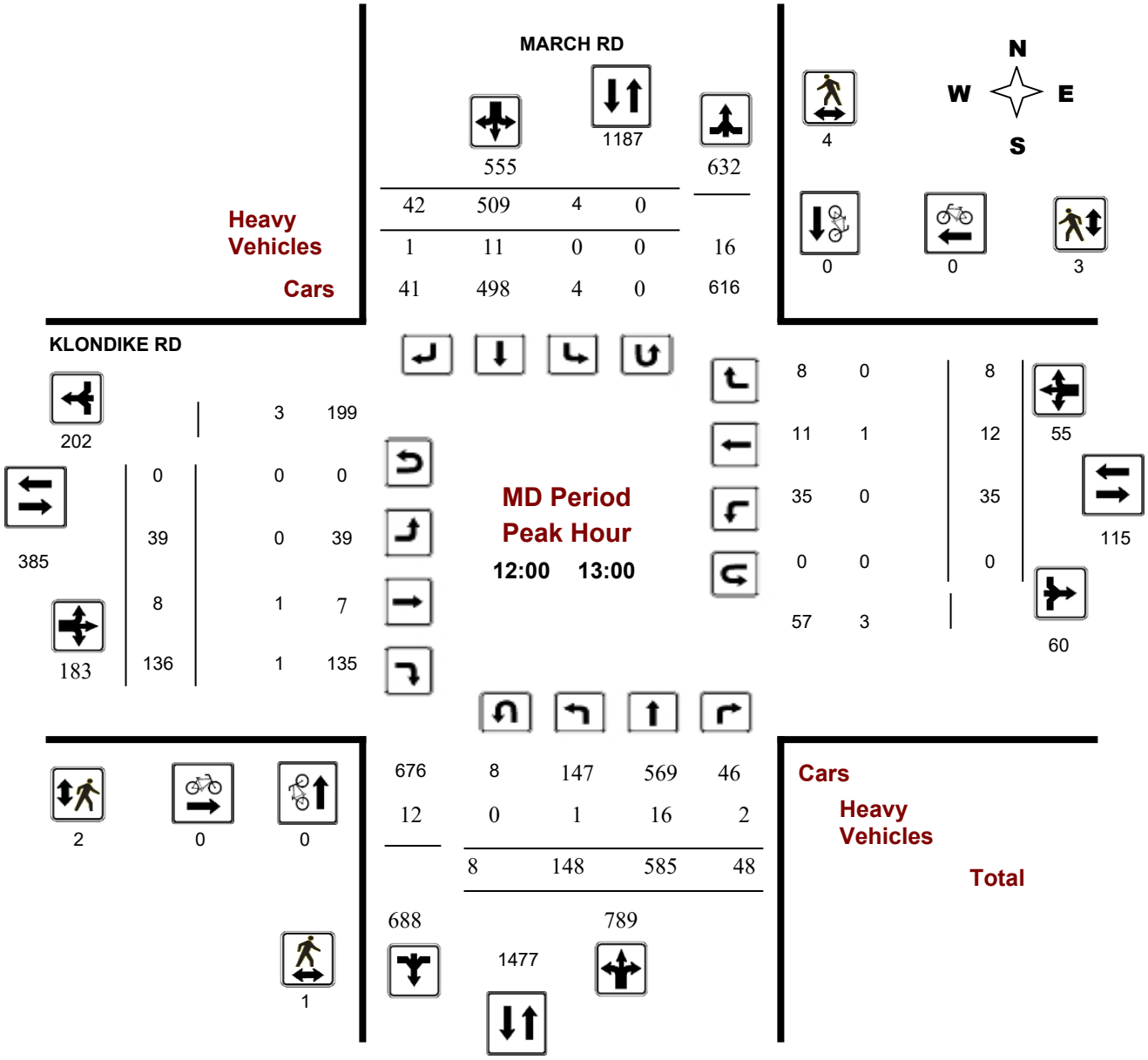
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

KLONDIKE RD @ MARCH RD

Survey Date: Wednesday, March 04, 2020 **WO No:** 39371

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



Comments 5472186 - WED JAN 22, 2020 - 8HRS - LORETTA

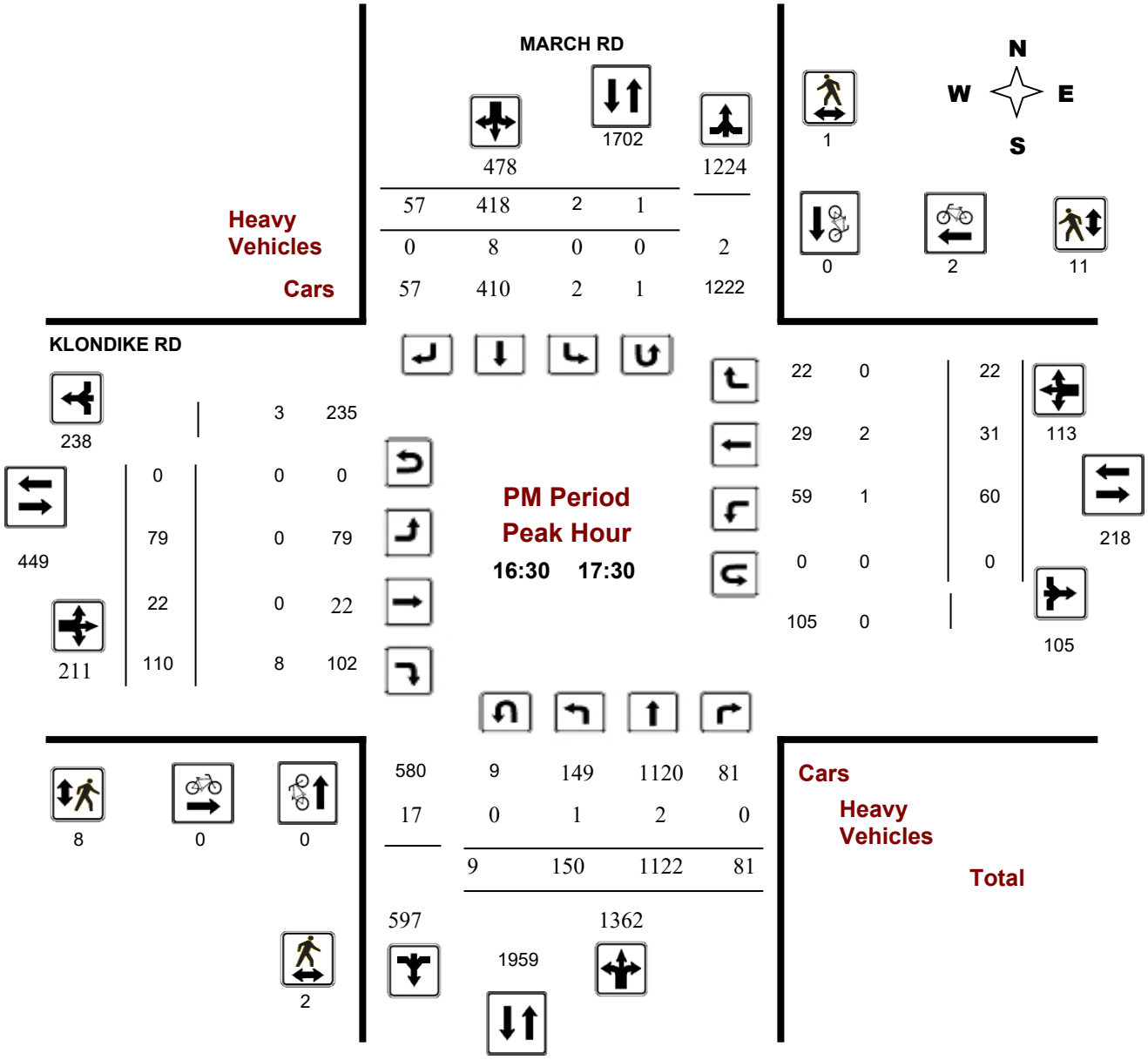
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

KLONDIKE RD @ MARCH RD

Survey Date: Wednesday, March 04, 2020 **WO No:** 39371

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



Comments 5472186 - WED JAN 22, 2020 - 8HRS - LORETTA

Transportation Services - Traffic Services

Turning Movement Count - Study Results

KLONDIKE RD @ MARCH RD

Survey Date: Wednesday, March 04, 2020 **WO No:** 39371

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

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, March 04, 2020

Total Observed U-Turns

Northbound: 75 Southbound: 1

Eastbound: 2 Westbound: 0

AADT Factor

1.00

	MARCH RD								KLONDIKE RD									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	**NB TOT**	LT	ST	RT	**SB TOT**	**STR TOT**	LT	ST	RT	**EB TOT**	LT	ST	RT	**WB TOT**	**STR TOT**	**Grand Total**
07:00 08:00	42	268	31	**341**	6	966	16	**988**	**1329**	11	12	217	**240**	79	9	10	**98**	**338**	**1667**
08:00 09:00	65	232	38	**335**	8	954	31	**993**	**1328**	22	27	221	**270**	49	21	8	**78**	**348**	**1676**
09:00 10:00	70	320	40	**430**	13	720	27	**760**	**1190**	27	18	211	**256**	100	18	15	**133**	**389**	**1579**
11:30 12:30	129	567	42	**738**	3	485	40	**528**	**1266**	32	10	125	**167**	43	13	4	**60**	**227**	**1493**
12:30 13:30	134	473	42	**649**	1	492	42	**535**	**1184**	50	12	159	**221**	32	13	10	**55**	**276**	**1460**
15:00 16:00	126	804	58	**988**	11	391	34	**436**	**1424**	62	28	100	**190**	62	26	32	**120**	**310**	**1734**
16:00 17:00	152	1123	74	**1349**	5	383	55	**443**	**1792**	65	20	112	**197**	76	36	24	**136**	**333**	**2125**
17:00 18:00	138	1068	85	**1291**	7	442	57	**506**	**1797**	78	24	98	**200**	60	32	15	**107**	**307**	**2104**
Sub Total	856	4855	410	**6121**	54	4833	302	**5189**	**11310**	347	151	1243	**1741**	501	168	118	**787**	**2528**	**13838**
U Turns				**75**				**1**	**76**				**2**				**0**	**2**	**78**
Total	856	4855	410	**6196**	54	4833	302	**5190**	**11386**	347	151	1243	**1743**	501	168	118	**787**	**2530**	**13916**
EQ 12Hr	1190	6748	570	**8612**	75	6718	420	**7214**	**15827**	482	210	1728	**2423**	696	234	164	**1094**	**3517**	**19343**

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

AVG 12Hr	1121	6360	537	**8117**	71	6331	396	**6799**	**15827**	455	198	1628	**2283**	656	220	155	**1031**	**3517**	**19343**

Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor. **1**

AVG 24Hr	1469	8332	704	**10633**	93	8294	518	**8907**	**19540**	595	259	2133	**2991**	860	288	202	**1351**	**4342**	**23882**

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

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

Transportation Services - Traffic Services

Turning Movement Count - Study Results

KLONDIKE RD @ MARCH RD

Survey Date: Wednesday, March 04, 2020 **WO No:** 39371

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

Full Study 15 Minute Increments

		MARCH RD									KLONDIKE RD									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	3	66	8	84	3	229	6	238	13	2	0	59	61	21	1	2	24	13	407
07:15	07:30	15	76	5	99	0	276	3	279	16	6	5	53	64	17	1	3	21	16	463
07:30	07:45	9	68	9	89	0	225	3	228	6	1	2	46	49	21	4	5	30	6	396
07:45	08:00	15	58	9	84	3	236	4	243	11	2	5	59	66	20	3	0	23	11	416
08:00	08:15	14	60	7	84	0	265	7	272	14	2	4	45	51	21	5	1	27	14	434
08:15	08:30	13	52	9	79	3	230	5	238	7	4	5	51	60	8	4	2	14	7	391
08:30	08:45	23	73	10	110	3	223	8	234	8	3	7	62	72	13	1	0	14	8	430
08:45	09:00	15	47	12	74	2	236	11	249	11	13	11	63	87	7	11	5	23	11	433
09:00	09:15	19	72	14	106	10	235	7	252	18	9	12	69	90	31	6	10	47	18	495
09:15	09:30	18	82	8	111	2	189	7	198	10	5	5	59	69	40	7	4	51	10	429
09:30	09:45	20	85	8	115	0	169	5	174	6	3	1	42	46	12	2	1	15	6	350
09:45	10:00	13	81	10	106	1	127	8	136	2	10	0	41	51	17	3	0	20	2	313
11:30	11:45	23	123	9	158	0	129	11	140	9	8	3	26	37	10	4	0	14	9	349
11:45	12:00	23	128	7	160	0	108	15	123	8	9	1	35	45	12	4	2	18	8	346
12:00	12:15	51	179	16	251	1	131	2	134	6	8	2	28	38	11	2	0	13	6	436
12:15	12:30	32	137	10	180	2	117	12	131	8	7	4	36	47	10	3	2	15	8	373
12:30	12:45	38	143	7	189	0	128	12	140	7	11	1	38	50	11	4	4	19	7	398
12:45	13:00	27	126	15	169	1	133	16	150	10	13	1	34	48	3	3	2	8	10	375
13:00	13:15	28	108	8	146	0	126	6	132	5	10	3	53	66	8	2	2	12	5	356
13:15	13:30	41	96	12	151	0	105	8	113	7	16	7	34	57	10	4	2	16	7	337
15:00	15:15	19	164	13	197	2	101	9	112	5	17	3	18	40	10	5	3	18	5	367
15:15	15:30	32	209	15	257	3	89	9	101	13	15	8	23	46	13	9	3	25	13	429
15:30	15:45	37	201	19	257	5	84	5	94	13	14	10	27	51	15	4	5	24	13	426
15:45	16:00	38	230	11	282	1	117	11	129	7	16	7	32	55	24	8	21	53	7	519
16:00	16:15	38	262	21	323	3	96	11	110	7	14	4	31	49	31	11	4	46	7	528
16:15	16:30	39	307	12	361	1	100	10	111	7	16	5	25	46	13	8	6	27	7	545
16:30	16:45	38	283	24	346	0	87	18	106	2	18	5	24	47	15	14	7	36	2	535
16:45	17:00	37	271	17	327	1	100	16	117	4	17	6	32	55	17	3	7	27	4	526
17:00	17:15	26	279	19	325	0	109	8	117	2	21	5	21	47	13	7	2	22	2	511
17:15	17:30	49	289	21	364	1	122	15	138	3	23	6	33	62	15	7	6	28	3	592
17:30	17:45	36	266	22	324	2	102	17	121	10	13	5	21	39	19	8	3	30	10	514
17:45	18:00	27	234	23	288	4	109	17	130	1	21	8	23	52	13	10	4	27	1	497
Total:		856	4855	410	6196	54	4833	302	5190	256	347	151	1243	1743	501	168	118	787	256	13,916

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

KLONDIKE RD @ MARCH RD

Survey Date: Wednesday, March 04, 2020 **WO No:** 39371

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

Full Study Cyclist Volume

Time Period		MARCH RD			KLONDIKE RD			
		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	0	0	0	0	0	0	0
07:15	07:30	0	0	0	0	0	0	0
07:30	07:45	0	0	0	0	0	0	0
07:45	08:00	0	0	0	0	0	0	0
08:00	08:15	0	0	0	0	0	0	0
08:15	08:30	0	0	0	0	0	0	0
08:30	08:45	0	0	0	0	0	0	0
08:45	09:00	0	0	0	0	0	0	0
09:00	09:15	0	0	0	0	0	0	0
09:15	09:30	0	0	0	0	0	0	0
09:30	09:45	0	0	0	0	0	0	0
09:45	10:00	0	0	0	0	0	0	0
11:30	11:45	0	0	0	0	0	0	0
11:45	12:00	0	0	0	0	0	0	0
12:00	12:15	0	0	0	0	0	0	0
12:15	12:30	0	0	0	0	0	0	0
12:30	12:45	0	0	0	0	0	0	0
12:45	13:00	0	0	0	0	0	0	0
13:00	13:15	0	0	0	0	0	0	0
13:15	13:30	0	0	0	0	0	0	0
15:00	15:15	0	0	0	0	0	0	0
15:15	15:30	0	0	0	0	1	1	1
15:30	15:45	0	0	0	0	0	0	0
15:45	16:00	0	0	0	1	0	1	1
16:00	16:15	0	0	0	0	0	0	0
16:15	16:30	0	0	0	0	0	0	0
16:30	16:45	0	0	0	0	1	1	1
16:45	17:00	0	0	0	0	0	0	0
17:00	17:15	0	0	0	0	0	0	0
17:15	17:30	0	0	0	0	1	1	1
17:30	17:45	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0
Total		0	0	**0**	1	3	4	4

Transportation Services - Traffic Services

Turning Movement Count - Study Results

KLONDIKE RD @ MARCH RD

Survey Date: Wednesday, March 04, 2020 **WO No:** 39371

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

Full Study Pedestrian Volume

	MARCH RD			KLONDIKE RD			
Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	1	0	**1**	0	1	**1**	**2**
07:15 07:30	1	0	**1**	0	2	**2**	**3**
07:30 07:45	0	0	**0**	0	0	**0**	**0**
07:45 08:00	0	0	**0**	0	0	**0**	**0**
08:00 08:15	3	0	**3**	0	0	**0**	**3**
08:15 08:30	1	0	**1**	0	0	**0**	**1**
08:30 08:45	0	0	**0**	1	0	**1**	**1**
08:45 09:00	3	0	**3**	1	2	**3**	**6**
09:00 09:15	1	2	**3**	1	0	**1**	**4**
09:15 09:30	2	1	**3**	0	2	**2**	**5**
09:30 09:45	0	2	**2**	1	0	**1**	**3**
09:45 10:00	0	0	**0**	1	0	**1**	**1**
11:30 11:45	0	1	**1**	0	0	**0**	**1**
11:45 12:00	1	2	**3**	3	0	**3**	**6**
12:00 12:15	0	0	**0**	0	1	**1**	**1**
12:15 12:30	1	1	**2**	0	1	**1**	**3**
12:30 12:45	0	1	**1**	1	1	**2**	**3**
12:45 13:00	0	2	**2**	1	0	**1**	**3**
13:00 13:15	1	0	**1**	1	3	**4**	**5**
13:15 13:30	0	0	**0**	0	0	**0**	**0**
15:00 15:15	2	1	**3**	2	4	**6**	**9**
15:15 15:30	2	3	**5**	2	1	**3**	**8**
15:30 15:45	1	1	**2**	1	2	**3**	**5**
15:45 16:00	2	0	**2**	0	1	**1**	**3**
16:00 16:15	2	2	**4**	1	1	**2**	**6**
16:15 16:30	0	1	**1**	0	1	**1**	**2**
16:30 16:45	0	0	**0**	1	2	**3**	**3**
16:45 17:00	1	1	**2**	2	1	**3**	**5**
17:00 17:15	1	0	**1**	2	5	**7**	**8**
17:15 17:30	0	0	**0**	3	3	**6**	**6**
17:30 17:45	1	0	**1**	3	6	**9**	**10**
17:45 18:00	1	0	**1**	4	0	**4**	**5**
Total	28	21	**49**	32	40	**72**	**121**

5472186 - WED JAN 22, 2020 - 8HRS - LORETTA

Transportation Services - Traffic Services

Turning Movement Count - Study Results

KLONDIKE RD @ MARCH RD

Survey Date: Wednesday, March 04, 2020 **WO No:** 39371

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

Full Study Heavy Vehicles

		MARCH RD									KLONDIKE RD									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	5	0	**5**	0	6	2	**8**	**13**	0	0	0	**0**	0	0	0	**0**	**0**	**13**
07:15	07:30	2	10	0	**12**	0	3	1	**4**	**16**	3	2	0	**5**	0	0	2	**2**	**7**	**23**
07:30	07:45	1	2	0	**3**	0	3	0	**3**	**6**	0	1	0	**1**	0	0	0	**0**	**1**	**7**
07:45	08:00	3	3	1	**7**	0	4	0	**4**	**11**	0	0	0	**0**	0	0	0	**0**	**0**	**11**
08:00	08:15	3	7	0	**10**	0	4	0	**4**	**14**	1	1	0	**2**	0	0	0	**0**	**2**	**16**
08:15	08:30	2	2	1	**5**	0	2	0	**2**	**7**	0	0	0	**0**	0	0	0	**0**	**0**	**7**
08:30	08:45	1	4	0	**5**	0	2	1	**3**	**8**	1	0	2	**3**	0	0	0	**0**	**3**	**11**
08:45	09:00	2	1	2	**5**	0	4	2	**6**	**11**	1	1	0	**2**	0	0	0	**0**	**2**	**13**
09:00	09:15	1	6	2	**9**	2	7	0	**9**	**18**	2	0	0	**2**	1	1	2	**4**	**6**	**24**
09:15	09:30	0	7	0	**7**	1	2	0	**3**	**10**	0	1	0	**1**	1	1	0	**2**	**3**	**13**
09:30	09:45	1	1	0	**2**	0	4	0	**4**	**6**	0	0	0	**0**	0	0	0	**0**	**0**	**6**
09:45	10:00	0	1	0	**1**	0	1	0	**1**	**2**	1	0	0	**1**	0	0	0	**0**	**1**	**3**
11:30	11:45	0	7	0	**7**	0	1	1	**2**	**9**	1	0	1	**2**	0	0	0	**0**	**2**	**11**
11:45	12:00	0	3	0	**3**	0	4	1	**5**	**8**	1	0	0	**1**	0	0	0	**0**	**1**	**9**
12:00	12:15	1	0	2	**3**	0	3	0	**3**	**6**	0	0	0	**0**	0	0	0	**0**	**0**	**6**
12:15	12:30	0	4	0	**4**	0	4	0	**4**	**8**	0	1	0	**1**	0	0	0	**0**	**1**	**9**
12:30	12:45	0	5	0	**5**	0	2	0	**2**	**7**	0	0	1	**1**	0	1	0	**1**	**2**	**9**
12:45	13:00	0	7	0	**7**	0	2	1	**3**	**10**	0	0	0	**0**	0	0	0	**0**	**0**	**10**
13:00	13:15	1	1	0	**2**	0	3	0	**3**	**5**	0	0	2	**2**	0	0	0	**0**	**2**	**7**
13:15	13:30	2	3	0	**5**	0	2	0	**2**	**7**	0	1	1	**2**	0	0	0	**0**	**2**	**9**
15:00	15:15	2	0	0	**2**	0	3	0	**3**	**5**	0	0	2	**2**	0	1	0	**1**	**3**	**8**
15:15	15:30	3	4	1	**8**	0	5	0	**5**	**13**	2	0	1	**3**	0	0	0	**0**	**3**	**16**
15:30	15:45	1	7	0	**8**	0	5	0	**5**	**13**	0	1	2	**3**	0	0	0	**0**	**3**	**16**
15:45	16:00	1	1	2	**4**	1	2	0	**3**	**7**	2	3	1	**6**	0	1	2	**3**	**9**	**16**
16:00	16:15	1	2	0	**3**	0	3	1	**4**	**7**	1	0	1	**2**	4	1	0	**5**	**7**	**14**
16:15	16:30	3	1	1	**5**	0	2	0	**2**	**7**	1	0	1	**2**	0	0	0	**0**	**2**	**9**
16:30	16:45	0	0	0	**0**	0	2	0	**2**	**2**	0	0	3	**3**	0	1	0	**1**	**4**	**6**
16:45	17:00	0	0	0	**0**	0	4	0	**4**	**4**	0	0	4	**4**	0	0	0	**0**	**4**	**8**
17:00	17:15	0	1	0	**1**	0	1	0	**1**	**2**	0	0	0	**0**	1	0	0	**1**	**1**	**3**
17:15	17:30	1	1	0	**2**	0	1	0	**1**	**3**	0	0	1	**1**	0	1	0	**1**	**2**	**5**
17:30	17:45	0	4	0	**4**	0	6	0	**6**	**10**	1	0	1	**2**	0	0	0	**0**	**2**	**12**
17:45	18:00	0	0	0	**0**	0	1	0	**1**	**1**	0	0	1	**1**	0	0	0	**0**	**1**	**2**
Total:	None	32	100	12	**144**	4	98	10	**112**	**256**	18	12	25	**55**	7	8	6	**21**	**76**	**332**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

KLONDIKE RD @ MARCH RD

Survey Date: Wednesday, March 04, 2020 **WO No:** 39371

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

Full Study 15 Minute U-Turn Total

Time Period		MARCH RD Northbound U-Turn Total	MARCH RD Southbound U-Turn Total	KLONDIKE RD Eastbound U-Turn Total	KLONDIKE RD Westbound U-Turn Total	Total
07:00	07:15	7	0	0	0	7
07:15	07:30	3	0	0	0	3
07:30	07:45	3	0	0	0	3
07:45	08:00	2	0	0	0	2
08:00	08:15	3	0	0	0	3
08:15	08:30	5	0	0	0	5
08:30	08:45	4	0	0	0	4
08:45	09:00	0	0	0	0	0
09:00	09:15	1	0	0	0	1
09:15	09:30	3	0	0	0	3
09:30	09:45	2	0	0	0	2
09:45	10:00	2	0	0	0	2
11:30	11:45	3	0	0	0	3
11:45	12:00	2	0	0	0	2
12:00	12:15	5	0	0	0	5
12:15	12:30	1	0	0	0	1
12:30	12:45	1	0	0	0	1
12:45	13:00	1	0	0	0	1
13:00	13:15	2	0	0	0	2
13:15	13:30	2	0	0	0	2
15:00	15:15	1	0	2	0	3
15:15	15:30	1	0	0	0	1
15:30	15:45	0	0	0	0	0
15:45	16:00	3	0	0	0	3
16:00	16:15	2	0	0	0	2
16:15	16:30	3	0	0	0	3
16:30	16:45	1	1	0	0	2
16:45	17:00	2	0	0	0	2
17:00	17:15	1	0	0	0	1
17:15	17:30	5	0	0	0	5
17:30	17:45	0	0	0	0	0
17:45	18:00	4	0	0	0	4
Total		75	1	2	0	78

Traffic Signal Timing

City of Ottawa, Transportation Services Department

Traffic Signal Operations Unit

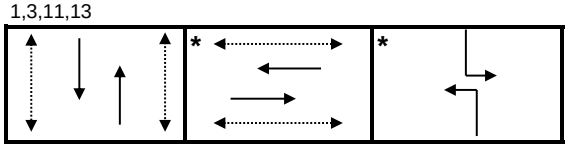
Intersection:	**Main:** March	**Side:**	Maxwell Bridge
Controller:	**MS-3200**	**TSD:**	**5963**
Author:	Sarah Saade	**Date:**	25-Jul-2018

Existing Timing Plans†

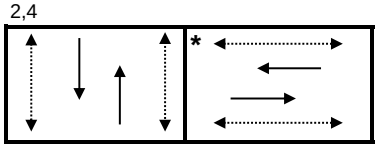
	Plan						**Ped Minimum Time**		
	AM Peak 1	**Off Peak** 2	**PM Peak** 3	**Night** 4	**AM Peak** 11	**PM Peak** 13	***Walk***	***DW***	***A+R***
Cycle	110	95	120	95	120	120			
Offset	90	11	50	X	99	50			
NB Thru	56	56	66	56	52	55	7	21	4.6+2.0
SB Thru	56	56	66	56	52	55	7	21	4.6+2.0
EB Thru	39	39	39	39	48	45	7	25	3.3+3.3
WB Thru	39	39	39	39	48	45	7	25	3.3+3.3
NB Left	15	-	15	-	20	20	-	-	4.6+1.8
SB Left	15	-	15	-	20	20	-	-	4.6+1.8

Phasing Sequence‡

Plan: 1,3,11,13



Plan: 2,4



Schedule

Weekday

Time	Plan
0:10	4
6:20	1
7:30	11
9:50	2
15:00	3
16:30	13
18:30	3
19:00	2
23:00	4

Weekend

Time	Plan
0:10	4
8:00	2
22:30	4

Notes

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

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

Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn

◄·····► Pedestrian signal

Cost is $56.50 ($50 + HST)

Traffic Signal Timing

City of Ottawa, Transportation Services Department

Traffic Signal Operations Unit

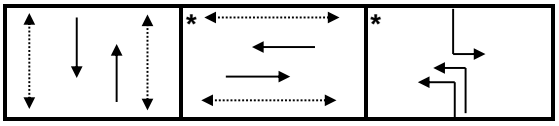
Intersection:	**Main:** March	**Side:**	Klondike
Controller:	**MS-3200**	**TSD:**	**6742**
Author:	Matthew Anderson	**Date:**	08-May-2020

Existing Timing Plans†

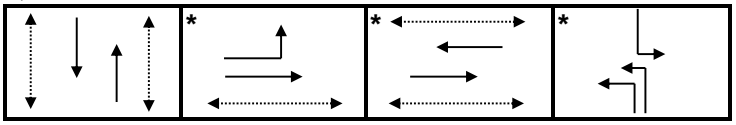
	Plan					**Ped Minimum Time**		
	AM Peak 1	**Off Peak** 2	**PM Peak** 3	**Night** 4	**PM Heavy** 13	***Walk***	***DW***	***A+R***
Cycle	130	110	120	110	130			
Offset	64	16	8	X	20			
NB Thru	58	49	43	47	51	7	19	4.6+1.8
SB Thru	58	49	43	47	51	7	19	4.6+1.8
EB Left	12	-	12	-	12	-	-	3.3+3.3
EB Thru	57	45	57	46	57	7	30	3.3+3.8
WB Thru	45	45	45	46	45	7	30	3.3+3.8
NB Left (fp)	15	16	20	17	22	-	-	4.6+2.0
SB Left (fp)	15	16	20	17	22	-	-	4.6+2.0

Phasing Sequence‡

Plan: 1,2,4



Plan: 3,13



Schedule

Weekday

Time	Plan
0:10	4
6:30	1
9:30	2
15:00	3
16:30	13
18:00	3
18:30	2
23:00	4

Weekend

Time	Plan
0:10	4
8:00	2
22:30	4

Notes

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

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

Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn

◄·····► Pedestrian signal

Cost is $58.78 ($52.02 + HST)

Appendix D

Collision Data

CGH TRANSPORTATION

Accident Date	Accident Year	Accident Time	Location	Environment Condition	Light	Traffic Control	Traffic Control Condition	Classification Of Accident	Initial Impact Type	Road Surface Condition	# Vehicles	# Motorcycles
2016-09-30	2016	19:32	HALTON TERR/MAXWELL BRIDGE RD @ MARCH RD (0011852)	01 - Clear	05 - Dusk	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	05 - Turning movement	01 - Dry	2	0
2016-11-24	2016	6:47	HALTON TERR/MAXWELL BRIDGE RD @ MARCH RD (0011852)	03 - Snow	03 - Dawn	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	05 - Turning movement	06 - Ice	2	0
2016-12-05	2016	8:23	HALTON TERR/MAXWELL BRIDGE RD @ MARCH RD (0011852)	03 - Snow	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	03 - Loose snow	2	0
2016-12-23	2016	10:59	HALTON TERR/MAXWELL BRIDGE RD @ MARCH RD (0011852)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	02 - Wet	2	0
2016-02-28	2016	19:57	HALTON TERR/MAXWELL BRIDGE RD @ MARCH RD (0011852)	04 - Freezing Rain	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	06 - Ice	2	0
2017-11-28	2017	22:03	HALTON TERR/MAXWELL BRIDGE RD @ MARCH RD (0011852)	02 - Rain	07 - Dark	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	07 - SMV other	02 - Wet	1	0
2017-04-19	2017	14:14	HALTON TERR/MAXWELL BRIDGE RD @ MARCH RD (0011852)	02 - Rain	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	02 - Angle	02 - Wet	2	0
2017-06-22	2017	10:59	HALTON TERR/MAXWELL BRIDGE RD @ MARCH RD (0011852)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	99 - Other	01 - Dry	2	0
2018-11-15	2018	17:20	HALTON TERR/MAXWELL BRIDGE RD @ MARCH RD (0011852)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0
2018-12-05	2018	18:26	HALTON TERR/MAXWELL BRIDGE RD @ MARCH RD (0011852)	03 - Snow	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	03 - Loose snow	2	0
2019-02-02	2019	16:10	HALTON TERR/MAXWELL BRIDGE RD @ MARCH RD (0011852)	03 - Snow	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	03 - Loose snow	2	0
2019-02-12	2019	15:00	HALTON TERR/MAXWELL BRIDGE RD @ MARCH RD (0011852)	03 - Snow	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	02 - Wet	2	0
2019-03-29	2019	17:24	HALTON TERR/MAXWELL BRIDGE RD @ MARCH RD (0011852)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0
2020-05-20	2020	11:26	HALTON TERR/MAXWELL BRIDGE RD @ MARCH RD (0011852)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	01 - Dry	2	0
2020-08-02	2020	18:07	HALTON TERR/MAXWELL BRIDGE RD @ MARCH RD (0011852)	02 - Rain	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	02 - Wet	2	0
2020-11-24	2020	15:50	HALTON TERR/MAXWELL BRIDGE RD @ MARCH RD (0011852)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	01 - Dry	2	0
2019-12-24	2019	11:23	MAXWELL BRIDGE RD btwn MARCH RD & WINDANCE CRES (__5J15LI)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	02 - Angle	01 - Dry	2	0
2020-02-07	2020	16:48	MAXWELL BRIDGE RD btwn MARCH RD & WINDANCE CRES (__5J15LI)	01 - Clear	05 - Dusk	10 - No control	0	03 - P.D. only	05 - Turning movement	05 - Packed snow	2	0
2019-01-07	2019	15:30	250 N OF KLONDIKE RD @ MARCH RD (0013528)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0
2019-02-22	2019	8:50	250 N OF KLONDIKE RD @ MARCH RD (0013528)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	02 - Wet	2	0
2019-04-23	2019	13:40	250 N OF KLONDIKE RD @ MARCH RD (0013528)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	03 - Rear end	01 - Dry	2	0
2020-10-27	2020	18:48	250 N OF KLONDIKE RD @ MARCH RD (0013528)	01 - Clear	05 - Dusk	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	3	0
2016-01-18	2016	13:16	HALTON TER btwn Continuation of HALTON TER & OLD CARP RD (__49PV3H)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	04 - Slush	2	0
2016-01-18	2016	12:14	HALTON TER btwn Continuation of HALTON TER & OLD CARP RD (__49PV3H)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	04 - Slush	2	0
2018-01-24	2018	15:03	MARCH RD btwn HALTON TERR/MAXWELL BRIDGE RD & KLONDIKE RD (__3ZA3CG)	03 - Snow	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	05 - Packed snow	2	0
2019-09-08	2019	0:48	MARCH RD btwn HALTON TERR/MAXWELL BRIDGE RD & KLONDIKE RD (__3ZA3CG)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	07 - SMV other	01 - Dry	1	0
2019-11-03	2019	8:58	MARCH RD btwn HALTON TERR/MAXWELL BRIDGE RD & KLONDIKE RD (__3ZA3CG)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	07 - SMV other	01 - Dry	1	0
2020-05-04	2020	11:51	MARCH RD btwn HALTON TERR/MAXWELL BRIDGE RD & KLONDIKE RD (__3ZA3CG)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	01 - Dry	2	0
2020-08-28	2020	14:57	MARCH RD btwn HALTON TERR/MAXWELL BRIDGE RD & KLONDIKE RD (__3ZA3CG)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0
2016-10-19	2016	9:08	MARCH RD btwn HALTON TERR/MAXWELL BRIDGE RD & MAXWELL RD (__3ZA2GD)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	01 - Dry	2	0
2016-12-11	2016	21:53	MARCH RD btwn HALTON TERR/MAXWELL BRIDGE RD & MAXWELL RD (__3ZA2GD)	03 - Snow	07 - Dark	10 - No control	0	03 - P.D. only	07 - SMV other	03 - Loose snow	1	0
2016-05-06	2016	6:56	MARCH RD btwn HALTON TERR/MAXWELL BRIDGE RD & MAXWELL RD (__3ZA2GD)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	07 - SMV other	01 - Dry	1	0
2016-04-24	2016	11:02	MARCH RD btwn HALTON TERR/MAXWELL BRIDGE RD & MAXWELL RD (__3ZA2GD)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	05 - Turning movement	01 - Dry	2	0
2016-04-22	2016	13:53	MARCH RD btwn HALTON TERR/MAXWELL BRIDGE RD & MAXWELL RD (__3ZA2GD)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	07 - SMV other	02 - Wet	1	0
2017-11-27	2017	17:36	MARCH RD btwn HALTON TERR/MAXWELL BRIDGE RD & MAXWELL RD (__3ZA2GD)	01 - Clear	07 - Dark	10 - No control	0	02 - Non-fatal injury	07 - SMV other	02 - Wet	1	0
2017-02-08	2017	4:35	MARCH RD btwn HALTON TERR/MAXWELL BRIDGE RD & MAXWELL RD (__3ZA2GD)	04 - Freezing Rain	07 - Dark	10 - No control	0	03 - P.D. only	07 - SMV other	04 - Slush	1	0
2017-02-21	2017	11:58	MARCH RD btwn HALTON TERR/MAXWELL BRIDGE RD & MAXWELL RD (__3ZA2GD)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	04 - Sideswipe	01 - Dry	2	0
2017-04-06	2017	21:59	MARCH RD btwn HALTON TERR/MAXWELL BRIDGE RD & MAXWELL RD (__3ZA2GD)	02 - Rain	07 - Dark	10 - No control	0	03 - P.D. only	03 - Rear end	02 - Wet	2	0
2017-06-06	2017	14:15	MARCH RD btwn HALTON TERR/MAXWELL BRIDGE RD & MAXWELL RD (__3ZA2GD)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	02 - Wet	2	0
2018-12-05	2018	16:50	MARCH RD btwn HALTON TERR/MAXWELL BRIDGE RD & MAXWELL RD (__3ZA2GD)	03 - Snow	07 - Dark	10 - No control	0	03 - P.D. only	07 - SMV other	03 - Loose snow	1	0
2018-02-01	2018	17:05	MARCH RD btwn HALTON TERR/MAXWELL BRIDGE RD & MAXWELL RD (__3ZA2GD)	03 - Snow	07 - Dark	10 - No control	0	03 - P.D. only	03 - Rear end	03 - Loose snow	3	0
2019-09-26	2019	16:40	MARCH RD btwn HALTON TERR/MAXWELL BRIDGE RD & MAXWELL RD (__3ZA2GD)	02 - Rain	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	02 - Wet	2	0
2019-11-15	2019	22:25	MARCH RD btwn HALTON TERR/MAXWELL BRIDGE RD & MAXWELL RD (__3ZA2GD)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	07 - SMV other	01 - Dry	1	0
2019-12-18	2019	5:40	MARCH RD btwn HALTON TERR/MAXWELL BRIDGE RD & MAXWELL RD (__3ZA2GD)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	07 - SMV other	02 - Wet	1	0
2019-05-26	2019	18:54	MARCH RD btwn HALTON TERR/MAXWELL BRIDGE RD & MAXWELL RD (__3ZA2GD)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	05 - Turning movement	01 - Dry	2	0
2020-01-24	2020	19:30	MARCH RD btwn HALTON TERR/MAXWELL BRIDGE RD & MAXWELL RD (__3ZA2GD)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0
2020-01-21	2020	14:45	MARCH RD btwn HALTON TERR/MAXWELL BRIDGE RD & MAXWELL RD (__3ZA2GD)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	07 - SMV other	02 - Wet	1	0
2020-02-28	2020	8:18	MARCH RD btwn HALTON TERR/MAXWELL BRIDGE RD & MAXWELL RD (__3ZA2GD)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	07 - SMV other	05 - Packed snow	1	0
2020-04-16	2020	20:41	MARCH RD btwn HALTON TERR/MAXWELL BRIDGE RD & MAXWELL RD (__3ZA2GD)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	07 - SMV other	01 - Dry	1	0
2020-11-22	2020	17:57	MARCH RD btwn HALTON TERR/MAXWELL BRIDGE RD & MAXWELL RD (__3ZA2GD)	03 - Snow	07 - Dark	10 - No control	0	03 - P.D. only	07 - SMV other	03 - Loose snow	1	0
2020-11-10	2020	18:50	MARCH RD btwn HALTON TERR/MAXWELL BRIDGE RD & MAXWELL RD (__3ZA2GD)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	07 - SMV other	01 - Dry	1	0
2020-11-10	2020	19:09	MARCH RD btwn HALTON TERR/MAXWELL BRIDGE RD & MAXWELL RD (__3ZA2GD)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	07 - SMV other	01 - Dry	1	0
2020-12-26	2020	13:29	MARCH RD btwn HALTON TERR/MAXWELL BRIDGE RD & MAXWELL RD (__3ZA2GD)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	07 - SMV other	02 - Wet	1	0
2016-12-13	2016	10:43	KLONDIKE RD @ MARCH RD (0003096)	03 - Snow	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	06 - Ice	2	0
2016-01-05	2016	10:48	KLONDIKE RD @ MARCH RD (0003096)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	01 - Dry	2	0
2016-12-17	2016	10:39	KLONDIKE RD @ MARCH RD (0003096)	03 - Snow	01 - Daylight	01 - Traffic signal	00 - Unknown	03 - P.D. only	04 - Sideswipe	03 - Loose snow	2	0
2016-02-16	2016	9:08	KLONDIKE RD @ MARCH RD (0003096)	03 - Snow	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	07 - SMV other	03 - Loose snow	1	0
2016-09-10	2016	14:55	KLONDIKE RD @ MARCH RD (0003096)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	01 - Dry	2	0
2017-01-03	2017	21:32	KLONDIKE RD @ MARCH RD (0003096)	03 - Snow	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	03 - Loose snow	2	0
2017-10-28	2017	11:01	KLONDIKE RD @ MARCH RD (0003096)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	01 - Dry	2	0
2017-11-26	2017	6:56	KLONDIKE RD @ MARCH RD (0003096)	01 - Clear	03 - Dawn	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	07 - SMV other	06 - Ice	1	0
2017-12-07	2017	13:37	KLONDIKE RD @ MARCH RD (0003096)	03 - Snow	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	03 - Loose snow	2	0
2017-12-18	2017	22:19	KLONDIKE RD @ MARCH RD (0003096)	03 - Snow	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	03 - Loose snow	2	0
2017-02-13	2017	10:42	KLONDIKE RD @ MARCH RD (0003096)	03 - Snow	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	04 - Slush	2	0
2017-07-23	2017	13:00	KLONDIKE RD @ MARCH RD (0003096)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	01 - Dry	2	0
2017-07-28	2017	12:51	KLONDIKE RD @ MARCH RD (0003096)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	02 - Angle	01 - Dry	2	0
2017-08-17	2017	6:14	KLONDIKE RD @ MARCH RD (0003096)	01 - Clear	03 - Dawn	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	07 - SMV other	01 - Dry	1	0
2018-09-28	2018	10:57	KLONDIKE RD @ MARCH RD (0003096)	01 - Clear	01 - Daylight	01 - Traffic signal	00 - Unknown	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0
2018-02-02	2018	20:40	KLONDIKE RD @ MARCH RD (0003096)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	03 - Rear end	02 - Wet	2	0
2018-03-04	2018	16:30	KLONDIKE RD @ MARCH RD (0003096)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0
2018-04-17	2018	9:39	KLONDIKE RD @ MARCH RD (0003096)	02 - Rain	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	02 - Wet	2	0
2018-05-04	2018	18:25	KLONDIKE RD @ MARCH RD (0003096)	06 - Strong wind	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0
2018-07-20	2018	6:26	KLONDIKE RD @ MARCH RD (0003096)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	07 - SMV other	01 - Dry	1	0
2018-07-18	2018	8:07	KLONDIKE RD @ MARCH RD (0003096)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0
2018-08-23	2018	12:45	KLONDIKE RD @ MARCH RD (0003096)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	01 - Dry	2	0
2018-08-29	2018	13:00	KLONDIKE RD @ MARCH RD (0003096)	01 - Clear	01 - Daylight	01 - Traffic signal	02 - Not functioning	02 - Non-fatal injury	05 - Turning movement	01 - Dry	2	0
2019-11-01	2019	11:50	KLONDIKE RD @ MARCH RD (0003096)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	03 - Rear end	01 - Dry	2	0

2019-12-14	2019	23:30	KLONDIKE RD @ MARCH RD (0003096)	03 - Snow	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	07 - SMV other	03 - Loose snow	1	0
2019-12-30	2019	21:38	KLONDIKE RD @ MARCH RD (0003096)	03 - Snow	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	05 - Packed snow	2	0
2016-02-11	2016	7:32	MARCH RD btwn KLONDIKE RD & MORGAN'S GRANT WAY (__3ZA2EW)	03 - Snow	01 - Daylight	10 - No control	0	02 - Non-fatal injury	04 - Sideswipe	04 - Slush	2	0
2017-07-28	2017	9:20	MARCH RD btwn KLONDIKE RD & MORGAN'S GRANT WAY (__3ZA2EW)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	2	0
2017-09-07	2017	19:47	MARCH RD btwn KLONDIKE RD & MORGAN'S GRANT WAY (__3ZA2EW)	02 - Rain	07 - Dark	10 - No control	0	03 - P.D. only	07 - SMV other	02 - Wet	1	0
2018-12-03	2018	9:24	MARCH RD btwn KLONDIKE RD & MORGAN'S GRANT WAY (__3ZA2EW)	03 - Snow	01 - Daylight	10 - No control	0	03 - P.D. only	07 - SMV other	06 - Ice	1	0
2019-12-02	2019	8:22	MARCH RD btwn KLONDIKE RD & MORGAN'S GRANT WAY (__3ZA2EW)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	01 - Dry	2	0
2020-04-25	2020	9:33	MARCH RD btwn KLONDIKE RD & MORGAN'S GRANT WAY (__3ZA2EW)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	06 - SMV unattended vehicle	01 - Dry	1	0
2020-01-13	2020	6:14	MARCH RD btwn KLONDIKE RD & MORGAN'S GRANT WAY (__3ZA2EW)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	04 - Sideswipe	02 - Wet	2	0

Appendix E

March Road Widening Scenarios

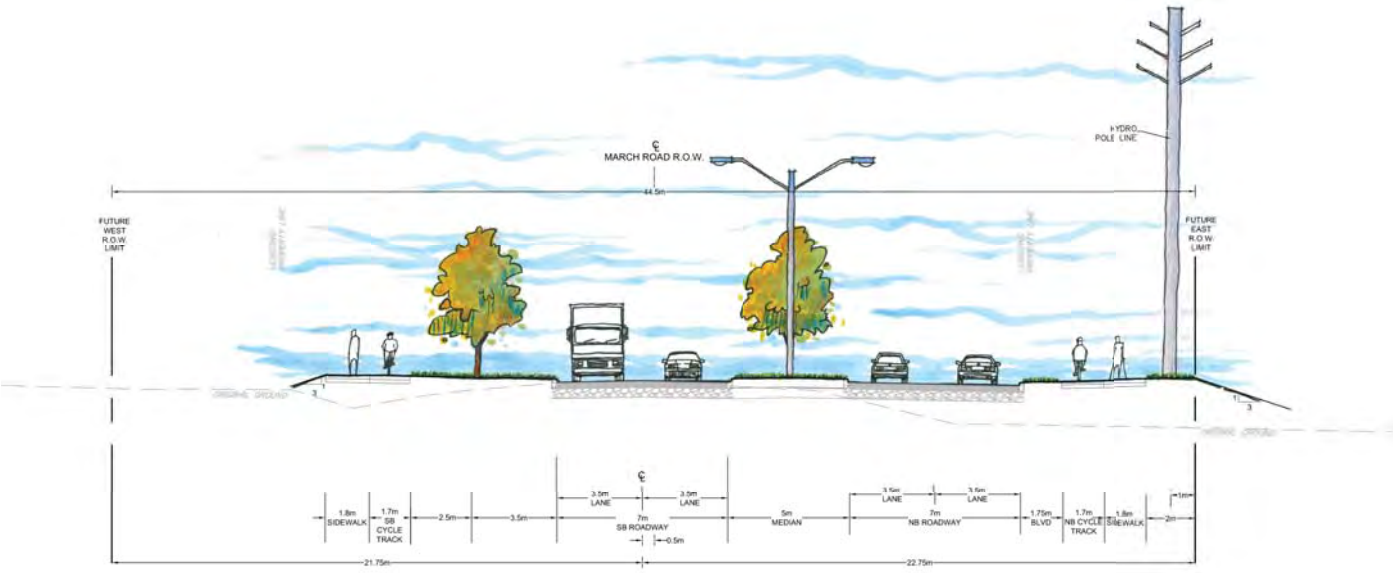


FIGURE 27 | Cross-Section for March Road - Interim

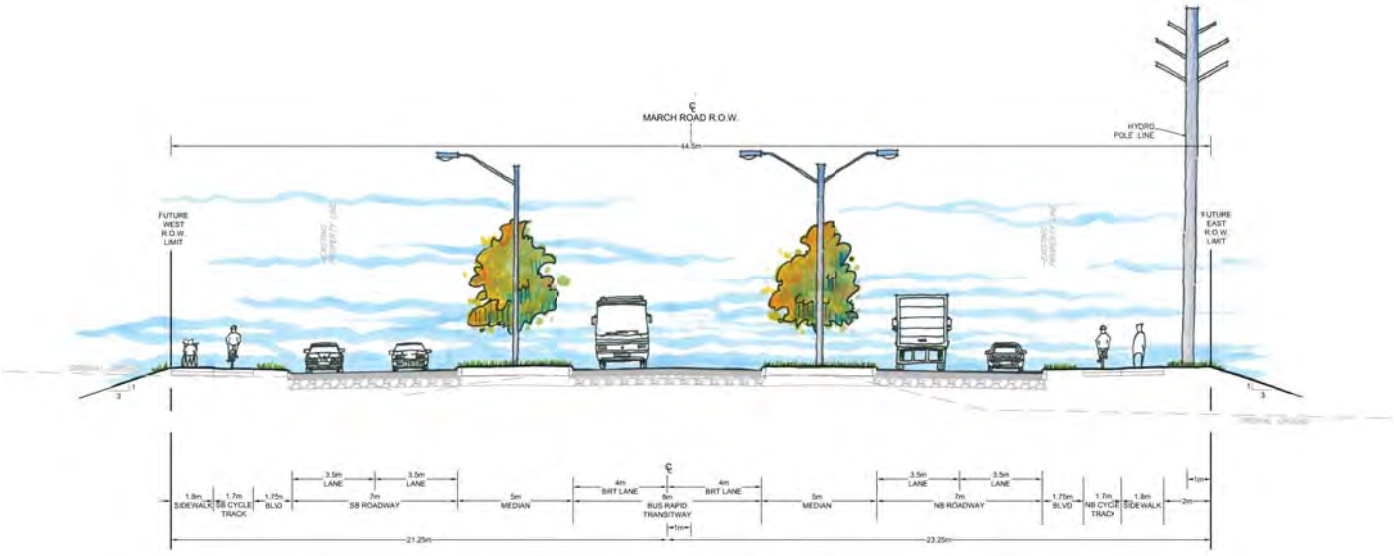


FIGURE 28 | Cross-Section for March Road - Ultimate

Appendix F

TDM Checklist

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	☒
BASIC	1.1.2	Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	☒
BASIC	1.1.3	Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	☒
	1.2	**Facilities for walking & cycling**	
REQUIRED	1.2.1	Provide convenient, direct access to stations or major stops along rapid transit routes within 600 metres; minimize walking distances from buildings to rapid transit; provide pedestrian-friendly, weather-protected (where possible) environment between rapid transit accesses and building entrances; ensure quality linkages from sidewalks through building entrances to integrated stops/stations *(see Official Plan policy 4.3.3)*	☒
REQUIRED	1.2.2	Provide safe, direct and attractive pedestrian access from public sidewalks to building entrances through such measures as: reducing distances between public sidewalks and major building entrances; providing walkways from public streets to major building entrances; within a site, providing walkways along the front of adjoining buildings, between adjacent buildings, and connecting areas where people may congregate, such as courtyards and transit stops; and providing weather protection through canopies, colonnades, and other design elements wherever possible *(see Official Plan policy 4.3.12)*	☒

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

		TDM-supportive design & infrastructure measures: *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)*	☒
REQUIRED	2.1.2	Provide the number of bicycle parking spaces specified for various land uses in different parts of Ottawa; provide convenient access to main entrances or well-used areas *(see Zoning By-law Section 111)*	☒
REQUIRED	2.1.3	Ensure that bicycle parking spaces and access aisles meet minimum dimensions; that no more than 50% of spaces are vertical spaces; and that parking racks are securely anchored *(see Zoning By-law Section 111)*	☒
BASIC	2.1.4	Provide bicycle parking spaces equivalent to the expected number of 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)*	☐
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	☒
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)	☐
	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-Supportive Development Design and Infrastructure Checklist:
Residential Developments (multi-family or condominium)

Legend

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

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

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

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

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

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

Legend

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

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

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

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

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

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

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

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

Legend

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

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

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

		TDM measures: *Residential developments*	Check if proposed & add descriptions
	1.	**TDM PROGRAM MANAGEMENT**	
	1.1	**Program coordinator**	
BASIC ★	1.1.1	Designate an internal coordinator, or contract with an external coordinator	☒
	1.2	**Travel surveys**	
BETTER	1.2.1	Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress	☐
	2.	**WALKING AND CYCLING**	
	2.1	**Information on walking/cycling routes & destinations**	
BASIC	2.1.1	Display local area maps with walking/cycling access routes and key destinations at major entrances *(multi-family, condominium)*	☒
	2.2	**Bicycle skills training**	
BETTER	2.2.1	Offer on-site cycling courses for residents, or subsidize off-site courses	☐

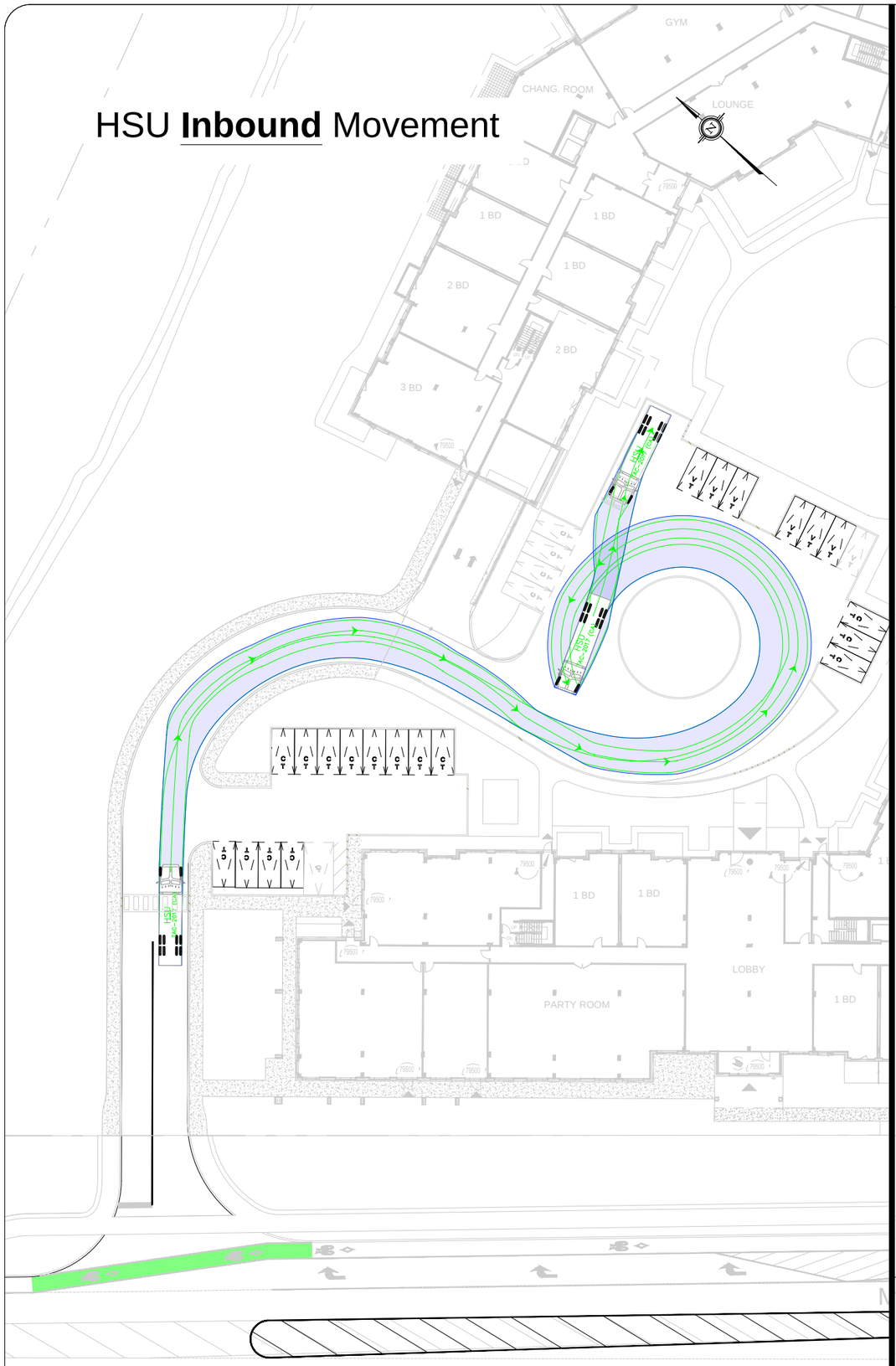
		TDM measures: *Residential developments*	Check if proposed & add descriptions
		3. TRANSIT	
		3.1 Transit information	
BASIC		3.1.1 Display relevant transit schedules and route maps at entrances *(multi-family, condominium)*	☐
BETTER		3.1.2 Provide real-time arrival information display at entrances *(multi-family,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

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

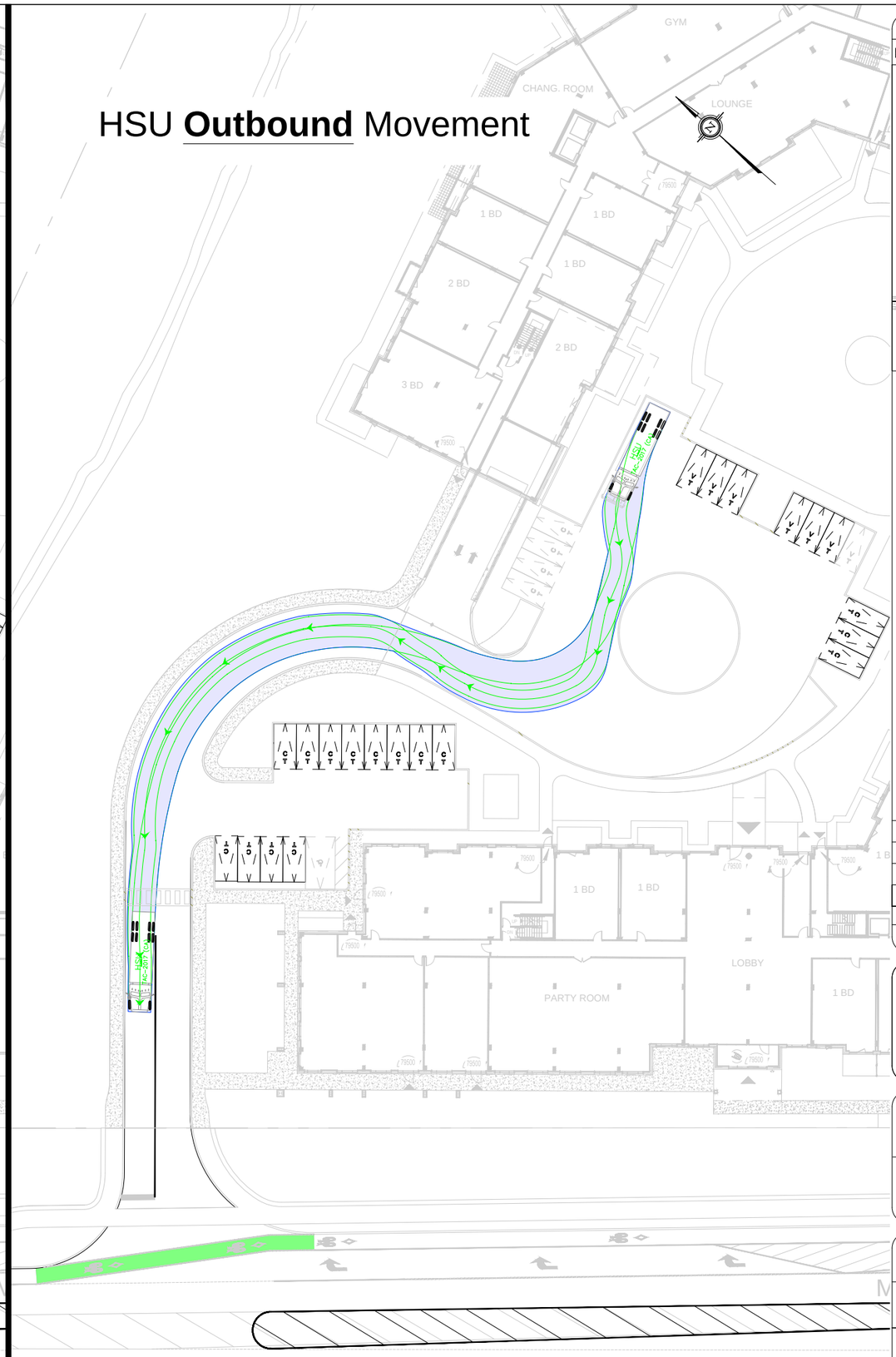
Appendix G

Turning Templates

HSU **Inbound** Movement



HSU **Outbound** Movement



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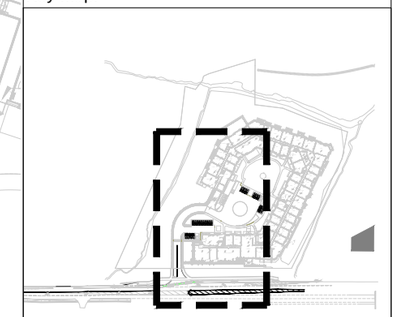
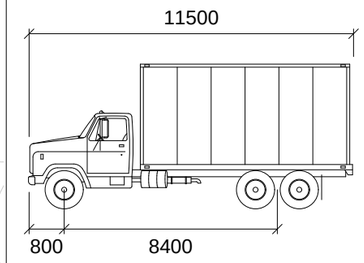
Key Map:





HSU

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

REV:	DESCRIPTION:	BY:	DATE:
04	Updated Site Plan	AN	2023-07-27
03	Updated Site Plan	AN	2023-03-30
02	Updated Site Plan	AN	2023-03-29
01	Issued for Review	AN	2023-03-14

STATUS:

CGH Transportation
6 Plaza Court
Ottawa, ON
K2H 7W1
(343) 999-9117

CLIENT: Lepine Corp.

ARCHITECT:

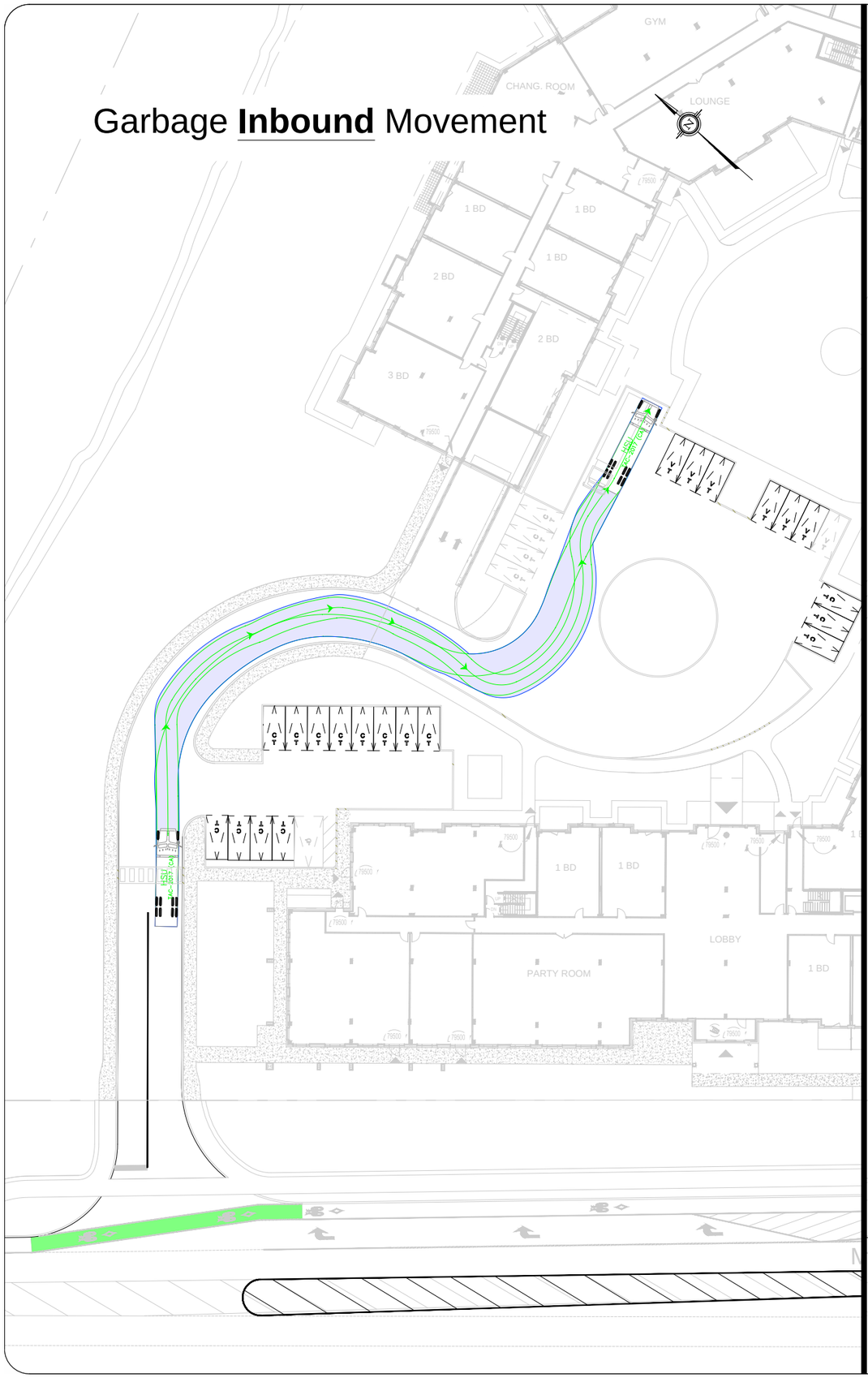
SITE: 910 March Road

TITLE: Turning Movement Analysis
HSU Turning Movements

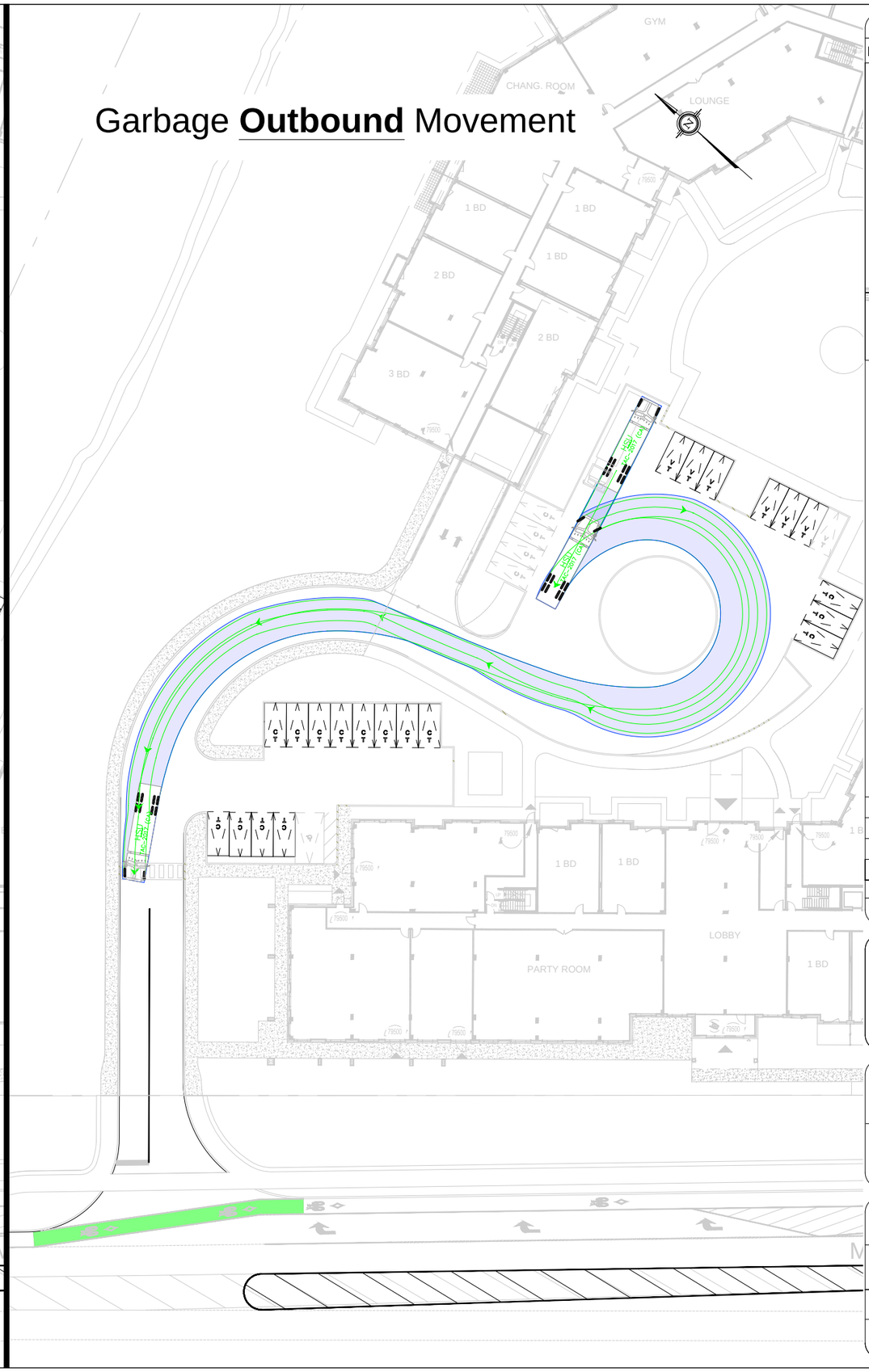
SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2023-07-27	AN	AL

PROJECT NO:	DRAWING NO:	REVISION:
2021-073	001	04

Garbage **Inbound** Movement



Garbage **Outbound** Movement



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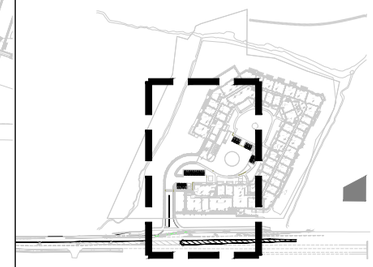

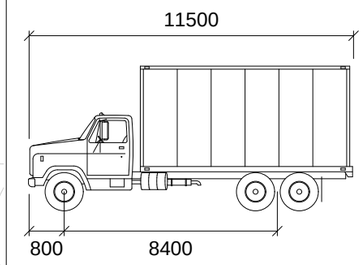

HSU

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

REV:	DESCRIPTION:	BY:	DATE:
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6 Plaza Court
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Garbage Turning Movements

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2023-07-27	AN	AL

PROJECT NO:	DRAWING NO:	REVISION:
2021-073	002	04

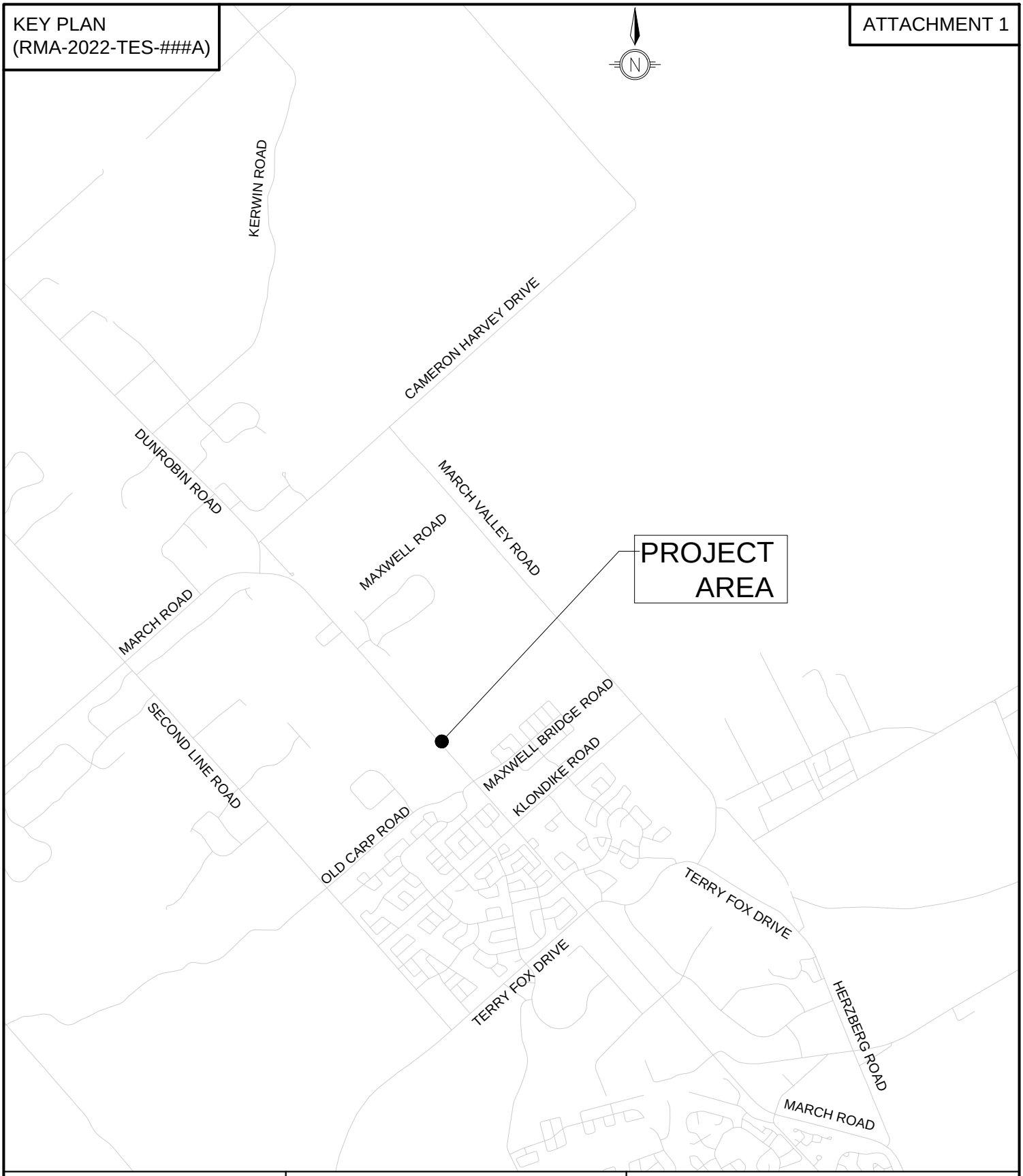
Appendix H

Interim and Ultimate Access RMA Package

CGH TRANSPORTATION

KEY PLAN
(RMA-2022-TES-###A)

ATTACHMENT 1



TRANSPORTATION
PLANNING DEPT.

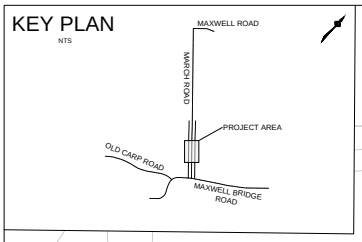
LEPINE
910 MARCH ROAD

KEY PLAN

Transportation Engineering Services

Approved By: TBD	Drawing No.: RMA-2022 -TES-###A
Completed By: CGH	
Scale: N.T.S.	Date: JULY 2023

ATTACHMENT 2



LIMIT OF PROJECT

1.1km MAXWELL ROAD

PROPERTY LINE

FULL DEPTH ROAD WIDENING TO ACCOMODATE NEW SOUTHBOUND LEFT TURN LANE

MARCH ROAD

FUTURE WIDENING

NEW 2.0m PAVED SHOULDER

PROPERTY LINE

NEW 0.5m PAVED SHOULDER

1.80m PAVED SHOULDER

1.00m INNER BOULEVARD

FULL DEPTH ROADWAY REINSTATEMENT FROM STORM SEWER EXTENSION

SIDEWALK TERMINATION ONTO PAVED SHOULDER

NEW SOUTHBOUND LEFT TURN LANE TO REPLACE EXISTING PAINTED GORE AREA

REFER TO ATTACHMENT 3

Ottawa

TRANSPORTATION PLANNING DEPT.

LEPINE
910 MARCH ROAD

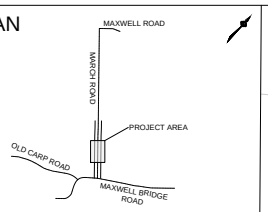
MARCH ROAD MODIFICATIONS INTERIM CONDITION

Transportation Engineering Services

Approved By: TBD	Drawing No.: RMA-2022 -TES-###B
Completed By: CGH	
Scale: 1:1000	Date: JULY 2023

ATTACHMENT 3

KEY PLAN
NTS



REFER TO ATTACHMENT 2

TOP SOIL AND SOD BOULEVARD

1.80m CYCLE LANE WITH SOLID GREEN THERMOPLAST AT CROSSING

FULL MOVEMENT ACCESS

2.00m DEPRESSED CONCRETE SIDEWALK PER SC7.1

PAINTED GORE AREA

FULL DEPTH ROADWAY WIDENING FOR NORTHBOUND RIGHT TURN LANE AND CYCLING LANE

REPURPOSE EXISTING EASTERNMOST NORTHBOUND RUNOUT LANE TO RIGHT TURN LANE

1.00m INNER BOULEVARD

CYCLING LANE EXTENSION

2.00m EXISTING CONCRETE SIDEWALK EXTENSION

MARCH ROAD

0.1km MAXWELL BRIDGE ROAD

PROPERTY LINE

FUTURE WIDENING

EXISTING LANE TERMINATION SHIFTED SOUTH OF NEW ACCESS AND RIGHT TURN LANE

LIMIT OF PROJECT

Ottawa

TRANSPORTATION PLANNING DEPT.

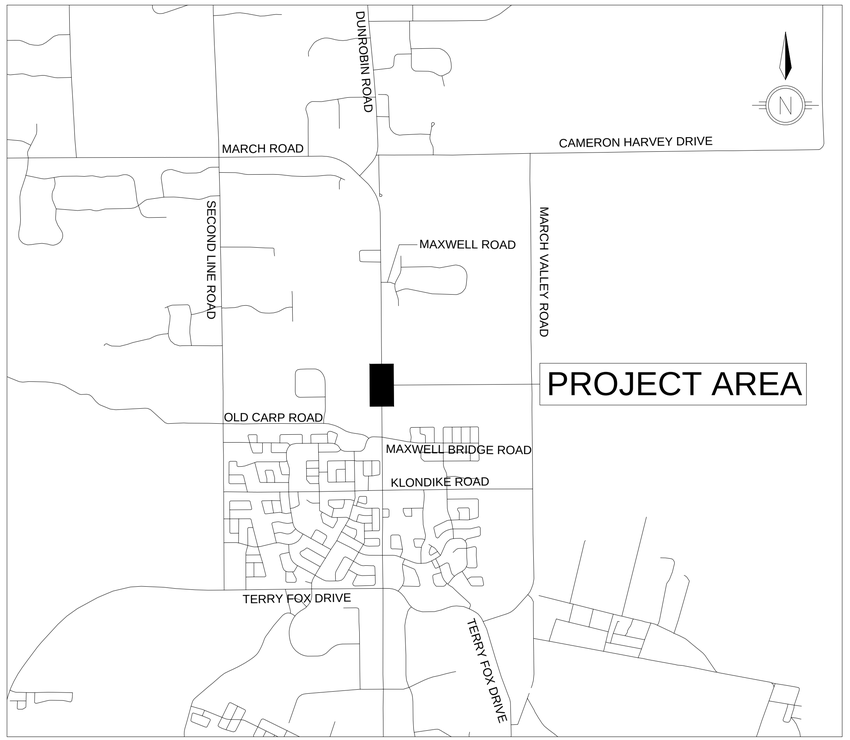
LEPINE
910 MARCH ROAD

MARCH ROAD MODIFICATIONS
INTERIM CONDITION

Transportation Engineering Services

Approved By: TBD	Drawing No.: RMA-2022 -TES-###B
Completed By: CGH	
Scale: 1:1000	Date: JULY 2023

INFRASTRUCTURE SERVICES DEPARTMENT



CGH TRANSPORTATION

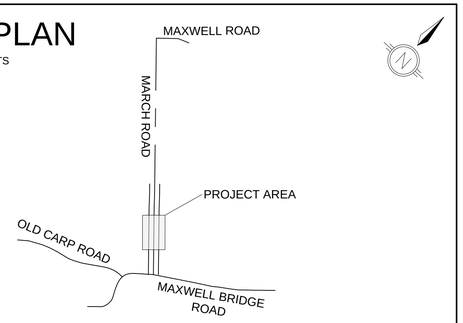
910 MARCH ROAD
ROADWAY MODIFICATION
INTERIM CONFIGURATION

CONTRACT NO. CP000XXX

FUNCTIONAL DESIGN
NOT FOR CONSTRUCTION
JULY, 2023

KEY PLAN

NTS



LEGEND

- CONCRETE SIDEWALK REINSTATEMENT
- TACTILE WALKING SURFACE INDICATORS
- FULL DEPTH ROAD STRUCTURE REINSTATEMENT & WIDENING
- ASPHALT SHOULDER STRUCTURE
- PARTIAL DEPTH ASPHALT REINSTATEMENT
- GRANULAR SHOULDER
- TOPSOIL AND SOD

910 MARCH ROAD
ROAD WIDENING

GEOMETRY & GENERAL LAYOUT
MARCH ROAD
STA 9+775 TO 9+960

CGH TRANSPORTATION

Ottawa

Contract No.	Dwg. No.
CP000XXX	G01

Sheet - of -

Asset No.

Asset Group

Des.	Chk'd.
B.B	A.H
Dwn.	Chk'd.
B.B	A.H
Utility Circ. No.	Index No.

Const. Inspector

Scale: HORIZONTAL
0m 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)
1.	ISSUED FOR FUNCTIONAL DESIGN REVIEW	M.C	25/01/23
2.	ISSUED FOR FUNCTIONAL DESIGN REVIEW	M.C	27/07/23

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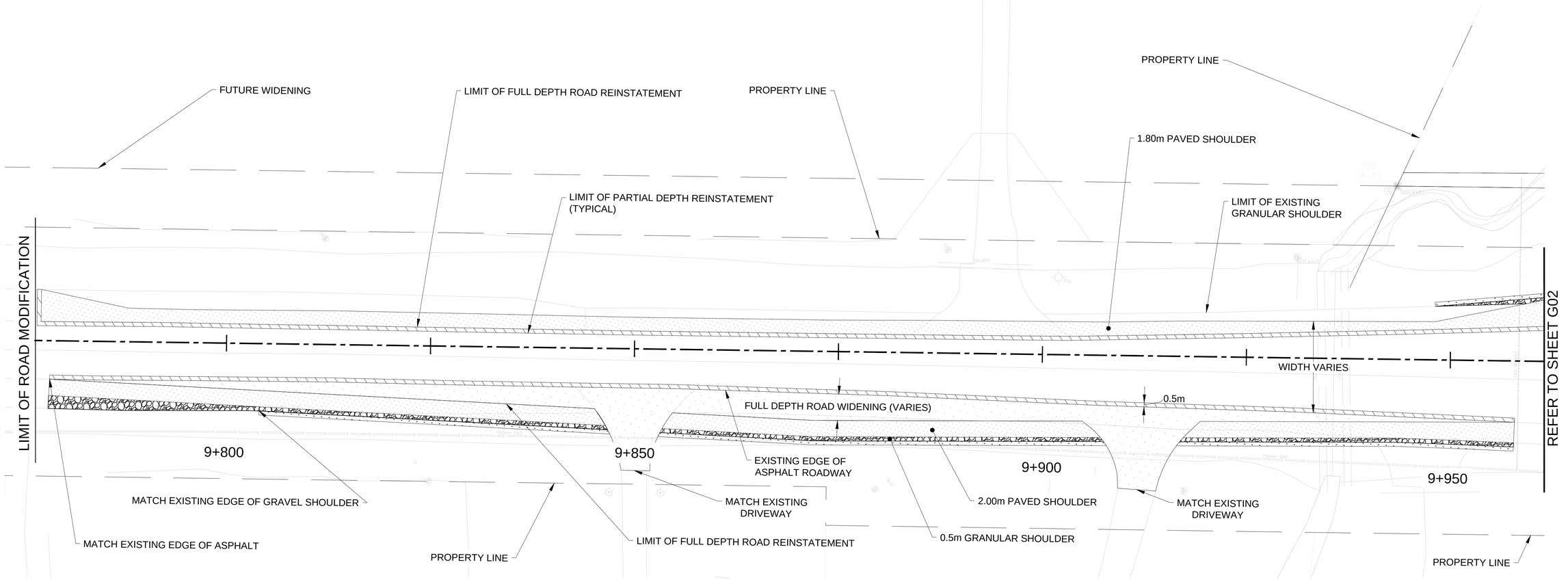
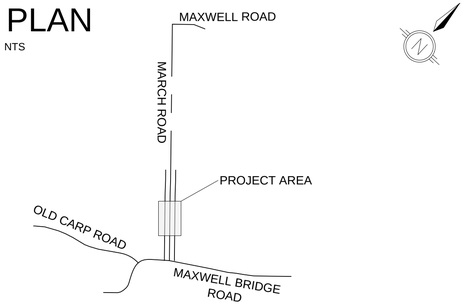
NOT FOR CONSTRUCTION



MARCH ROAD

KEY PLAN

NTS



LEGEND

- CONCRETE SIDEWALK REINSTATEMENT
- TACTILE WALKING SURFACE INDICATORS
- FULL DEPTH ROAD STRUCTURE REINSTATEMENT & WIDENING
- ASPHALT SHOULDER STRUCTURE
- PARTIAL DEPTH ASPHALT REINSTATEMENT
- GRANULAR SHOULDER
- TOPSOIL AND SOD

910 MARCH ROAD
ROAD WIDENING

GEOMETRY & GENERAL LAYOUT
MARCH ROAD
STA 9+960 TO 10+150

CGH TRANSPORTATION

Ottawa

Contract No.	Dwg. No.
CP000XXX	G02

Sheet - of -

Asset No.

Asset Group

Des.	Chk'd.
B.B	A.H
Dwn.	Chk'd.
B.B	A.H
Utility Circ. No.	Index No.

Const. Inspector

Scale: HORIZONTAL
0m 5 10

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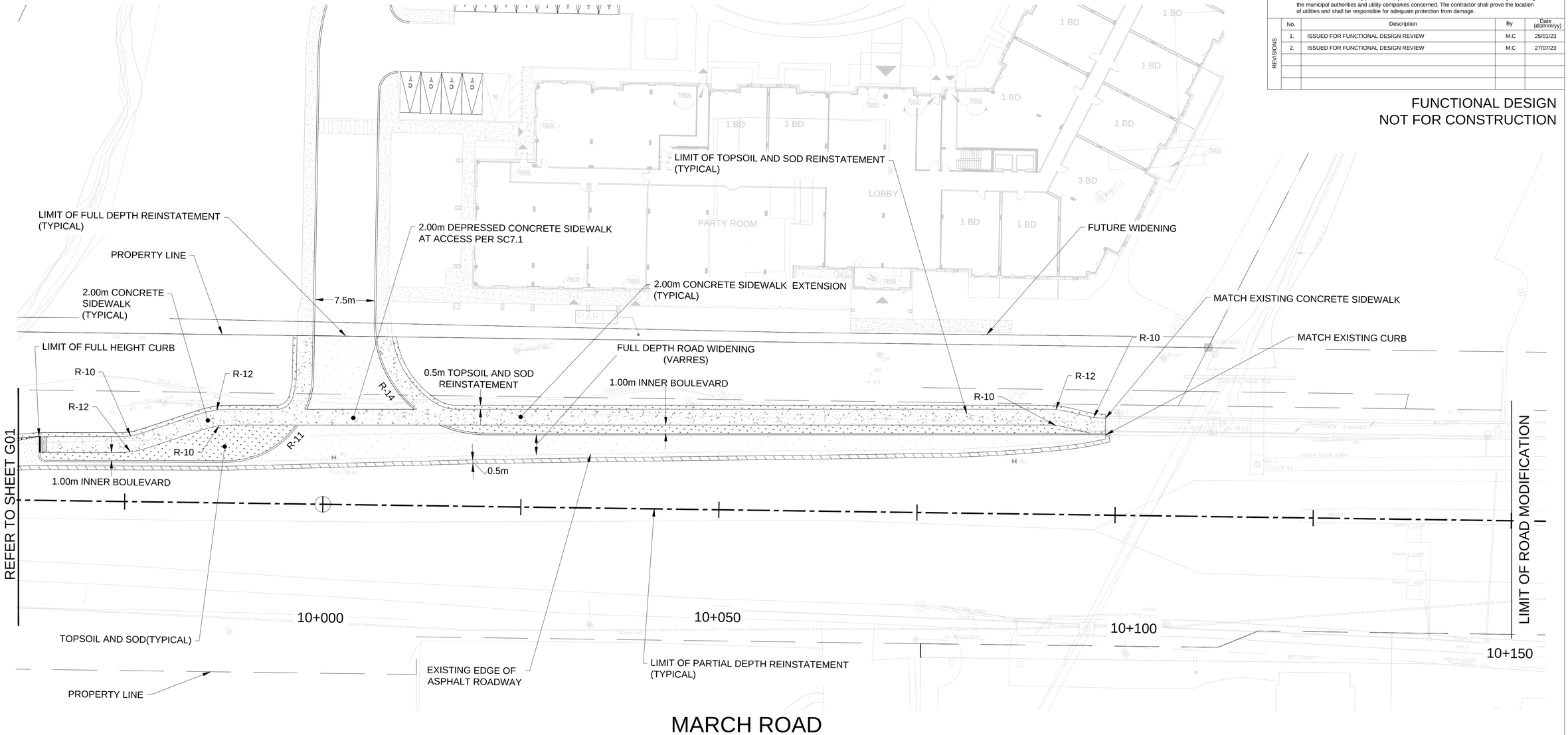
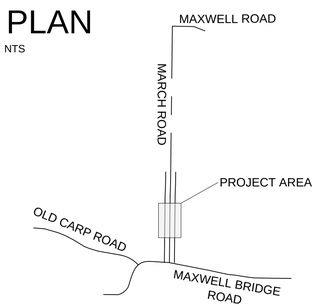


MARCH ROAD

KEY PLAN

NTS



SIGN LEGEND

Ra-16 | Ra-18TR | Rb-42 | Ra-101 | Wa-123R

910 MARCH ROAD
ROAD WIDENING

PAVEMENT MARKING AND SIGNAGE
MARCH ROAD
STA 9+775 TO 9+945

CGH TRANSPORTATION

Ottawa

Contract No.	Dwg. No.
CP000XXX	PMK01

Sheet - of -

Asset No.

Asset Group

Des.	Chk'd.
B.B	A.H
Dwn.	Chk'd.
B.B	A.H
Utility Circ. No.	Index No.

Const. Inspector

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0m 5 10

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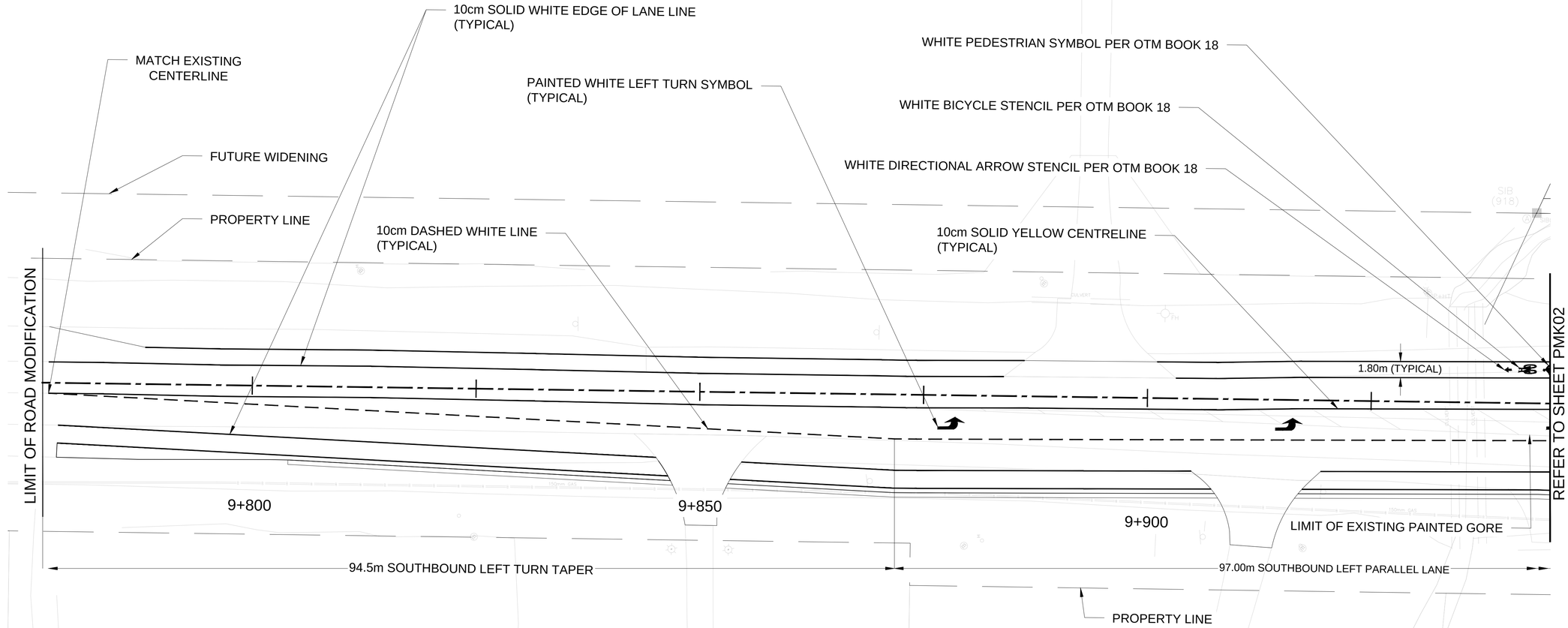
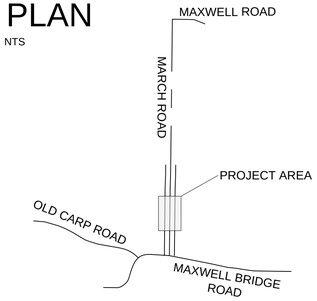


MARCH ROAD

KEY PLAN

NTS



SIGN LEGEND

Ra-16 | Ra-18TR | Rb-42 | Ra-101 | Wa-123R

910 MARCH ROAD
ROAD WIDENING

PAVEMENT MARKING AND SIGNAGE
MARCH ROAD
STA 9+945 TO 10+100

CGH TRANSPORTATION

Ottawa

Contract No.	Dwg. No.
CP000XXX	PMK02

Sheet - of -

Asset No.

Asset Group

Des.	Chk'd.
B.B	A.H
Dwn.	Chk'd.
B.B	A.H
Utility Circ. No.	Index No.

Const. Inspector

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0m 5 10

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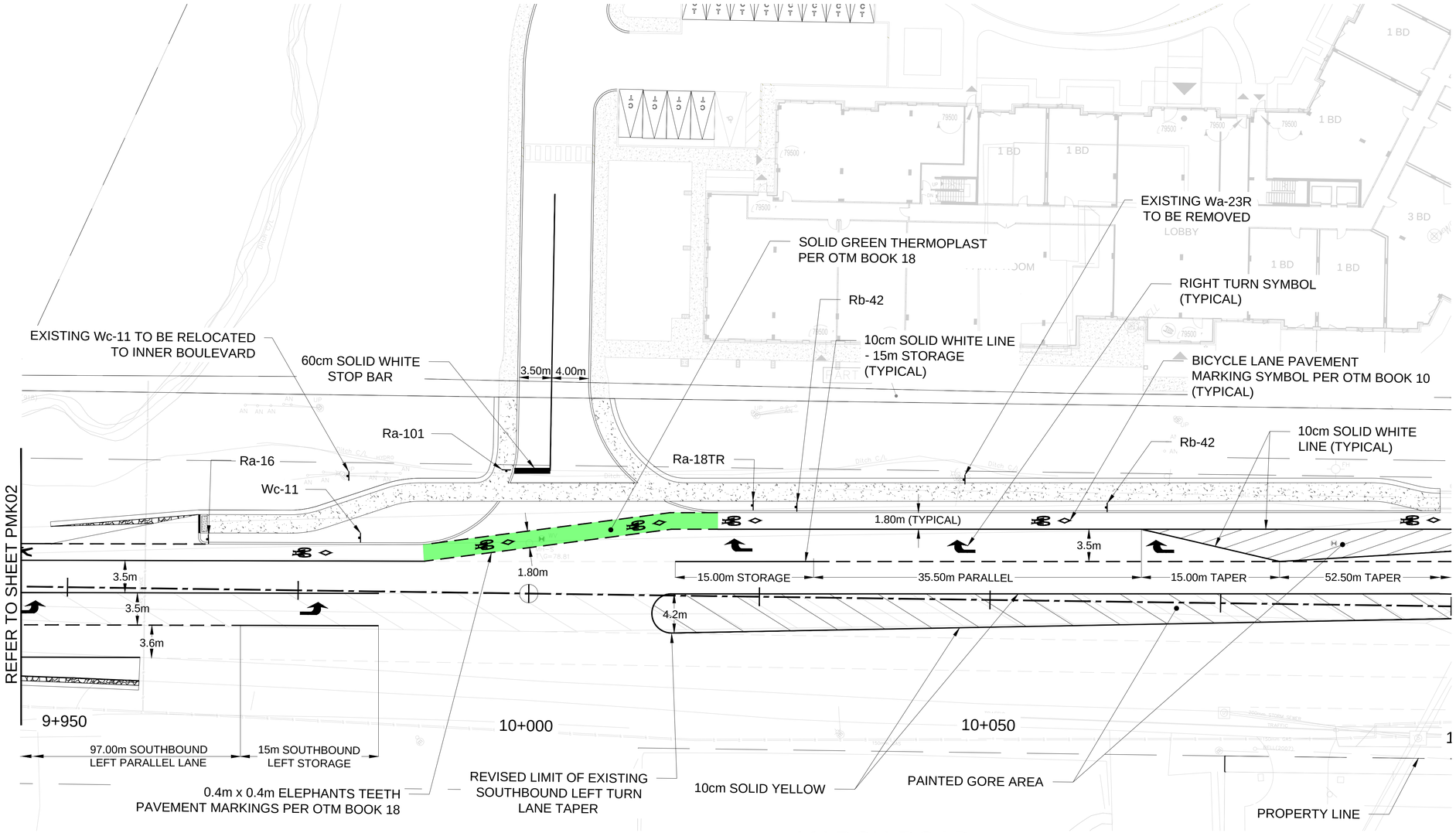
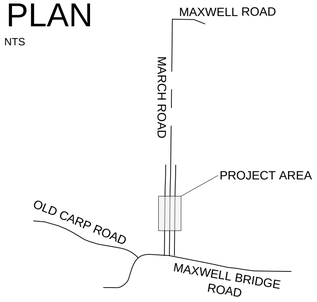


MARCH ROAD

KEY PLAN

NTS



SIGN LEGEND

Ra-16 | Ra-18TR | Rb-42 | Ra-101 | Wa-123R

910 MARCH ROAD
ROAD WIDENING

PAVEMENT MARKING AND SIGNAGE
MARCH ROAD
STA 10+100 TO 10+200

CGH TRANSPORTATION

Ottawa

Contract No.	Dwg. No.
CP000XXX	PMK03

Sheet - of -

Asset No.

Asset Group

Des.	Chk'd.
B.B	A.H
Dwn.	Chk'd.
B.B	A.H
Utility Circ. No.	Index No.

Const. Inspector

Scale: HORIZONTAL
0m 5 10

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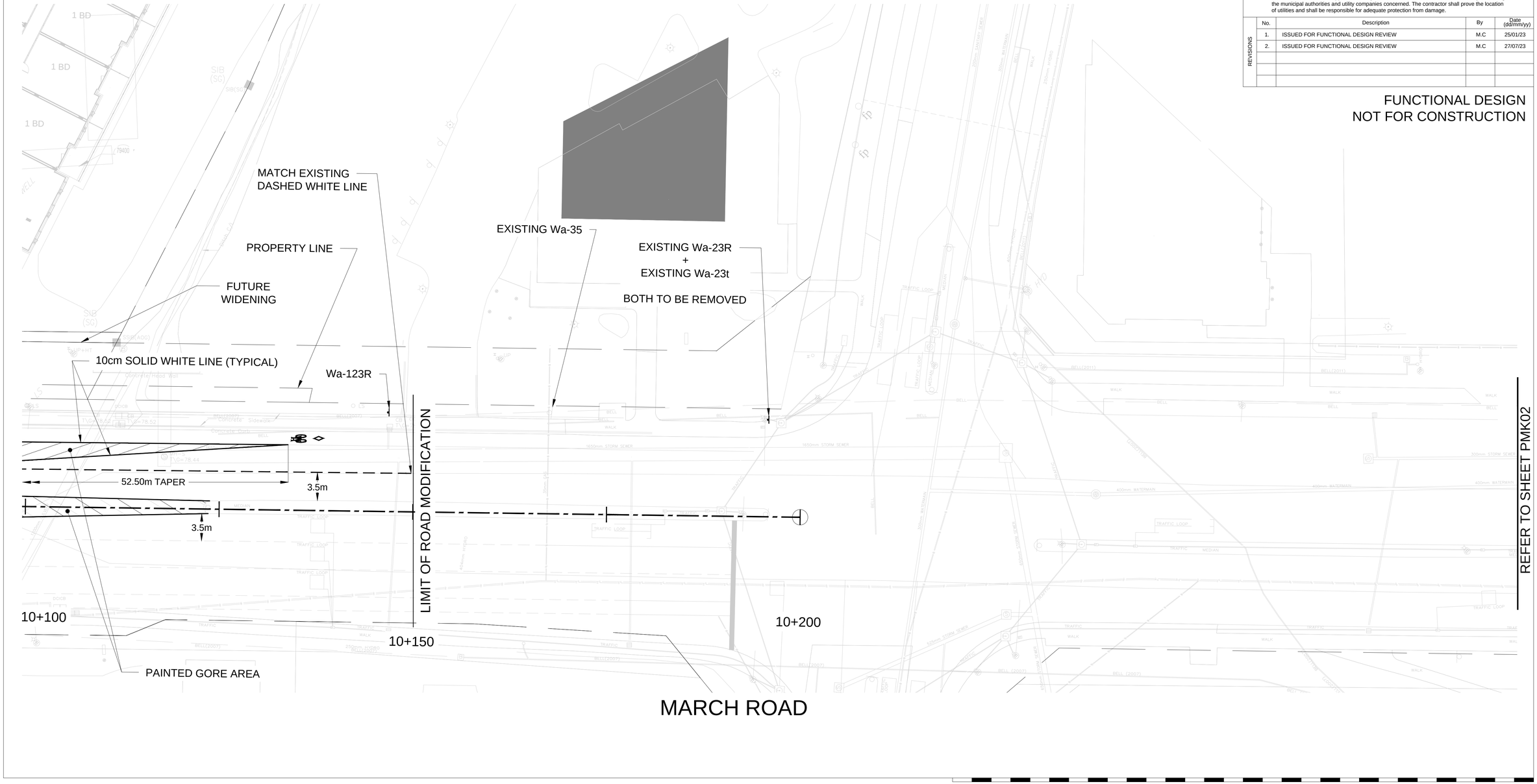

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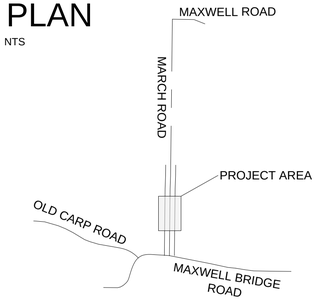
NTS



910 MARCH ROAD
ROAD WIDENING

HSU DESIGN VEHICLE
TURNING MOVEMENT ANALYSIS
NEW SITE ACCESS

CGH TRANSPORTATION

Ottawa

Contract No.	Dwg. No.
CP000XXX	TT01

Sheet - of -

Asset No.

Asset Group

Des.	Chk'd.
B.B	A.H
Dwn.	Chk'd.
B.B	A.H
Utility Circ. No.	Index No.

Const. Inspector

Scale: HORIZONTAL
0m 5 10

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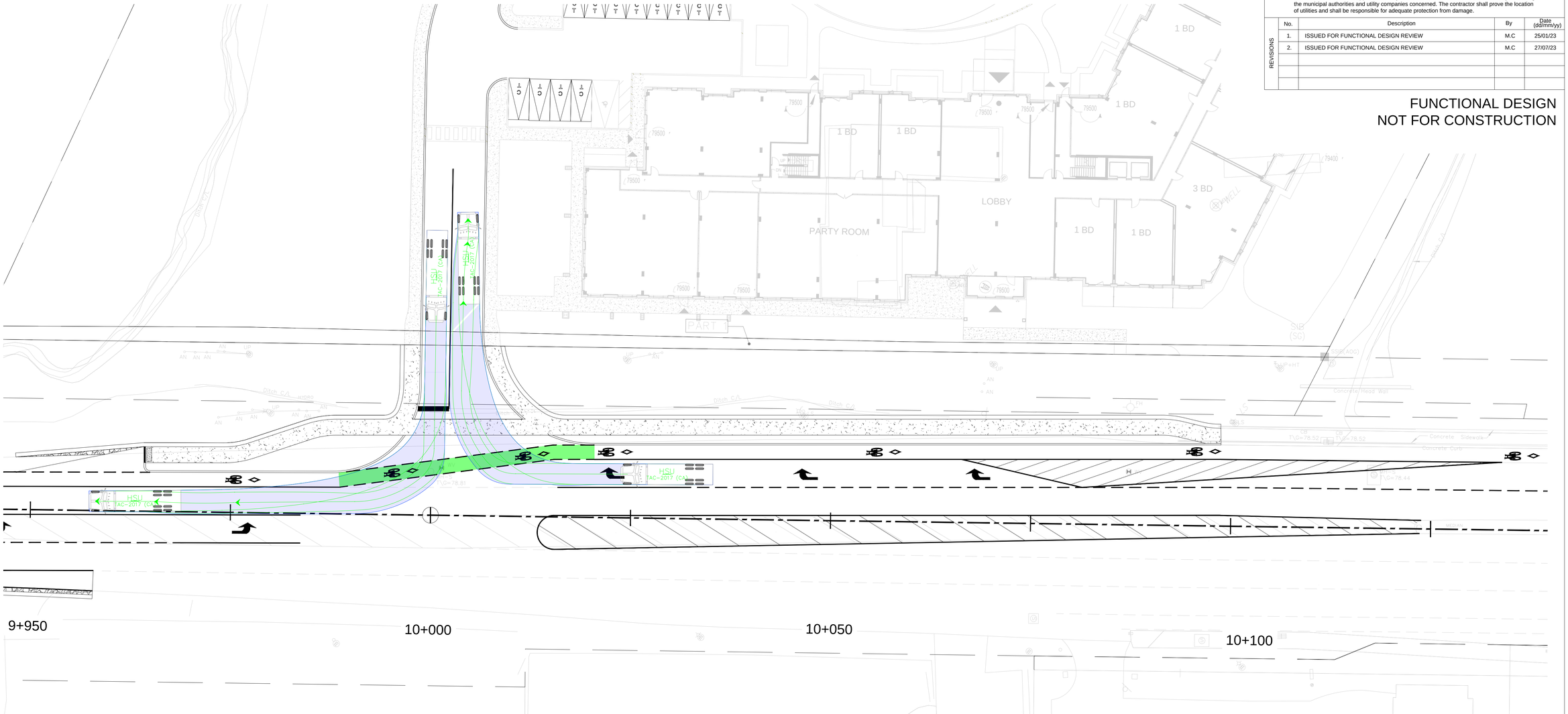
REVISIONS

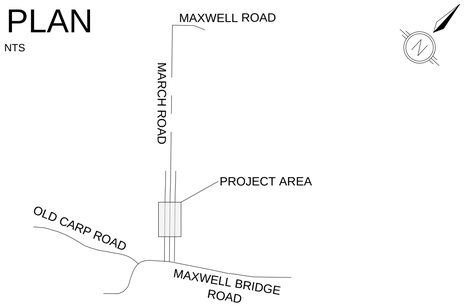
No.	Description	By	Date (dd/mm/yy)
1.	ISSUED FOR FUNCTIONAL DESIGN REVIEW	M.C	25/01/23
2.	ISSUED FOR FUNCTIONAL DESIGN REVIEW	M.C	27/07/23

FUNCTIONAL DESIGN
NOT FOR CONSTRUCTION



KEY PLAN

NTS



910 MARCH ROAD
ROAD WIDENING

HSU DESIGN VEHICLE
TURNING MOVEMENT ANALYSIS
NEW SITE ACCESS

CGH TRANSPORTATION

Ottawa

Contract No.	Dwg. No.
CP000XXX	TT02

Sheet - of -

Asset No.

Asset Group

Des.	Chk'd.
B.B	A.H
Dwn.	Chk'd.
B.B	A.H
Utility Circ. No.	Index No.

Const. Inspector

Scale: HORIZONTAL
0m 5 10

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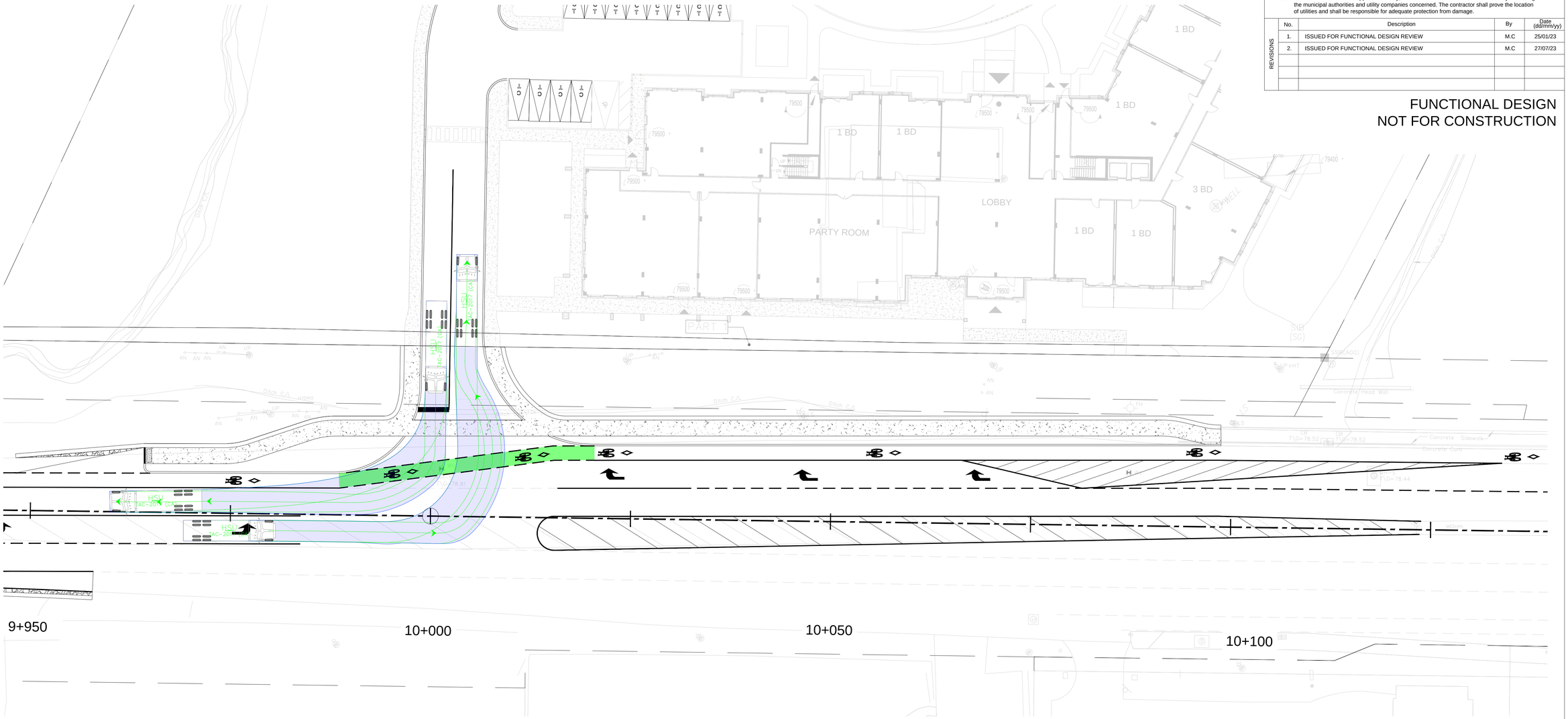


City of Ottawa

RMA-20XX-TPD-XX

910 March Road
Intersection Modification Construction Costs
Interim Condition
Class 'D' Cost Estimate
2023-07-27

Item	Description		Amount
10	**Construction**		**$ 478,390.82**
10.00	Construction - General		$ 4,500.00
10.01	Excavation and Removals		$ 130,211.26
10.02	Concrete		$ 90,167.88
10.03	Pavement Structure		$ 193,133.44
10.04	Landscaping		$ 7,493.28
10.05	Pavement Marking		$ 5,750.00
10.06	Storm Sewer		$ 45,734.96
10.07	Signage		$ 1,400.00
20	Engineering and Architectural Services	15%	$ 71,758.62
30	Contract Administration Fees (If Required)	10%	$ 47,839.08
	Sub Total		$ 597,988.53
40	Contingency	15%	$ 71,758.62
	GRAND TOTAL		$ 669,747.15

City of Ottawa

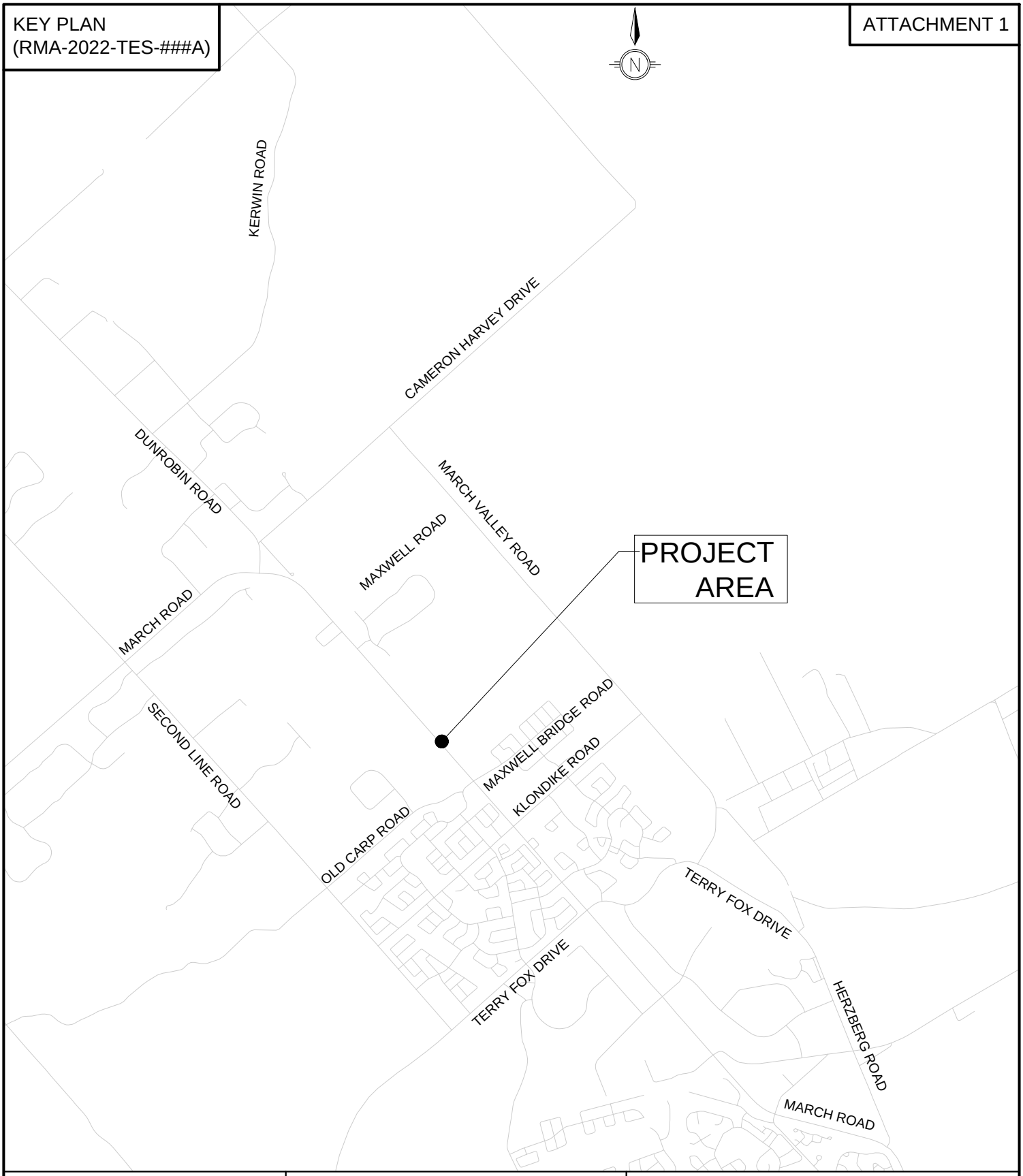
RMA-20XX-TPD-XX

910 March Road
Intersection Modification Construction Costs
Interim Condition
Class 'D' Cost Estimate
2023-07-27

Item No.	Item Code	Description	Quantity	Units	Unit Price	Amount
10.00		**Construction General**				
	A020.01	Traffic Control Plan (includes Police assistance)	1	LS	$ 3,500.00	$ 3,500.00
	A030.01	Construction Site Pedestrian Control Plan	1	LS	$ 1,000.00	$ 1,000.00
10.01		**Excavation and Removals**				
	L040.35	Saw Cutting of Asphalt	1260	m	$ 13.63	$ 17,172.03
	L040.37	Remove Asphalt Pavement by Dry Grinding	254	m^2	$ 103.17	$ 26,205.18
	L040.38	Remove Asphalt Pavement - Full Depth (Stripping)	732	m^2	$ 42.74	$ 31,265.59
	L120.01	Earth Excavation (Includes stripping, Duct and Foundation Removals)	1849	m3	$ 30.05	$ 55,568.46
10.02		**Concrete**				
	L260.01	Concrete Barrier Curb as per SC1.1	148	m	$ 160.65	$ 23,708.73
	L250.06	Concrete Sidewalks, Boulevards and Islands	308	m^2	$ 211.74	$ 65,110.05
	L250.11	TWSI	1	m^2	$ 1,309.81	$ 1,349.10
10.03		**Pavement Structure**				
	L380.20	Superpave 12.5mm (50mm Depth)	215	t	$ 341.39	$ 73,398.85
	L390.05	Superpave 19.0mm (70mm Depth)	145	t	$ 226.39	$ 32,715.62
	L210.01	Granular 'A' (150mm Depth)	880	t	$ 41.90	$ 36,872.00
	L210.03	Granular 'B', Type II (450mm Depth)	1206	t	$ 28.89	$ 34,827.47
	L190.09	Geotextile	650	m2	$ 2.67	$ 1,735.50
	-	Clean Fill	960	m3	$ 14.15	$ 13,584.00
10.04		**Landscaping**				
	T020.03	Top Soil, Imported (150mm Thick)	5	m3	$ 91.84	$ 413.28
	T030.05	Sod, Including Watering	300	m2	$ 23.60	$ 7,080.00
10.05		**Pavement Markings**				
	-	Pavement Markings [Provisional]	1	LS	$ 5,750.00	$ 5,750.00
10.06		**Storm Sewer**				
	F010.05	Subdrains (includes connections)	148	m	$ 41.93	$ 6,205.64
	F040.01	600mm x 600mm PCC Catch Basin	4	ea	$ 5,557.85	$ 22,231.40
	F060.02	200mm dia. PVC Catch Basin Leads	32	m	$ 540.56	$ 17,297.92
10.07		**Signage**				
		Ra-101	1	ea	$ 400.00	$ 400.00
		Ra-16	1	ea	$ 150.00	$ 150.00
		Ra-18TR	1	ea	$ 150.00	$ 150.00
		Rb-42	2	ea	$ 150.00	$ 300.00
		Wa-123R	1	ea	$ 400.00	$ 400.00
					Total	**$ 478,390.82**

KEY PLAN
(RMA-2022-TES-###A)

ATTACHMENT 1



Ottawa

TRANSPORTATION
PLANNING DEPT.

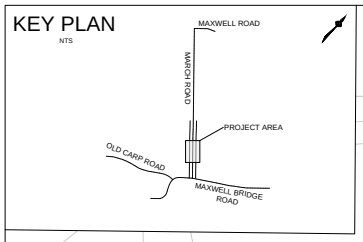
LEPINE
910 MARCH ROAD

KEY PLAN

Transportation Engineering Services

Approved By: N/A	Drawing No.: RMA-2022 -TES-###A
Completed By: CGH	
Scale: N.T.S.	Date: JULY 2023

ATTACHMENT 2



LIMIT OF PROJECT

0.9km MAXWELL ROAD

SOLID WHITE EDGE OF LANE MARKING

FUTURE WIDENING

ASPHALT FROM INTERIM WIDENING TO ACCOMMODATE SBLTL TO REMAIN - SOUTBOUND LANE MARKED WITH SOLID WHITE EDGE LINE

PROPERTY LINE

PROPERTY LINE

EXISTING MARCH ROAD MEDIAN EXTENSION

REFER TO ATTACHMENT 3

TRANSPORTATION PLANNING DEPT.

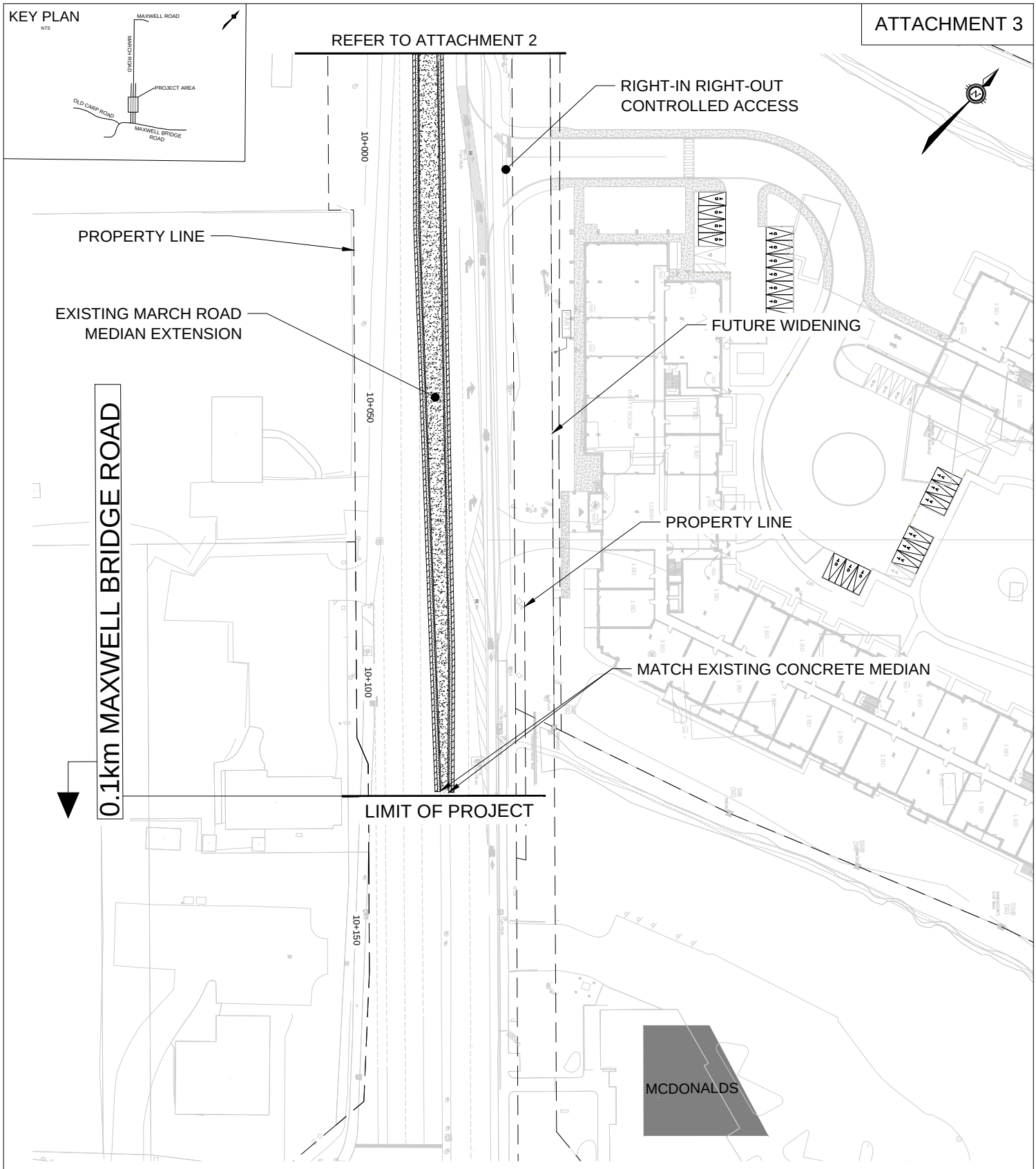
LEPINE
910 MARCH ROAD

MARCH ROAD MODIFICATIONS ULTIMATE CONDITION

Transportation Engineering Services

Approved By: N/A	Drawing No.: RMA-2022 -TES-###B
Completed By: CGH	
Scale: 1:1000	Date: JULY 2023

ATTACHMENT 3



TRANSPORTATION
PLANNING DEPT.

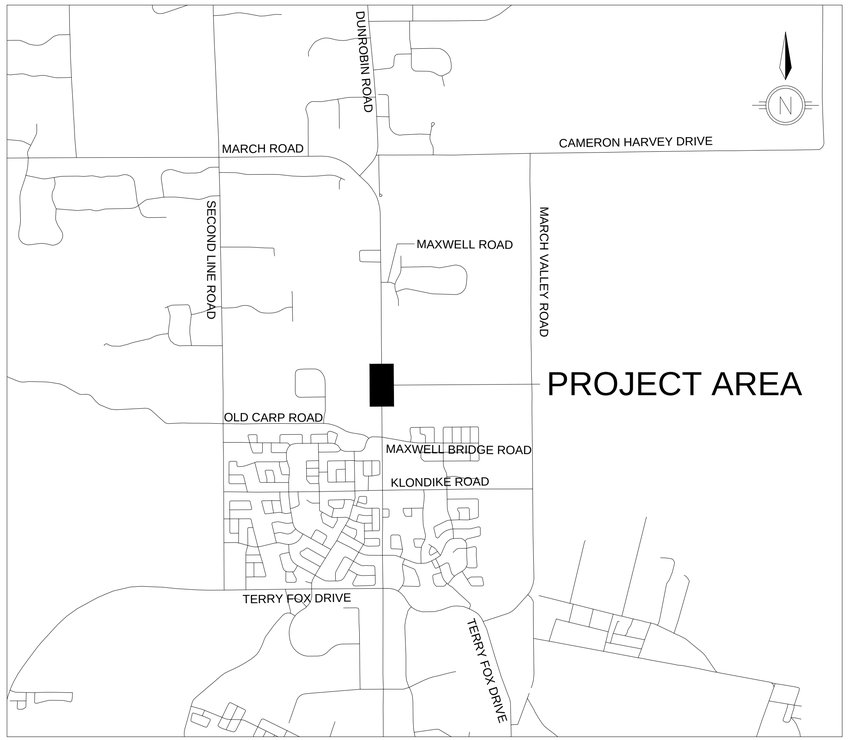
LEPINE
910 MARCH ROAD

MARCH ROAD MODIFICATIONS ULTIMATE CONDITION

Transportation Engineering Services

Approved By: N/A	Drawing No.: RMA-2022 -TES-###B
Completed By: CGH	
Scale: 1:1000	Date: JULY 2023

INFRASTRUCTURE SERVICES DEPARTMENT



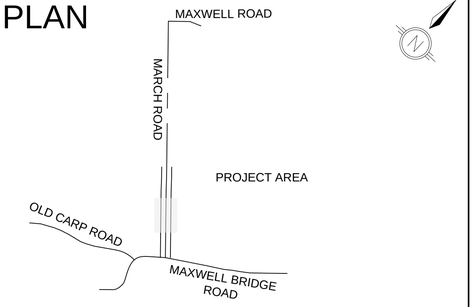
CGH TRANSPORTATION

910 MARCH ROAD
ROADWAY MODIFICATION
ULTIMATE CONFIGURATION

CONTRACT NO. CP000XXX

FUNCTIONAL DESIGN
NOT FOR CONSTRUCTION
JULY, 2023

KEY PLAN



LEGEND

CONCRETE MEDIAN

FULL DEPTH ASPHALT REINSTATEMENT

PARTIAL DEPTH ASPHALT REINSTATEMENT

910 MARCH ROAD
ROADWAY MODIFICATION
ULTIMATE CONFIGURATION

GEOMETRY & GENERAL LAYOUT
MARCH ROAD
STA 9+950 TO 10+125

CGH TRANSPORTATION

Contract No.	CP000XXX
Dwg. No.	G01
Sheet	- of -
Asset No.	
Asset Group	
Des.	B.B
Chk'd.	A.L
Dwn.	B.B
Chk'd.	A.L
Utility Circ. No.	
Index No.	
Const. Inspector	

Scale: HORIZONTAL
0m 5 10

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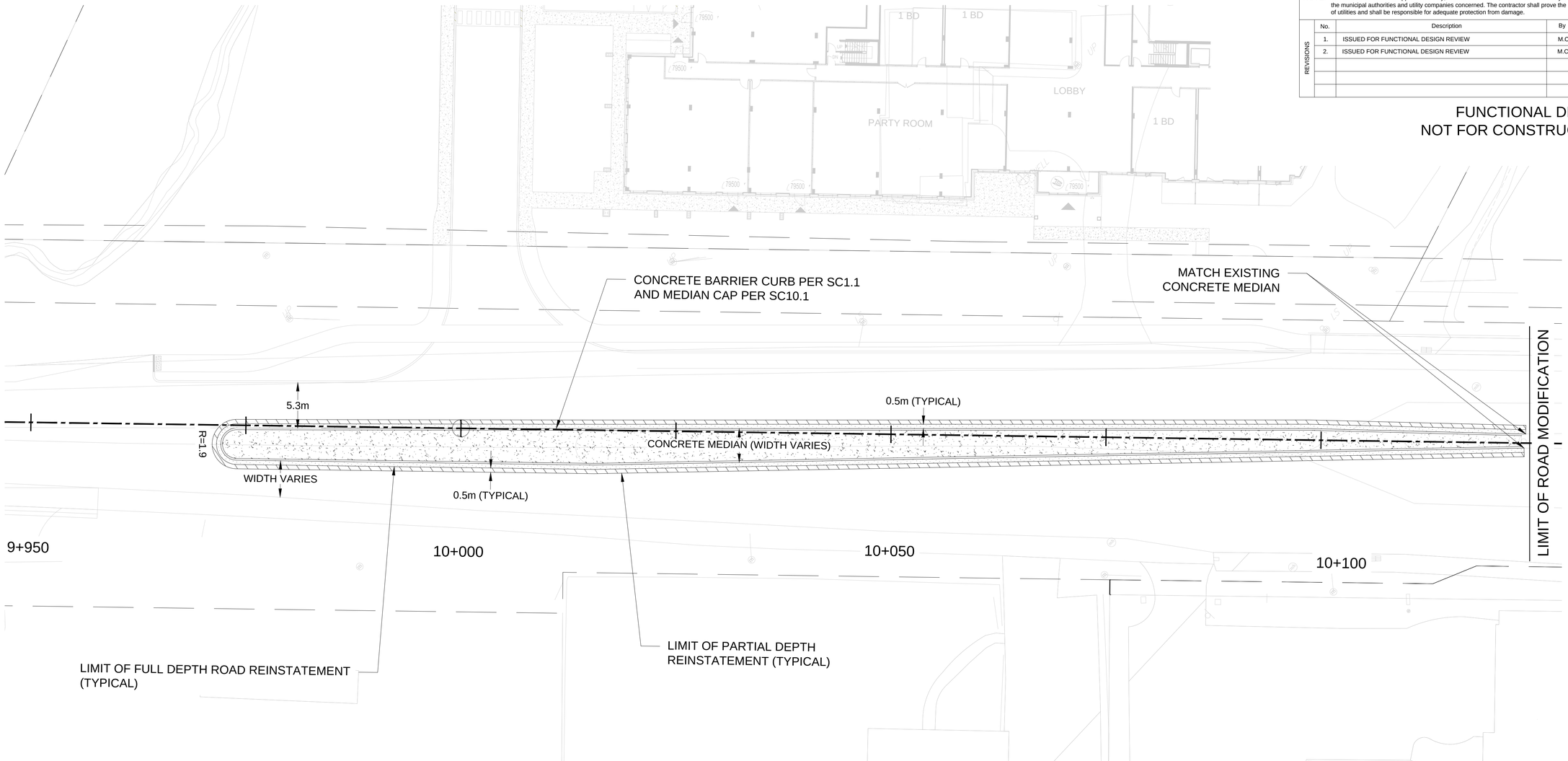

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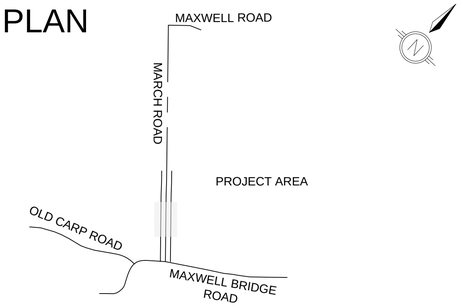

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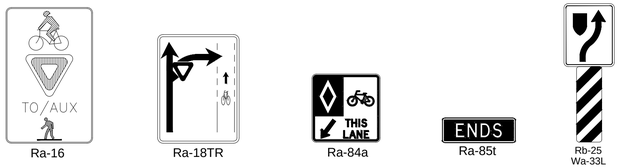

NOTES:
ANY PROPOSED SIGNAGE FROM INTERIM RMA PACKAGE TO REMAIN UNLESS NOTED.

910 MARCH ROAD
ROADWAY MODIFICATION
ULTIMATE CONFIGURATION

PAVEMENT MARKING AND SIGNAGE
MARCH ROAD
9+775 TO 9+935

CGH TRANSPORTATION

Contract No.	CP000XXX
Dwg. No.	PMK01
Sheet	- of -
Asset No.	
Asset Group	
Des.	B.B
Chk'd.	A.L
Dwn.	B.B
Chk'd.	A.L
Utility Circ. No.	
Index No.	
Const. Inspector	

Scale: HORIZONTAL
0m 5 10

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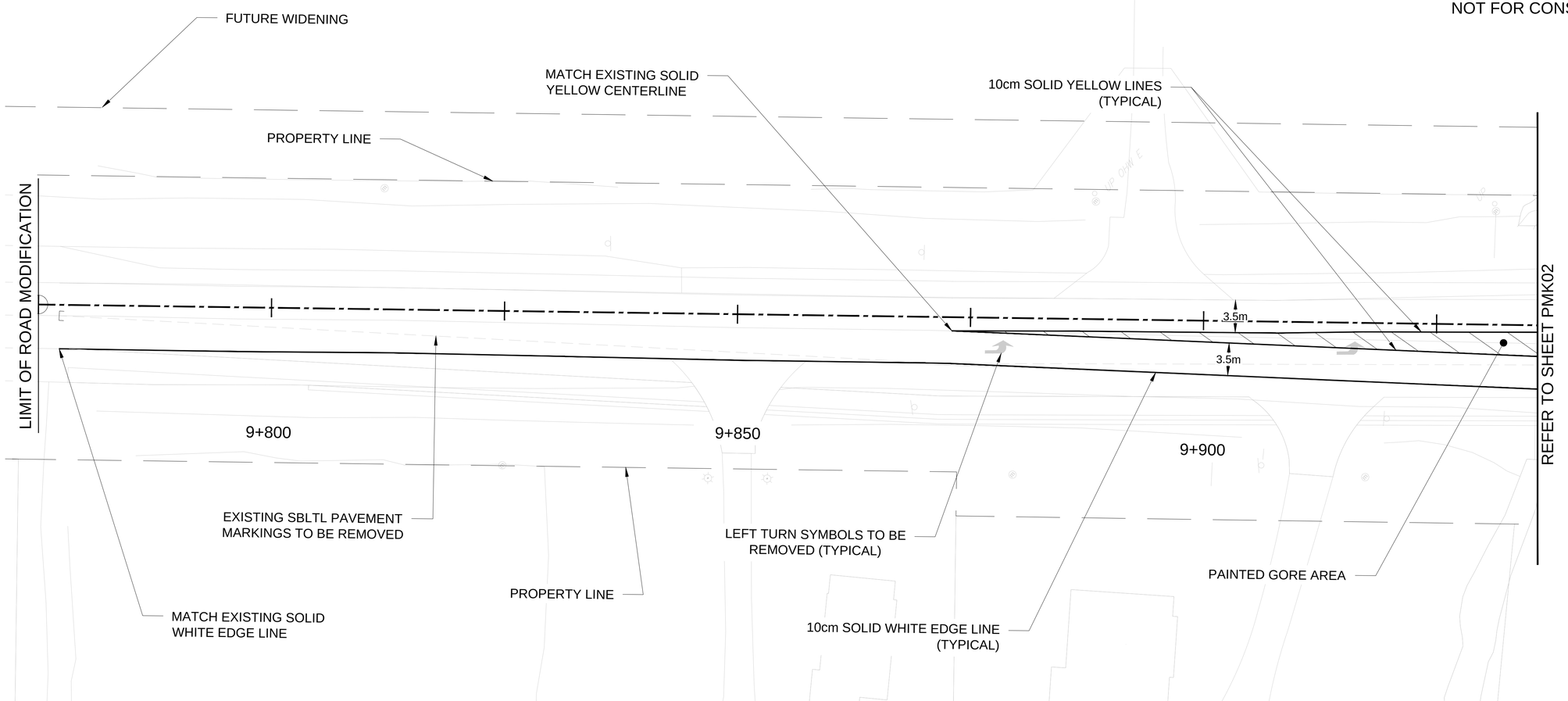

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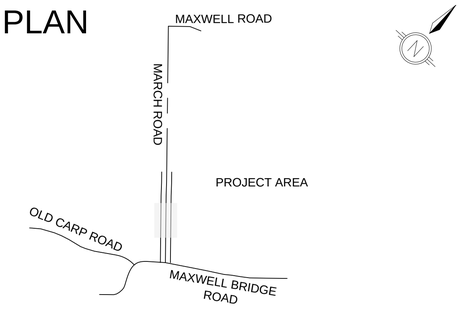

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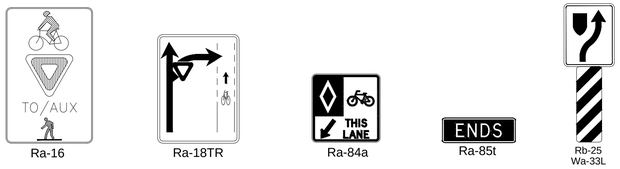

Ra-16 | Ra-18TR | Ra-84a | Ra-85t | Rb-25 Wa-33L

NOTES:
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910 MARCH ROAD
ROADWAY MODIFICATION
ULTIMATE CONFIGURATION

PAVEMENT MARKING AND SIGNAGE
MARCH ROAD
STA 9+935 TO 10+125

Contract No.	CP000XXX
Dwg. No.	PMK02
Sheet	- of -
Asset No.	
Asset Group	
Des.	B.B
Chk'd.	A.L
Dwn.	B.B
Chk'd.	A.L
Utility Circ. No.	
Index No.	
Const. Inspector	

CGH TRANSPORTATION

Scale: HORIZONTAL
0m 5 10

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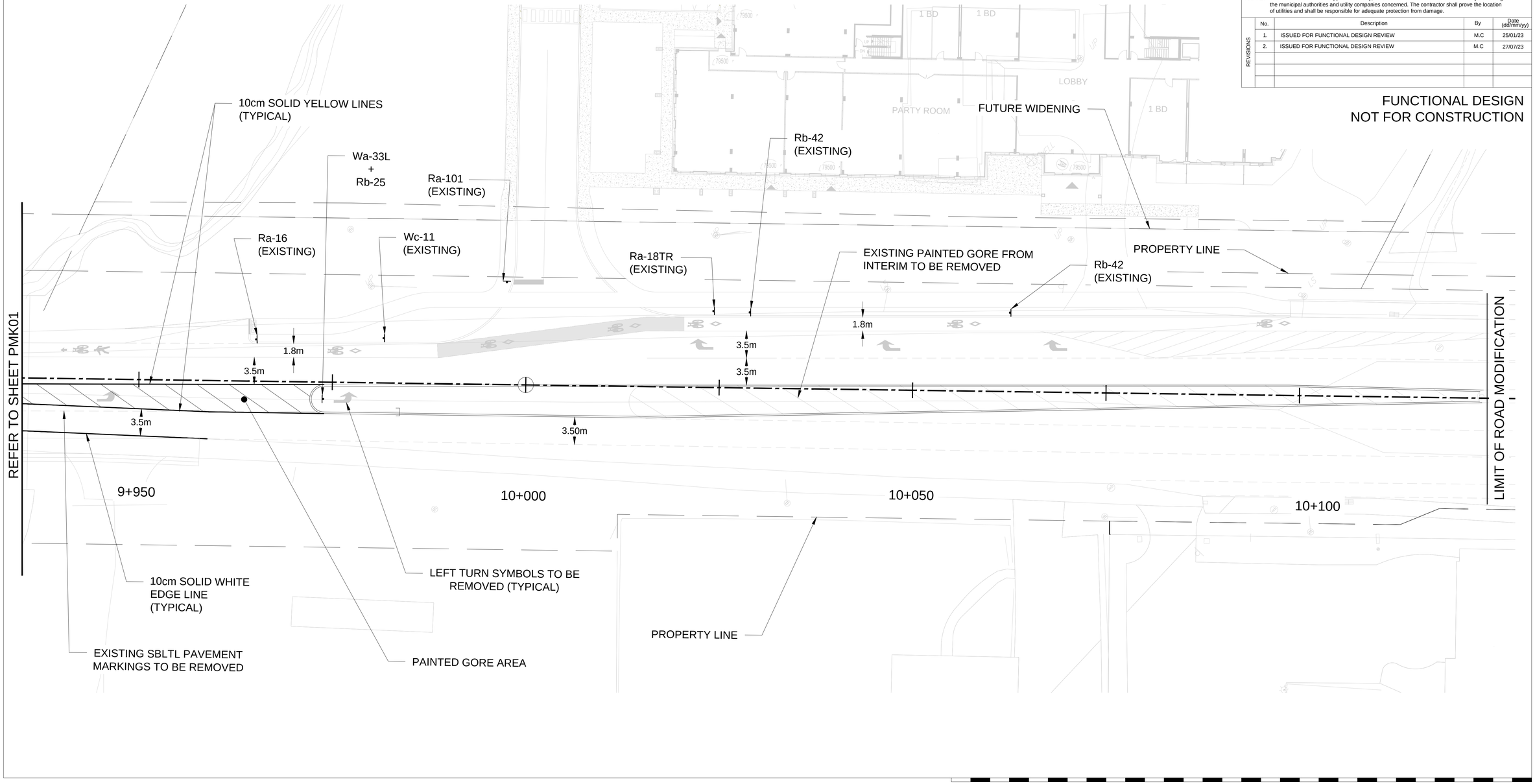

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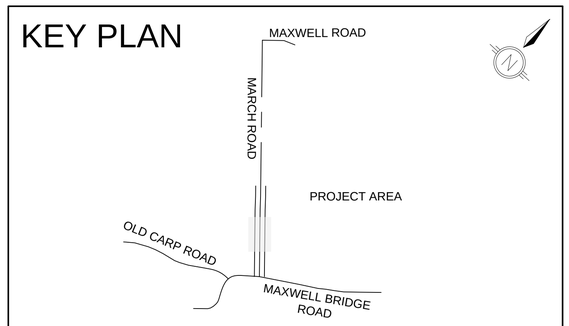

910 MARCH ROAD
ROADWAY MODIFICATION
ULTIMATE CONFIGURATION

TURNING MOVEMENT ANALYSIS
MARCH ROAD
STA 9+950 TO 10+125

CGH TRANSPORTATION

Contract No.	CP000XXX
Dwg. No.	TT01
Sheet	- of -
Asset No.	
Asset Group	
Des.	B.B
Chk'd.	A.L
Dwn.	B.B
Chk'd.	A.L
Utility Circ. No.	
Index No.	
Const. Inspector	

Scale: HORIZONTAL
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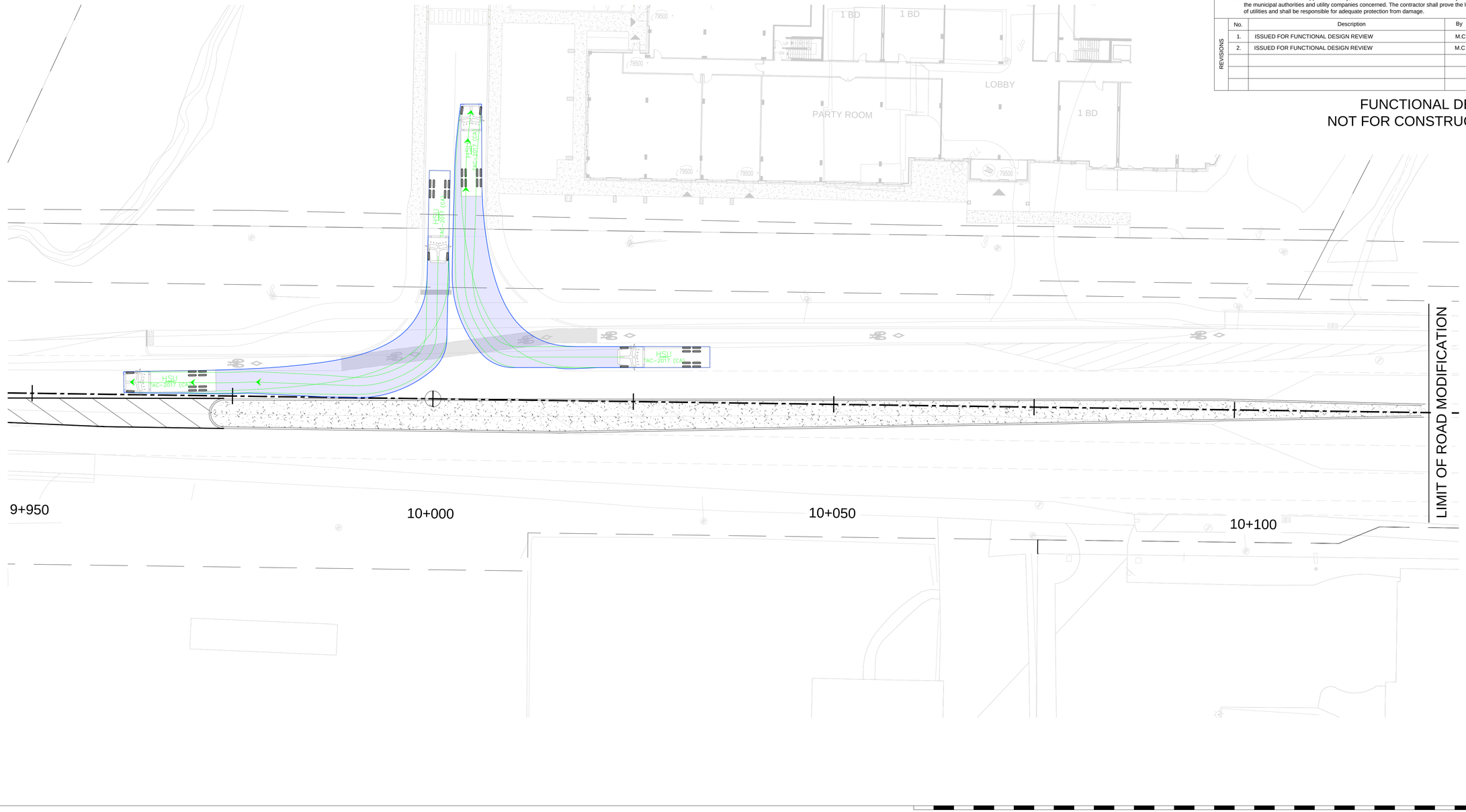

City of Ottawa

RMA-20XX-TPD-XX

910 March Road
Intersection Modification Construction Costs
Ultimate Condition
Class 'D' Cost Estimate
2023-07-27

Item	Description		Amount
10	**Construction**		**$ 205,392.43**
10.00	Construction - General		$ 2,500.00
10.01	Excavation and Removals		$ 52,859.34
10.02	Concrete		$ 145,500.60
10.03	Pavement Structure		$ 2,232.49
10.05	Pavement Marking		$ 1,500.00
10.07	Signage		$ 800.00
20	Engineering and Architectural Services	15%	$ 30,808.86
30	Contract Administration Fees (If Required)	10%	$ 20,539.24
	Sub Total		$ 256,740.54
40	Contingency	15%	$ 30,808.86
	GRAND TOTAL		$ 287,549.40

City of Ottawa

RMA-20XX-TPD-XX

910 March Road
Intersection Modification Construction Costs
Ultimate Condition
Class 'D' Cost Estimate
2023-07-27

Item No.	Item Code	Description	Quantity	Units	Unit Price	Amount
10.00		**Construction General**				
	A020.01	Traffic Control Plan (includes Police assistance)	1	LS	$ 1,500.00	$ 1,500.00
	A030.01	Construction Site Pedestrian Control Plan	1	LS	$ 1,000.00	$ 1,000.00
10.01		**Excavation and Removals**				
	L040.35	Saw Cutting of Asphalt	618	m	$ 13.63	$ 8,423.34
	L040.37	Remove Asphalt Pavement by Dry Grinding	154	m^2	$ 103.17	$ 15,898.50
	L040.38	Remove Asphalt Pavement - Full Depth (Stripping)	668	m^2	$ 42.74	$ 28,537.50
10.02		**Concrete**				
	L260.01	Concrete Barrier Curb as per SC1.1	306	m	$ 160.65	$ 49,158.90
	L250.06	Concrete Sidewalks, Boulevards and Islands	455	m^2	$ 211.74	$ 96,341.70
10.03		**Pavement Structure**				
	L380.20	Superpave 12.5mm (50mm Depth)	5	t	$ 341.39	$ 1,553.32
	L390.05	Superpave 19.0mm (70mm Depth)	3	t	$ 226.39	$ 679.17
10.05		**Pavement Markings**				
	-	Pavement Markings [Provisional]	1	LS	$ 1,500.00	$ 1,500.00
10.07		**Signage**				
		Wa-33L	1	ea	$ 400.00	$ 400.00
		Rb-25	1	ea	$ 400.00	$ 400.00
					Total	**$ 205,392.43**

Appendix I

Underground Parking

P1 LEVEL PARKING

1 : 300

GRAPHIC SCALE: 1:300

NOTES LIST	
# NOTE	DESCRIPTION
1	TOP OF BANK /ORDINARY HIGHT WATER MARK
2	EXISTING MUNICIPAL MUP/TRAIL
3	EXISTING UTILITY POLE TO BE REMOVED
4	UNDERGROUND PARKING P1 OUTLINE
5	GROUND FLOOR OUTLINE
6	2ND FLOOR - OUTLINE
7	NEW SIDEWALK
8	EXISTING TRIBUTARIES
9	RETAINING WALL
10	EXISTING UTILITY POLE
11	OVERHEAD WIRES
12	PRIVATE BALCONY
13	PRIVATE TERRACE
14	ELEVATOR MECHANICAL PENTHOUSE
15	BIKE RACK
16	EXISTING FIRE HYDRANT
18	P2 LEVEL - OUTLINE
19	DEPRESSED CURB
20	EXIT STAIR
21	P3 LEVEL - OUTLINE
22	COMMERCIAL TERRACE
23	CANOPY PROFILE
24	WATER TANK ACCESS
25	PERGOLA
26	FIRE DEPARTMENT CONNECTION

LINE TYPE LEGEND	
	PROPERTY LINE
	REQUIRED SETBACKS
	SETBACKS AS PER PROPOSED ZONING

LOCKER SCHEDULE	
Description	Count
P3 PARKING LEVEL	
LOCKER	125
P2 PARKING LEVEL	
LOCKER	143
P1 PARKING LEVEL	
LOCKER	122
GRAND TOTAL	390

BIKE SCHEDULE	
Description	Count
P1 PARKING LEVEL	
BICYCLE RACK	192
1ST FLOOR LEVEL	
BICYCLE RACK	6
	198

BICYCLE RACK LEGEND
• F.M.S. - FLOOR MOUNTED SINGLE - 600 x 1800
• F.M.D. - FLOOR MOUNTED DOUBLE - 600 x 1800
• W.M.S. - WALL MOUNTED SINGLE - 500 x 1500

PARKING SPACE	
	COUNT
P3 PARKING LEVEL	
STANDARD SMALL: 2400mmx4600mm	15
STANDARD: 2600mmx5200mm	107
P2 PARKING LEVEL	
STANDARD SMALL: 2400mmx4600mm	42
STANDARD: 2600mmx5200mm	188
P1 PARKING LEVEL	
BARRIER FREE PARKING: 2400mmx5200mm	6
BARRIER FREE PARKING: 3400mmx5200mm	6
STANDARD SMALL: 2400mmx4600mm	19
STANDARD SMALL: PARKING SPACE FOR VISITORS	6
STANDARD: 2600mmx5200mm	86
STANDARD: PARKING SPACE FOR VISITORS	66
1ST FLOOR LEVEL	
BARRIER FREE_REF: TYPE C (3400mmx6000mm)	1
STANDARD: PARKING SPACE FOR COMMERCIAL	19
STANDARD: PARKING SPACE FOR VISITORS	7
GRAND TOTAL	568

PARKING LEGEND	
A	BARRIER FREE PARKING SPACE 5.2m X 3.4m (min.)
B	BARRIER FREE PARKING SPACE 5.2m X 2.4m (min.)
T	TYPICAL PARKING SPACE 5.2m X 2.6m (min.)
V T	TYPICAL PARKING SPACE FOR VISITORS 5.2m X 2.6m (min.)
C T	TYPICAL PARKING SPACE FOR SHOPPING CENTER 5.2m X 2.6m (min.)
S	SMALL CAR PARKING SPACE 4.6m X 2.4m (min.)
V S	SMALL CAR PARKING SPACE FOR VISITORS 4.6m X 2.4m (min.)
	ZONE WITH A CLEAR HEIGHT OF 2300mm min.
	DRIVING AISLE IN GARAGE
	PEDESTRIAN TRAFFIC
	ZONES WHICH ARE CONSIDERED PART OF THE EXIT AND CANNOT BE PENETRATED BY ANY ELECTRICAL AND MECHANICAL NOT SERVICING THE EXIT

PLAN SYMBOL LEGEND	
A01	RAILING OR GUARDRAIL TYPE : • SEE PAGE A530 FOR DETAILS
##	GENERAL NOTES • SEE LEGEND FOR DESCRIPTION
WB	WINDOW OR CURTAIN WALL TYPE • SEE PAGE A904 & 905 FOR DETAILS
XX	WALL TYPE • SEE PAGE A800 FOR DETAILS
RT-XX	ROOF TYPE • SEE PAGE A800 FOR DETAILS
XX	DOOR NUMBER • SEE PAGE A900 & A901 FOR DETAILS
XX	ROOM NUMBER • SEE PLANS FOR DETAILS
XX	MATERIAL TYPE • SEE PAGE A400 @ A404 FOR LEGEND

NOTES GÉNÉRALES General Notes

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COMPANY NAME
910 MARCH ROAD

EMPLACEMENT Location
910 MARCH ROAD

NO PROJET No.
12712.00

NO	RELEASE	DATE (aa-mm-jj)
0	ISSUED FOR ZONING	2023.01.26
1.A	ISSUED FOR SITE PLAN	2023.03.29

Preliminary DO NOT USE FOR CONSTRUCTION

DESSINÉ PAR Drawn by
Z.S

VÉRIFIÉ PAR Checked
K.P.

DATE (aa.mm.jj)
23/03/29

ÉCHELLE Scale
As indicated

TITRE DU DESSIN Drawing Title
P1 LEVEL PARKING

PREVIOUS REVISION: 0.14
CURRENT REVISION: 1.0

RÉVISION Revision
1.0

NO. DESSIN Dwg Number
A100c

Appendix J

MMLOS Worksheets

Multi-Modal Level of Service - Intersections Form

Consultant	**CGH Transportation**	**Project**	**2021-073**
Scenario	**Existing Conditions**	**Date**	**2022-11-03**
Comments			

INTERSECTIONS		March Road & Halton Terrace / Maxwell Bridge Road				March Road & Klondike Road			
	Crossing Side	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**
Pedestrian	Lanes	6	6	3	3	7	8	3	4
	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
	Conflicting Left Turns	Protected/ Permissive	Protected/ Permissive	Permissive	Permissive	Protected	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
	Right Turns on Red (RToR) ?	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
	Right Turn Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	Conv'tl without Receiving Lane
	Corner Radius	15-25m	10-15m	10-15m	15-25m	10-15m	15-25m	10-15m	15-25m
	Crosswalk Type	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings
	PETSI Score	**18**	**20**	**70**	**68**	**12**	**-6**	**70**	**55**
	Ped. Exposure to Traffic LoS	**F**	**F**	**C**	**C**	**F**	**F**	**C**	**D**
	Cycle Length	120				130			
	Effective Walk Time	7				7			
	Average Pedestrian Delay	**53**				**58**			
	Pedestrian Delay LoS	**E**	**-**	**-**	**-**	**E**	**-**	**-**	**-**
	Level of Service	**F**	**F**	**C**	**C**	**F**	**F**	**C**	**D**
		F				**F**			
	Approach From	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**
Bicycle	Bicycle Lane Arrangement on Approach	Pocket Bike Lane	Pocket Bike Lane	Mixed Traffic	Mixed Traffic	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Mixed Traffic	Mixed Traffic
	Right Turn Lane Configuration	Bike lane shifts to the left of right turn	Bike lane shifts to the left of right turn	> 50 m	> 50 m	Not Applicable	Not Applicable	> 50 m	≤ 50 m
	Right Turning Speed	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h	Not Applicable	Not Applicable	≤ 25 km/h	≤ 25 km/h
	Cyclist relative to RT motorists	**D**	**D**	**F**	**F**	**Not Applicable**	**Not Applicable**	**F**	**D**
	Separated or Mixed Traffic	**Separated**	**Separated**	**Mixed Traffic**	**Mixed Traffic**	**Separated**	**Separated**	**Mixed Traffic**	**Mixed Traffic**
	Left Turn Approach	≥ 2 lanes crossed	≥ 2 lanes crossed	No lane crossed	No lane crossed	≥ 2 lanes crossed	≥ 2 lanes crossed	No lane crossed	No lane crossed
	Operating Speed	≥ 60 km/h	≥ 60 km/h	≤ 40 km/h	≤ 40 km/h	≥ 60 km/h	≥ 60 km/h	> 40 to ≤ 50 km/h	> 40 to ≤ 50 km/h
	Left Turning Cyclist	**F**	**F**	**B**	**B**	**F**	**F**	**B**	**B**
	Level of Service	**F**	**F**	**F**	**F**	**F**	**F**	**F**	**D**
		F				**F**			
Transit	Average Signal Delay	≤ 30 sec	≤ 20 sec	> 40 sec	≤ 30 sec	≤ 30 sec	≤ 30 sec	> 40 sec	≤ 30 sec
	Level of Service	**D**	**C**	**F**	**D**	**D**	**D**	**F**	**D**
		F				**F**			
Truck	Effective Corner Radius	> 15 m	10 - 15 m	10 - 15 m	> 15 m	10 - 15 m	> 15 m	10 - 15 m	> 15 m
	Number of Receiving Lanes on Departure from Intersection	1	1	≥ 2	≥ 2	1	≥ 2	≥ 2	≥ 2
	Level of Service	**C**	**E**	**B**	**A**	**E**	**A**	**B**	**A**
		E				**E**			
Auto	Volume to Capacity Ratio	0.71 - 0.80				0.61 - 0.70			
	Level of Service	**C**				**B**			

Multi-Modal Level of Service - Segments Form

Consultant	**CGH Transportation**	**Project**	**2021-073**
Scenario	**Existing Conditions**	**Date**	**2022-12-16**
Comments			

SEGMENTS		**March Road**	> 110 m N of Halton Terrace	10 m N of Halton Terrace & Kl	S of Klondike Road
			1	2	3
Pedestrian	Sidewalk Width Boulevard Width	**F**	no sidewalk n/a	≥ 2 m < 0.5	≥ 2 m < 0.5
	Avg Daily Curb Lane Traffic Volume		> 3000	> 3000	> 3000
	Operating Speed On-Street Parking		> 60 km/h no	> 60 km/h no	> 60 km/h no
	Exposure to Traffic PLoS		**F**	**F**	**F**
	Effective Sidewalk Width			2.0 m	2.0 m
	Pedestrian Volume			250 ped/hr	250 ped/hr
	Crowding PLoS		**-**	**B**	**B**
	Level of Service		**-**	**F**	**F**
Bicycle	Type of Cycling Facility	**F**	Mixed Traffic	Curbside Bike Lane	Curbside Bike Lane
	Number of Travel Lanes		2-3 lanes total	2 ea. dir. (w median)	2 ea. dir. (w median)
	Operating Speed		≥ 60 km/h	> 70 km/h	> 70 km/h
	# of Lanes & Operating Speed LoS		**F**	**E**	**E**
	Bike Lane (+ Parking Lane) Width			≥ 1.8 m	≥ 1.8 m
	Bike Lane Width LoS		**-**	**A**	**A**
	Bike Lane Blockages			Rare	Rare
	Blockage LoS		**-**	**A**	**A**
	Median Refuge Width (no median = < 1.8 m)		< 1.8 m refuge	< 1.8 m refuge	< 1.8 m refuge
	No. of Lanes at Unsignalized Crossing		≤ 3 lanes	≤ 3 lanes	≤ 3 lanes
	Sidestreet Operating Speed		≤ 40 km/h	≤ 40 km/h	>40 to 50 km/h
	Unsignalized Crossing - Lowest LoS		**A**	**A**	**A**
	Level of Service		**F**	**E**	**E**
Transit	Facility Type	**D**	Mixed Traffic	Mixed Traffic	Mixed Traffic
	Friction or Ratio Transit:Posted Speed		Vt/Vp ≥ 0.8	Vt/Vp ≥ 0.8	Vt/Vp ≥ 0.8
	Level of Service		**D**	**D**	**D**
Truck	Truck Lane Width	**C**	≤ 3.5 m	≤ 3.5 m	≤ 3.5 m
	Travel Lanes per Direction		1	> 1	> 1
	Level of Service		**C**	**A**	**A**
Auto	**Level of Service**	**Not Applicable**			

Multi-Modal Level of Service - Intersections Form

Consultant	**CGH Transportation**	**Project**	**2021-073**
Scenario	**FB2028**	**Date**	**2022-07-31**
Comments			

INTERSECTIONS		March Road & Halton Terrace / Maxwell Bridge Road				March Road & Klondike Road			
Crossing Side		**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**
Pedestrian	Lanes	6	6	3	3	7	8	3	4
	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
	Conflicting Left Turns	Protected/ Permissive	Protected/ Permissive	Permissive	Permissive	Protected	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
	Right Turns on Red (RToR) ?	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
	Right Turn Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	Conv'tl without Receiving Lane
	Corner Radius	15-25m	10-15m	10-15m	15-25m	10-15m	15-25m	10-15m	15-25m
	Crosswalk Type	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings
	PETSI Score	**18**	**20**	**70**	**68**	**12**	**-6**	**70**	**55**
	Ped. Exposure to Traffic LoS	**F**	**F**	**C**	**C**	**F**	**F**	**C**	**D**
	Cycle Length	120				130			
	Effective Walk Time	7				7			
	Average Pedestrian Delay	**53**				**58**			
	Pedestrian Delay LoS	**E**	**-**	**-**	**-**	**E**	**-**	**-**	**-**
	Level of Service	**F**	**F**	**C**	**C**	**F**	**F**	**C**	**D**
		F				**F**			
Approach From		**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**
Bicycle	Bicycle Lane Arrangement on Approach	Pocket Bike Lane	Pocket Bike Lane	Mixed Traffic	Mixed Traffic	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Mixed Traffic	Mixed Traffic
	Right Turn Lane Configuration	Bike lane shifts to the left of right turn	Bike lane shifts to the left of right turn	> 50 m	> 50 m	Not Applicable	Not Applicable	> 50 m	≤ 50 m
	Right Turning Speed	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h	Not Applicable	Not Applicable	≤ 25 km/h	≤ 25 km/h
	Cyclist relative to RT motorists	**D**	**D**	**F**	**F**	**Not Applicable**	**Not Applicable**	**F**	**D**
	Separated or Mixed Traffic	**Separated**	**Separated**	**Mixed Traffic**	**Mixed Traffic**	**Separated**	**Separated**	**Mixed Traffic**	**Mixed Traffic**
	Left Turn Approach	≥ 2 lanes crossed	≥ 2 lanes crossed	No lane crossed	No lane crossed	≥ 2 lanes crossed	≥ 2 lanes crossed	No lane crossed	No lane crossed
	Operating Speed	≥ 60 km/h	≥ 60 km/h	≤ 40 km/h	≤ 40 km/h	≥ 60 km/h	≥ 60 km/h	> 40 to ≤ 50 km/h	> 40 to ≤ 50 km/h
	Left Turning Cyclist	**F**	**F**	**B**	**B**	**F**	**F**	**B**	**B**
	Level of Service	**F**	**F**	**F**	**F**	**F**	**F**	**F**	**D**
		F				**F**			
Transit	Average Signal Delay	≤ 30 sec	≤ 20 sec	> 40 sec	≤ 30 sec	≤ 30 sec	≤ 30 sec	> 40 sec	≤ 30 sec
	Level of Service	**D**	**C**	**F**	**D**	**D**	**D**	**F**	**D**
		F				**F**			
Truck	Effective Corner Radius	> 15 m	10 - 15 m	10 - 15 m	> 15 m	10 - 15 m	> 15 m	10 - 15 m	> 15 m
	Number of Receiving Lanes on Departure from Intersection	1	1	≥ 2	≥ 2	1	≥ 2	≥ 2	≥ 2
	Level of Service	**C**	**E**	**B**	**A**	**E**	**A**	**B**	**A**
		E				**E**			
Auto	Volume to Capacity Ratio	0.71 - 0.80				0.61 - 0.70			
	Level of Service	**C**				**B**			

Multi-Modal Level of Service - Segments Form

Consultant	**CGH Transportation**	**Project**	**2021-073**
Scenario	**FB2028**	**Date**	**2022-07-31**
Comments			

SEGMENTS		**March Road**	> 110 m N of Halton Terrace 1	m 110 m N of Halton Terrace & Klonc 2	S of Klondike Road 3
Pedestrian	Sidewalk Width Boulevard Width	**F**	no sidewalk n/a	≥ 2 m < 0.5	≥ 2 m < 0.5
	Avg Daily Curb Lane Traffic Volume		> 3000	> 3000	> 3000
	Operating Speed On-Street Parking		> 60 km/h no	> 60 km/h no	> 60 km/h no
	Exposure to Traffic PLoS		**F**	**F**	**F**
	Effective Sidewalk Width			2.0 m	2.0 m
	Pedestrian Volume			250 ped/hr	250 ped/hr
	Crowding PLoS		**-**	**B**	**B**
	Level of Service		**-**	**F**	**F**
Bicycle	Type of Cycling Facility	**F**	Mixed Traffic	Curbside Bike Lane	Curbside Bike Lane
	Number of Travel Lanes		2-3 lanes total	2 ea. dir. (w median)	2 ea. dir. (w median)
	Operating Speed		≥ 60 km/h	> 70 km/h	> 70 km/h
	# of Lanes & Operating Speed LoS		**F**	**E**	**E**
	Bike Lane (+ Parking Lane) Width			≥ 1.8 m	≥ 1.8 m
	Bike Lane Width LoS		**-**	**A**	**A**
	Bike Lane Blockages			Rare	Rare
	Blockage LoS		**-**	**A**	**A**
	Median Refuge Width (no median = < 1.8 m)		< 1.8 m refuge	< 1.8 m refuge	< 1.8 m refuge
	No. of Lanes at Unsignalized Crossing		≤ 3 lanes	≤ 3 lanes	≤ 3 lanes
	Sidestreet Operating Speed		≤ 40 km/h	≤ 40 km/h	>40 to 50 km/h
	Unsignalized Crossing - Lowest LoS		**A**	**A**	**A**
	Level of Service		**F**	**E**	**E**
Transit	Facility Type	**D**	Mixed Traffic	Mixed Traffic	Mixed Traffic
	Friction or Ratio Transit:Posted Speed		Vt/Vp ≥ 0.8	Vt/Vp ≥ 0.8	Vt/Vp ≥ 0.8
	Level of Service		**D**	**D**	**D**
Truck	Truck Lane Width	**C**	≤ 3.5 m	≤ 3.5 m	≤ 3.5 m
	Travel Lanes per Direction		1	> 1	> 1
	Level of Service		**C**	**A**	**A**
Auto	**Level of Service**	**Not Applicable**			

Multi-Modal Level of Service - Intersections Form

Consultant	**CGH Transportation**	**Project**	**2021-073**
Scenario	**FB2033**	**Date**	**2023-07-31**
Comments			

INTERSECTIONS		March Road & Halton Terrace / Maxwell Bridge Road				March Road & Klondike Road			
Crossing Side		**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**
Pedestrian	Lanes	6	6	3	3	7	8	3	4
	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
	Conflicting Left Turns	Protected/ Permissive	Protected/ Permissive	Permissive	Permissive	Protected	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
	Right Turns on Red (RToR) ?	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
	Right Turn Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	Conv'tl without Receiving Lane
	Corner Radius	15-25m	10-15m	10-15m	15-25m	10-15m	15-25m	10-15m	15-25m
	Crosswalk Type	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings
	PETSI Score	**18**	**20**	**70**	**68**	**12**	**-6**	**70**	**55**
	Ped. Exposure to Traffic LoS	**F**	**F**	**C**	**C**	**F**	**F**	**C**	**D**
	Cycle Length								
	Effective Walk Time								
	Average Pedestrian Delay								
	Pedestrian Delay LoS	-	-	-	-	-	-	-	-
	Level of Service	**F**	**F**	**C**	**C**	**F**	**F**	**C**	**D**
		F				**F**			
Approach From		**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**
Bicycle	Bicycle Lane Arrangement on Approach	Pocket Bike Lane	Pocket Bike Lane	Mixed Traffic	Mixed Traffic	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Mixed Traffic	Mixed Traffic
	Right Turn Lane Configuration	Bike lane shifts to the left of right turn	Bike lane shifts to the left of right turn	> 50 m	> 50 m	Not Applicable	Not Applicable	> 50 m	≤ 50 m
	Right Turning Speed	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h	Not Applicable	Not Applicable	≤ 25 km/h	≤ 25 km/h
	Cyclist relative to RT motorists	**D**	**D**	**F**	**F**	**Not Applicable**	**Not Applicable**	**F**	**D**
	Separated or Mixed Traffic	**Separated**	**Separated**	**Mixed Traffic**	**Mixed Traffic**	**Separated**	**Separated**	**Mixed Traffic**	**Mixed Traffic**
	Left Turn Approach	≥ 2 lanes crossed	≥ 2 lanes crossed	No lane crossed	No lane crossed	≥ 2 lanes crossed	≥ 2 lanes crossed	No lane crossed	No lane crossed
	Operating Speed	≥ 60 km/h	≥ 60 km/h	≤ 40 km/h	≤ 40 km/h	≥ 60 km/h	≥ 60 km/h	> 40 to ≤ 50 km/h	> 40 to ≤ 50 km/h
	Left Turning Cyclist	**F**	**F**	**B**	**B**	**F**	**F**	**B**	**B**
	Level of Service	**F**	**F**	**F**	**F**	**F**	**F**	**F**	**D**
		F				**F**			
Transit	Average Signal Delay	≤ 30 sec	≤ 20 sec	> 40 sec	≤ 30 sec	≤ 30 sec	≤ 30 sec	> 40 sec	≤ 30 sec
	Level of Service	**D**	**C**	**F**	**D**	**D**	**D**	**F**	**D**
		F				**F**			
Truck	Effective Corner Radius	> 15 m	10 - 15 m	10 - 15 m	> 15 m	10 - 15 m	> 15 m	10 - 15 m	> 15 m
	Number of Receiving Lanes on Departure from Intersection	1	1	≥ 2	≥ 2	1	≥ 2	≥ 2	≥ 2
	Level of Service	**C**	**E**	**B**	**A**	**E**	**A**	**B**	**A**
		E				**E**			
Auto	Volume to Capacity Ratio	0.81 - 0.90				0.71 - 0.80			
	Level of Service	**D**				**C**			

Multi-Modal Level of Service - Segments Form

Consultant	**CGH Transportation**	**Project**	**2021-073**
Scenario	**FB2033**	**Date**	**2023-07-31**
Comments			

SEGMENTS			> 110 m N of Halton Terrace	Btwn 110 m N of Halton Terrace & Klondike	S of Klondike Road
			1	2	3
Pedestrian	Sidewalk Width Boulevard Width	**F**	no sidewalk n/a	≥ 2 m < 0.5	≥ 2 m < 0.5
	Avg Daily Curb Lane Traffic Volume		> 3000	> 3000	> 3000
	Operating Speed On-Street Parking		> 60 km/h no	> 60 km/h no	> 60 km/h no
	Exposure to Traffic PLoS		**F**	**F**	**F**
	Effective Sidewalk Width		2.0 m	2.0 m	2.0 m
	Pedestrian Volume		250 ped/hr	250 ped/hr	250 ped/hr
	Crowding PLoS		**B**	**B**	**B**
	Level of Service		**F**	**F**	**F**
Bicycle	Type of Cycling Facility	**F**	Mixed Traffic	Curbside Bike Lane	Curbside Bike Lane
	Number of Travel Lanes		2-3 lanes total	2 ea. dir. (w median)	2 ea. dir. (w median)
	Operating Speed		≥ 60 km/h	> 70 km/h	> 70 km/h
	# of Lanes & Operating Speed LoS		**F**	**E**	**E**
	Bike Lane (+ Parking Lane) Width			≥ 1.8 m	≥ 1.8 m
	Bike Lane Width LoS		**-**	**A**	**A**
	Bike Lane Blockages			Rare	Rare
	Blockage LoS		**-**	**A**	**A**
	Median Refuge Width (no median = < 1.8 m)		< 1.8 m refuge	< 1.8 m refuge	< 1.8 m refuge
	No. of Lanes at Unsignalized Crossing		≤ 3 lanes	≤ 3 lanes	≤ 3 lanes
	Sidestreet Operating Speed		≤ 40 km/h	≤ 40 km/h	>50 to 60 km/h
	Unsignalized Crossing - Lowest LoS		**A**	**A**	**B**
	Level of Service		**F**	**E**	**E**
Transit	Facility Type	**D**	Mixed Traffic	Mixed Traffic	Mixed Traffic
	Friction or Ratio Transit:Posted Speed		Vt/Vp ≥ 0.8	Vt/Vp ≥ 0.8	Vt/Vp ≥ 0.8
	Level of Service		**D**	**D**	**D**
Truck	Truck Lane Width	**C**	≤ 3.5 m	≤ 3.5 m	≤ 3.5 m
	Travel Lanes per Direction		1	> 1	> 1
	Level of Service		**C**	**A**	**A**
Auto	**Level of Service**	**Not Applicable**			

Multi-Modal Level of Service - Intersections Form

Consultant	**CGH Transportation**	**Project**	**2021-073**
Scenario	**FT2028**	**Date**	**2023-07-31**
Comments			

INTERSECTIONS		March Road & Halton Terrace / Maxwell Bridge Road				March Road & Klondike Road			
	Crossing Side	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**
Pedestrian	Lanes	6	6	3	3	7	8	3	4
	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
	Conflicting Left Turns	Protected/ Permissive	Protected/ Permissive	Permissive	Permissive	Protected	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
	Right Turns on Red (RToR) ?	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
	Right Turn Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	Conv'tl without Receiving Lane
	Corner Radius	15-25m	10-15m	10-15m	15-25m	10-15m	15-25m	10-15m	15-25m
	Crosswalk Type	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings
	PETSI Score	**18**	**20**	**70**	**68**	**12**	**-6**	**70**	**55**
	Ped. Exposure to Traffic LoS	**F**	**F**	**C**	**C**	**F**	**F**	**C**	**D**
	Cycle Length								
	Effective Walk Time								
	Average Pedestrian Delay								
	Pedestrian Delay LoS	-	-	-	-	-	-	-	-
	Level of Service	**F**	**F**	**C**	**C**	**F**	**F**	**C**	**D**
		F				**F**			
	Approach From	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**
Bicycle	Bicycle Lane Arrangement on Approach	Pocket Bike Lane	Pocket Bike Lane	Mixed Traffic	Mixed Traffic	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Mixed Traffic	Mixed Traffic
	Right Turn Lane Configuration	Bike lane shifts to the left of right turn	Bike lane shifts to the left of right turn	> 50 m	> 50 m	Not Applicable	Not Applicable	> 50 m	≤ 50 m
	Right Turning Speed	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h	Not Applicable	Not Applicable	≤ 25 km/h	≤ 25 km/h
	Cyclist relative to RT motorists	**D**	**D**	**F**	**F**	**Not Applicable**	**Not Applicable**	**F**	**D**
	Separated or Mixed Traffic	**Separated**	**Separated**	**Mixed Traffic**	**Mixed Traffic**	**Separated**	**Separated**	**Mixed Traffic**	**Mixed Traffic**
	Left Turn Approach	≥ 2 lanes crossed	≥ 2 lanes crossed	No lane crossed	No lane crossed	≥ 2 lanes crossed	≥ 2 lanes crossed	No lane crossed	No lane crossed
	Operating Speed	≥ 60 km/h	≥ 60 km/h	≤ 40 km/h	≤ 40 km/h	≥ 60 km/h	≥ 60 km/h	> 40 to ≤ 50 km/h	> 40 to ≤ 50 km/h
	Left Turning Cyclist	**F**	**F**	**B**	**B**	**F**	**F**	**B**	**B**
	Level of Service	**F**	**F**	**F**	**F**	**F**	**F**	**F**	**D**
		F				**F**			
Transit	Average Signal Delay	≤ 30 sec	≤ 20 sec	> 40 sec	≤ 30 sec	≤ 30 sec	≤ 30 sec	> 40 sec	≤ 30 sec
	Level of Service	**D**	**C**	**F**	**D**	**D**	**D**	**F**	**D**
		F				**F**			
Truck	Effective Corner Radius	> 15 m	10 - 15 m	10 - 15 m	> 15 m	10 - 15 m	> 15 m	10 - 15 m	> 15 m
	Number of Receiving Lanes on Departure from Intersection	1	1	≥ 2	≥ 2	1	≥ 2	≥ 2	≥ 2
	Level of Service	**C**	**E**	**B**	**A**	**E**	**A**	**B**	**A**
		E				**E**			
Auto	Volume to Capacity Ratio	0.81 - 0.90				0.71 - 0.80			
	Level of Service	**D**				**C**			

Multi-Modal Level of Service - Segments Form

Consultant	**CGH Transportation**	**Project**	**2021-073**
Scenario	**FT2028**	**Date**	**2023-07-31**
Comments			

SEGMENTS			> 110 m N of Halton Terrace	Btwn 110 m N of Halton Terrace & Klondike	S of Klondike Road
			1	2	3
Pedestrian	Sidewalk Width Boulevard Width	**F**	≥ 2 m > 2 m	≥ 2 m < 0.5	≥ 2 m < 0.5
	Avg Daily Curb Lane Traffic Volume		> 3000	> 3000	> 3000
	Operating Speed On-Street Parking		> 60 km/h no	> 60 km/h no	> 60 km/h no
	Exposure to Traffic PLoS		**D**	**F**	**F**
	Effective Sidewalk Width		2.0 m	2.0 m	2.0 m
	Pedestrian Volume		250 ped/hr	250 ped/hr	250 ped/hr
	Crowding PLoS		**B**	**B**	**B**
	Level of Service		**D**	**F**	**F**
Bicycle	Type of Cycling Facility	**E**	Curbside Bike Lane	Curbside Bike Lane	Curbside Bike Lane
	Number of Travel Lanes		2 ea. dir. (no median)	2 ea. dir. (w median)	2 ea. dir. (w median)
	Operating Speed		> 70 km/h	> 70 km/h	> 70 km/h
	# of Lanes & Operating Speed LoS		**E**	**E**	**E**
	Bike Lane (+ Parking Lane) Width		≥ 1.8 m	≥ 1.8 m	≥ 1.8 m
	Bike Lane Width LoS		**A**	**A**	**A**
	Bike Lane Blockages		Rare	Rare	Rare
	Blockage LoS		**A**	**A**	**A**
	Median Refuge Width (no median = < 1.8 m)		< 1.8 m refuge	< 1.8 m refuge	< 1.8 m refuge
	No. of Lanes at Unsignalized Crossing		≤ 3 lanes	≤ 3 lanes	≤ 3 lanes
	Sidestreet Operating Speed		≤ 40 km/h	≤ 40 km/h	>50 to 60 km/h
	Unsignalized Crossing - Lowest LoS		**A**	**A**	**B**
	Level of Service		**E**	**E**	**E**
Transit	Facility Type	**D**	Mixed Traffic	Mixed Traffic	Mixed Traffic
	Friction or Ratio Transit:Posted Speed		Vt/Vp ≥ 0.8	Vt/Vp ≥ 0.8	Vt/Vp ≥ 0.8
	Level of Service		**D**	**D**	**D**
Truck	Truck Lane Width	**C**	≤ 3.5 m	≤ 3.5 m	≤ 3.5 m
	Travel Lanes per Direction		1	> 1	> 1
	Level of Service		**C**	**A**	**A**
Auto	**Level of Service**	**Not Applicable**			

Multi-Modal Level of Service - Intersections Form

Consultant	**CGH Transportation**	**Project**	**2021-073**
Scenario	**FT2033**	**Date**	**2023-07-31**
Comments			

INTERSECTIONS		March Road & Halton Terrace / Maxwell Bridge Road				March Road & Klondike Road			
	Crossing Side	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**
Pedestrian	Lanes	6	6	3	3	7	8	3	4
	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
	Conflicting Left Turns	Protected/ Permissive	Protected/ Permissive	Permissive	Permissive	Protected	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
	Right Turns on Red (RToR) ?	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
	Right Turn Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	Conv'tl without Receiving Lane
	Corner Radius	15-25m	10-15m	10-15m	15-25m	10-15m	15-25m	10-15m	15-25m
	Crosswalk Type	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings
	PETSI Score	**18**	**20**	**70**	**68**	**12**	**-6**	**70**	**55**
	Ped. Exposure to Traffic LoS	**F**	**F**	**C**	**C**	**F**	**F**	**C**	**D**
	Cycle Length								
	Effective Walk Time								
	Average Pedestrian Delay								
	Pedestrian Delay LoS	-	-	-	-	-	-	-	-
	Level of Service	**F**	**F**	**C**	**C**	**F**	**F**	**C**	**D**
		F				**F**			
	Approach From	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**
Bicycle	Bicycle Lane Arrangement on Approach	Pocket Bike Lane	Pocket Bike Lane	Mixed Traffic	Mixed Traffic	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Mixed Traffic	Mixed Traffic
	Right Turn Lane Configuration	Bike lane shifts to the left of right turn	Bike lane shifts to the left of right turn	> 50 m	> 50 m	Not Applicable	Not Applicable	> 50 m	≤ 50 m
	Right Turning Speed	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h	Not Applicable	Not Applicable	≤ 25 km/h	≤ 25 km/h
	Cyclist relative to RT motorists	**D**	**D**	**F**	**F**	**Not Applicable**	**Not Applicable**	**F**	**D**
	Separated or Mixed Traffic	**Separated**	**Separated**	**Mixed Traffic**	**Mixed Traffic**	**Separated**	**Separated**	**Mixed Traffic**	**Mixed Traffic**
	Left Turn Approach	≥ 2 lanes crossed	≥ 2 lanes crossed	No lane crossed	No lane crossed	≥ 2 lanes crossed	≥ 2 lanes crossed	No lane crossed	No lane crossed
	Operating Speed	≥ 60 km/h	≥ 60 km/h	≤ 40 km/h	≤ 40 km/h	≥ 60 km/h	≥ 60 km/h	> 40 to ≤ 50 km/h	> 40 to ≤ 50 km/h
	Left Turning Cyclist	**F**	**F**	**B**	**B**	**F**	**F**	**B**	**B**
	Level of Service	**F**	**F**	**F**	**F**	**F**	**F**	**F**	**D**
		F				**F**			
Transit	Average Signal Delay	≤ 30 sec	≤ 20 sec	> 40 sec	≤ 30 sec	≤ 30 sec	≤ 30 sec	> 40 sec	≤ 30 sec
	Level of Service	**D**	**C**	**F**	**D**	**D**	**D**	**F**	**D**
		F				**F**			
Truck	Effective Corner Radius	> 15 m	10 - 15 m	10 - 15 m	> 15 m	10 - 15 m	> 15 m	10 - 15 m	> 15 m
	Number of Receiving Lanes on Departure from Intersection	1	1	≥ 2	≥ 2	1	≥ 2	≥ 2	≥ 2
	Level of Service	**C**	**E**	**B**	**A**	**E**	**A**	**B**	**A**
		E				**E**			
Auto	Volume to Capacity Ratio	0.81 - 0.90				0.71 - 0.80			
	Level of Service	**D**				**C**			

Multi-Modal Level of Service - Segments Form

Consultant	**CGH Transportation**	**Project**	**2021-073**
Scenario	**FT2033**	**Date**	**2023-07-31**
Comments			

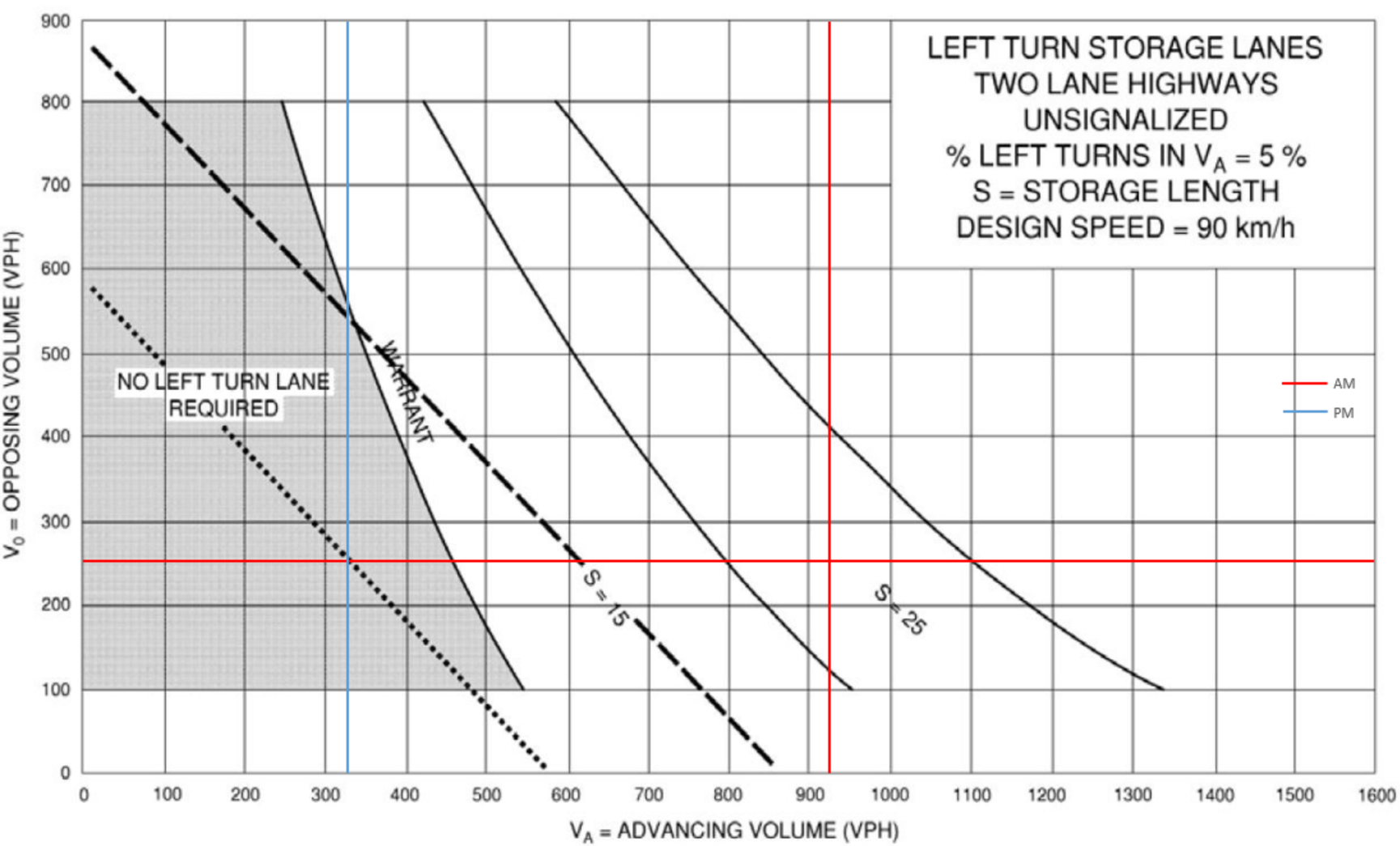
SEGMENTS			> 110 m N of Halton Terrace	Btwn 110 m N of Halton Terrace & Klondike	S of Klondike Road
			1	2	3
Pedestrian	Sidewalk Width Boulevard Width	**F**	≥ 2 m > 2 m	≥ 2 m < 0.5	≥ 2 m < 0.5
	Avg Daily Curb Lane Traffic Volume		> 3000	> 3000	> 3000
	Operating Speed On-Street Parking		> 60 km/h no	> 60 km/h no	> 60 km/h no
	Exposure to Traffic PLoS		**D**	**F**	**F**
	Effective Sidewalk Width		2.0 m	2.0 m	2.0 m
	Pedestrian Volume		250 ped/hr	250 ped/hr	250 ped/hr
	Crowding PLoS		**B**	**B**	**B**
	Level of Service		**D**	**F**	**F**
Bicycle	Type of Cycling Facility	**E**	Curbside Bike Lane	Curbside Bike Lane	Curbside Bike Lane
	Number of Travel Lanes		2 ea. dir. (no median)	2 ea. dir. (w median)	2 ea. dir. (w median)
	Operating Speed		> 70 km/h	> 70 km/h	> 70 km/h
	# of Lanes & Operating Speed LoS		**E**	**E**	**E**
	Bike Lane (+ Parking Lane) Width		≥ 1.8 m	≥ 1.8 m	≥ 1.8 m
	Bike Lane Width LoS		**A**	**A**	**A**
	Bike Lane Blockages		Rare	Rare	Rare
	Blockage LoS		**A**	**A**	**A**
	Median Refuge Width (no median = < 1.8 m)		< 1.8 m refuge	< 1.8 m refuge	< 1.8 m refuge
	No. of Lanes at Unsignalized Crossing		≤ 3 lanes	≤ 3 lanes	≤ 3 lanes
	Sidestreet Operating Speed		≤ 40 km/h	≤ 40 km/h	>50 to 60 km/h
	Unsignalized Crossing - Lowest LoS		**A**	**A**	**B**
	Level of Service		**E**	**E**	**E**
Transit	Facility Type	**D**	Mixed Traffic	Mixed Traffic	Mixed Traffic
	Friction or Ratio Transit:Posted Speed		Vt/Vp ≥ 0.8	Vt/Vp ≥ 0.8	Vt/Vp ≥ 0.8
	Level of Service		**D**	**D**	**D**
Truck	Truck Lane Width	**A**	≤ 3.5 m	≤ 3.5 m	≤ 3.5 m
	Travel Lanes per Direction		> 1	> 1	> 1
	Level of Service		**A**	**A**	**A**
Auto	**Level of Service**	**Not Applicable**			

Appendix K

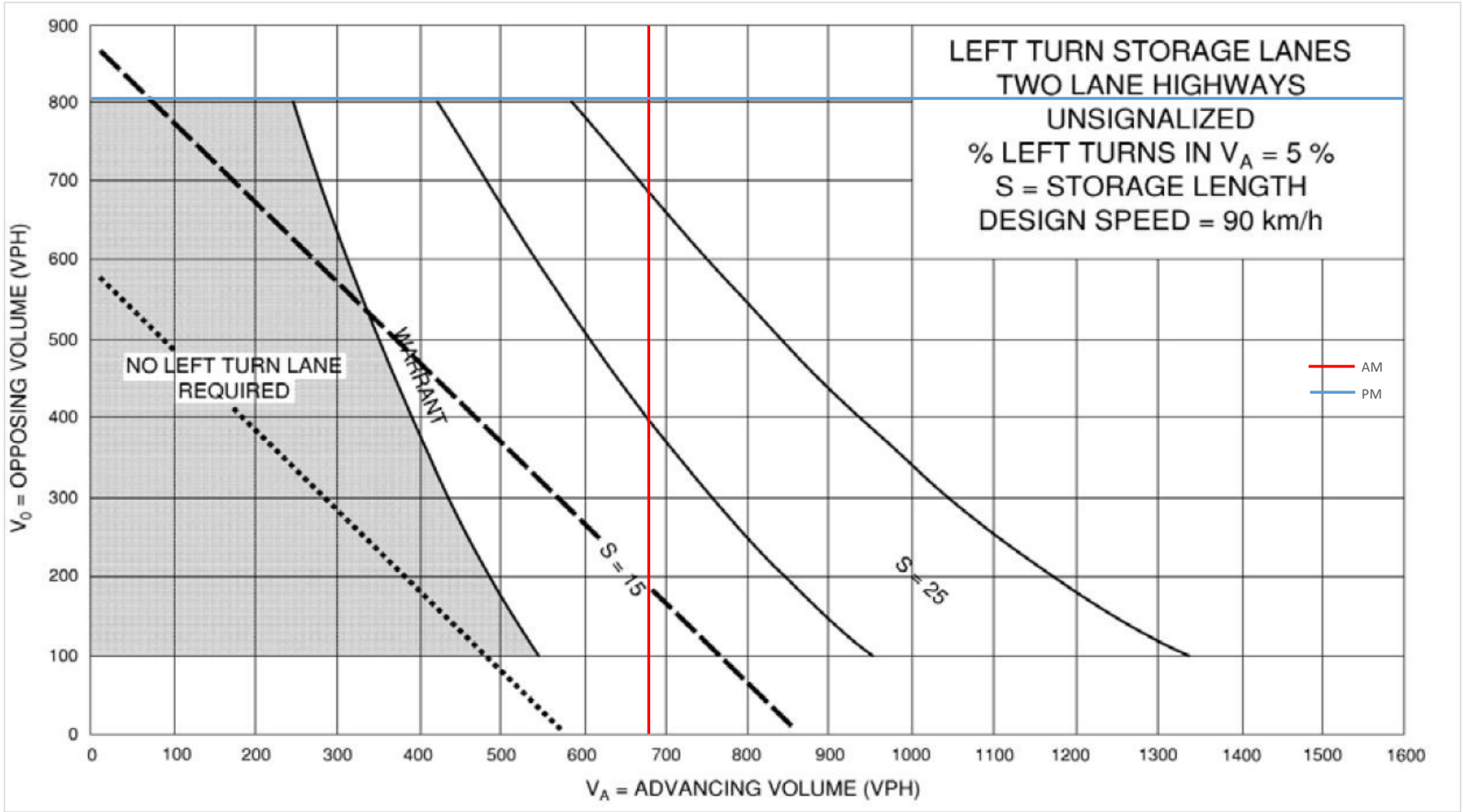
Left-turn Lane Warrants

CGH TRANSPORTATION

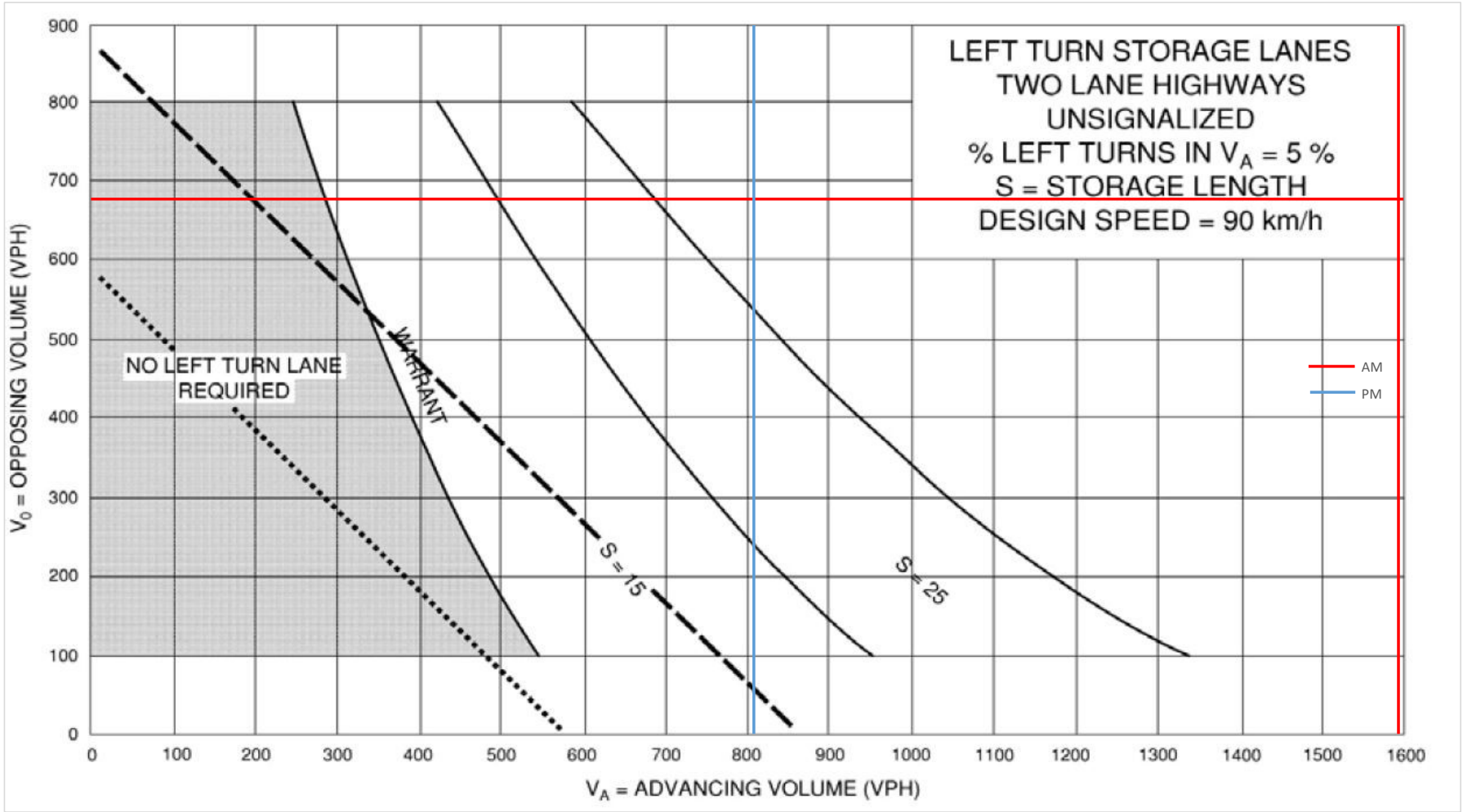
March Road/Site Access	FT2028 Interim																		
Design Speed	Southbound Left													Yes					
90 km/h		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing			
	AM	0	1	0	53	0	7	0	229	26	4	921	0	0.4%	925	255			
	PM	0	0	0	40	0	12	0	1009	58	12	316	0	3.7%	328	1067			


LEFT TURN STORAGE LANES
TWO LANE HIGHWAYS
UNSIGNALIZED
% LEFT TURNS IN V_A = 5 %
S = STORAGE LENGTH
DESIGN SPEED = 90 km/h
NO LEFT TURN LANE REQUIRED
WARRANT
S = 15
S = 25
AM
PM
V_O = OPPOSING VOLUME (VPH)
V_A = ADVANCING VOLUME (VPH)
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600

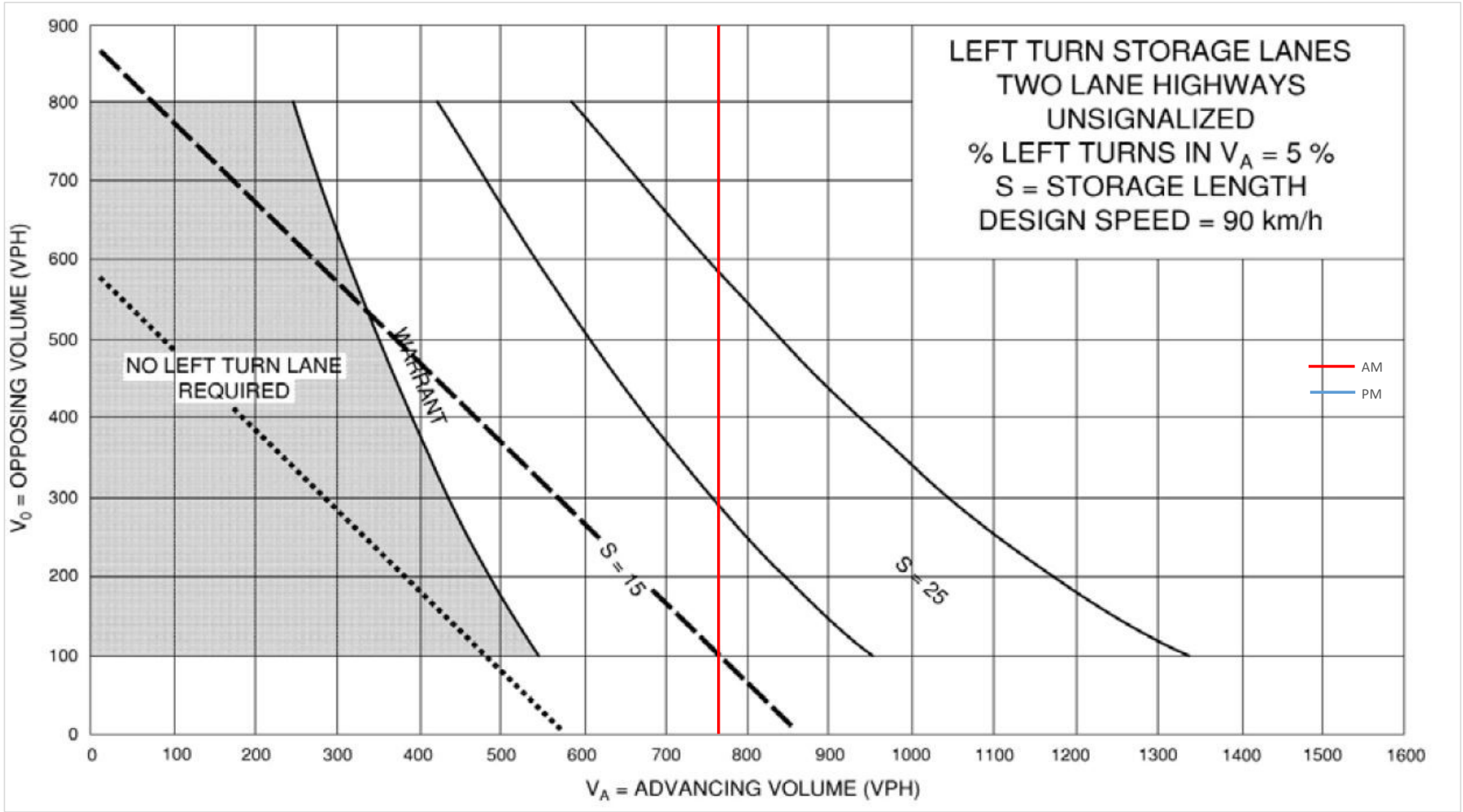
March Road/Site Access	FT2028																	
Design Speed	Northbound Left							Yes										
90 km/h		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing		
	AM	5	2	30	51	3	6	4	650	26	3	1590	1	0.6%	680	1594		
	PM	5	3	49	39	2	11	23	1633	58	9	787	12	1.3%	1714	808		


LEFT TURN STORAGE LANES
TWO LANE HIGHWAYS
UNSIGNALIZED
% LEFT TURNS IN V_A = 5 %
S = STORAGE LENGTH
DESIGN SPEED = 90 km/h
NO LEFT TURN LANE REQUIRED
WARRANT
S = 15
S = 25
AM
PM
V_0 = OPPOSING VOLUME (VPH)
V_A = ADVANCING VOLUME (VPH)
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600

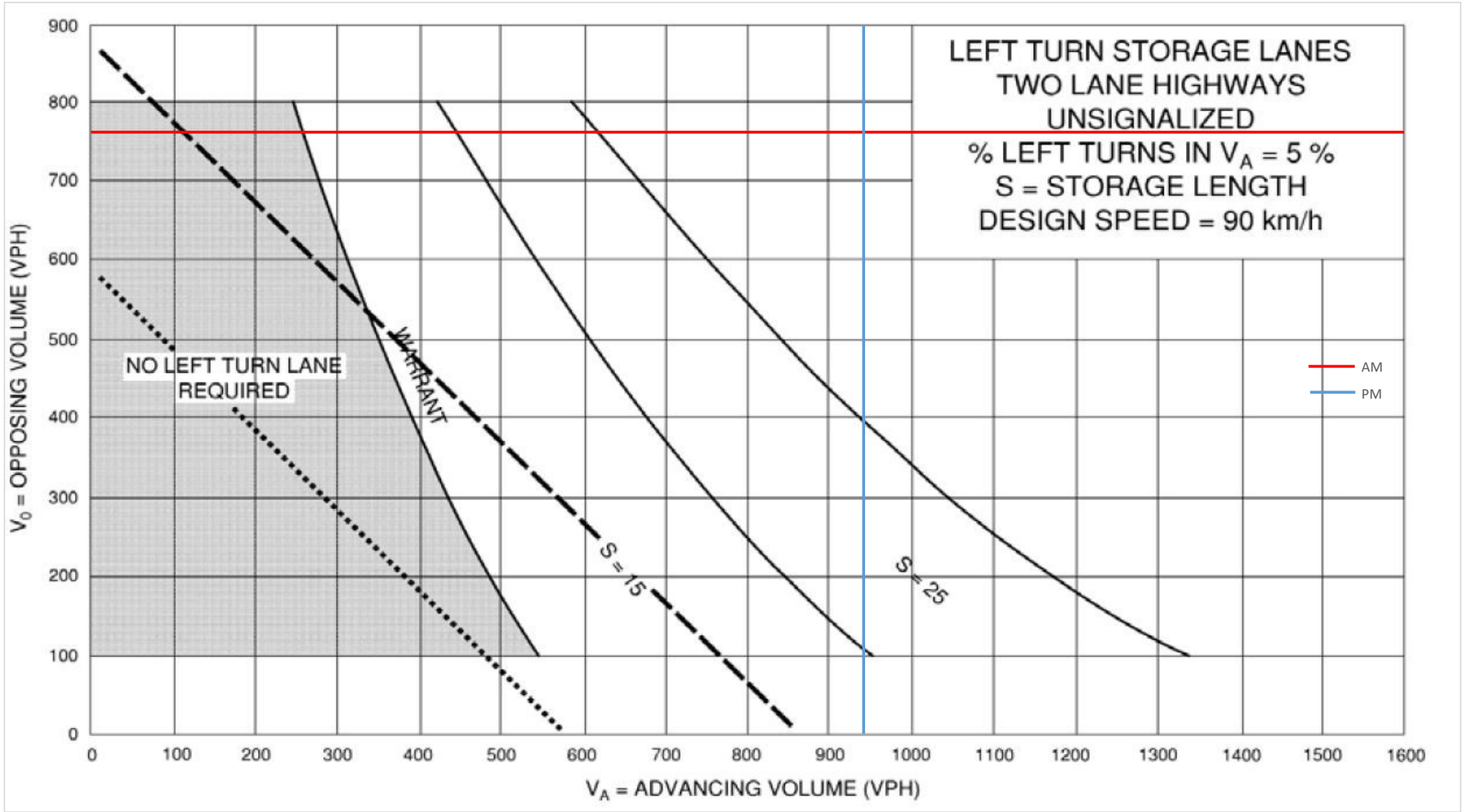
March Road/Site Access	FT2028																	
Design Speed	Southbound Left												Yes					
90 km/h		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing		
	AM	5	2	30	51	3	6	4	650	26	3	1590	1	0.2%	1594	680		
	PM	5	3	49	39	2	11	23	1633	58	9	787	12	1.1%	808	1714		


LEFT TURN STORAGE LANES
TWO LANE HIGHWAYS
UNSIGNALIZED
% LEFT TURNS IN V_A = 5 %
S = STORAGE LENGTH
DESIGN SPEED = 90 km/h
NO LEFT TURN LANE REQUIRED
WARRANT
S = 15
S = 25
AM
PM
V_0 = OPPOSING VOLUME (VPH)
V_A = ADVANCING VOLUME (VPH)
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600

March Road/Site Access	FT2033																	
Design Speed	Northbound Left							Yes										
90 km/h		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing		
	AM	5	2	31	51	3	6	4	735	26	3	1796	1	0.5%	765	1800		
	PM	5	3	50	39	2	11	23	1850	58	9	920	13	1.2%	1931	942		


LEFT TURN STORAGE LANES
TWO LANE HIGHWAYS
UNSIGNALIZED
% LEFT TURNS IN V_A = 5 %
S = STORAGE LENGTH
DESIGN SPEED = 90 km/h
NO LEFT TURN LANE REQUIRED
WARRANT
S = 15
S = 25
AM
PM
V_0 = OPPOSING VOLUME (VPH)
V_A = ADVANCING VOLUME (VPH)
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600

March Road/Site Access	FT2033																	
Design Speed	Southbound Left												Yes					
90 km/h		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing		
	AM	5	2	31	51	3	6	4	735	26	3	1796	1	0.2%	1800	765		
	PM	5	3	50	39	2	11	23	1850	58	9	920	13	1.0%	942	1931		


LEFT TURN STORAGE LANES
TWO LANE HIGHWAYS
UNSIGNALIZED
% LEFT TURNS IN V_A = 5 %
S = STORAGE LENGTH
DESIGN SPEED = 90 km/h
NO LEFT TURN LANE REQUIRED
WARRANT
S = 15
S = 25
AM
PM
V_0 = OPPOSING VOLUME (VPH)
V_A = ADVANCING VOLUME (VPH)
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600

Appendix L

Heavy Vehicle Percentage Calculations

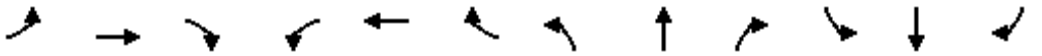
[1] March Road at Halton Terrace / Maxwell Bridge Road												
AM												
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
HV Volume	2	22	4	1	13	1	0	5	2	1	0	2
Total Volume	23	178	61	68	807	12	21	37	95	125	16	23
HV%	9%	12%	7%	1%	2%	8%	0%	14%	2%	1%	0%	9%
PM												
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
HV Volume	0	5	0	0	4	0	0	5	2	4	2	0
Total Volume	172	873	114	59	238	12	17	55	41	79	58	89
HV%	0%	1%	0%	0%	2%	0%	0%	9%	5%	5%	3%	0%

[2] March Road at Klondike Road												
AM												
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
HV Volume	4	18	4	3	15	3	4	2	2	2	2	2
Total Volume	83	274	44	17	883	33	30	35	253	91	25	19
HV%	5%	7%	9%	18%	2%	9%	13%	6%	1%	2%	8%	11%
PM												
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
HV Volume	1	2	0	0	8	0	0	0	0	1	2	0
Total Volume	159	1122	81	2	418	57	79	22	110	60	31	22
HV%	1%	0%	0%	0%	2%	0%	0%	0%	0%	2%	6%	0%

Appendix M

Synchro Intersection Worksheets – 2022 Existing Conditions

CGH TRANSPORTATION

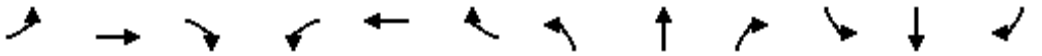


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	37	95	125	16	23	23	180	61	68	815	12
Future Volume (vph)	21	37	95	125	16	23	23	180	61	68	815	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		0.99		1.00					0.98	1.00		
Frt		0.892			0.911				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1658	1493	0	1658	1528	0	1551	3020	1414	1658	3316	1401
Flt Permitted	0.728			0.588			0.280			0.616		
Satd. Flow (perm)	1270	1493	0	1025	1528	0	457	3020	1380	1071	3316	1401
Satd. Flow (RTOR)		106			26				100			100
Confl. Peds. (#/hr)			1	1					2	2		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	14%	2%	2%	2%	9%	9%	12%	7%	2%	2%	8%
Adj. Flow (vph)	23	41	106	139	18	26	26	200	68	76	906	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	147	0	139	44	0	26	200	68	76	906	13
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
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)	38.6	38.6		38.6	38.6		12.4	34.6	34.6	11.4	34.6	34.6
Total Split (s)	48.0	48.0		48.0	48.0		20.0	52.0	52.0	20.0	52.0	52.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	40.0%	40.0%		40.0%	40.0%		16.7%	43.3%	43.3%	16.7%	43.3%	43.3%
Maximum Green (s)	41.4	41.4		41.4	41.4		12.6	45.4	45.4	13.6	45.4	45.4
Yellow Time (s)	3.3	3.3		3.3	3.3		4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	3.3	3.3		3.3	3.3		2.8	2.0	2.0	1.8	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)	25.0	25.0		25.0	25.0			21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)	0	0		0	0			0	0		0	0
Act Effct Green (s)	20.1	20.1		20.1	20.1		79.8	75.5	75.5	83.4	78.4	78.4
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.66	0.63	0.63	0.70	0.65	0.65
v/c Ratio	0.11	0.44		0.81	0.16		0.07	0.11	0.08	0.10	0.42	0.01
Control Delay	40.0	17.6		80.0	21.7		7.2	11.0	1.2	6.4	12.8	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	40.0	17.6		80.0	21.7		7.2	11.0	1.2	6.4	12.8	0.0
LOS	D	B		F	C		A	B	A	A	B	A
Approach Delay		20.6			66.0			8.4			12.1	
Approach LOS		C			E			A			B	
Queue Length 50th (m)	4.7	8.4		31.9	3.6		1.6	9.6	0.0	4.6	56.4	0.0
Queue Length 95th (m)	11.1	24.7		50.7	12.8		5.3	18.7	3.1	11.6	87.7	0.0
Internal Link Dist (m)		119.7			332.2			300.9			243.2	
Turn Bay Length (m)	30.0			30.0			60.0			70.0		15.0
Base Capacity (vph)	438	584		353	544		437	1900	905	840	2165	949
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.25		0.39	0.08		0.06	0.11	0.08	0.09	0.42	0.01

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 99 (83%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 18.4	Intersection LOS: B
Intersection Capacity Utilization 67.9%	ICU Level of Service C
Analysis Period (min) 15	

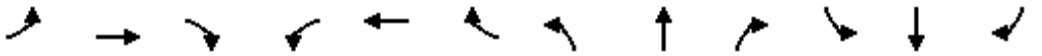
Splits and Phases: 1: March Road & Halton Terrace/Maxwell Bridge Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	37	95	125	16	23	23	180	61	68	815	12
Future Volume (vph)	21	37	95	125	16	23	23	180	61	68	815	12
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.89		1.00	0.91		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1658	1493		1656	1528		1551	3020	1380	1655	3316	1401
Flt Permitted	0.73	1.00		0.59	1.00		0.28	1.00	1.00	0.62	1.00	1.00
Satd. Flow (perm)	1271	1493		1025	1528		457	3020	1380	1073	3316	1401
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	23	41	106	139	18	26	26	200	68	76	906	13
RTOR Reduction (vph)	0	88	0	0	22	0	0	0	26	0	0	5
Lane Group Flow (vph)	23	59	0	139	22	0	26	200	42	76	906	8
Confl. Peds. (#/hr)			1	1					2	2		
Heavy Vehicles (%)	2%	14%	2%	2%	2%	9%	9%	12%	7%	2%	2%	8%
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
Actuated Green, G (s)	20.1	20.1		20.1	20.1		78.1	74.2	74.2	81.5	75.4	75.4
Effective Green, g (s)	20.1	20.1		20.1	20.1		78.1	74.2	74.2	81.5	75.4	75.4
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.65	0.62	0.62	0.68	0.63	0.63
Clearance Time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	212	250		171	255		332	1867	853	758	2083	880
v/s Ratio Prot		0.04			0.01		0.00	0.07		c0.01	c0.27	
v/s Ratio Perm	0.02			c0.14			0.05		0.03	0.06		0.01
v/c Ratio	0.11	0.24		0.81	0.09		0.08	0.11	0.05	0.10	0.43	0.01
Uniform Delay, d1	42.4	43.3		48.1	42.2		7.7	9.4	9.0	6.5	11.4	8.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.5		24.6	0.1		0.1	0.1	0.1	0.1	0.7	0.0
Delay (s)	42.6	43.8		72.8	42.4		7.8	9.5	9.1	6.5	12.1	8.4
Level of Service	D	D		E	D		A	A	A	A	B	A
Approach Delay (s)		43.6			65.4			9.2			11.6	
Approach LOS		D			E			A			B	

Intersection Summary			
HCM 2000 Control Delay	20.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.6
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

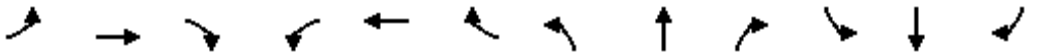


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	35	253	91	25	19	79	277	44	17	892	33
Future Volume (vph)	30	35	253	91	25	19	79	277	44	17	892	33
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor	1.00		0.98	0.99	0.99		1.00	1.00		0.99	1.00	
Frt			0.850		0.936			0.979			0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1496	1679	1483	1658	1515	0	3124	4417	0	1433	4726	0
Flt Permitted	0.510			0.732			0.950			0.950		
Satd. Flow (perm)	801	1679	1456	1270	1515	0	3119	4417	0	1424	4726	0
Satd. Flow (RTOR)			184		21			27			5	
Confl. Peds. (#/hr)	3		6	6		3	3		4	4		3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	13%	6%	2%	2%	8%	11%	5%	7%	9%	18%	2%	9%
Adj. Flow (vph)	33	39	281	101	28	21	88	308	49	19	991	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	39	281	101	49	0	88	357	0	19	1028	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8								
Detector Phase	7	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.6	44.1	44.1	44.1	44.1		11.6	32.4		11.6	32.4	
Total Split (s)	12.0	57.0	57.0	45.0	45.0		15.0	58.0		15.0	58.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	9.2%	43.8%	43.8%	34.6%	34.6%		11.5%	44.6%		11.5%	44.6%	
Maximum Green (s)	5.4	49.9	49.9	37.9	37.9		8.4	51.6		8.4	51.6	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		4.6	4.6		4.6	4.6	
All-Red Time (s)	3.3	3.8	3.8	3.8	3.8		2.0	1.8		2.0	1.8	
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)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)		7.0	7.0	7.0	7.0			7.0			7.0	
Flash Dont Walk (s)		30.0	30.0	30.0	30.0			19.0			19.0	
Pedestrian Calls (#/hr)		0	0	0	0			0			0	
Act Effct Green (s)	23.4	22.9	22.9	15.7	15.7		9.0	87.4		7.3	77.9	
Actuated g/C Ratio	0.18	0.18	0.18	0.12	0.12		0.07	0.67		0.06	0.60	
v/c Ratio	0.19	0.13	0.69	0.66	0.24		0.41	0.12		0.24	0.36	
Control Delay	42.0	41.1	24.8	73.6	34.4		63.0	9.7		64.9	15.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	42.0	41.1	24.8	73.6	34.4		63.0	9.7		64.9	15.4	
LOS	D	D	C	E	C		E	A		E	B	
Approach Delay		28.2			60.8			20.3			16.3	
Approach LOS		C			E			C			B	
Queue Length 50th (m)	6.8	8.1	21.6	25.1	6.5		11.3	9.7		4.8	51.4	
Queue Length 95th (m)	14.8	16.7	47.8	41.7	17.6		19.5	22.2		12.8	72.6	
Internal Link Dist (m)		93.7			322.6			237.8			118.1	
Turn Bay Length (m)	100.0		5.0	15.0			100.0			45.0		
Base Capacity (vph)	173	644	672	370	456		228	2976		95	2835	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.19	0.06	0.42	0.27	0.11		0.39	0.12		0.20	0.36	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 64 (49%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 22.7	Intersection LOS: C
Intersection Capacity Utilization 63.8%	ICU Level of Service B
Analysis Period (min) 15	

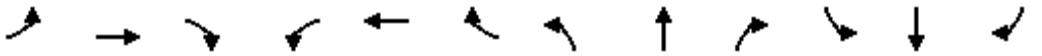
Splits and Phases: 2: March Road & Klondike Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	35	253	91	25	19	79	277	44	17	892	33
Future Volume (vph)	30	35	253	91	25	19	79	277	44	17	892	33
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1495	1679	1456	1648	1514		3124	4418		1433	4724	
Flt Permitted	0.51	1.00	1.00	0.73	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	803	1679	1456	1269	1514		3124	4418		1433	4724	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	33	39	281	101	28	21	88	308	49	19	991	37
RTOR Reduction (vph)	0	0	148	0	18	0	0	10	0	0	2	0
Lane Group Flow (vph)	33	39	133	101	31	0	88	347	0	19	1026	0
Confl. Peds. (#/hr)	3		6	6		3	3		4	4		3
Heavy Vehicles (%)	13%	6%	2%	2%	8%	11%	5%	7%	9%	18%	2%	9%
Turn Type	pm+pt	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	25.5	25.5	25.5	15.7	15.7		9.0	80.8		3.6	75.4	
Effective Green, g (s)	25.5	25.5	25.5	15.7	15.7		9.0	80.8		3.6	75.4	
Actuated g/C Ratio	0.20	0.20	0.20	0.12	0.12		0.07	0.62		0.03	0.58	
Clearance Time (s)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	174	329	285	153	182		216	2745		39	2739	
v/s Ratio Prot	0.00	0.02			0.02		c0.03	c0.08		0.01	c0.22	
v/s Ratio Perm	0.03		c0.09	c0.08								
v/c Ratio	0.19	0.12	0.47	0.66	0.17		0.41	0.13		0.49	0.37	
Uniform Delay, d1	43.1	43.0	46.2	54.6	51.3		57.9	10.1		62.3	14.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.2	1.2	10.2	0.4		1.3	0.1		9.3	0.4	
Delay (s)	43.7	43.2	47.4	64.8	51.7		59.2	10.2		71.6	15.0	
Level of Service	D	D	D	E	D		E	B		E	B	
Approach Delay (s)		46.6			60.5			19.9			16.1	
Approach LOS		D			E			B			B	

Intersection Summary			
HCM 2000 Control Delay	25.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	26.7
Intersection Capacity Utilization	63.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

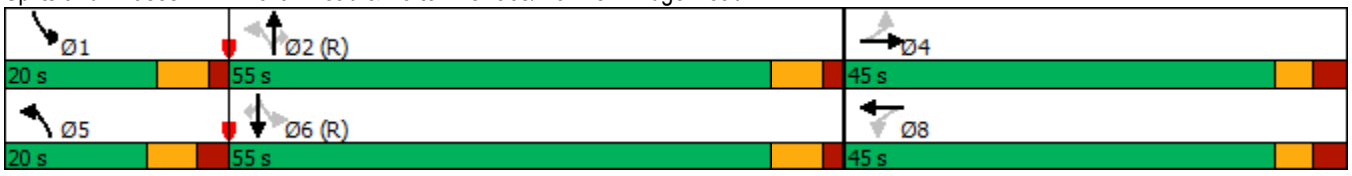


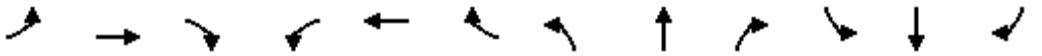
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	55	41	79	58	89	172	882	114	59	240	12
Future Volume (vph)	17	55	41	79	58	89	172	882	114	59	240	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99	0.99		0.98	0.99		1.00		0.96	1.00		0.98
Frt		0.936			0.909				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1658	1532	0	1610	1557	0	1658	3316	1483	1658	3316	1483
Flt Permitted	0.487			0.687			0.551			0.274		
Satd. Flow (perm)	842	1532	0	1145	1557	0	959	3316	1419	476	3316	1447
Satd. Flow (RTOR)		33			68				127			100
Confl. Peds. (#/hr)	11		17	17		11	2		11	11		2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	9%	5%	5%	3%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	19	61	46	88	64	99	191	980	127	66	267	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	19	107	0	88	163	0	191	980	127	66	267	13
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
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)	38.6	38.6		38.6	38.6		12.4	34.6	34.6	11.4	34.6	34.6
Total Split (s)	45.0	45.0		45.0	45.0		20.0	55.0	55.0	20.0	55.0	55.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	37.5%	37.5%		37.5%	37.5%		16.7%	45.8%	45.8%	16.7%	45.8%	45.8%
Maximum Green (s)	38.4	38.4		38.4	38.4		12.6	48.4	48.4	13.6	48.4	48.4
Yellow Time (s)	3.3	3.3		3.3	3.3		4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	3.3	3.3		3.3	3.3		2.8	2.0	2.0	1.8	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)	25.0	25.0		25.0	25.0			21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)	0	0		0	0			0	0		0	0
Act Effct Green (s)	15.1	15.1		15.1	15.1		88.3	81.0	81.0	81.7	74.8	74.8
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.74	0.68	0.68	0.68	0.62	0.62
v/c Ratio	0.18	0.48		0.61	0.64		0.25	0.44	0.13	0.17	0.13	0.01
Control Delay	48.5	39.8		66.7	39.5		5.4	11.0	2.0	5.7	10.4	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	48.5	39.8		66.7	39.5		5.4	11.0	2.0	5.7	10.4	0.0
LOS	D	D		E	D		A	B	A	A	B	A
Approach Delay		41.1			49.1			9.3			9.2	
Approach LOS		D			D			A			A	
Queue Length 50th (m)	4.1	16.3		20.0	21.3		10.3	53.8	0.0	3.2	12.3	0.0
Queue Length 95th (m)	10.8	32.0		35.3	41.3		21.4	83.3	7.7	8.2	22.9	0.0
Internal Link Dist (m)		119.7			332.2			300.9			243.2	
Turn Bay Length (m)	30.0			30.0			60.0			70.0		15.0
Base Capacity (vph)	269	512		366	544		795	2236	998	485	2067	939
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.21		0.24	0.30		0.24	0.44	0.13	0.14	0.13	0.01

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 50 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 16.2	Intersection LOS: B
Intersection Capacity Utilization 70.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: March Road & Halton Terrace/Maxwell Bridge Road

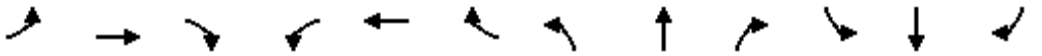




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	55	41	79	58	89	172	882	114	59	240	12
Future Volume (vph)	17	55	41	79	58	89	172	882	114	59	240	12
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.96	1.00	1.00	0.98
Flpb, ped/bikes	0.99	1.00		0.98	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.94		1.00	0.91		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1642	1532		1584	1557		1655	3316	1419	1656	3316	1447
Flt Permitted	0.49	1.00		0.69	1.00		0.55	1.00	1.00	0.27	1.00	1.00
Satd. Flow (perm)	843	1532		1145	1557		960	3316	1419	478	3316	1447
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	19	61	46	88	64	99	191	980	127	66	267	13
RTOR Reduction (vph)	0	29	0	0	59	0	0	0	43	0	0	5
Lane Group Flow (vph)	19	78	0	88	104	0	191	980	84	66	267	8
Confl. Peds. (#/hr)	11		17	17		11	2		11	11		2
Heavy Vehicles (%)	2%	9%	5%	5%	3%	2%	2%	2%	2%	2%	2%	2%
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
Actuated Green, G (s)	15.1	15.1		15.1	15.1		89.2	79.7	79.7	80.4	74.8	74.8
Effective Green, g (s)	15.1	15.1		15.1	15.1		89.2	79.7	79.7	80.4	74.8	74.8
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.74	0.66	0.66	0.67	0.62	0.62
Clearance Time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	106	192		144	195		768	2202	942	375	2066	901
v/s Ratio Prot		0.05			0.07		c0.02	c0.30		0.01	0.08	
v/s Ratio Perm	0.02			c0.08			0.17		0.06	0.11		0.01
v/c Ratio	0.18	0.41		0.61	0.53		0.25	0.45	0.09	0.18	0.13	0.01
Uniform Delay, d1	46.9	48.3		49.7	49.1		4.6	9.6	7.2	6.9	9.3	8.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	1.4		7.5	2.8		0.2	0.7	0.2	0.2	0.1	0.0
Delay (s)	47.7	49.7		57.1	51.9		4.8	10.3	7.4	7.1	9.4	8.6
Level of Service	D	D		E	D		A	B	A	A	A	A
Approach Delay (s)		49.4			53.7			9.2			8.9	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.6
Intersection Capacity Utilization	70.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

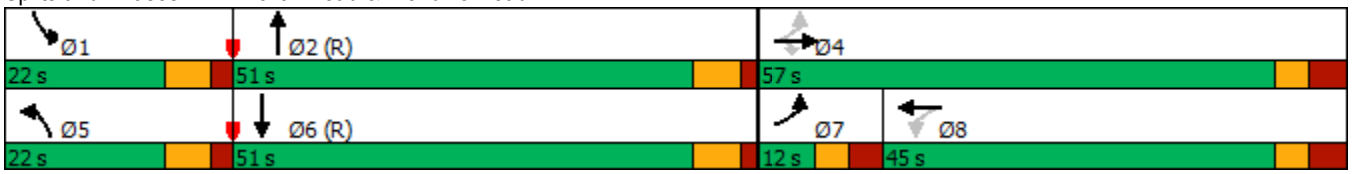


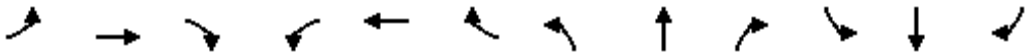
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	22	110	60	31	22	159	1133	81	2	422	57
Future Volume (vph)	79	22	110	60	31	22	159	1133	81	2	422	57
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor	1.00		0.99	1.00	0.99		0.99	1.00		1.00	1.00	
Frt			0.850		0.938			0.990			0.982	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1658	1745	1483	1658	1591	0	3216	4702	0	1658	4665	0
Flt Permitted	0.446			0.742			0.950			0.950		
Satd. Flow (perm)	778	1745	1462	1292	1591	0	3185	4702	0	1651	4665	0
Satd. Flow (RTOR)			122		24			9			20	
Confl. Peds. (#/hr)	1		2	2		1	8		11	11		8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	88	24	122	67	34	24	177	1259	90	2	469	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	88	24	122	67	58	0	177	1349	0	2	532	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8								
Detector Phase	7	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.6	44.1	44.1	44.1	44.1		11.6	32.4		11.6	32.4	
Total Split (s)	12.0	57.0	57.0	45.0	45.0		22.0	51.0		22.0	51.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	9.2%	43.8%	43.8%	34.6%	34.6%		16.9%	39.2%		16.9%	39.2%	
Maximum Green (s)	5.4	49.9	49.9	37.9	37.9		15.4	44.6		15.4	44.6	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		4.6	4.6		4.6	4.6	
All-Red Time (s)	3.3	3.8	3.8	3.8	3.8		2.0	1.8		2.0	1.8	
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)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)		7.0	7.0	7.0	7.0			7.0			7.0	
Flash Dont Walk (s)		30.0	30.0	30.0	30.0			19.0			19.0	
Pedestrian Calls (#/hr)		0	0	0	0			0			0	
Act Effct Green (s)	22.0	21.5	21.5	12.1	12.1		12.5	92.4		5.8	75.9	
Actuated g/C Ratio	0.17	0.17	0.17	0.09	0.09		0.10	0.71		0.04	0.58	
v/c Ratio	0.52	0.08	0.36	0.56	0.34		0.57	0.40		0.03	0.19	
Control Delay	56.4	42.3	10.0	72.7	39.5		63.4	9.6		60.0	13.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	56.4	42.3	10.0	72.7	39.5		63.4	9.6		60.0	13.8	
LOS	E	D	B	E	D		E	A		E	B	
Approach Delay		30.8			57.3			15.8			14.0	
Approach LOS		C			E			B			B	
Queue Length 50th (m)	19.5	5.1	0.0	16.7	8.2		22.7	45.8		0.5	22.5	
Queue Length 95th (m)	33.1	12.2	15.5	30.8	20.9		33.6	84.9		3.3	34.2	
Internal Link Dist (m)		93.7			322.6			237.8			118.1	
Turn Bay Length (m)	100.0		5.0	15.0			100.0			45.0		
Base Capacity (vph)	169	669	636	376	480		383	3344		196	2733	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.52	0.04	0.19	0.18	0.12		0.46	0.40		0.01	0.19	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 20 (15%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.57	
Intersection Signal Delay: 19.0	Intersection LOS: B
Intersection Capacity Utilization 58.5%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 2: March Road & Klondike Road





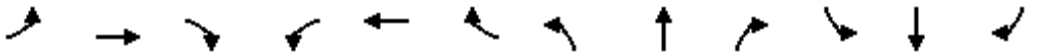
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	22	110	60	31	22	159	1133	81	2	422	57
Future Volume (vph)	79	22	110	60	31	22	159	1133	81	2	422	57
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1657	1745	1462	1654	1591		3216	4702		1658	4666	
Flt Permitted	0.45	1.00	1.00	0.74	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	779	1745	1462	1292	1591		3216	4702		1658	4666	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	88	24	122	67	34	24	177	1259	90	2	469	63
RTOR Reduction (vph)	0	0	101	0	22	0	0	3	0	0	9	0
Lane Group Flow (vph)	88	24	21	67	36	0	177	1346	0	2	523	0
Confl. Peds. (#/hr)	1		2	2		1	8		11	11		8
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	22.9	22.9	22.9	10.8	10.8		12.5	85.7		1.3	74.5	
Effective Green, g (s)	22.9	22.9	22.9	10.8	10.8		12.5	85.7		1.3	74.5	
Actuated g/C Ratio	0.18	0.18	0.18	0.08	0.08		0.10	0.66		0.01	0.57	
Clearance Time (s)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	174	307	257	107	132		309	3099		16	2673	
v/s Ratio Prot	c0.02	0.01			0.02		c0.06	c0.29		0.00	0.11	
v/s Ratio Perm	0.07		0.01	c0.05								
v/c Ratio	0.51	0.08	0.08	0.63	0.27		0.57	0.43		0.12	0.20	
Uniform Delay, d1	47.3	44.7	44.8	57.6	55.9		56.2	10.6		63.8	13.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.3	0.1	0.1	10.9	1.1		2.6	0.4		3.5	0.2	
Delay (s)	49.6	44.8	44.9	68.6	57.0		58.8	11.0		67.3	13.5	
Level of Service	D	D	D	E	E		E	B		E	B	
Approach Delay (s)		46.7			63.2			16.6			13.7	
Approach LOS		D			E			B			B	

Intersection Summary			
HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	26.7
Intersection Capacity Utilization	58.5%	ICU Level of Service	B
Analysis Period (min)	15		

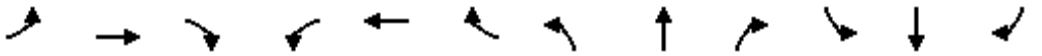
c Critical Lane Group

Appendix N

Synchro Intersection Worksheets – 2028 Future Background Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	37	158	126	17	49	99	504	64	76	1478	66
Future Volume (vph)	101	37	158	126	17	49	99	504	64	76	1478	66
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0		0.0	30.0		0.0	60.0		0.0	70.0		15.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	60.0			60.0			70.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		0.99		1.00					0.98	1.00		
Frt		0.878			0.889				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1658	1483	0	1658	1476	0	1551	3020	1414	1658	3316	1401
Flt Permitted	0.714			0.461			0.096			0.467		
Satd. Flow (perm)	1246	1483	0	804	1476	0	157	3020	1380	813	3316	1401
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		158			49				100			100
Link Speed (k/h)		40			40			80			80	
Link Distance (m)		143.7			356.2			324.9			307.8	
Travel Time (s)		12.9			32.1			14.6			13.9	
Confl. Peds. (#/hr)			1	1					2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	14%	2%	2%	2%	9%	9%	12%	7%	2%	2%	8%
Adj. Flow (vph)	101	37	158	126	17	49	99	504	64	76	1478	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	101	195	0	126	66	0	99	504	64	76	1478	66
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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)	38.6	38.6		38.6	38.6		12.4	34.6	34.6	11.4	34.6	34.6
Total Split (s)	48.0	48.0		48.0	48.0		20.0	52.0	52.0	20.0	52.0	52.0
Total Split (%)	40.0%	40.0%		40.0%	40.0%		16.7%	43.3%	43.3%	16.7%	43.3%	43.3%
Maximum Green (s)	41.4	41.4		41.4	41.4		12.6	45.4	45.4	13.6	45.4	45.4
Yellow Time (s)	3.3	3.3		3.3	3.3		4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	3.3	3.3		3.3	3.3		2.8	2.0	2.0	1.8	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)	25.0	25.0		25.0	25.0			21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)	0	0		0	0			0	0		0	0
Act Effct Green (s)	20.2	20.2		20.2	20.2		81.8	75.4	75.4	78.3	70.8	70.8
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.68	0.63	0.63	0.65	0.59	0.59
v/c Ratio	0.48	0.51		0.93	0.23		0.49	0.27	0.07	0.13	0.76	0.08
Control Delay	51.0	14.9		109.8	16.8		16.9	12.3	1.1	7.0	23.3	1.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.0	14.9		109.8	16.8		16.9	12.3	1.1	7.0	23.3	1.3
LOS	D	B		F	B		B	B	A	A	C	A
Approach Delay		27.3			77.9			11.9			21.6	
Approach LOS		C			E			B			C	
Queue Length 50th (m)	21.8	7.5		29.6	3.4		6.3	27.4	0.0	4.6	126.2	0.0
Queue Length 95th (m)	35.8	26.6		#51.4	14.3		18.4	46.8	2.5	11.8	#218.9	3.1
Internal Link Dist (m)		119.7			332.2			300.9			283.8	
Turn Bay Length (m)	30.0			30.0			60.0			70.0		15.0
Base Capacity (vph)	429	615		277	541		257	1896	903	668	1957	867
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.32		0.45	0.12		0.39	0.27	0.07	0.11	0.76	0.08

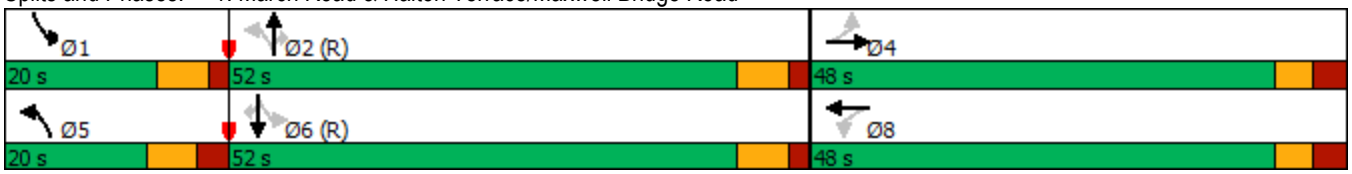
Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 99 (83%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 23.8	Intersection LOS: C

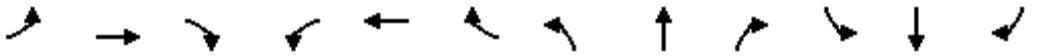
Intersection Capacity Utilization 92.8% ICU Level of Service F

Analysis Period (min) 15

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

Splits and Phases: 1: March Road & Halton Terrace/Maxwell Bridge Road



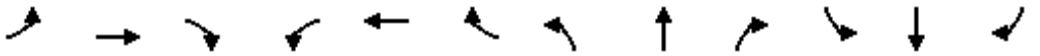


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	37	158	126	17	49	99	504	64	76	1478	66
Future Volume (vph)	101	37	158	126	17	49	99	504	64	76	1478	66
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.88		1.00	0.89		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1658	1484		1657	1476		1551	3020	1380	1656	3316	1401
Flt Permitted	0.71	1.00		0.46	1.00		0.10	1.00	1.00	0.47	1.00	1.00
Satd. Flow (perm)	1246	1484		804	1476		156	3020	1380	814	3316	1401
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	101	37	158	126	17	49	99	504	64	76	1478	66
RTOR Reduction (vph)	0	131	0	0	41	0	0	0	24	0	0	27
Lane Group Flow (vph)	101	64	0	126	25	0	99	504	40	76	1478	39
Confl. Peds. (#/hr)			1	1					2	2		
Heavy Vehicles (%)	2%	14%	2%	2%	2%	9%	9%	12%	7%	2%	2%	8%
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
Actuated Green, G (s)	20.2	20.2		20.2	20.2		82.5	74.1	74.1	76.9	70.8	70.8
Effective Green, g (s)	20.2	20.2		20.2	20.2		82.5	74.1	74.1	76.9	70.8	70.8
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.69	0.62	0.62	0.64	0.59	0.59
Clearance Time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	209	249		135	248		204	1864	852	564	1956	826
v/s Ratio Prot		0.04			0.02		c0.03	0.17		0.01	c0.45	
v/s Ratio Perm	0.08			c0.16			c0.30		0.03	0.08		0.03
v/c Ratio	0.48	0.26		0.93	0.10		0.49	0.27	0.05	0.13	0.76	0.05
Uniform Delay, d1	45.2	43.4		49.2	42.2		13.6	10.5	9.0	8.1	18.2	10.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	0.5		57.1	0.2		1.8	0.4	0.1	0.1	2.8	0.1
Delay (s)	46.9	43.9		106.3	42.4		15.5	10.9	9.1	8.2	21.0	10.5
Level of Service	D	D		F	D		B	B	A	A	C	B
Approach Delay (s)		44.9			84.4			11.4			19.9	
Approach LOS		D			F			B			B	

Intersection Summary			
HCM 2000 Control Delay	25.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.6
Intersection Capacity Utilization	92.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	39	256	182	34	52	83	616	79	32	1544	55
Future Volume (vph)	64	39	256	182	34	52	83	616	79	32	1544	55
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		5.0	15.0		0.0	100.0		0.0	45.0		0.0
Storage Lanes	1		1	1		0	2		0	1		0
Taper Length (m)	0.0			30.0			100.0			85.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor	1.00		0.98	0.99	0.99		1.00	1.00		1.00	1.00	
Frt			0.850		0.909			0.983			0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1496	1679	1483	1658	1460	0	3124	4440	0	1433	4726	0
Flt Permitted	0.550			0.732			0.950			0.950		
Satd. Flow (perm)	864	1679	1456	1270	1460	0	3122	4440	0	1428	4726	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			157		52			21			5	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		117.7			346.6			261.8			142.1	
Travel Time (s)		8.5			25.0			11.8			6.4	
Confl. Peds. (#/hr)	3		6	6		3	3		4	4		3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	13%	6%	2%	2%	8%	11%	5%	7%	9%	18%	2%	9%
Adj. Flow (vph)	64	39	256	182	34	52	83	616	79	32	1544	55
Shared Lane Traffic (%)												
Lane Group Flow (vph)	64	39	256	182	86	0	83	695	0	32	1599	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

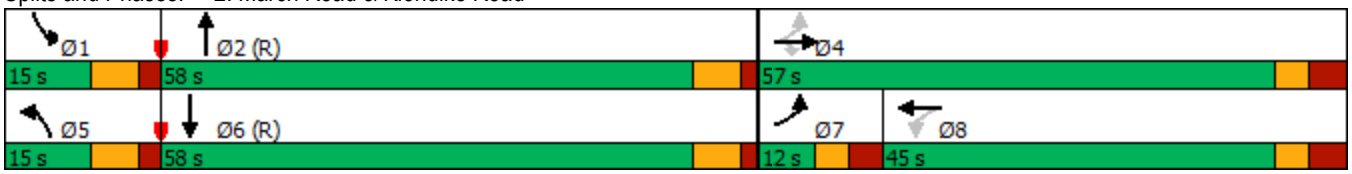


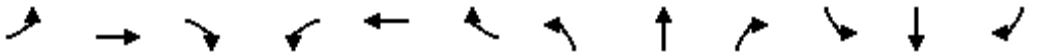
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8								
Detector Phase	7	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.6	44.1	44.1	44.1	44.1		11.6	32.4		11.6	32.4	
Total Split (s)	12.0	57.0	57.0	45.0	45.0		15.0	58.0		15.0	58.0	
Total Split (%)	9.2%	43.8%	43.8%	34.6%	34.6%		11.5%	44.6%		11.5%	44.6%	
Maximum Green (s)	5.4	49.9	49.9	37.9	37.9		8.4	51.6		8.4	51.6	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		4.6	4.6		4.6	4.6	
All-Red Time (s)	3.3	3.8	3.8	3.8	3.8		2.0	1.8		2.0	1.8	
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)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)		7.0	7.0	7.0	7.0			7.0			7.0	
Flash Dont Walk (s)		30.0	30.0	30.0	30.0			19.0			19.0	
Pedestrian Calls (#/hr)		0	0	0	0			0			0	
Act Effct Green (s)	34.1	33.6	33.6	24.0	24.0		8.8	73.0		8.4	67.5	
Actuated g/C Ratio	0.26	0.26	0.26	0.18	0.18		0.07	0.56		0.06	0.52	
v/c Ratio	0.25	0.09	0.52	0.78	0.28		0.39	0.28		0.35	0.65	
Control Delay	35.8	32.5	17.6	71.4	21.1		63.0	17.7		67.5	26.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	35.8	32.5	17.6	71.4	21.1		63.0	17.7		67.5	26.4	
LOS	D	C	B	E	C		E	B		E	C	
Approach Delay		22.5			55.3			22.6			27.2	
Approach LOS		C			E			C			C	
Queue Length 50th (m)	12.3	7.4	19.9	44.8	7.4		10.6	36.0		8.0	110.0	
Queue Length 95th (m)	21.6	14.7	41.3	65.5	20.0		18.8	54.4		18.3	151.1	
Internal Link Dist (m)		93.7			322.6			237.8			118.1	
Turn Bay Length (m)	100.0		5.0	15.0			100.0			45.0		
Base Capacity (vph)	253	644	655	370	462		224	2503		102	2456	
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	0.25	0.06	0.39	0.49	0.19		0.37	0.28		0.31	0.65	

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 64 (49%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 27.9	Intersection LOS: C

Intersection Capacity Utilization 80.4% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 2: March Road & Klondike Road

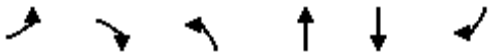




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	39	256	182	34	52	83	616	79	32	1544	55
Future Volume (vph)	64	39	256	182	34	52	83	616	79	32	1544	55
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.91		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1494	1679	1456	1648	1460		3124	4440		1433	4726	
Flt Permitted	0.55	1.00	1.00	0.73	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	865	1679	1456	1269	1460		3124	4440		1433	4726	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	64	39	256	182	34	52	83	616	79	32	1544	55
RTOR Reduction (vph)	0	0	115	0	42	0	0	10	0	0	2	0
Lane Group Flow (vph)	64	39	141	182	44	0	83	685	0	32	1597	0
Confl. Peds. (#/hr)	3		6	6		3	3		4	4		3
Heavy Vehicles (%)	13%	6%	2%	2%	8%	11%	5%	7%	9%	18%	2%	9%
Turn Type	pm+pt	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	34.9	34.9	34.9	24.0	24.0		8.8	69.1		5.9	66.2	
Effective Green, g (s)	34.9	34.9	34.9	24.0	24.0		8.8	69.1		5.9	66.2	
Actuated g/C Ratio	0.27	0.27	0.27	0.18	0.18		0.07	0.53		0.05	0.51	
Clearance Time (s)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	253	450	390	234	269		211	2360		65	2406	
v/s Ratio Prot	0.01	0.02			0.03		c0.03	c0.15		0.02	c0.34	
v/s Ratio Perm	0.06		c0.10	c0.14								
v/c Ratio	0.25	0.09	0.36	0.78	0.16		0.39	0.29		0.49	0.66	
Uniform Delay, d1	36.5	35.6	38.5	50.5	44.5		58.0	16.9		60.6	23.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.1	0.6	14.9	0.3		1.2	0.3		5.8	1.5	
Delay (s)	37.0	35.7	39.1	65.4	44.8		59.3	17.2		66.3	25.1	
Level of Service	D	D	D	E	D		E	B		E	C	
Approach Delay (s)		38.4			58.8			21.7			25.9	
Approach LOS		D			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	26.7
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	30	0	654	1590	1
Future Volume (vph)	0	30	0	654	1590	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt		0.865				
Flt Protected						
Satd. Flow (prot)	0	1510	0	3316	1745	0
Flt Permitted						
Satd. Flow (perm)	0	1510	0	3316	1745	0
Link Speed (k/h)	50			80	80	
Link Distance (m)	136.5			307.8	144.0	
Travel Time (s)	9.8			13.9	6.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	30	0	654	1590	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	30	0	654	1591	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 98.4%		ICU Level of Service F	
Analysis Period (min) 15			

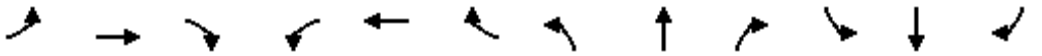
Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	30	0	654	1590	1
Future Vol, veh/h	0	30	0	654	1590	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	30	0	654	1590	1

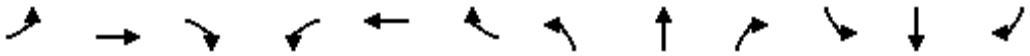
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	1591	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.23	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.319	-	-	-	-
Pot Cap-1 Maneuver	0	132	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	132	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	40.1	0	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	132	-	-
HCM Lane V/C Ratio	-	0.227	-	-
HCM Control Delay (s)	-	40.1	-	-
HCM Lane LOS	-	E	-	-
HCM 95th %tile Q(veh)	-	0.8	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	56	72	80	61	123	252	1458	115	109	633	97
Future Volume (vph)	82	56	72	80	61	123	252	1458	115	109	633	97
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0		0.0	30.0		0.0	60.0		0.0	70.0		15.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	60.0			60.0			70.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99	0.98		0.98	0.98		1.00		0.96			0.98
Frt		0.916			0.900				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1658	1501	0	1610	1540	0	1658	3316	1483	1658	3316	1483
Flt Permitted	0.422			0.614			0.374			0.122		
Satd. Flow (perm)	730	1501	0	1024	1540	0	652	3316	1419	213	3316	1447
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		57			89				100			100
Link Speed (k/h)		40			40			80			80	
Link Distance (m)		143.7			356.2			324.9			212.1	
Travel Time (s)		12.9			32.1			14.6			9.5	
Confl. Peds. (#/hr)	11		17	17		11	2		11	11		2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	9%	5%	5%	3%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	82	56	72	80	61	123	252	1458	115	109	633	97
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	128	0	80	184	0	252	1458	115	109	633	97
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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)	38.6	38.6		38.6	38.6		12.4	34.6	34.6	11.4	34.6	34.6
Total Split (s)	45.0	45.0		45.0	45.0		20.0	55.0	55.0	20.0	55.0	55.0
Total Split (%)	37.5%	37.5%		37.5%	37.5%		16.7%	45.8%	45.8%	16.7%	45.8%	45.8%
Maximum Green (s)	38.4	38.4		38.4	38.4		12.6	48.4	48.4	13.6	48.4	48.4
Yellow Time (s)	3.3	3.3		3.3	3.3		4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	3.3	3.3		3.3	3.3		2.8	2.0	2.0	1.8	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)	25.0	25.0		25.0	25.0			21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)	0	0		0	0			0	0		0	0
Act Effct Green (s)	15.5	15.5		15.5	15.5		85.9	75.6	75.6	82.4	72.8	72.8
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.72	0.63	0.63	0.69	0.61	0.61
v/c Ratio	0.88	0.53		0.61	0.67		0.45	0.70	0.12	0.42	0.31	0.11
Control Delay	114.9	34.3		67.5	36.7		7.7	18.5	3.5	10.6	13.1	2.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	114.9	34.3		67.5	36.7		7.7	18.5	3.5	10.6	13.1	2.9
LOS	F	C		E	D		A	B	A	B	B	A
Approach Delay		65.7			46.0			16.1			11.6	
Approach LOS		E			D			B			B	
Queue Length 50th (m)	19.3	15.6		18.2	21.3		14.4	108.3	1.2	5.4	34.8	0.0
Queue Length 95th (m)	#39.0	32.8		32.6	42.4		29.2	176.8	10.3	12.9	59.3	7.8
Internal Link Dist (m)		119.7			332.2			300.9			188.1	
Turn Bay Length (m)	30.0			30.0			60.0			70.0		15.0
Base Capacity (vph)	233	519		327	553		588	2089	930	318	2012	917
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.25		0.24	0.33		0.43	0.70	0.12	0.34	0.31	0.11

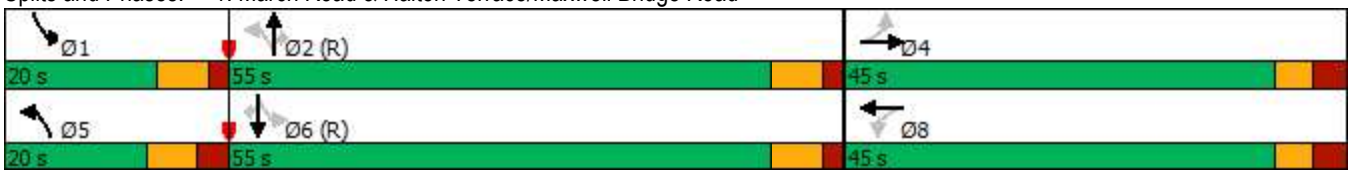
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 50 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 20.7		Intersection LOS: C	

Intersection Capacity Utilization 95.7% 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.

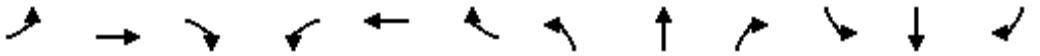
Splits and Phases: 1: March Road & Halton Terrace/Maxwell Bridge Road



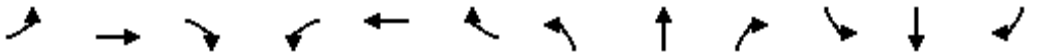
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	56	72	80	61	123	252	1458	115	109	633	97
Future Volume (vph)	82	56	72	80	61	123	252	1458	115	109	633	97
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	0.98		1.00	1.00	0.96	1.00	1.00	0.98
Flpb, ped/bikes	0.99	1.00		0.98	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.92		1.00	0.90		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1643	1500		1585	1540		1657	3316	1419	1658	3316	1447
Flt Permitted	0.42	1.00		0.61	1.00		0.37	1.00	1.00	0.12	1.00	1.00
Satd. Flow (perm)	730	1500		1025	1540		652	3316	1419	213	3316	1447
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	82	56	72	80	61	123	252	1458	115	109	633	97
RTOR Reduction (vph)	0	50	0	0	78	0	0	0	37	0	0	38
Lane Group Flow (vph)	82	78	0	80	106	0	252	1458	78	109	633	59
Confl. Peds. (#/hr)	11		17	17		11	2		11	11		2
Heavy Vehicles (%)	2%	9%	5%	5%	3%	2%	2%	2%	2%	2%	2%	2%
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
Actuated Green, G (s)	15.5	15.5		15.5	15.5		86.7	75.6	75.6	82.1	72.8	72.8
Effective Green, g (s)	15.5	15.5		15.5	15.5		86.7	75.6	75.6	82.1	72.8	72.8
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.72	0.63	0.63	0.68	0.61	0.61
Clearance Time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	94	193		132	198		564	2089	893	257	2011	877
v/s Ratio Prot		0.05			0.07		c0.04	c0.44		0.03	0.19	
v/s Ratio Perm	c0.11			0.08			0.28		0.05	0.26		0.04
v/c Ratio	0.87	0.41		0.61	0.54		0.45	0.70	0.09	0.42	0.31	0.07
Uniform Delay, d1	51.3	48.0		49.4	48.9		5.8	14.7	8.7	9.9	11.5	9.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	53.6	1.4		7.6	2.8		0.6	2.0	0.2	1.1	0.4	0.1
Delay (s)	104.9	49.4		57.0	51.7		6.3	16.6	8.9	11.1	11.9	9.8
Level of Service	F	D		E	D		A	B	A	B	B	A
Approach Delay (s)		71.1			53.3			14.7			11.5	
Approach LOS		E			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	20.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.6
Intersection Capacity Utilization	95.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	112	31	111	115	37	38	161	1746	156	15	753	92
Future Volume (vph)	112	31	111	115	37	38	161	1746	156	15	753	92
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		5.0	15.0		0.0	100.0		0.0	45.0		0.0
Storage Lanes	1		1	1		0	2		0	1		0
Taper Length (m)	0.0			30.0			100.0			85.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor	1.00		0.99	1.00	0.99		0.99	1.00		1.00	1.00	
Frt			0.850		0.924			0.988			0.984	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1658	1745	1483	1658	1571	0	3216	4689	0	1658	4676	0
Flt Permitted	0.510			0.737			0.950			0.950		
Satd. Flow (perm)	889	1745	1462	1284	1571	0	3196	4689	0	1655	4676	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			111		38			12			18	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		117.7			346.6			261.8			142.1	
Travel Time (s)		8.5			25.0			11.8			6.4	
Confl. Peds. (#/hr)	1		2	2		1	8		11	11		8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	112	31	111	115	37	38	161	1746	156	15	753	92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	112	31	111	115	75	0	161	1902	0	15	845	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

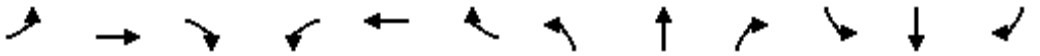


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8								
Detector Phase	7	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.6	44.1	44.1	44.1	44.1		11.6	32.4		11.6	32.4	
Total Split (s)	12.0	57.0	57.0	45.0	45.0		22.0	51.0		22.0	51.0	
Total Split (%)	9.2%	43.8%	43.8%	34.6%	34.6%		16.9%	39.2%		16.9%	39.2%	
Maximum Green (s)	5.4	49.9	49.9	37.9	37.9		15.4	44.6		15.4	44.6	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		4.6	4.6		4.6	4.6	
All-Red Time (s)	3.3	3.8	3.8	3.8	3.8		2.0	1.8		2.0	1.8	
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)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)		7.0	7.0	7.0	7.0			7.0			7.0	
Flash Dont Walk (s)		30.0	30.0	30.0	30.0			19.0			19.0	
Pedestrian Calls (#/hr)		0	0	0	0			0			0	
Act Effct Green (s)	29.5	29.0	29.0	17.0	17.0		11.8	81.6		6.8	69.1	
Actuated g/C Ratio	0.23	0.22	0.22	0.13	0.13		0.09	0.63		0.05	0.53	
v/c Ratio	0.48	0.08	0.27	0.68	0.31		0.55	0.65		0.17	0.34	
Control Delay	47.9	37.9	8.1	73.3	29.6		63.5	18.5		62.9	18.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	47.9	37.9	8.1	73.3	29.6		63.5	18.5		62.9	18.5	
LOS	D	D	A	E	C		E	B		E	B	
Approach Delay		29.3			56.1			22.0			19.3	
Approach LOS		C			E			C			B	
Queue Length 50th (m)	24.0	6.3	0.0	28.5	8.6		20.7	89.7		3.8	42.7	
Queue Length 95th (m)	38.1	13.7	13.8	46.1	21.8		31.2	165.7		11.0	62.3	
Internal Link Dist (m)		93.7			322.6			237.8			118.1	
Turn Bay Length (m)	100.0		5.0	15.0			100.0			45.0		
Base Capacity (vph)	233	669	629	374	484		380	2948		196	2492	
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	0.48	0.05	0.18	0.31	0.15		0.42	0.65		0.08	0.34	

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 20 (15%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 23.8	Intersection LOS: C

Intersection Capacity Utilization 74.6% ICU Level of Service D
Analysis Period (min) 15

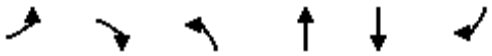
Splits and Phases: 2: March Road & Klondike Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	112	31	111	115	37	38	161	1746	156	15	753	92
Future Volume (vph)	112	31	111	115	37	38	161	1746	156	15	753	92
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.92		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1657	1745	1462	1654	1571		3216	4687		1658	4674	
Flt Permitted	0.51	1.00	1.00	0.74	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	890	1745	1462	1283	1571		3216	4687		1658	4674	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	112	31	111	115	37	38	161	1746	156	15	753	92
RTOR Reduction (vph)	0	0	86	0	33	0	0	5	0	0	8	0
Lane Group Flow (vph)	112	31	25	115	42	0	161	1897	0	15	837	0
Confl. Peds. (#/hr)	1		2	2		1	8		11	11		8
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	29.0	29.0	29.0	17.0	17.0		11.8	77.7		3.2	69.1	
Effective Green, g (s)	29.0	29.0	29.0	17.0	17.0		11.8	77.7		3.2	69.1	
Actuated g/C Ratio	0.22	0.22	0.22	0.13	0.13		0.09	0.60		0.02	0.53	
Clearance Time (s)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	230	389	326	167	205		291	2801		40	2484	
v/s Ratio Prot	c0.02	0.02			0.03		c0.05	c0.40		0.01	0.18	
v/s Ratio Perm	0.09		0.02	c0.09								
v/c Ratio	0.49	0.08	0.08	0.69	0.20		0.55	0.68		0.38	0.34	
Uniform Delay, d1	43.8	39.9	39.9	54.0	50.5		56.6	17.7		62.4	17.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	0.1	0.1	11.2	0.5		2.3	1.3		5.8	0.4	
Delay (s)	45.4	40.0	40.0	65.2	51.0		58.8	19.0		68.2	17.7	
Level of Service	D	D	D	E	D		E	B		E	B	
Approach Delay (s)		42.4			59.6			22.1			18.6	
Approach LOS		D			E			C			B	

Intersection Summary			
HCM 2000 Control Delay	24.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	26.7
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	49	0	1663	790	12
Future Volume (vph)	0	49	0	1663	790	12
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt		0.865			0.998	
Flt Protected						
Satd. Flow (prot)	0	1510	0	3316	1742	0
Flt Permitted						
Satd. Flow (perm)	0	1510	0	3316	1742	0
Link Speed (k/h)	50			80	80	
Link Distance (m)	120.2			212.1	95.6	
Travel Time (s)	8.7			9.5	4.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	49	0	1663	790	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	49	0	1663	802	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.7%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	49	0	1663	790	12
Future Vol, veh/h	0	49	0	1663	790	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	49	0	1663	790	12

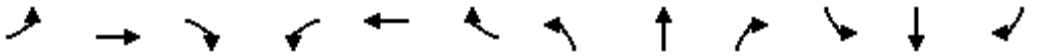
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	796	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.23	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.319	-	-	-	-
Pot Cap-1 Maneuver	0	386	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	386	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.7	0	0
HCM LOS	C		

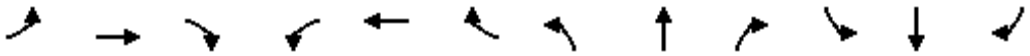
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	386	-	-
HCM Lane V/C Ratio	-	0.127	-	-
HCM Control Delay (s)	-	15.7	-	-
HCM Lane LOS	-	C	-	-
HCM 95th %tile Q(veh)	-	0.4	-	-

Appendix O

Synchro Intersection Worksheets – 2033 Future Background Conditions



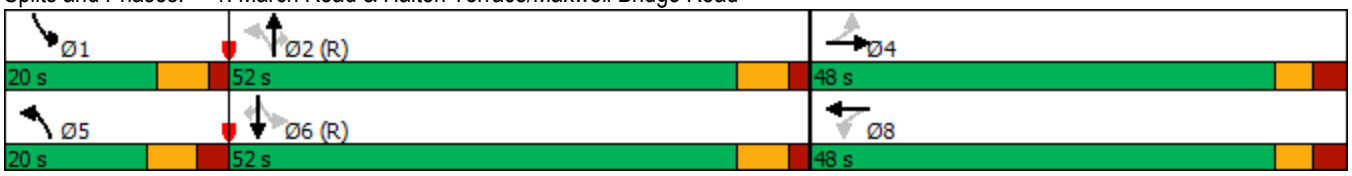
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	37	158	126	17	49	99	589	64	76	1685	66
Future Volume (vph)	101	37	158	126	17	49	99	589	64	76	1685	66
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0		0.0	30.0		0.0	60.0		0.0	70.0		15.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	60.0			60.0			70.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		0.99		1.00					0.98	1.00		
Frt		0.878			0.889				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1658	1483	0	1658	1476	0	1551	3020	1414	1658	3316	1401
Flt Permitted	0.714			0.461			0.057			0.430		
Satd. Flow (perm)	1246	1483	0	804	1476	0	93	3020	1380	749	3316	1401
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		158			49				100			100
Link Speed (k/h)		40			40			80			80	
Link Distance (m)		143.7			356.2			324.9			203.9	
Travel Time (s)		12.9			32.1			14.6			9.2	
Confl. Peds. (#/hr)			1	1					2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	14%	2%	2%	2%	9%	9%	12%	7%	2%	2%	8%
Adj. Flow (vph)	101	37	158	126	17	49	99	589	64	76	1685	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	101	195	0	126	66	0	99	589	64	76	1685	66
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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)	38.6	38.6		38.6	38.6		12.4	34.6	34.6	11.4	34.6	34.6
Total Split (s)	48.0	48.0		48.0	48.0		20.0	52.0	52.0	20.0	52.0	52.0
Total Split (%)	40.0%	40.0%		40.0%	40.0%		16.7%	43.3%	43.3%	16.7%	43.3%	43.3%
Yellow Time (s)	3.3	3.3		3.3	3.3		4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	3.3	3.3		3.3	3.3		2.8	2.0	2.0	1.8	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
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)	20.2	20.2		20.2	20.2		81.8	75.4	75.4	78.3	70.8	70.8
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.68	0.63	0.63	0.65	0.59	0.59
v/c Ratio	0.48	0.51		0.93	0.23		0.60	0.31	0.07	0.14	0.86	0.08
Control Delay	51.0	14.9		109.8	16.8		35.1	12.7	1.1	7.1	28.0	1.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.0	14.9		109.8	16.8		35.1	12.7	1.1	7.1	28.0	1.3
LOS	D	B		F	B		D	B	A	A	C	A
Approach Delay		27.3			77.9			14.7			26.2	
Approach LOS		C			E			B			C	
Queue Length 50th (m)	21.8	7.5		29.6	3.4		8.6	33.2	0.0	4.6	162.2	0.0
Queue Length 95th (m)	35.8	26.6		#51.4	14.3		27.6	55.8	2.5	11.8	#272.5	3.1
Internal Link Dist (m)		119.7			332.2			300.9			179.9	
Turn Bay Length (m)	30.0			30.0			60.0			70.0		15.0
Base Capacity (vph)	429	615		277	541		218	1896	903	630	1957	867
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.32		0.45	0.12		0.45	0.31	0.07	0.12	0.86	0.08

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 99 (83%), 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: 26.7		Intersection LOS: C	
Intersection Capacity Utilization 98.8%		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.			

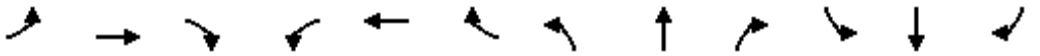
Splits and Phases: 1: March Road & Halton Terrace/Maxwell Bridge Road



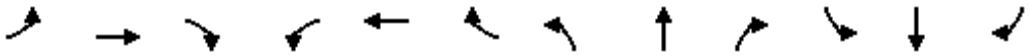
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	37	158	126	17	49	99	589	64	76	1685	66
Future Volume (vph)	101	37	158	126	17	49	99	589	64	76	1685	66
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.88		1.00	0.89		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1658	1484		1657	1476		1551	3020	1380	1657	3316	1401
Flt Permitted	0.71	1.00		0.46	1.00		0.06	1.00	1.00	0.43	1.00	1.00
Satd. Flow (perm)	1246	1484		804	1476		94	3020	1380	749	3316	1401
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	101	37	158	126	17	49	99	589	64	76	1685	66
RTOR Reduction (vph)	0	131	0	0	41	0	0	0	24	0	0	27
Lane Group Flow (vph)	101	64	0	126	25	0	99	589	40	76	1685	39
Confl. Peds. (#/hr)			1	1					2	2		
Heavy Vehicles (%)	2%	14%	2%	2%	2%	9%	9%	12%	7%	2%	2%	8%
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
Actuated Green, G (s)	20.2	20.2		20.2	20.2		82.5	74.1	74.1	76.9	70.8	70.8
Effective Green, g (s)	20.2	20.2		20.2	20.2		82.5	74.1	74.1	76.9	70.8	70.8
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.69	0.62	0.62	0.64	0.59	0.59
Clearance Time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	209	249		135	248		166	1864	852	526	1956	826
v/s Ratio Prot		0.04			0.02		c0.04	0.20		0.01	c0.51	
v/s Ratio Perm	0.08			c0.16			c0.37		0.03	0.09		0.03
v/c Ratio	0.48	0.26		0.93	0.10		0.60	0.32	0.05	0.14	0.86	0.05
Uniform Delay, d1	45.2	43.4		49.2	42.2		21.8	10.9	9.0	8.1	20.5	10.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	0.5		57.1	0.2		5.7	0.4	0.1	0.1	5.3	0.1
Delay (s)	46.9	43.9		106.3	42.4		27.5	11.4	9.1	8.2	25.8	10.5
Level of Service	D	D		F	D		C	B	A	A	C	B
Approach Delay (s)		44.9			84.4			13.3			24.5	
Approach LOS		D			F			B			C	

Intersection Summary			
HCM 2000 Control Delay	27.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.6
Intersection Capacity Utilization	98.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	39	256	182	34	57	83	692	79	35	1737	61
Future Volume (vph)	70	39	256	182	34	57	83	692	79	35	1737	61
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		5.0	15.0		0.0	100.0		0.0	45.0		0.0
Storage Lanes	1		1	1		0	2		0	1		0
Taper Length (m)	0.0			30.0			100.0			85.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor	1.00		0.98	0.99	0.99		1.00	1.00		1.00	1.00	
Frt			0.850		0.906			0.985			0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1496	1679	1483	1658	1454	0	3124	4451	0	1433	4727	0
Flt Permitted	0.547			0.732			0.950			0.950		
Satd. Flow (perm)	859	1679	1456	1270	1454	0	3122	4451	0	1428	4727	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			155		57			18			5	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		117.7			346.6			261.8			142.1	
Travel Time (s)		8.5			25.0			11.8			6.4	
Confl. Peds. (#/hr)	3		6	6		3	3		4	4		3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	13%	6%	2%	2%	8%	11%	5%	7%	9%	18%	2%	9%
Adj. Flow (vph)	70	39	256	182	34	57	83	692	79	35	1737	61
Shared Lane Traffic (%)												
Lane Group Flow (vph)	70	39	256	182	91	0	83	771	0	35	1798	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8								
Detector Phase	7	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.6	44.1	44.1	44.1	44.1		11.6	32.4		11.6	32.4	
Total Split (s)	12.0	57.0	57.0	45.0	45.0		15.0	58.0		15.0	58.0	
Total Split (%)	9.2%	43.8%	43.8%	34.6%	34.6%		11.5%	44.6%		11.5%	44.6%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		4.6	4.6		4.6	4.6	
All-Red Time (s)	3.3	3.8	3.8	3.8	3.8		2.0	1.8		2.0	1.8	
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)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	34.1	33.6	33.6	24.0	24.0		8.8	72.8		8.7	67.5	
Actuated g/C Ratio	0.26	0.26	0.26	0.18	0.18		0.07	0.56		0.07	0.52	
v/c Ratio	0.28	0.09	0.52	0.78	0.29		0.39	0.31		0.37	0.73	
Control Delay	36.5	32.5	17.9	71.4	20.3		63.0	18.4		67.9	28.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	36.5	32.5	17.9	71.4	20.3		63.0	18.4		67.9	28.6	
LOS	D	C	B	E	C		E	B		E	C	
Approach Delay		23.0			54.4			22.7			29.4	
Approach LOS		C			D			C			C	
Queue Length 50th (m)	13.6	7.4	20.4	44.8	7.4		10.6	41.3		8.7	132.0	
Queue Length 95th (m)	23.2	14.7	41.8	65.5	20.7		18.8	61.7		19.2	#180.5	
Internal Link Dist (m)		93.7			322.6			237.8			118.1	
Turn Bay Length (m)	100.0		5.0	15.0			100.0			45.0		
Base Capacity (vph)	251	644	654	370	464		224	2500		104	2457	
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	0.28	0.06	0.39	0.49	0.20		0.37	0.31		0.34	0.73	

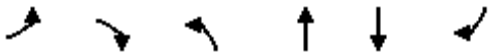
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 64 (49%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 29.0		Intersection LOS: C	
Intersection Capacity Utilization 84.5%		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.			

Splits and Phases: 2: March Road & Klondike Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	39	256	182	34	57	83	692	79	35	1737	61
Future Volume (vph)	70	39	256	182	34	57	83	692	79	35	1737	61
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.91		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1494	1679	1456	1648	1454		3124	4450		1433	4726	
Flt Permitted	0.55	1.00	1.00	0.73	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	861	1679	1456	1269	1454		3124	4450		1433	4726	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	70	39	256	182	34	57	83	692	79	35	1737	61
RTOR Reduction (vph)	0	0	113	0	46	0	0	8	0	0	2	0
Lane Group Flow (vph)	70	39	143	182	45	0	83	763	0	35	1796	0
Confl. Peds. (#/hr)	3		6	6		3	3		4	4		3
Heavy Vehicles (%)	13%	6%	2%	2%	8%	11%	5%	7%	9%	18%	2%	9%
Turn Type	pm+pt	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	34.9	34.9	34.9	24.0	24.0		8.8	68.9		6.1	66.2	
Effective Green, g (s)	34.9	34.9	34.9	24.0	24.0		8.8	68.9		6.1	66.2	
Actuated g/C Ratio	0.27	0.27	0.27	0.18	0.18		0.07	0.53		0.05	0.51	
Clearance Time (s)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	252	450	390	234	268		211	2358		67	2406	
v/s Ratio Prot	0.01	0.02			0.03		c0.03	c0.17		0.02	c0.38	
v/s Ratio Perm	0.07		c0.10	c0.14								
v/c Ratio	0.28	0.09	0.37	0.78	0.17		0.39	0.32		0.52	0.75	
Uniform Delay, d1	37.1	35.6	38.6	50.5	44.6		58.0	17.3		60.5	25.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.1	0.6	14.9	0.3		1.2	0.4		7.2	2.2	
Delay (s)	37.7	35.7	39.2	65.4	44.9		59.3	17.7		67.7	27.4	
Level of Service	D	D	D	E	D		E	B		E	C	
Approach Delay (s)		38.5			58.6			21.7			28.2	
Approach LOS		D			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	30.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	26.7
Intersection Capacity Utilization	84.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	31	0	739	1796	1
Future Volume (vph)	0	31	0	739	1796	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt		0.865				
Flt Protected						
Satd. Flow (prot)	0	1510	0	3316	1745	0
Flt Permitted						
Satd. Flow (perm)	0	1510	0	3316	1745	0
Link Speed (k/h)	50			80	80	
Link Distance (m)	175.3			203.9	135.6	
Travel Time (s)	12.6			9.2	6.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	31	0	739	1796	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	31	0	739	1797	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	109.8%	ICU Level of Service	H
Analysis Period (min)	15		

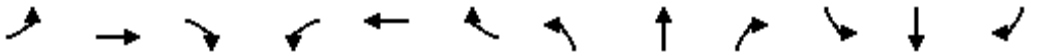
Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	31	0	739	1796	1
Future Vol, veh/h	0	31	0	739	1796	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	31	0	739	1796	1

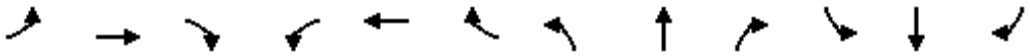
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	1797	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.23	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.319	-	-	-	-
Pot Cap-1 Maneuver	0	99	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	99	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	57.1	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	99	-	-
HCM Lane V/C Ratio	-	0.313	-	-
HCM Control Delay (s)	-	57.1	-	-
HCM Lane LOS	-	F	-	-
HCM 95th %tile Q(veh)	-	1.2	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	58	96	80	61	123	252	1675	115	109	767	97
Future Volume (vph)	82	58	96	80	61	123	252	1675	115	109	767	97
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0		0.0	30.0		0.0	60.0		0.0	70.0		15.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	60.0			60.0			70.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99	0.98		0.98	0.98		1.00		0.96			0.98
Frt		0.906			0.900				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1658	1485	0	1610	1540	0	1658	3316	1483	1658	3316	1483
Flt Permitted	0.422			0.524			0.313			0.079		
Satd. Flow (perm)	730	1485	0	875	1540	0	546	3316	1419	138	3316	1447
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		73			89				100			100
Link Speed (k/h)		40			40			80			80	
Link Distance (m)		143.7			356.2			324.9			214.1	
Travel Time (s)		12.9			32.1			14.6			9.6	
Confl. Peds. (#/hr)	11		17	17		11	2		11	11		2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	9%	5%	5%	3%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	82	58	96	80	61	123	252	1675	115	109	767	97
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	154	0	80	184	0	252	1675	115	109	767	97
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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)	38.6	38.6		38.6	38.6		12.4	34.6	34.6	11.4	34.6	34.6
Total Split (s)	45.0	45.0		45.0	45.0		20.0	55.0	55.0	20.0	55.0	55.0
Total Split (%)	37.5%	37.5%		37.5%	37.5%		16.7%	45.8%	45.8%	16.7%	45.8%	45.8%
Maximum Green (s)	38.4	38.4		38.4	38.4		12.6	48.4	48.4	13.6	48.4	48.4
Yellow Time (s)	3.3	3.3		3.3	3.3		4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	3.3	3.3		3.3	3.3		2.8	2.0	2.0	1.8	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)	25.0	25.0		25.0	25.0			21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)	0	0		0	0			0	0		0	0
Act Effct Green (s)	15.5	15.5		15.5	15.5		86.1	75.6	75.6	82.2	72.6	72.6
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.72	0.63	0.63	0.68	0.60	0.60
v/c Ratio	0.88	0.61		0.71	0.67		0.51	0.80	0.12	0.51	0.38	0.11
Control Delay	114.9	35.3		81.2	36.7		8.8	22.1	3.5	21.3	14.0	2.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	114.9	35.3		81.2	36.7		8.8	22.1	3.5	21.3	14.0	2.9
LOS	F	D		F	D		A	C	A	C	B	A
Approach Delay		62.9			50.2			19.4			13.7	
Approach LOS		E			D			B			B	
Queue Length 50th (m)	19.3	17.9		18.4	21.3		14.4	140.7	1.2	5.4	44.7	0.0
Queue Length 95th (m)	#39.0	37.1		33.6	42.4		29.2	#246.8	10.3	23.4	74.1	7.8
Internal Link Dist (m)		119.7			332.2			300.9			190.1	
Turn Bay Length (m)	30.0			30.0			60.0			70.0		15.0
Base Capacity (vph)	233	524		280	553		523	2089	930	272	2006	915
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.29		0.29	0.33		0.48	0.80	0.12	0.40	0.38	0.11

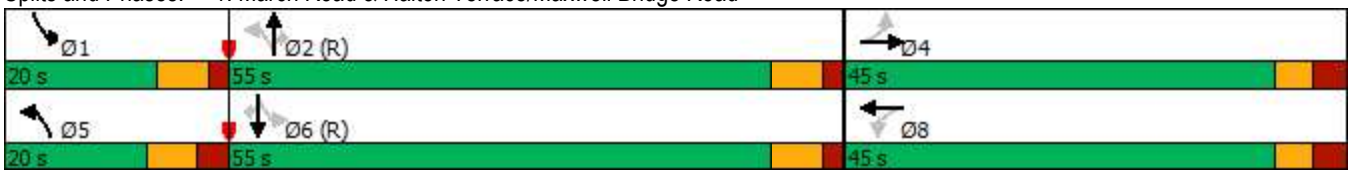
Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 50 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 23.1	Intersection LOS: C

Intersection Capacity Utilization 102.9% ICU Level of Service G

Analysis Period (min) 15

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

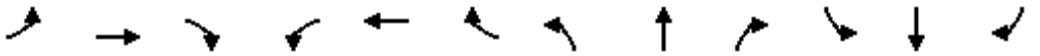
Splits and Phases: 1: March Road & Halton Terrace/Maxwell Bridge Road



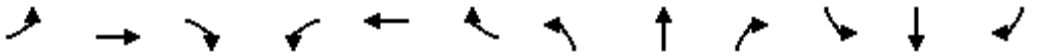
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	58	96	80	61	123	252	1675	115	109	767	97
Future Volume (vph)	82	58	96	80	61	123	252	1675	115	109	767	97
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	0.98		1.00	1.00	0.96	1.00	1.00	0.98
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.91		1.00	0.90		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1643	1486		1587	1540		1657	3316	1419	1658	3316	1447
Flt Permitted	0.42	1.00		0.52	1.00		0.31	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	730	1486		875	1540		545	3316	1419	138	3316	1447
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	82	58	96	80	61	123	252	1675	115	109	767	97
RTOR Reduction (vph)	0	64	0	0	78	0	0	0	37	0	0	38
Lane Group Flow (vph)	82	90	0	80	106	0	252	1675	78	109	767	59
Confl. Peds. (#/hr)	11		17	17		11	2		11	11		2
Heavy Vehicles (%)	2%	9%	5%	5%	3%	2%	2%	2%	2%	2%	2%	2%
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
Actuated Green, G (s)	15.5	15.5		15.5	15.5		86.9	75.6	75.6	81.9	72.6	72.6
Effective Green, g (s)	15.5	15.5		15.5	15.5		86.9	75.6	75.6	81.9	72.6	72.6
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.72	0.63	0.63	0.68	0.60	0.60
Clearance Time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	94	191		113	198		499	2089	893	211	2006	875
v/s Ratio Prot		0.06			0.07		c0.05	c0.51		0.04	0.23	
v/s Ratio Perm	c0.11			0.09			0.32		0.05	0.31		0.04
v/c Ratio	0.87	0.47		0.71	0.54		0.51	0.80	0.09	0.52	0.38	0.07
Uniform Delay, d1	51.3	48.5		50.1	48.9		6.1	16.6	8.7	14.5	12.2	9.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	53.6	1.8		18.3	2.8		0.8	3.4	0.2	2.1	0.6	0.1
Delay (s)	104.9	50.3		68.4	51.7		6.9	20.0	8.9	16.6	12.7	9.9
Level of Service	F	D		E	D		A	B	A	B	B	A
Approach Delay (s)		69.3			56.8			17.7			12.9	
Approach LOS		E			E			B			B	

Intersection Summary			
HCM 2000 Control Delay	22.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.6
Intersection Capacity Utilization	102.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	31	111	115	37	41	161	1954	156	16	894	109
Future Volume (vph)	124	31	111	115	37	41	161	1954	156	16	894	109
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		5.0	15.0		0.0	100.0		0.0	45.0		0.0
Storage Lanes	1		1	1		0	2		0	1		0
Taper Length (m)	0.0			30.0			100.0			85.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor	1.00		0.99	1.00	0.99		1.00	1.00		1.00	1.00	
Frt			0.850		0.921			0.989			0.984	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1658	1745	1483	1658	1567	0	3216	4695	0	1658	4676	0
Flt Permitted	0.509			0.737			0.950			0.950		
Satd. Flow (perm)	887	1745	1462	1284	1567	0	3200	4695	0	1655	4676	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			111		41			11			18	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		117.7			346.6			261.8			142.1	
Travel Time (s)		8.5			25.0			11.8			6.4	
Confl. Peds. (#/hr)	1		2	2		1	8		11	11		8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	124	31	111	115	37	41	161	1954	156	16	894	109
Shared Lane Traffic (%)												
Lane Group Flow (vph)	124	31	111	115	78	0	161	2110	0	16	1003	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

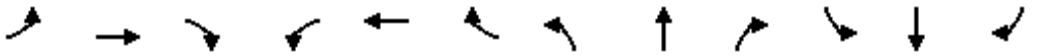


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8								
Detector Phase	7	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.6	44.1	44.1	44.1	44.1		11.6	32.4		11.6	32.4	
Total Split (s)	12.0	57.0	57.0	45.0	45.0		22.0	51.0		22.0	51.0	
Total Split (%)	9.2%	43.8%	43.8%	34.6%	34.6%		16.9%	39.2%		16.9%	39.2%	
Maximum Green (s)	5.4	49.9	49.9	37.9	37.9		15.4	44.6		15.4	44.6	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		4.6	4.6		4.6	4.6	
All-Red Time (s)	3.3	3.8	3.8	3.8	3.8		2.0	1.8		2.0	1.8	
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)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)		7.0	7.0	7.0	7.0			7.0			7.0	
Flash Dont Walk (s)		30.0	30.0	30.0	30.0			19.0			19.0	
Pedestrian Calls (#/hr)		0	0	0	0			0			0	
Act Effct Green (s)	29.5	29.0	29.0	17.0	17.0		11.8	81.6		6.8	69.1	
Actuated g/C Ratio	0.23	0.22	0.22	0.13	0.13		0.09	0.63		0.05	0.53	
v/c Ratio	0.53	0.08	0.27	0.68	0.33		0.55	0.72		0.18	0.40	
Control Delay	50.1	37.9	8.1	73.3	29.0		63.5	20.4		63.2	19.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	50.1	37.9	8.1	73.3	29.0		63.5	20.4		63.2	19.5	
LOS	D	D	A	E	C		E	C		E	B	
Approach Delay		31.1			55.4			23.5			20.2	
Approach LOS		C			E			C			C	
Queue Length 50th (m)	26.8	6.3	0.0	28.5	8.6		20.7	107.5		4.0	53.1	
Queue Length 95th (m)	41.4	13.7	13.8	46.1	22.1		31.2	197.9		11.5	76.0	
Internal Link Dist (m)		93.7			322.6			237.8			118.1	
Turn Bay Length (m)	100.0		5.0	15.0			100.0			45.0		
Base Capacity (vph)	233	669	629	374	485		380	2950		196	2492	
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	0.53	0.05	0.18	0.31	0.16		0.42	0.72		0.08	0.40	

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 20 (15%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 130	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay: 24.8	Intersection LOS: C

Intersection Capacity Utilization 79.5% ICU Level of Service D
Analysis Period (min) 15

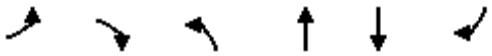
Splits and Phases: 2: March Road & Klondike Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	31	111	115	37	41	161	1954	156	16	894	109
Future Volume (vph)	124	31	111	115	37	41	161	1954	156	16	894	109
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.92		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1657	1745	1462	1654	1567		3216	4695		1658	4674	
Flt Permitted	0.51	1.00	1.00	0.74	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	887	1745	1462	1283	1567		3216	4695		1658	4674	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	124	31	111	115	37	41	161	1954	156	16	894	109
RTOR Reduction (vph)	0	0	86	0	36	0	0	4	0	0	8	0
Lane Group Flow (vph)	124	31	25	115	42	0	161	2106	0	16	995	0
Confl. Peds. (#/hr)	1		2	2		1	8		11	11		8
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	29.0	29.0	29.0	17.0	17.0		11.8	77.7		3.2	69.1	
Effective Green, g (s)	29.0	29.0	29.0	17.0	17.0		11.8	77.7		3.2	69.1	
Actuated g/C Ratio	0.22	0.22	0.22	0.13	0.13		0.09	0.60		0.02	0.53	
Clearance Time (s)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	229	389	326	167	204		291	2806		40	2484	
v/s Ratio Prot	c0.02	0.02			0.03		c0.05	c0.45		0.01	0.21	
v/s Ratio Perm	0.10		0.02	c0.09								
v/c Ratio	0.54	0.08	0.08	0.69	0.21		0.55	0.75		0.40	0.40	
Uniform Delay, d1	44.7	39.9	39.9	54.0	50.5		56.6	19.1		62.5	18.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.6	0.1	0.1	11.2	0.5		2.3	1.9		6.4	0.5	
Delay (s)	47.3	40.0	40.0	65.2	51.0		58.8	21.0		68.9	18.6	
Level of Service	D	D	D	E	D		E	C		E	B	
Approach Delay (s)		43.4			59.4			23.7			19.4	
Approach LOS		D			E			C			B	

Intersection Summary			
HCM 2000 Control Delay	25.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	26.7
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	50	0	1880	923	13
Future Volume (vph)	0	50	0	1880	923	13
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt		0.865			0.998	
Flt Protected						
Satd. Flow (prot)	0	1510	0	3316	1742	0
Flt Permitted						
Satd. Flow (perm)	0	1510	0	3316	1742	0
Link Speed (k/h)	50			80	80	
Link Distance (m)	136.6			214.1	120.6	
Travel Time (s)	9.8			9.6	5.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	50	0	1880	923	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	50	0	1880	936	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 62.1%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	50	0	1880	923	13
Future Vol, veh/h	0	50	0	1880	923	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	50	0	1880	923	13

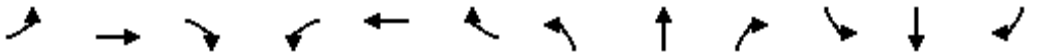
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	930	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.23	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.319	-	-	-	-
Pot Cap-1 Maneuver	0	323	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	323	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.2	0	0
HCM LOS	C		

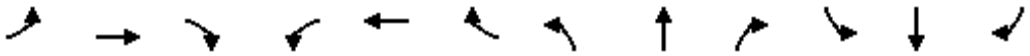
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	323	-	-
HCM Lane V/C Ratio	-	0.155	-	-
HCM Control Delay (s)	-	18.2	-	-
HCM Lane LOS	-	C	-	-
HCM 95th %tile Q(veh)	-	0.5	-	-

Appendix P

Synchro Intersection Worksheets – 2028 Future Total Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	37	158	126	17	51	99	527	64	79	1523	69
Future Volume (vph)	103	37	158	126	17	51	99	527	64	79	1523	69
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0		0.0	30.0		0.0	60.0		0.0	70.0		15.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	60.0			60.0			70.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		0.99		1.00					0.98	1.00		
Frt		0.878			0.887				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1658	1483	0	1658	1472	0	1551	3020	1414	1658	3316	1401
Flt Permitted	0.713			0.461			0.087			0.456		
Satd. Flow (perm)	1244	1483	0	804	1472	0	142	3020	1380	794	3316	1401
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		158			51				100			100
Link Speed (k/h)		40			40			80			80	
Link Distance (m)		143.7			356.2			324.9			135.7	
Travel Time (s)		12.9			32.1			14.6			6.1	
Confl. Peds. (#/hr)			1	1					2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	14%	2%	2%	2%	9%	9%	12%	7%	2%	2%	8%
Adj. Flow (vph)	103	37	158	126	17	51	99	527	64	79	1523	69
Shared Lane Traffic (%)												
Lane Group Flow (vph)	103	195	0	126	68	0	99	527	64	79	1523	69
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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)	38.6	38.6		38.6	38.6		12.4	34.6	34.6	11.4	34.6	34.6
Total Split (s)	48.0	48.0		48.0	48.0		20.0	52.0	52.0	20.0	52.0	52.0
Total Split (%)	40.0%	40.0%		40.0%	40.0%		16.7%	43.3%	43.3%	16.7%	43.3%	43.3%
Maximum Green (s)	41.4	41.4		41.4	41.4		12.6	45.4	45.4	13.6	45.4	45.4
Yellow Time (s)	3.3	3.3		3.3	3.3		4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	3.3	3.3		3.3	3.3		2.8	2.0	2.0	1.8	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)	25.0	25.0		25.0	25.0			21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)	0	0		0	0			0	0		0	0
Act Effct Green (s)	20.2	20.2		20.2	20.2		81.7	75.3	75.3	78.3	70.8	70.8
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.68	0.63	0.63	0.65	0.59	0.59
v/c Ratio	0.49	0.51		0.93	0.23		0.51	0.28	0.07	0.14	0.78	0.08
Control Delay	51.5	14.9		109.8	16.7		19.4	12.4	1.1	7.0	24.1	1.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.5	14.9		109.8	16.7		19.4	12.4	1.1	7.0	24.1	1.5
LOS	D	B		F	B		B	B	A	A	C	A
Approach Delay		27.6			77.2			12.4			22.4	
Approach LOS		C			E			B			C	
Queue Length 50th (m)	22.3	7.5		29.6	3.4		6.3	29.0	0.0	4.8	133.2	0.0
Queue Length 95th (m)	36.3	26.6		#51.4	14.5		20.6	49.4	2.5	12.1	#230.7	3.7
Internal Link Dist (m)		119.7			332.2			300.9			111.7	
Turn Bay Length (m)	30.0			30.0			60.0			70.0		15.0
Base Capacity (vph)	429	615		277	541		247	1895	903	657	1957	867
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.32		0.45	0.13		0.40	0.28	0.07	0.12	0.78	0.08

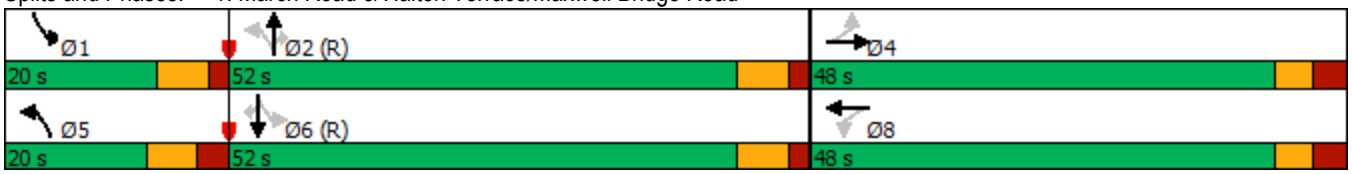
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 99 (83%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 24.2		Intersection LOS: C	

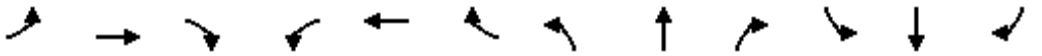
Intersection Capacity Utilization 94.1% ICU Level of Service F

Analysis Period (min) 15

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

Splits and Phases: 1: March Road & Halton Terrace/Maxwell Bridge Road

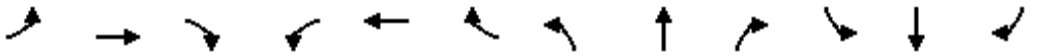




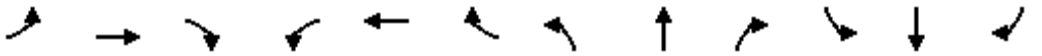
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	37	158	126	17	51	99	527	64	79	1523	69
Future Volume (vph)	103	37	158	126	17	51	99	527	64	79	1523	69
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.88		1.00	0.89		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1658	1484		1657	1473		1551	3020	1380	1656	3316	1401
Flt Permitted	0.71	1.00		0.46	1.00		0.09	1.00	1.00	0.46	1.00	1.00
Satd. Flow (perm)	1244	1484		804	1473		142	3020	1380	796	3316	1401
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	103	37	158	126	17	51	99	527	64	79	1523	69
RTOR Reduction (vph)	0	131	0	0	42	0	0	0	25	0	0	28
Lane Group Flow (vph)	103	64	0	126	26	0	99	527	39	79	1523	41
Confl. Peds. (#/hr)			1	1					2	2		
Heavy Vehicles (%)	2%	14%	2%	2%	2%	9%	9%	12%	7%	2%	2%	8%
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
Actuated Green, G (s)	20.2	20.2		20.2	20.2		82.4	74.0	74.0	77.0	70.8	70.8
Effective Green, g (s)	20.2	20.2		20.2	20.2		82.4	74.0	74.0	77.0	70.8	70.8
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.69	0.62	0.62	0.64	0.59	0.59
Clearance Time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	209	249		135	247		196	1862	851	555	1956	826
v/s Ratio Prot		0.04			0.02		c0.04	0.17		0.01	c0.46	
v/s Ratio Perm	0.08			c0.16			c0.31		0.03	0.08		0.03
v/c Ratio	0.49	0.26		0.93	0.10		0.51	0.28	0.05	0.14	0.78	0.05
Uniform Delay, d1	45.3	43.4		49.2	42.2		14.7	10.7	9.1	8.1	18.7	10.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	0.5		57.1	0.2		2.0	0.4	0.1	0.1	3.1	0.1
Delay (s)	47.1	43.9		106.3	42.4		16.8	11.1	9.2	8.2	21.8	10.5
Level of Service	D	D		F	D		B	B	A	A	C	B
Approach Delay (s)		45.0			83.9			11.7			20.7	
Approach LOS		D			F			B			C	

Intersection Summary			
HCM 2000 Control Delay	25.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.6
Intersection Capacity Utilization	94.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	39	256	182	34	54	83	636	79	35	1583	58
Future Volume (vph)	66	39	256	182	34	54	83	636	79	35	1583	58
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		5.0	15.0		0.0	100.0		0.0	45.0		0.0
Storage Lanes	1		1	1		0	2		0	1		0
Taper Length (m)	0.0			30.0			100.0			85.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor	1.00		0.98	0.99	0.99		1.00	1.00		1.00	1.00	
Frt			0.850		0.908			0.983			0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1496	1679	1483	1658	1458	0	3124	4440	0	1433	4726	0
Flt Permitted	0.549			0.732			0.950			0.950		
Satd. Flow (perm)	863	1679	1456	1270	1458	0	3122	4440	0	1428	4726	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			156		54			20			5	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		117.7			346.6			261.8			142.1	
Travel Time (s)		8.5			25.0			11.8			6.4	
Confl. Peds. (#/hr)	3		6	6		3	3		4	4		3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	13%	6%	2%	2%	8%	11%	5%	7%	9%	18%	2%	9%
Adj. Flow (vph)	66	39	256	182	34	54	83	636	79	35	1583	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	66	39	256	182	88	0	83	715	0	35	1641	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

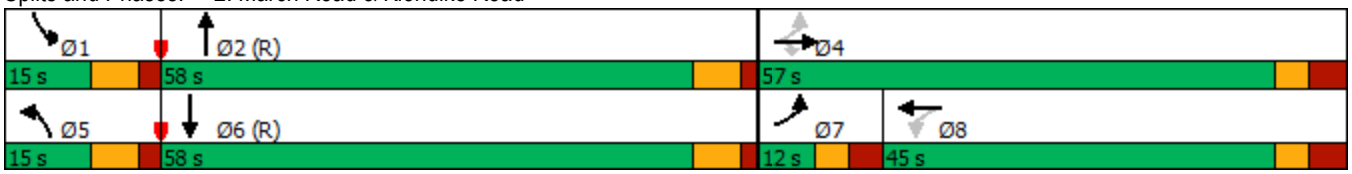


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8								
Detector Phase	7	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.6	44.1	44.1	44.1	44.1		11.6	32.4		11.6	32.4	
Total Split (s)	12.0	57.0	57.0	45.0	45.0		15.0	58.0		15.0	58.0	
Total Split (%)	9.2%	43.8%	43.8%	34.6%	34.6%		11.5%	44.6%		11.5%	44.6%	
Maximum Green (s)	5.4	49.9	49.9	37.9	37.9		8.4	51.6		8.4	51.6	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		4.6	4.6		4.6	4.6	
All-Red Time (s)	3.3	3.8	3.8	3.8	3.8		2.0	1.8		2.0	1.8	
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)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)		7.0	7.0	7.0	7.0			7.0			7.0	
Flash Dont Walk (s)		30.0	30.0	30.0	30.0			19.0			19.0	
Pedestrian Calls (#/hr)		0	0	0	0			0			0	
Act Effct Green (s)	34.1	33.6	33.6	24.0	24.0		8.8	72.8		8.7	67.5	
Actuated g/C Ratio	0.26	0.26	0.26	0.18	0.18		0.07	0.56		0.07	0.52	
v/c Ratio	0.26	0.09	0.52	0.78	0.28		0.39	0.29		0.37	0.67	
Control Delay	36.0	32.5	17.8	71.4	20.8		63.0	18.0		67.9	26.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	36.0	32.5	17.8	71.4	20.8		63.0	18.0		67.9	26.9	
LOS	D	C	B	E	C		E	B		E	C	
Approach Delay		22.7			54.9			22.7			27.7	
Approach LOS		C			D			C			C	
Queue Length 50th (m)	12.7	7.4	20.1	44.8	7.4		10.6	37.5		8.7	114.2	
Queue Length 95th (m)	22.0	14.7	41.5	65.5	20.2		18.8	56.5		19.2	157.1	
Internal Link Dist (m)		93.7			322.6			237.8			118.1	
Turn Bay Length (m)	100.0		5.0	15.0			100.0			45.0		
Base Capacity (vph)	252	644	655	370	463		224	2495		104	2456	
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	0.26	0.06	0.39	0.49	0.19		0.37	0.29		0.34	0.67	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 64 (49%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 28.2		Intersection LOS: C	

Intersection Capacity Utilization 81.3% ICU Level of Service D
Analysis Period (min) 15

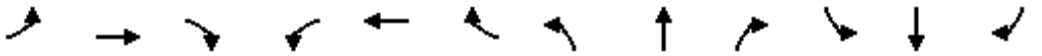
Splits and Phases: 2: March Road & Klondike Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	39	256	182	34	54	83	636	79	35	1583	58
Future Volume (vph)	66	39	256	182	34	54	83	636	79	35	1583	58
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.91		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1494	1679	1456	1648	1458		3124	4442		1433	4725	
Flt Permitted	0.55	1.00	1.00	0.73	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	864	1679	1456	1269	1458		3124	4442		1433	4725	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	66	39	256	182	34	54	83	636	79	35	1583	58
RTOR Reduction (vph)	0	0	114	0	44	0	0	9	0	0	2	0
Lane Group Flow (vph)	66	39	142	182	44	0	83	706	0	35	1639	0
Confl. Peds. (#/hr)	3		6	6		3	3		4	4		3
Heavy Vehicles (%)	13%	6%	2%	2%	8%	11%	5%	7%	9%	18%	2%	9%
Turn Type	pm+pt	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	34.9	34.9	34.9	24.0	24.0		8.8	68.9		6.1	66.2	
Effective Green, g (s)	34.9	34.9	34.9	24.0	24.0		8.8	68.9		6.1	66.2	
Actuated g/C Ratio	0.27	0.27	0.27	0.18	0.18		0.07	0.53		0.05	0.51	
Clearance Time (s)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	252	450	390	234	269		211	2354		67	2406	
v/s Ratio Prot	0.01	0.02			0.03		c0.03	c0.16		0.02	c0.35	
v/s Ratio Perm	0.06		c0.10	c0.14								
v/c Ratio	0.26	0.09	0.36	0.78	0.16		0.39	0.30		0.52	0.68	
Uniform Delay, d1	36.7	35.6	38.5	50.5	44.6		58.0	17.1		60.5	24.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.1	0.6	14.9	0.3		1.2	0.3		7.2	1.6	
Delay (s)	37.2	35.7	39.1	65.4	44.8		59.3	17.4		67.7	25.5	
Level of Service	D	D	D	E	D		E	B		E	C	
Approach Delay (s)		38.4			58.7			21.8			26.4	
Approach LOS		D			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	26.7
Intersection Capacity Utilization	81.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	2	30	51	3	6	4	650	26	3	1590	1
Future Volume (vph)	5	2	30	51	3	6	4	650	26	3	1590	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		50.0	110.0		0.0
Storage Lanes	0		0	0		0	1		1	1		0
Taper Length (m)	15.0			15.0			15.0			95.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.891			0.986				0.850			
Flt Protected		0.993			0.959		0.950			0.950		
Satd. Flow (prot)	0	1544	0	0	1650	0	1658	1745	1483	1658	1745	0
Flt Permitted		0.993			0.959		0.950			0.950		
Satd. Flow (perm)	0	1544	0	0	1650	0	1658	1745	1483	1658	1745	0
Link Speed (k/h)		50			30			80			80	
Link Distance (m)		84.7			77.2			78.1			262.6	
Travel Time (s)		6.1			9.3			3.5			11.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	5	2	30	51	3	6	4	650	26	3	1590	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	37	0	0	60	0	4	650	26	3	1591	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 105.3%		ICU Level of Service G	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	27.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	2	30	51	3	6	4	650	26	3	1590	1
Future Vol, veh/h	5	2	30	51	3	6	4	650	26	3	1590	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	30	-	50	110	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	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	5	2	30	51	3	6	4	650	26	3	1590	1

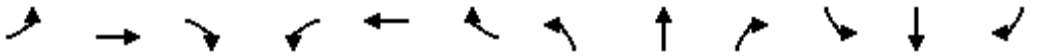
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2273	2281	1591	2271	2255	650	1591	0	0	676	0	0
Stage 1	1597	1597	-	658	658	-	-	-	-	-	-	-
Stage 2	676	684	-	1613	1597	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	28	40	132	~ 29	41	469	412	-	-	915	-	-
Stage 1	134	166	-	453	461	-	-	-	-	-	-	-
Stage 2	443	449	-	131	166	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	26	39	132	~ 21	40	469	412	-	-	915	-	-
Mov Cap-2 Maneuver	26	39	-	~ 21	40	-	-	-	-	-	-	-
Stage 1	133	166	-	448	456	-	-	-	-	-	-	-
Stage 2	430	445	-	100	166	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	85.6	$ 1024.2	0.1	0
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	412	-	-	79	24	915	-	-
HCM Lane V/C Ratio	0.01	-	-	0.468	2.5	0.003	-	-
HCM Control Delay (s)	13.8	-	-	85.5	$ 1024.2	8.9	-	-
HCM Lane LOS	B	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1.9	7.5	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	56	93	80	61	126	252	1503	115	111	665	99
Future Volume (vph)	85	56	93	80	61	126	252	1503	115	111	665	99
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0		0.0	30.0		0.0	60.0		0.0	70.0		15.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	60.0			60.0			70.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99	0.98		0.98	0.98		1.00		0.96			0.98
Frt		0.906			0.899				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1658	1485	0	1610	1538	0	1658	3316	1483	1658	3316	1483
Flt Permitted	0.420			0.546			0.358			0.111		
Satd. Flow (perm)	726	1485	0	911	1538	0	624	3316	1419	194	3316	1447
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		73			91				100			100
Link Speed (k/h)		40			40			80			80	
Link Distance (m)		143.7			356.2			324.9			231.3	
Travel Time (s)		12.9			32.1			14.6			10.4	
Confl. Peds. (#/hr)	11		17	17		11	2		11	11		2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	9%	5%	5%	3%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	85	56	93	80	61	126	252	1503	115	111	665	99
Shared Lane Traffic (%)												
Lane Group Flow (vph)	85	149	0	80	187	0	252	1503	115	111	665	99
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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)	38.6	38.6		38.6	38.6		12.4	34.6	34.6	11.4	34.6	34.6
Total Split (s)	45.0	45.0		45.0	45.0		20.0	55.0	55.0	20.0	55.0	55.0
Total Split (%)	37.5%	37.5%		37.5%	37.5%		16.7%	45.8%	45.8%	16.7%	45.8%	45.8%
Maximum Green (s)	38.4	38.4		38.4	38.4		12.6	48.4	48.4	13.6	48.4	48.4
Yellow Time (s)	3.3	3.3		3.3	3.3		4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	3.3	3.3		3.3	3.3		2.8	2.0	2.0	1.8	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)	25.0	25.0		25.0	25.0			21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)	0	0		0	0			0	0		0	0
Act Effct Green (s)	15.9	15.9		15.9	15.9		85.4	75.0	75.0	82.0	72.3	72.3
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.71	0.62	0.62	0.68	0.60	0.60
v/c Ratio	0.89	0.58		0.67	0.66		0.47	0.73	0.12	0.45	0.33	0.11
Control Delay	116.5	33.2		74.3	35.9		8.1	19.7	3.6	12.8	13.6	3.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	116.5	33.2		74.3	35.9		8.1	19.7	3.6	12.8	13.6	3.1
LOS	F	C		E	D		A	B	A	B	B	A
Approach Delay		63.4			47.4			17.1			12.3	
Approach LOS		E			D			B			B	
Queue Length 50th (m)	20.0	16.7		18.3	21.5		14.7	116.4	1.2	5.6	37.6	0.0
Queue Length 95th (m)	#39.8	35.3		33.1	42.7		29.8	190.1	10.5	15.4	63.4	8.3
Internal Link Dist (m)		119.7			332.2			300.9			207.3	
Turn Bay Length (m)	30.0			30.0			60.0			70.0		15.0
Base Capacity (vph)	232	524		291	554		568	2073	924	307	1998	912
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.28		0.27	0.34		0.44	0.73	0.12	0.36	0.33	0.11

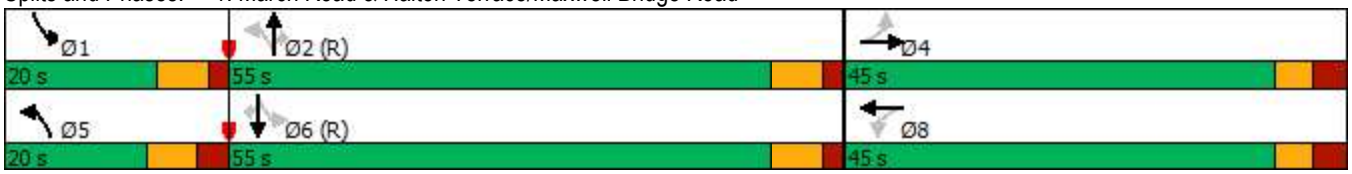
Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 50 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 21.7	Intersection LOS: C

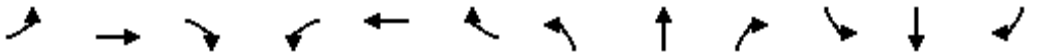
Intersection Capacity Utilization 97.8% ICU Level of Service F

Analysis Period (min) 15

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

Splits and Phases: 1: March Road & Halton Terrace/Maxwell Bridge Road

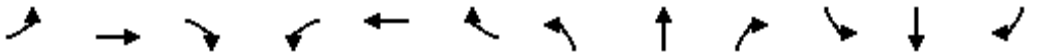




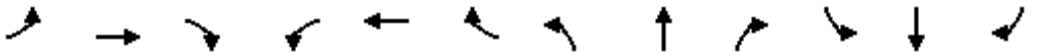
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	56	93	80	61	126	252	1503	115	111	665	99
Future Volume (vph)	85	56	93	80	61	126	252	1503	115	111	665	99
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	0.98		1.00	1.00	0.96	1.00	1.00	0.98
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.91		1.00	0.90		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1643	1486		1587	1538		1657	3316	1419	1658	3316	1447
Flt Permitted	0.42	1.00		0.55	1.00		0.36	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)	726	1486		912	1538		625	3316	1419	193	3316	1447
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	85	56	93	80	61	126	252	1503	115	111	665	99
RTOR Reduction (vph)	0	63	0	0	79	0	0	0	38	0	0	39
Lane Group Flow (vph)	85	86	0	80	108	0	252	1503	78	111	665	60
Confl. Peds. (#/hr)	11		17	17		11	2		11	11		2
Heavy Vehicles (%)	2%	9%	5%	5%	3%	2%	2%	2%	2%	2%	2%	2%
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
Actuated Green, G (s)	15.9	15.9		15.9	15.9		86.2	75.0	75.0	81.8	72.3	72.3
Effective Green, g (s)	15.9	15.9		15.9	15.9		86.2	75.0	75.0	81.8	72.3	72.3
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.72	0.62	0.62	0.68	0.60	0.60
Clearance Time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	96	196		120	203		545	2072	886	247	1997	871
v/s Ratio Prot		0.06			0.07		c0.04	c0.45		0.04	0.20	
v/s Ratio Perm	c0.12			0.09			0.29		0.05	0.27		0.04
v/c Ratio	0.89	0.44		0.67	0.53		0.46	0.73	0.09	0.45	0.33	0.07
Uniform Delay, d1	51.2	47.9		49.5	48.6		6.0	15.4	8.9	11.0	11.9	9.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	56.1	1.6		13.1	2.7		0.6	2.3	0.2	1.3	0.4	0.2
Delay (s)	107.2	49.5		62.7	51.3		6.6	17.7	9.1	12.3	12.3	10.0
Level of Service	F	D		E	D		A	B	A	B	B	B
Approach Delay (s)		70.5			54.7			15.7			12.0	
Approach LOS		E			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.6
Intersection Capacity Utilization	97.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	31	111	115	37	41	161	1785	156	16	799	97
Future Volume (vph)	115	31	111	115	37	41	161	1785	156	16	799	97
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		5.0	15.0		0.0	100.0		0.0	45.0		0.0
Storage Lanes	1		1	1		0	2		0	1		0
Taper Length (m)	0.0			30.0			100.0			85.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor	1.00		0.99	1.00	0.99		0.99	1.00		1.00	1.00	
Frt			0.850		0.921			0.988			0.984	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1658	1745	1483	1658	1567	0	3216	4689	0	1658	4676	0
Flt Permitted	0.509			0.737			0.950			0.950		
Satd. Flow (perm)	887	1745	1462	1284	1567	0	3198	4689	0	1655	4676	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			111		41			12			18	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		117.7			346.6			261.8			142.1	
Travel Time (s)		8.5			25.0			11.8			6.4	
Confl. Peds. (#/hr)	1		2	2		1	8		11	11		8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	115	31	111	115	37	41	161	1785	156	16	799	97
Shared Lane Traffic (%)												
Lane Group Flow (vph)	115	31	111	115	78	0	161	1941	0	16	896	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

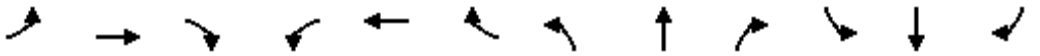


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8								
Detector Phase	7	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.6	44.1	44.1	44.1	44.1		11.6	32.4		11.6	32.4	
Total Split (s)	12.0	57.0	57.0	45.0	45.0		22.0	51.0		22.0	51.0	
Total Split (%)	9.2%	43.8%	43.8%	34.6%	34.6%		16.9%	39.2%		16.9%	39.2%	
Maximum Green (s)	5.4	49.9	49.9	37.9	37.9		15.4	44.6		15.4	44.6	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		4.6	4.6		4.6	4.6	
All-Red Time (s)	3.3	3.8	3.8	3.8	3.8		2.0	1.8		2.0	1.8	
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)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)		7.0	7.0	7.0	7.0			7.0			7.0	
Flash Dont Walk (s)		30.0	30.0	30.0	30.0			19.0			19.0	
Pedestrian Calls (#/hr)		0	0	0	0			0			0	
Act Effct Green (s)	29.5	29.0	29.0	17.0	17.0		11.8	81.6		6.8	69.1	
Actuated g/C Ratio	0.23	0.22	0.22	0.13	0.13		0.09	0.63		0.05	0.53	
v/c Ratio	0.49	0.08	0.27	0.68	0.33		0.55	0.66		0.18	0.36	
Control Delay	48.5	37.9	8.1	73.3	29.0		63.5	18.9		63.2	18.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	48.5	37.9	8.1	73.3	29.0		63.5	18.9		63.2	18.8	
LOS	D	D	A	E	C		E	B		E	B	
Approach Delay		29.8			55.4			22.3			19.6	
Approach LOS		C			E			C			B	
Queue Length 50th (m)	24.7	6.3	0.0	28.5	8.6		20.7	92.8		4.0	46.0	
Queue Length 95th (m)	38.7	13.7	13.8	46.1	22.1		31.2	171.6		11.5	66.6	
Internal Link Dist (m)		93.7			322.6			237.8			118.1	
Turn Bay Length (m)	100.0		5.0	15.0			100.0			45.0		
Base Capacity (vph)	233	669	629	374	485		380	2946		196	2492	
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	0.49	0.05	0.18	0.31	0.16		0.42	0.66		0.08	0.36	

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 20 (15%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 24.0	Intersection LOS: C

Intersection Capacity Utilization 75.6% ICU Level of Service D
Analysis Period (min) 15

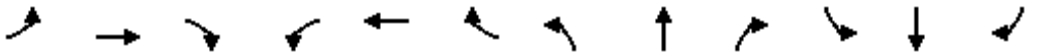
Splits and Phases: 2: March Road & Klondike Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	31	111	115	37	41	161	1785	156	16	799	97
Future Volume (vph)	115	31	111	115	37	41	161	1785	156	16	799	97
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.92		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1657	1745	1462	1654	1567		3216	4689		1658	4675	
Flt Permitted	0.51	1.00	1.00	0.74	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	887	1745	1462	1283	1567		3216	4689		1658	4675	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	115	31	111	115	37	41	161	1785	156	16	799	97
RTOR Reduction (vph)	0	0	86	0	36	0	0	5	0	0	8	0
Lane Group Flow (vph)	115	31	25	115	42	0	161	1936	0	16	888	0
Confl. Peds. (#/hr)	1		2	2		1	8		11	11		8
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	29.0	29.0	29.0	17.0	17.0		11.8	77.7		3.2	69.1	
Effective Green, g (s)	29.0	29.0	29.0	17.0	17.0		11.8	77.7		3.2	69.1	
Actuated g/C Ratio	0.22	0.22	0.22	0.13	0.13		0.09	0.60		0.02	0.53	
Clearance Time (s)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	229	389	326	167	204		291	2802		40	2484	
v/s Ratio Prot	c0.02	0.02			0.03		c0.05	c0.41		0.01	0.19	
v/s Ratio Perm	0.09		0.02	c0.09								
v/c Ratio	0.50	0.08	0.08	0.69	0.21		0.55	0.69		0.40	0.36	
Uniform Delay, d1	44.0	39.9	39.9	54.0	50.5		56.6	17.9		62.5	17.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	0.1	0.1	11.2	0.5		2.3	1.4		6.4	0.4	
Delay (s)	45.8	40.0	40.0	65.2	51.0		58.8	19.3		68.9	18.0	
Level of Service	D	D	D	E	D		E	B		E	B	
Approach Delay (s)		42.6			59.4			22.4			18.9	
Approach LOS		D			E			C			B	

Intersection Summary			
HCM 2000 Control Delay	25.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	26.7
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	3	49	39	2	11	23	1633	58	9	787	12
Future Volume (vph)	5	3	49	39	2	11	23	1633	58	9	787	12
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		50.0	110.0		0.0
Storage Lanes	0		0	0		0	1		1	1		0
Taper Length (m)	15.0			15.0			15.0			95.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.884			0.971				0.850		0.998	
Flt Protected		0.996			0.964		0.950			0.950		
Satd. Flow (prot)	0	1536	0	0	1633	0	1658	1745	1483	1658	1742	0
Flt Permitted		0.996			0.964		0.950			0.950		
Satd. Flow (perm)	0	1536	0	0	1633	0	1658	1745	1483	1658	1742	0
Link Speed (k/h)		50			30			80			80	
Link Distance (m)		100.3			69.7			80.8			213.6	
Travel Time (s)		7.2			8.4			3.6			9.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	5	3	49	39	2	11	23	1633	58	9	787	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	57	0	0	52	0	23	1633	58	9	799	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	107.2%	ICU Level of Service	G
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	25.6

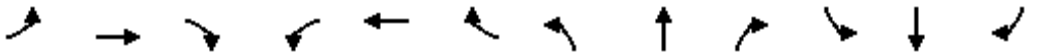
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	3	49	39	2	11	23	1633	58	9	787	12
Future Vol, veh/h	5	3	49	39	2	11	23	1633	58	9	787	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	30	-	50	110	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	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	5	3	49	39	2	11	23	1633	58	9	787	12

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2526	2548	793	2516	2496	1633	799	0	0	1691	0	0
Stage 1	811	811	-	1679	1679	-	-	-	-	-	-	-
Stage 2	1715	1737	-	837	817	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	19	27	389	~ 19	29	125	824	-	-	377	-	-
Stage 1	373	393	-	120	151	-	-	-	-	-	-	-
Stage 2	114	141	-	361	390	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	16	26	389	~ 15	28	125	824	-	-	377	-	-
Mov Cap-2 Maneuver	16	26	-	~ 15	28	-	-	-	-	-	-	-
Stage 1	363	384	-	117	147	-	-	-	-	-	-	-
Stage 2	100	137	-	306	381	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	76.6	$ 1206.6	0.1	0.2
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	824	-	-	103	19	377	-	-
HCM Lane V/C Ratio	0.028	-	-	0.553	2.737	0.024	-	-
HCM Control Delay (s)	9.5	-	-	76.8	$ 1206.6	14.8	-	-
HCM Lane LOS	A	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2.6	6.9	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	37	0	0	60	0	658	31	0	1588	1
Future Volume (vph)	0	0	37	0	0	60	0	658	31	0	1588	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		50.0	110.0		0.0
Storage Lanes	0		1	0		1	0		1	0		0
Taper Length (m)	15.0			15.0			15.0			95.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			0.865			0.850			
Flt Protected												
Satd. Flow (prot)	0	0	1510	0	0	1510	0	1745	1483	0	1745	0
Flt Permitted												
Satd. Flow (perm)	0	0	1510	0	0	1510	0	1745	1483	0	1745	0
Link Speed (k/h)		50			30			80			80	
Link Distance (m)		84.7			77.2			81.6			262.6	
Travel Time (s)		6.1			9.3			3.7			11.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	37	0	0	60	0	658	31	0	1588	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	37	0	0	60	0	658	31	0	1589	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		

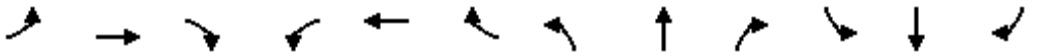
Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	37	0	0	60	0	658	31	0	1588	1
Future Vol, veh/h	0	0	37	0	0	60	0	658	31	0	1588	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	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	37	0	0	60	0	658	31	0	1588	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	1589	-	-	658	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.22	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	-	-	3.318	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	133	0	0	464	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	133	-	-	464	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	42.2	13.9	0	0
HCM LOS	E	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	133	464	-	-
HCM Lane V/C Ratio	-	-	0.278	0.129	-	-
HCM Control Delay (s)	-	-	42.2	13.9	-	-
HCM Lane LOS	-	-	E	B	-	-
HCM 95th %tile Q(veh)	-	-	1.1	0.4	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	57	0	0	52	0	1686	67	0	801	12
Future Volume (vph)	0	0	57	0	0	52	0	1686	67	0	801	12
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	20.0		0.0	0.0		50.0	110.0		0.0
Storage Lanes	0		1	0		1	0		1	0		0
Taper Length (m)	15.0			15.0			15.0			95.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			0.865			0.850		0.998	
Flt Protected												
Satd. Flow (prot)	0	0	1510	0	0	1510	0	1745	1483	0	1742	0
Flt Permitted												
Satd. Flow (perm)	0	0	1510	0	0	1510	0	1745	1483	0	1742	0
Link Speed (k/h)		50			30			80			80	
Link Distance (m)		100.3			69.7			75.7			213.6	
Travel Time (s)		7.2			8.4			3.4			9.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	57	0	0	52	0	1686	67	0	801	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	57	0	0	52	0	1686	67	0	813	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	103.7%	ICU Level of Service	G
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	57	0	0	52	0	1686	67	0	801	12
Future Vol, veh/h	0	0	57	0	0	52	0	1686	67	0	801	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	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	57	0	0	52	0	1686	67	0	801	12

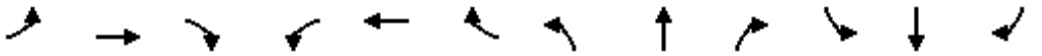
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	807	-	-	1686	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.22	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	-	-	3.318	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	381	0	0	116	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	381	-	-	116	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.1	59.1	0	0
HCM LOS	C	F		

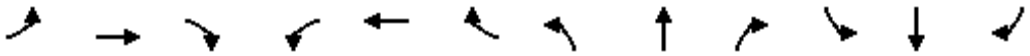
Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	381	116	-	-
HCM Lane V/C Ratio	-	-	0.15	0.448	-	-
HCM Control Delay (s)	-	-	16.1	59.1	-	-
HCM Lane LOS	-	-	C	F	-	-
HCM 95th %tile Q(veh)	-	-	0.5	2	-	-

Appendix Q

Synchro Intersection Worksheets – 2028 Future Total Interim Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	37	96	126	16	25	23	208	62	72	885	15
Future Volume (vph)	23	37	96	126	16	25	23	208	62	72	885	15
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0		0.0	30.0		0.0	60.0		0.0	70.0		15.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	60.0			60.0			70.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		0.99		1.00					0.98	1.00		
Frt		0.892			0.909				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1658	1493	0	1658	1523	0	1551	3020	1414	1658	3316	1401
Flt Permitted	0.730			0.617			0.291			0.613		
Satd. Flow (perm)	1274	1493	0	1076	1523	0	475	3020	1380	1066	3316	1401
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		96			25				100			100
Link Speed (k/h)		40			40			80			80	
Link Distance (m)		143.7			356.2			324.9			130.5	
Travel Time (s)		12.9			32.1			14.6			5.9	
Confl. Peds. (#/hr)			1	1					2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	14%	2%	2%	2%	9%	9%	12%	7%	2%	2%	8%
Adj. Flow (vph)	23	37	96	126	16	25	23	208	62	72	885	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	133	0	126	41	0	23	208	62	72	885	15
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

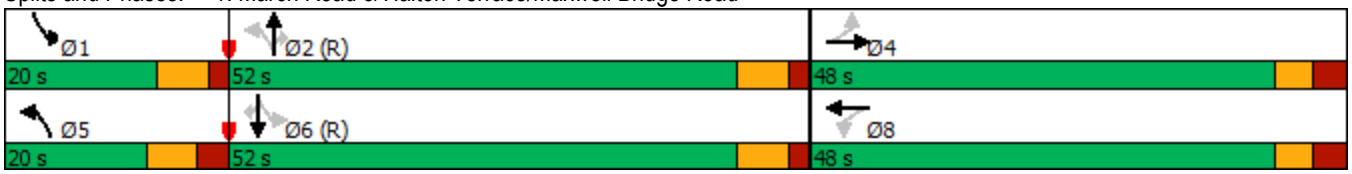


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	38.6	38.6		38.6	38.6		12.4	34.6	34.6	11.4	34.6	34.6
Total Split (s)	48.0	48.0		48.0	48.0		20.0	52.0	52.0	20.0	52.0	52.0
Total Split (%)	40.0%	40.0%		40.0%	40.0%		16.7%	43.3%	43.3%	16.7%	43.3%	43.3%
Maximum Green (s)	41.4	41.4		41.4	41.4		12.6	45.4	45.4	13.6	45.4	45.4
Yellow Time (s)	3.3	3.3		3.3	3.3		4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	3.3	3.3		3.3	3.3		2.8	2.0	2.0	1.8	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)	25.0	25.0		25.0	25.0			21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)	0	0		0	0			0	0		0	0
Act Effct Green (s)	18.4	18.4		18.4	18.4		81.5	77.4	77.4	85.0	80.1	80.1
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.68	0.64	0.64	0.71	0.67	0.67
v/c Ratio	0.12	0.43		0.77	0.16		0.06	0.11	0.07	0.09	0.40	0.02
Control Delay	41.9	18.5		76.0	22.4		6.5	10.1	0.8	5.8	11.6	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	41.9	18.5		76.0	22.4		6.5	10.1	0.8	5.8	11.6	0.0
LOS	D	B		E	C		A	B	A	A	B	A
Approach Delay		22.0			62.9			7.9			11.0	
Approach LOS		C			E			A			B	
Queue Length 50th (m)	4.7	7.7		28.8	3.3		1.3	9.6	0.0	4.1	52.1	0.0
Queue Length 95th (m)	11.4	23.8		46.5	12.3		4.5	18.4	2.1	10.3	80.8	0.0
Internal Link Dist (m)		119.7			332.2			300.9			106.5	
Turn Bay Length (m)	30.0			30.0			60.0			70.0		15.0
Base Capacity (vph)	439	577		371	541		455	1947	925	852	2214	969
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.23		0.34	0.08		0.05	0.11	0.07	0.08	0.40	0.02

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 99 (83%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 17.0	Intersection LOS: B

Intersection Capacity Utilization 70.0% ICU Level of Service C
Analysis Period (min) 15

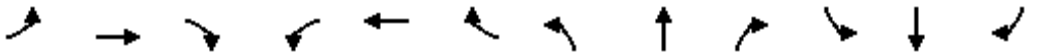
Splits and Phases: 1: March Road & Halton Terrace/Maxwell Bridge Road



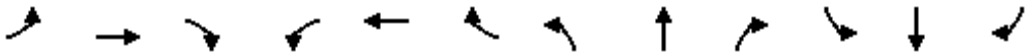
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	37	96	126	16	25	23	208	62	72	885	15
Future Volume (vph)	23	37	96	126	16	25	23	208	62	72	885	15
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.89		1.00	0.91		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1658	1493		1656	1522		1551	3020	1380	1655	3316	1401
Flt Permitted	0.73	1.00		0.62	1.00		0.29	1.00	1.00	0.61	1.00	1.00
Satd. Flow (perm)	1274	1493		1076	1522		475	3020	1380	1067	3316	1401
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	23	37	96	126	16	25	23	208	62	72	885	15
RTOR Reduction (vph)	0	81	0	0	21	0	0	0	23	0	0	5
Lane Group Flow (vph)	23	52	0	126	20	0	23	208	39	72	885	10
Confl. Peds. (#/hr)			1	1					2	2		
Heavy Vehicles (%)	2%	14%	2%	2%	2%	9%	9%	12%	7%	2%	2%	8%
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
Actuated Green, G (s)	18.4	18.4		18.4	18.4		79.9	76.1	76.1	83.1	77.2	77.2
Effective Green, g (s)	18.4	18.4		18.4	18.4		79.9	76.1	76.1	83.1	77.2	77.2
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.67	0.63	0.63	0.69	0.64	0.64
Clearance Time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	195	228		164	233		350	1915	875	767	2133	901
v/s Ratio Prot		0.03			0.01		0.00	0.07		c0.00	c0.27	
v/s Ratio Perm	0.02			c0.12			0.04		0.03	0.06		0.01
v/c Ratio	0.12	0.23		0.77	0.09		0.07	0.11	0.04	0.09	0.41	0.01
Uniform Delay, d1	43.8	44.6		48.8	43.6		7.0	8.6	8.3	5.9	10.4	7.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.5		19.2	0.2		0.1	0.1	0.1	0.1	0.6	0.0
Delay (s)	44.1	45.1		67.9	43.7		7.1	8.7	8.4	6.0	11.0	7.7
Level of Service	D	D		E	D		A	A	A	A	B	A
Approach Delay (s)		44.9			62.0			8.5			10.6	
Approach LOS		D			E			A			B	

Intersection Summary			
HCM 2000 Control Delay	19.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.6
Intersection Capacity Utilization	70.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	35	256	92	25	21	83	305	44	20	958	36
Future Volume (vph)	32	35	256	92	25	21	83	305	44	20	958	36
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		5.0	15.0		0.0	100.0		0.0	45.0		0.0
Storage Lanes	1		1	1		0	2		0	1		0
Taper Length (m)	0.0			30.0			100.0			85.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor	1.00		0.98	0.99	0.99		1.00	1.00		0.99	1.00	
Frt			0.850		0.932			0.981			0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1496	1679	1483	1658	1506	0	3124	4428	0	1433	4726	0
Flt Permitted	0.503			0.734			0.950			0.950		
Satd. Flow (perm)	790	1679	1456	1273	1506	0	3118	4428	0	1424	4726	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			188		21			24			5	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		117.7			346.6			261.8			142.1	
Travel Time (s)		8.5			25.0			11.8			6.4	
Confl. Peds. (#/hr)	3		6	6		3	3		4	4		3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	13%	6%	2%	2%	8%	11%	5%	7%	9%	18%	2%	9%
Adj. Flow (vph)	32	35	256	92	25	21	83	305	44	20	958	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	32	35	256	92	46	0	83	349	0	20	994	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

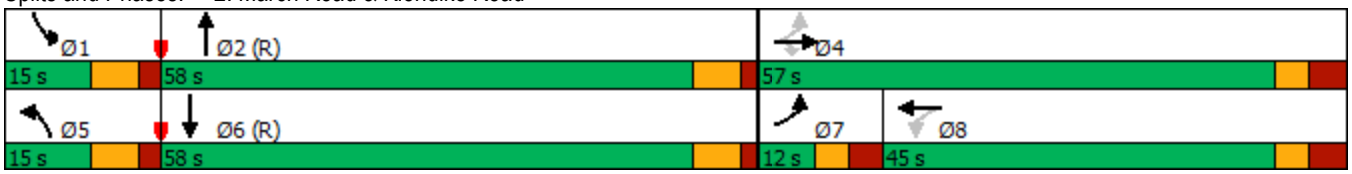


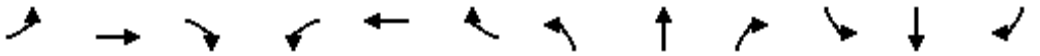
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8								
Detector Phase	7	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.6	44.1	44.1	44.1	44.1		11.6	32.4		11.6	32.4	
Total Split (s)	12.0	57.0	57.0	45.0	45.0		15.0	58.0		15.0	58.0	
Total Split (%)	9.2%	43.8%	43.8%	34.6%	34.6%		11.5%	44.6%		11.5%	44.6%	
Maximum Green (s)	5.4	49.9	49.9	37.9	37.9		8.4	51.6		8.4	51.6	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		4.6	4.6		4.6	4.6	
All-Red Time (s)	3.3	3.8	3.8	3.8	3.8		2.0	1.8		2.0	1.8	
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)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)		7.0	7.0	7.0	7.0			7.0			7.0	
Flash Dont Walk (s)		30.0	30.0	30.0	30.0			19.0			19.0	
Pedestrian Calls (#/hr)		0	0	0	0			0			0	
Act Effct Green (s)	22.5	22.0	22.0	14.8	14.8		8.8	88.2		7.4	79.1	
Actuated g/C Ratio	0.17	0.17	0.17	0.11	0.11		0.07	0.68		0.06	0.61	
v/c Ratio	0.19	0.12	0.64	0.64	0.24		0.39	0.12		0.25	0.35	
Control Delay	43.0	41.7	20.3	73.6	34.4		63.0	9.5		65.1	14.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	43.0	41.7	20.3	73.6	34.4		63.0	9.5		65.1	14.6	
LOS	D	D	C	E	C		E	A		E	B	
Approach Delay		24.9			60.5			19.7			15.6	
Approach LOS		C			E			B			B	
Queue Length 50th (m)	6.7	7.3	14.7	22.9	5.9		10.6	9.3		5.0	48.0	
Queue Length 95th (m)	14.6	15.4	39.4	39.1	16.9		18.8	21.4		13.3	68.0	
Internal Link Dist (m)		93.7			322.6			237.8			118.1	
Turn Bay Length (m)	100.0		5.0	15.0			100.0			45.0		
Base Capacity (vph)	166	644	674	371	453		224	3013		95	2878	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.19	0.05	0.38	0.25	0.10		0.37	0.12		0.21	0.35	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 64 (49%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 21.4		Intersection LOS: C	

Intersection Capacity Utilization 64.0% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 2: March Road & Klondike Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	35	256	92	25	21	83	305	44	20	958	36
Future Volume (vph)	32	35	256	92	25	21	83	305	44	20	958	36
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1495	1679	1456	1648	1506		3124	4428		1433	4724	
Flt Permitted	0.50	1.00	1.00	0.73	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	791	1679	1456	1274	1506		3124	4428		1433	4724	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	32	35	256	92	25	21	83	305	44	20	958	36
RTOR Reduction (vph)	0	0	152	0	19	0	0	9	0	0	2	0
Lane Group Flow (vph)	32	35	104	92	27	0	83	340	0	20	992	0
Confl. Peds. (#/hr)	3		6	6		3	3		4	4		3
Heavy Vehicles (%)	13%	6%	2%	2%	8%	11%	5%	7%	9%	18%	2%	9%
Turn Type	pm+pt	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	24.6	24.6	24.6	14.8	14.8		8.8	81.7		3.6	76.5	
Effective Green, g (s)	24.6	24.6	24.6	14.8	14.8		8.8	81.7		3.6	76.5	
Actuated g/C Ratio	0.19	0.19	0.19	0.11	0.11		0.07	0.63		0.03	0.59	
Clearance Time (s)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	167	317	275	145	171		211	2782		39	2779	
v/s Ratio Prot	0.00	0.02			0.02		c0.03	c0.08		0.01	c0.21	
v/s Ratio Perm	0.03		c0.07	c0.07								
v/c Ratio	0.19	0.11	0.38	0.63	0.16		0.39	0.12		0.51	0.36	
Uniform Delay, d1	43.8	43.6	46.0	55.0	52.0		58.0	9.7		62.3	13.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.2	0.9	8.8	0.4		1.2	0.1		10.9	0.4	
Delay (s)	44.4	43.8	46.9	63.8	52.4		59.3	9.8		73.3	14.3	
Level of Service	D	D	D	E	D		E	A		E	B	
Approach Delay (s)		46.3			60.0			19.3			15.5	
Approach LOS		D			E			B			B	

Intersection Summary			
HCM 2000 Control Delay	24.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	26.7
Intersection Capacity Utilization	64.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	53	7	229	26	4	921
Future Volume (vph)	53	7	229	26	4	921
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0	0.0		50.0	110.0	
Storage Lanes	1	0		1	1	
Taper Length (m)	15.0				95.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.984			0.850		
Flt Protected	0.958				0.950	
Satd. Flow (prot)	1645	0	1745	1483	1658	1745
Flt Permitted	0.958				0.950	
Satd. Flow (perm)	1645	0	1745	1483	1658	1745
Link Speed (k/h)	30		80			80
Link Distance (m)	77.2		83.4			262.6
Travel Time (s)	9.3		3.8			11.8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	53	7	229	26	4	921
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	0	229	26	4	921
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		

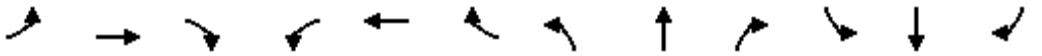
Intersection	
Int Delay, s/veh	1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	53	7	229	26	4	921
Future Vol, veh/h	53	7	229	26	4	921
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	50	110	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	53	7	229	26	4	921

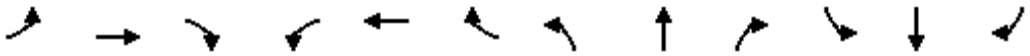
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1158	229	0	0	255	0
Stage 1	229	-	-	-	-	-
Stage 2	929	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	217	810	-	-	1310	-
Stage 1	809	-	-	-	-	-
Stage 2	385	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	216	810	-	-	1310	-
Mov Cap-2 Maneuver	216	-	-	-	-	-
Stage 1	809	-	-	-	-	-
Stage 2	384	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	25.4	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	236	1310	-
HCM Lane V/C Ratio	-	-	0.254	0.003	-
HCM Control Delay (s)	-	-	25.4	7.8	-
HCM Lane LOS	-	-	D	A	-
HCM 95th %tile Q(veh)	-	-	1	0	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	56	41	80	59	93	174	954	115	62	279	14
Future Volume (vph)	20	56	41	80	59	93	174	954	115	62	279	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0		0.0	30.0		0.0	60.0		0.0	70.0		15.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	60.0			60.0			70.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		0.99		1.00					0.98	1.00		
Frt		0.937			0.908				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1658	1523	0	1658	1521	0	1551	3020	1414	1658	3316	1401
Flt Permitted	0.509			0.694			0.547			0.285		
Satd. Flow (perm)	888	1523	0	1210	1521	0	893	3020	1380	497	3316	1401
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		32			70				115			100
Link Speed (k/h)		40			40			80			80	
Link Distance (m)		143.7			356.2			324.9			133.9	
Travel Time (s)		12.9			32.1			14.6			6.0	
Confl. Peds. (#/hr)			1	1					2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	14%	2%	2%	2%	9%	9%	12%	7%	2%	2%	8%
Adj. Flow (vph)	20	56	41	80	59	93	174	954	115	62	279	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	20	97	0	80	152	0	174	954	115	62	279	14
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

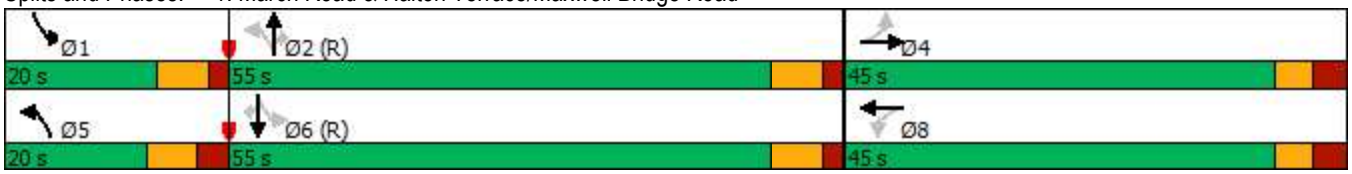


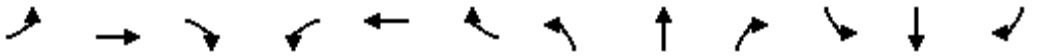
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	38.6	38.6		38.6	38.6		12.4	34.6	34.6	11.4	34.6	34.6
Total Split (s)	45.0	45.0		45.0	45.0		20.0	55.0	55.0	20.0	55.0	55.0
Total Split (%)	37.5%	37.5%		37.5%	37.5%		16.7%	45.8%	45.8%	16.7%	45.8%	45.8%
Maximum Green (s)	38.4	38.4		38.4	38.4		12.6	48.4	48.4	13.6	48.4	48.4
Yellow Time (s)	3.3	3.3		3.3	3.3		4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	3.3	3.3		3.3	3.3		2.8	2.0	2.0	1.8	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)	25.0	25.0		25.0	25.0			21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)	0	0		0	0			0	0		0	0
Act Effct Green (s)	13.9	13.9		13.9	13.9		89.4	82.3	82.3	83.1	76.3	76.3
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.74	0.69	0.69	0.69	0.64	0.64
v/c Ratio	0.19	0.48		0.57	0.64		0.24	0.46	0.12	0.15	0.13	0.02
Control Delay	50.5	40.2		65.5	39.3		5.0	10.7	1.9	5.1	9.7	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	50.5	40.2		65.5	39.3		5.0	10.7	1.9	5.1	9.7	0.0
LOS	D	D		E	D		A	B	A	A	A	A
Approach Delay		42.0			48.3			9.1			8.5	
Approach LOS		D			D			A			A	
Queue Length 50th (m)	4.4	14.4		18.2	18.4		8.8	51.7	0.0	2.8	12.4	0.0
Queue Length 95th (m)	11.5	29.8		32.8	38.4		18.5	80.1	7.0	7.3	22.6	0.0
Internal Link Dist (m)		119.7			332.2			300.9			109.9	
Turn Bay Length (m)	30.0			30.0			60.0			70.0		15.0
Base Capacity (vph)	284	509		387	534		750	2071	982	504	2107	926
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.19		0.21	0.28		0.23	0.46	0.12	0.12	0.13	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 50 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 15.6		Intersection LOS: B	

Intersection Capacity Utilization 66.2% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 1: March Road & Halton Terrace/Maxwell Bridge Road

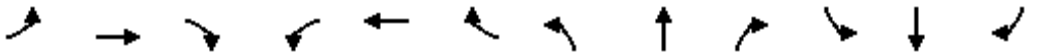




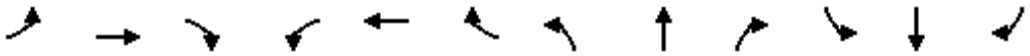
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	56	41	80	59	93	174	954	115	62	279	14
Future Volume (vph)	20	56	41	80	59	93	174	954	115	62	279	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.94		1.00	0.91		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1658	1522		1656	1521		1551	3020	1380	1657	3316	1401
Flt Permitted	0.51	1.00		0.69	1.00		0.55	1.00	1.00	0.29	1.00	1.00
Satd. Flow (perm)	888	1522		1210	1521		893	3020	1380	497	3316	1401
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	56	41	80	59	93	174	954	115	62	279	14
RTOR Reduction (vph)	0	28	0	0	62	0	0	0	37	0	0	5
Lane Group Flow (vph)	20	69	0	80	90	0	174	954	78	62	279	9
Confl. Peds. (#/hr)			1	1					2	2		
Heavy Vehicles (%)	2%	14%	2%	2%	2%	9%	9%	12%	7%	2%	2%	8%
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
Actuated Green, G (s)	13.9	13.9		13.9	13.9		90.2	81.0	81.0	81.8	76.3	76.3
Effective Green, g (s)	13.9	13.9		13.9	13.9		90.2	81.0	81.0	81.8	76.3	76.3
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.75	0.68	0.68	0.68	0.64	0.64
Clearance Time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	102	176		140	176		721	2038	931	391	2108	890
v/s Ratio Prot		0.05			0.06		c0.02	c0.32		0.01	0.08	
v/s Ratio Perm	0.02			c0.07			0.16		0.06	0.10		0.01
v/c Ratio	0.20	0.39		0.57	0.51		0.24	0.47	0.08	0.16	0.13	0.01
Uniform Delay, d1	48.0	49.1		50.2	49.9		4.3	9.3	6.7	6.4	8.7	8.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9	1.4		5.5	2.5		0.2	0.8	0.2	0.2	0.1	0.0
Delay (s)	48.9	50.6		55.8	52.4		4.5	10.0	6.9	6.6	8.8	8.0
Level of Service	D	D		E	D		A	B	A	A	A	A
Approach Delay (s)		50.3			53.5			9.0			8.4	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.6
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	22	111	61	31	25	161	1206	82	4	462	60
Future Volume (vph)	83	22	111	61	31	25	161	1206	82	4	462	60
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		5.0	15.0		0.0	100.0		0.0	45.0		0.0
Storage Lanes	1		1	1		0	2		0	1		0
Taper Length (m)	0.0			30.0			100.0			85.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor	1.00		0.98	0.99	0.99		1.00	1.00		1.00	1.00	
Frt			0.850		0.933			0.990			0.983	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1496	1679	1483	1658	1509	0	3124	4482	0	1433	4638	0
Flt Permitted	0.439			0.743			0.950			0.950		
Satd. Flow (perm)	690	1679	1456	1289	1509	0	3113	4482	0	1431	4638	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			111		25			9			19	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		117.7			346.6			261.8			142.1	
Travel Time (s)		8.5			25.0			11.8			6.4	
Confl. Peds. (#/hr)	3		6	6		3	3		4	4		3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	13%	6%	2%	2%	8%	11%	5%	7%	9%	18%	2%	9%
Adj. Flow (vph)	83	22	111	61	31	25	161	1206	82	4	462	60
Shared Lane Traffic (%)												
Lane Group Flow (vph)	83	22	111	61	56	0	161	1288	0	4	522	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

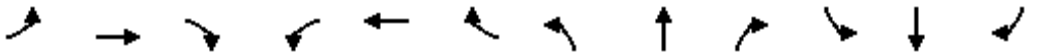


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8								
Detector Phase	7	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.6	44.1	44.1	44.1	44.1		11.6	32.4		11.6	32.4	
Total Split (s)	12.0	57.0	57.0	45.0	45.0		22.0	51.0		22.0	51.0	
Total Split (%)	9.2%	43.8%	43.8%	34.6%	34.6%		16.9%	39.2%		16.9%	39.2%	
Maximum Green (s)	5.4	49.9	49.9	37.9	37.9		15.4	44.6		15.4	44.6	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		4.6	4.6		4.6	4.6	
All-Red Time (s)	3.3	3.8	3.8	3.8	3.8		2.0	1.8		2.0	1.8	
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)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)		7.0	7.0	7.0	7.0			7.0			7.0	
Flash Dont Walk (s)		30.0	30.0	30.0	30.0			19.0			19.0	
Pedestrian Calls (#/hr)		0	0	0	0			0			0	
Act Effct Green (s)	21.5	21.0	21.0	11.5	11.5		12.0	92.8		6.0	76.9	
Actuated g/C Ratio	0.17	0.16	0.16	0.09	0.09		0.09	0.71		0.05	0.59	
v/c Ratio	0.56	0.08	0.34	0.54	0.36		0.56	0.40		0.06	0.19	
Control Delay	60.6	42.8	10.3	72.5	39.5		63.7	9.4		60.8	13.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	60.6	42.8	10.3	72.5	39.5		63.7	9.4		60.8	13.3	
LOS	E	D	B	E	D		E	A		E	B	
Approach Delay		33.0			56.7			15.5			13.7	
Approach LOS		C			E			B			B	
Queue Length 50th (m)	18.6	4.7	0.0	15.2	7.5		20.7	43.0		1.0	21.6	
Queue Length 95th (m)	32.3	11.8	15.0	28.8	20.1		31.2	81.4		4.8	32.9	
Internal Link Dist (m)		93.7			322.6			237.8			118.1	
Turn Bay Length (m)	100.0		5.0	15.0			100.0			45.0		
Base Capacity (vph)	148	644	627	375	457		370	3202		169	2752	
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	0.56	0.03	0.18	0.16	0.12		0.44	0.40		0.02	0.19	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 64 (49%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 18.8		Intersection LOS: B	

Intersection Capacity Utilization 62.5% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 2: March Road & Klondike Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	22	111	61	31	25	161	1206	82	4	462	60
Future Volume (vph)	83	22	111	61	31	25	161	1206	82	4	462	60
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1495	1679	1456	1648	1509		3124	4484		1433	4637	
Flt Permitted	0.44	1.00	1.00	0.74	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	691	1679	1456	1289	1509		3124	4484		1433	4637	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	83	22	111	61	31	25	161	1206	82	4	462	60
RTOR Reduction (vph)	0	0	92	0	23	0	0	3	0	0	8	0
Lane Group Flow (vph)	83	22	19	61	33	0	161	1285	0	4	514	0
Confl. Peds. (#/hr)	3		6	6		3	3		4	4		3
Heavy Vehicles (%)	13%	6%	2%	2%	8%	11%	5%	7%	9%	18%	2%	9%
Turn Type	pm+pt	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	22.4	22.4	22.4	10.3	10.3		12.0	86.1		1.4	75.5	
Effective Green, g (s)	22.4	22.4	22.4	10.3	10.3		12.0	86.1		1.4	75.5	
Actuated g/C Ratio	0.17	0.17	0.17	0.08	0.08		0.09	0.66		0.01	0.58	
Clearance Time (s)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	153	289	250	102	119		288	2969		15	2693	
v/s Ratio Prot	c0.02	0.01			0.02		c0.05	c0.29		0.00	0.11	
v/s Ratio Perm	c0.07		0.01	0.05								
v/c Ratio	0.54	0.08	0.08	0.60	0.28		0.56	0.43		0.27	0.19	
Uniform Delay, d1	48.1	45.1	45.1	57.8	56.3		56.5	10.4		63.8	12.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.9	0.1	0.1	9.1	1.3		2.3	0.5		9.3	0.2	
Delay (s)	52.0	45.2	45.3	66.9	57.6		58.8	10.9		73.1	13.0	
Level of Service	D	D	D	E	E		E	B		E	B	
Approach Delay (s)		47.8			62.5			16.2			13.5	
Approach LOS		D			E			B			B	

Intersection Summary			
HCM 2000 Control Delay	20.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	26.7
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	40	12	1009	58	12	316
Future Volume (vph)	40	12	1009	58	12	316
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0	0.0		50.0	110.0	
Storage Lanes	1	0		1	1	
Taper Length (m)	15.0				95.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.969			0.850		
Flt Protected	0.963				0.950	
Satd. Flow (prot)	1628	0	1745	1483	1658	1745
Flt Permitted	0.963				0.950	
Satd. Flow (perm)	1628	0	1745	1483	1658	1745
Link Speed (k/h)	30		80			80
Link Distance (m)	77.2		79.9			262.6
Travel Time (s)	9.3		3.6			11.8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	40	12	1009	58	12	316
Shared Lane Traffic (%)						
Lane Group Flow (vph)	52	0	1009	58	12	316
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 66.1%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	12	1009	58	12	316
Future Vol, veh/h	40	12	1009	58	12	316
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	50	110	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	12	1009	58	12	316

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1349	1009	0	0	1067	0
Stage 1	1009	-	-	-	-	-
Stage 2	340	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	166	292	-	-	653	-
Stage 1	352	-	-	-	-	-
Stage 2	721	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	163	292	-	-	653	-
Mov Cap-2 Maneuver	163	-	-	-	-	-
Stage 1	352	-	-	-	-	-
Stage 2	708	-	-	-	-	-

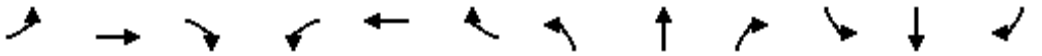
Approach	WB	NB	SB
HCM Control Delay, s	32.5	0	0.4
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	182	653	-
HCM Lane V/C Ratio	-	-	0.286	0.018	-
HCM Control Delay (s)	-	-	32.5	10.6	-
HCM Lane LOS	-	-	D	B	-
HCM 95th %tile Q(veh)	-	-	1.1	0.1	-

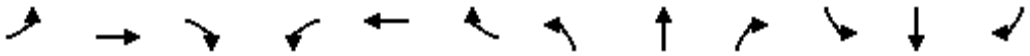
Appendix R

Synchro Intersection Worksheets – 2033 Future Total Conditions

CGH TRANSPORTATION



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	37	158	126	17	51	99	612	64	79	1730	69
Future Volume (vph)	103	37	158	126	17	51	99	612	64	79	1730	69
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0		0.0	30.0		0.0	60.0		0.0	70.0		15.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	60.0			60.0			70.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		0.99		1.00					0.98	1.00		
Frt		0.878			0.887				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1658	1483	0	1658	1472	0	1551	3020	1414	1658	3316	1401
Flt Permitted	0.713			0.461			0.054			0.419		
Satd. Flow (perm)	1244	1483	0	804	1472	0	88	3020	1380	730	3316	1401
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		158			51				100			100
Link Speed (k/h)		40			40			80			80	
Link Distance (m)		143.7			356.2			324.9			132.4	
Travel Time (s)		12.9			32.1			14.6			6.0	
Confl. Peds. (#/hr)			1	1					2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	14%	2%	2%	2%	9%	9%	12%	7%	2%	2%	8%
Adj. Flow (vph)	103	37	158	126	17	51	99	612	64	79	1730	69
Shared Lane Traffic (%)												
Lane Group Flow (vph)	103	195	0	126	68	0	99	612	64	79	1730	69
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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)	38.6	38.6		38.6	38.6		12.4	34.6	34.6	11.4	34.6	34.6
Total Split (s)	48.0	48.0		48.0	48.0		20.0	52.0	52.0	20.0	52.0	52.0
Total Split (%)	40.0%	40.0%		40.0%	40.0%		16.7%	43.3%	43.3%	16.7%	43.3%	43.3%
Maximum Green (s)	41.4	41.4		41.4	41.4		12.6	45.4	45.4	13.6	45.4	45.4
Yellow Time (s)	3.3	3.3		3.3	3.3		4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	3.3	3.3		3.3	3.3		2.8	2.0	2.0	1.8	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)	25.0	25.0		25.0	25.0			21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)	0	0		0	0			0	0		0	0
Act Effct Green (s)	20.2	20.2		20.2	20.2		81.7	75.3	75.3	78.3	70.8	70.8
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.68	0.63	0.63	0.65	0.59	0.59
v/c Ratio	0.49	0.51		0.93	0.23		0.61	0.32	0.07	0.15	0.88	0.08
Control Delay	51.5	14.9		109.8	16.7		37.4	12.9	1.1	7.1	29.5	1.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.5	14.9		109.8	16.7		37.4	12.9	1.1	7.1	29.5	1.5
LOS	D	B		F	B		D	B	A	A	C	A
Approach Delay		27.6			77.2			15.1			27.5	
Approach LOS		C			E			B			C	
Queue Length 50th (m)	22.3	7.5		29.6	3.4		9.4	34.9	0.0	4.8	171.3	0.0
Queue Length 95th (m)	36.3	26.6		#51.4	14.5		28.3	58.5	2.5	12.1	#284.1	3.7
Internal Link Dist (m)		119.7			332.2			300.9			108.4	
Turn Bay Length (m)	30.0			30.0			60.0			70.0		15.0
Base Capacity (vph)	429	615		277	541		215	1895	903	619	1957	867
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.32		0.45	0.13		0.46	0.32	0.07	0.13	0.88	0.08

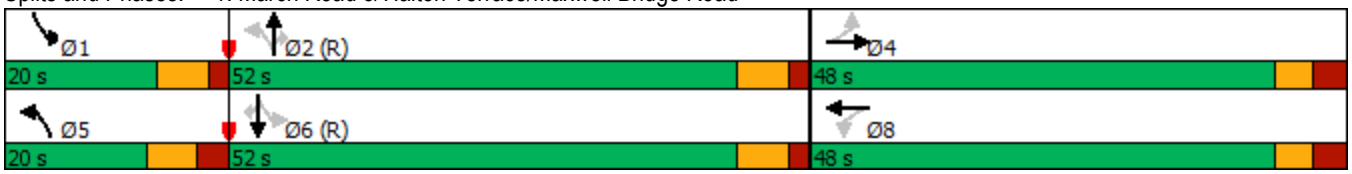
Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 99 (83%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 27.5	Intersection LOS: C

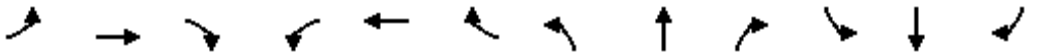
Intersection Capacity Utilization 100.2% ICU Level of Service G

Analysis Period (min) 15

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

Splits and Phases: 1: March Road & Halton Terrace/Maxwell Bridge Road

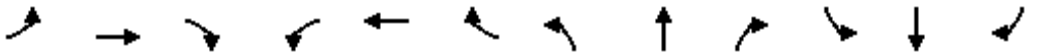




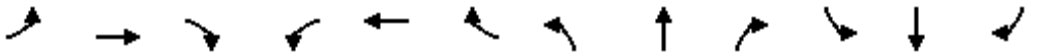
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	37	158	126	17	51	99	612	64	79	1730	69
Future Volume (vph)	103	37	158	126	17	51	99	612	64	79	1730	69
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.88		1.00	0.89		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1658	1484		1657	1473		1551	3020	1380	1657	3316	1401
Flt Permitted	0.71	1.00		0.46	1.00		0.05	1.00	1.00	0.42	1.00	1.00
Satd. Flow (perm)	1244	1484		804	1473		88	3020	1380	730	3316	1401
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	103	37	158	126	17	51	99	612	64	79	1730	69
RTOR Reduction (vph)	0	131	0	0	42	0	0	0	25	0	0	28
Lane Group Flow (vph)	103	64	0	126	26	0	99	612	39	79	1730	41
Confl. Peds. (#/hr)			1	1					2	2		
Heavy Vehicles (%)	2%	14%	2%	2%	2%	9%	9%	12%	7%	2%	2%	8%
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
Actuated Green, G (s)	20.2	20.2		20.2	20.2		82.4	74.0	74.0	77.0	70.8	70.8
Effective Green, g (s)	20.2	20.2		20.2	20.2		82.4	74.0	74.0	77.0	70.8	70.8
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.69	0.62	0.62	0.64	0.59	0.59
Clearance Time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	209	249		135	247		162	1862	851	516	1956	826
v/s Ratio Prot		0.04			0.02		c0.04	0.20		0.01	c0.52	
v/s Ratio Perm	0.08			c0.16			c0.37		0.03	0.09		0.03
v/c Ratio	0.49	0.26		0.93	0.10		0.61	0.33	0.05	0.15	0.88	0.05
Uniform Delay, d1	45.3	43.4		49.2	42.2		24.4	11.1	9.1	8.1	21.1	10.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	0.5		57.1	0.2		6.7	0.5	0.1	0.1	6.3	0.1
Delay (s)	47.1	43.9		106.3	42.4		31.0	11.5	9.2	8.2	27.4	10.5
Level of Service	D	D		F	D		C	B	A	A	C	B
Approach Delay (s)		45.0			83.9			13.8			26.0	
Approach LOS		D			F			B			C	

Intersection Summary			
HCM 2000 Control Delay	28.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.6
Intersection Capacity Utilization	100.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	39	256	182	34	59	83	712	79	38	1776	64
Future Volume (vph)	72	39	256	182	34	59	83	712	79	38	1776	64
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		5.0	15.0		0.0	100.0		0.0	45.0		0.0
Storage Lanes	1		1	1		0	2		0	1		0
Taper Length (m)	0.0			30.0			100.0			85.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor	1.00		0.98	0.99	0.99		1.00	1.00		1.00	1.00	
Frt			0.850		0.905			0.985			0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1496	1679	1483	1658	1452	0	3124	4452	0	1433	4726	0
Flt Permitted	0.546			0.732			0.950			0.950		
Satd. Flow (perm)	858	1679	1456	1270	1452	0	3122	4452	0	1428	4726	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			154		59			17			5	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		117.7			346.6			261.8			142.1	
Travel Time (s)		8.5			25.0			11.8			6.4	
Confl. Peds. (#/hr)	3		6	6		3	3		4	4		3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	13%	6%	2%	2%	8%	11%	5%	7%	9%	18%	2%	9%
Adj. Flow (vph)	72	39	256	182	34	59	83	712	79	38	1776	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	72	39	256	182	93	0	83	791	0	38	1840	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8								
Detector Phase	7	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.6	44.1	44.1	44.1	44.1		11.6	32.4		11.6	32.4	
Total Split (s)	12.0	57.0	57.0	45.0	45.0		15.0	58.0		15.0	58.0	
Total Split (%)	9.2%	43.8%	43.8%	34.6%	34.6%		11.5%	44.6%		11.5%	44.6%	
Maximum Green (s)	5.4	49.9	49.9	37.9	37.9		8.4	51.6		8.4	51.6	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		4.6	4.6		4.6	4.6	
All-Red Time (s)	3.3	3.8	3.8	3.8	3.8		2.0	1.8		2.0	1.8	
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)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)		7.0	7.0	7.0	7.0			7.0			7.0	
Flash Dont Walk (s)		30.0	30.0	30.0	30.0			19.0			19.0	
Pedestrian Calls (#/hr)		0	0	0	0			0			0	
Act Effct Green (s)	34.1	33.6	33.6	24.0	24.0		8.8	69.8		8.9	67.5	
Actuated g/C Ratio	0.26	0.26	0.26	0.18	0.18		0.07	0.54		0.07	0.52	
v/c Ratio	0.29	0.09	0.52	0.78	0.29		0.39	0.33		0.39	0.75	
Control Delay	36.7	32.5	18.1	71.4	20.1		63.0	19.9		68.5	29.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	36.7	32.5	18.1	71.4	20.1		63.0	19.9		68.5	29.2	
LOS	D	C	B	E	C		E	B		E	C	
Approach Delay		23.2			54.1			24.0			30.0	
Approach LOS		C			D			C			C	
Queue Length 50th (m)	14.0	7.4	20.6	44.8	7.3		10.6	42.8		9.5	137.1	
Queue Length 95th (m)	23.8	14.7	42.0	65.5	20.5		18.8	63.9		20.5	#197.9	
Internal Link Dist (m)		93.7			322.6			237.8			118.1	
Turn Bay Length (m)	100.0		5.0	15.0			100.0			45.0		
Base Capacity (vph)	251	644	653	370	465		224	2399		106	2456	
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	0.29	0.06	0.39	0.49	0.20		0.37	0.33		0.36	0.75	

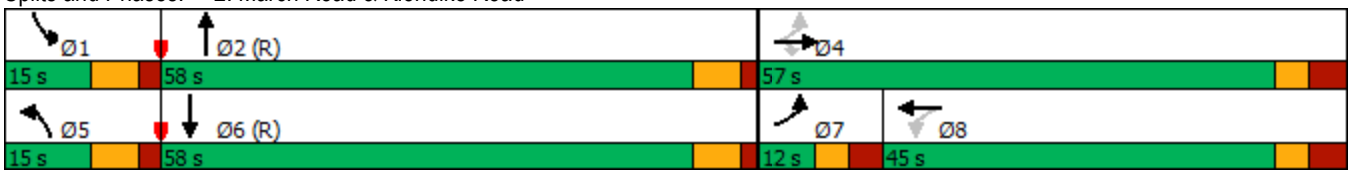
Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 64 (49%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 29.7	Intersection LOS: C

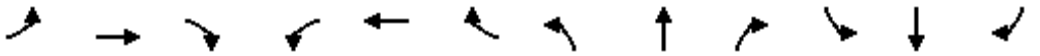
Intersection Capacity Utilization 85.4% ICU Level of Service E

Analysis Period (min) 15

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

Splits and Phases: 2: March Road & Klondike Road

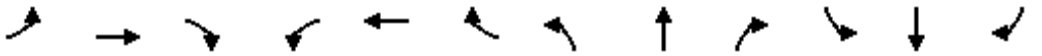




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	39	256	182	34	59	83	712	79	38	1776	64
Future Volume (vph)	72	39	256	182	34	59	83	712	79	38	1776	64
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.90		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1494	1679	1456	1648	1451		3124	4452		1433	4725	
Flt Permitted	0.55	1.00	1.00	0.73	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	860	1679	1456	1269	1451		3124	4452		1433	4725	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	72	39	256	182	34	59	83	712	79	38	1776	64
RTOR Reduction (vph)	0	0	113	0	48	0	0	8	0	0	2	0
Lane Group Flow (vph)	72	39	143	182	45	0	83	783	0	38	1838	0
Confl. Peds. (#/hr)	3		6	6		3	3		4	4		3
Heavy Vehicles (%)	13%	6%	2%	2%	8%	11%	5%	7%	9%	18%	2%	9%
Turn Type	pm+pt	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	34.9	34.9	34.9	24.0	24.0		8.8	67.2		7.8	66.2	
Effective Green, g (s)	34.9	34.9	34.9	24.0	24.0		8.8	67.2		7.8	66.2	
Actuated g/C Ratio	0.27	0.27	0.27	0.18	0.18		0.07	0.52		0.06	0.51	
Clearance Time (s)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	251	450	390	234	267		211	2301		85	2406	
v/s Ratio Prot	0.01	0.02			0.03		c0.03	0.18		0.03	c0.39	
v/s Ratio Perm	0.07		c0.10	c0.14								
v/c Ratio	0.29	0.09	0.37	0.78	0.17		0.39	0.34		0.45	0.76	
Uniform Delay, d1	37.3	35.6	38.6	50.5	44.6		58.0	18.4		59.0	25.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.1	0.6	14.9	0.3		1.2	0.4		3.7	2.4	
Delay (s)	37.9	35.7	39.2	65.4	44.9		59.3	18.8		62.7	28.0	
Level of Service	D	D	D	E	D		E	B		E	C	
Approach Delay (s)		38.6			58.5			22.6			28.7	
Approach LOS		D			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	30.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	26.7
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	2	31	51	3	6	4	735	26	3	1796	1
Future Volume (vph)	5	2	31	51	3	6	4	735	26	3	1796	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		50.0	110.0		0.0
Storage Lanes	0		0	0		0	1		1	1		0
Taper Length (m)	15.0			15.0			15.0			95.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.890			0.986				0.850			
Flt Protected		0.993			0.959		0.950			0.950		
Satd. Flow (prot)	0	1542	0	0	1650	0	1658	1745	1483	1658	1745	0
Flt Permitted		0.993			0.959		0.950			0.950		
Satd. Flow (perm)	0	1542	0	0	1650	0	1658	1745	1483	1658	1745	0
Link Speed (k/h)		50			30			80			80	
Link Distance (m)		84.7			77.2			81.5			262.6	
Travel Time (s)		6.1			9.3			3.7			11.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	5	2	31	51	3	6	4	735	26	3	1796	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	38	0	0	60	0	4	735	26	3	1797	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	116.7%	ICU Level of Service	H
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	47.9

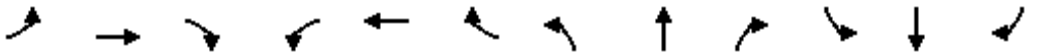
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	2	31	51	3	6	4	735	26	3	1796	1
Future Vol, veh/h	5	2	31	51	3	6	4	735	26	3	1796	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	30	-	50	110	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	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	5	2	31	51	3	6	4	735	26	3	1796	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2564	2572	1797	2562	2546	735	1797	0	0	761	0	0
Stage 1	1803	1803	-	743	743	-	-	-	-	-	-	-
Stage 2	761	769	-	1819	1803	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	18	26	100	~ 18	27	420	343	-	-	851	-	-
Stage 1	102	131	-	407	422	-	-	-	-	-	-	-
Stage 2	398	411	-	99	131	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	16	26	100	~ 12	27	420	343	-	-	851	-	-
Mov Cap-2 Maneuver	16	26	-	~ 12	27	-	-	-	-	-	-	-
Stage 1	101	130	-	402	417	-	-	-	-	-	-	-
Stage 2	385	406	-	67	130	-	-	-	-	-	-	-

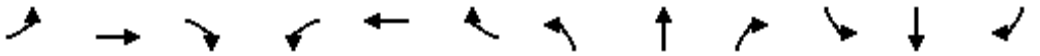
Approach	EB	WB	NB	SB
HCM Control Delay, s	164.9	$ 2022.4	0.1	0
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	343	-	-	54	14	851	-	-
HCM Lane V/C Ratio	0.012	-	-	0.704	4.286	0.004	-	-
HCM Control Delay (s)	15.6	-	-	164.9	$ 2022.4	9.2	-	-
HCM Lane LOS	C	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0	-	-	2.9	8.4	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	58	96	80	61	126	252	1720	115	111	799	99
Future Volume (vph)	85	58	96	80	61	126	252	1720	115	111	799	99
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0		0.0	30.0		0.0	60.0		0.0	70.0		15.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	60.0			60.0			70.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99	0.98		0.98	0.98		1.00		0.96			0.98
Frt		0.906			0.899				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1658	1485	0	1610	1538	0	1658	3316	1483	1658	3316	1483
Flt Permitted	0.420			0.529			0.298			0.069		
Satd. Flow (perm)	726	1485	0	883	1538	0	520	3316	1419	120	3316	1447
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		73			91				100			100
Link Speed (k/h)		40			40			80			80	
Link Distance (m)		143.7			356.2			324.9			233.0	
Travel Time (s)		12.9			32.1			14.6			10.5	
Confl. Peds. (#/hr)	11		17	17		11	2		11	11		2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	9%	5%	5%	3%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	85	58	96	80	61	126	252	1720	115	111	799	99
Shared Lane Traffic (%)												
Lane Group Flow (vph)	85	154	0	80	187	0	252	1720	115	111	799	99
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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)	38.6	38.6		38.6	38.6		12.4	34.6	34.6	11.4	34.6	34.6
Total Split (s)	45.0	45.0		45.0	45.0		20.0	55.0	55.0	20.0	55.0	55.0
Total Split (%)	37.5%	37.5%		37.5%	37.5%		16.7%	45.8%	45.8%	16.7%	45.8%	45.8%
Maximum Green (s)	38.4	38.4		38.4	38.4		12.6	48.4	48.4	13.6	48.4	48.4
Yellow Time (s)	3.3	3.3		3.3	3.3		4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	3.3	3.3		3.3	3.3		2.8	2.0	2.0	1.8	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)	25.0	25.0		25.0	25.0			21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)	0	0		0	0			0	0		0	0
Act Effct Green (s)	15.9	15.9		15.9	15.9		85.8	75.0	75.0	81.6	71.9	71.9
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.72	0.62	0.62	0.68	0.60	0.60
v/c Ratio	0.89	0.59		0.69	0.66		0.52	0.83	0.12	0.55	0.40	0.11
Control Delay	116.5	34.5		77.4	35.9		9.3	23.7	3.6	26.5	14.6	3.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	116.5	34.5		77.4	35.9		9.3	23.7	3.6	26.5	14.6	3.1
LOS	F	C		E	D		A	C	A	C	B	A
Approach Delay		63.6			48.3			20.9			14.8	
Approach LOS		E			D			C			B	
Queue Length 50th (m)	20.0	17.8		18.3	21.5		14.7	151.2	1.2	6.3	48.1	0.0
Queue Length 95th (m)	#39.8	36.9		33.3	42.7		29.8	#261.6	10.5	26.5	79.0	8.3
Internal Link Dist (m)		119.7			332.2			300.9			209.0	
Turn Bay Length (m)	30.0			30.0			60.0			70.0		15.0
Base Capacity (vph)	232	524		282	554		505	2073	924	261	1987	907
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.29		0.28	0.34		0.50	0.83	0.12	0.43	0.40	0.11

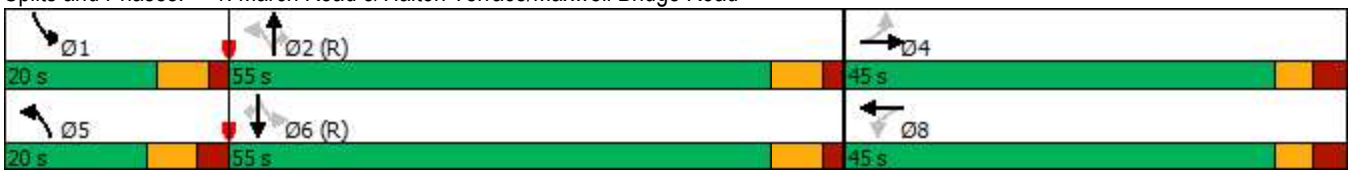
Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 50 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 24.0	Intersection LOS: C

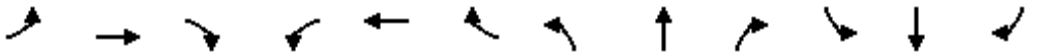
Intersection Capacity Utilization 104.3% ICU Level of Service G

Analysis Period (min) 15

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

Splits and Phases: 1: March Road & Halton Terrace/Maxwell Bridge Road

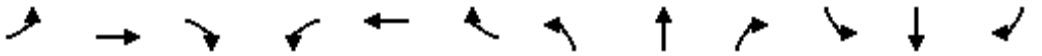




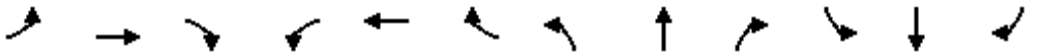
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	58	96	80	61	126	252	1720	115	111	799	99
Future Volume (vph)	85	58	96	80	61	126	252	1720	115	111	799	99
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	0.98		1.00	1.00	0.96	1.00	1.00	0.98
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.91		1.00	0.90		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1643	1486		1587	1538		1657	3316	1419	1658	3316	1447
Flt Permitted	0.42	1.00		0.53	1.00		0.30	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	726	1486		884	1538		519	3316	1419	121	3316	1447
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	85	58	96	80	61	126	252	1720	115	111	799	99
RTOR Reduction (vph)	0	63	0	0	79	0	0	0	38	0	0	40
Lane Group Flow (vph)	85	91	0	80	108	0	252	1720	78	111	799	59
Confl. Peds. (#/hr)	11		17	17		11	2		11	11		2
Heavy Vehicles (%)	2%	9%	5%	5%	3%	2%	2%	2%	2%	2%	2%	2%
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
Actuated Green, G (s)	15.9	15.9		15.9	15.9		86.6	75.0	75.0	81.4	71.9	71.9
Effective Green, g (s)	15.9	15.9		15.9	15.9		86.6	75.0	75.0	81.4	71.9	71.9
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.72	0.62	0.62	0.68	0.60	0.60
Clearance Time (s)	6.6	6.6		6.6	6.6		7.4	6.6	6.6	6.4	6.6	6.6
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	96	196		117	203		484	2072	886	203	1986	866
v/s Ratio Prot		0.06			0.07		c0.05	c0.52		0.04	0.24	
v/s Ratio Perm	c0.12			0.09			0.32		0.05	0.33		0.04
v/c Ratio	0.89	0.46		0.68	0.53		0.52	0.83	0.09	0.55	0.40	0.07
Uniform Delay, d1	51.2	48.1		49.7	48.6		6.4	17.5	8.9	16.5	12.7	10.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	56.1	1.7		15.3	2.7		1.0	4.0	0.2	3.0	0.6	0.2
Delay (s)	107.2	49.8		64.9	51.3		7.4	21.6	9.1	19.5	13.3	10.2
Level of Service	F	D		E	D		A	C	A	B	B	B
Approach Delay (s)		70.2			55.3			19.2			13.7	
Approach LOS		E			E			B			B	

Intersection Summary			
HCM 2000 Control Delay	23.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.6
Intersection Capacity Utilization	104.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	31	111	115	37	44	161	1993	156	18	921	111
Future Volume (vph)	127	31	111	115	37	44	161	1993	156	18	921	111
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		5.0	15.0		0.0	100.0		0.0	45.0		0.0
Storage Lanes	1		1	1		0	2		0	1		0
Taper Length (m)	0.0			30.0			100.0			85.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor	1.00		0.99	1.00	0.99		1.00	1.00		1.00	1.00	
Frt			0.850		0.919			0.989			0.984	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1658	1745	1483	1658	1564	0	3216	4696	0	1658	4676	0
Flt Permitted	0.507			0.737			0.950			0.950		
Satd. Flow (perm)	884	1745	1462	1284	1564	0	3201	4696	0	1656	4676	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			111		44			10			18	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		117.7			346.6			261.8			142.1	
Travel Time (s)		8.5			25.0			11.8			6.4	
Confl. Peds. (#/hr)	1		2	2		1	8		11	11		8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	127	31	111	115	37	44	161	1993	156	18	921	111
Shared Lane Traffic (%)												
Lane Group Flow (vph)	127	31	111	115	81	0	161	2149	0	18	1032	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

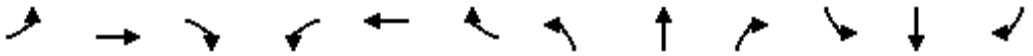


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8								
Detector Phase	7	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.6	44.1	44.1	44.1	44.1		11.6	32.4		11.6	32.4	
Total Split (s)	12.0	57.0	57.0	45.0	45.0		22.0	51.0		22.0	51.0	
Total Split (%)	9.2%	43.8%	43.8%	34.6%	34.6%		16.9%	39.2%		16.9%	39.2%	
Maximum Green (s)	5.4	49.9	49.9	37.9	37.9		15.4	44.6		15.4	44.6	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		4.6	4.6		4.6	4.6	
All-Red Time (s)	3.3	3.8	3.8	3.8	3.8		2.0	1.8		2.0	1.8	
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)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)		7.0	7.0	7.0	7.0			7.0			7.0	
Flash Dont Walk (s)		30.0	30.0	30.0	30.0			19.0			19.0	
Pedestrian Calls (#/hr)		0	0	0	0			0			0	
Act Effct Green (s)	29.5	29.0	29.0	17.0	17.0		11.8	81.4		7.0	69.1	
Actuated g/C Ratio	0.23	0.22	0.22	0.13	0.13		0.09	0.63		0.05	0.53	
v/c Ratio	0.55	0.08	0.27	0.68	0.33		0.55	0.73		0.20	0.41	
Control Delay	50.7	37.9	8.1	73.3	28.3		63.5	20.9		63.4	19.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	50.7	37.9	8.1	73.3	28.3		63.5	20.9		63.4	19.7	
LOS	D	D	A	E	C		E	C		E	B	
Approach Delay		31.7			54.7			23.9			20.4	
Approach LOS		C			D			C			C	
Queue Length 50th (m)	27.5	6.3	0.0	28.5	8.6		20.7	111.2		4.5	55.1	
Queue Length 95th (m)	42.5	13.7	13.8	46.1	22.3		31.2	205.9		12.5	78.8	
Internal Link Dist (m)		93.7			322.6			237.8			118.1	
Turn Bay Length (m)	100.0		5.0	15.0			100.0			45.0		
Base Capacity (vph)	233	669	629	374	487		380	2945		196	2492	
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	0.55	0.05	0.18	0.31	0.17		0.42	0.73		0.09	0.41	

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 20 (15%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 130	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 25.1	Intersection LOS: C

Intersection Capacity Utilization 80.5% ICU Level of Service D
Analysis Period (min) 15

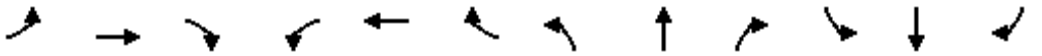
Splits and Phases: 2: March Road & Klondike Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	31	111	115	37	44	161	1993	156	18	921	111
Future Volume (vph)	127	31	111	115	37	44	161	1993	156	18	921	111
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.92		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1657	1745	1462	1654	1564		3216	4696		1658	4675	
Flt Permitted	0.51	1.00	1.00	0.74	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	885	1745	1462	1283	1564		3216	4696		1658	4675	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	127	31	111	115	37	44	161	1993	156	18	921	111
RTOR Reduction (vph)	0	0	86	0	38	0	0	4	0	0	8	0
Lane Group Flow (vph)	127	31	25	115	43	0	161	2145	0	18	1024	0
Confl. Peds. (#/hr)	1		2	2		1	8		11	11		8
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	29.0	29.0	29.0	17.0	17.0		11.8	77.5		3.4	69.1	
Effective Green, g (s)	29.0	29.0	29.0	17.0	17.0		11.8	77.5		3.4	69.1	
Actuated g/C Ratio	0.22	0.22	0.22	0.13	0.13		0.09	0.60		0.03	0.53	
Clearance Time (s)	6.6	7.1	7.1	7.1	7.1		6.6	6.4		6.6	6.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	229	389	326	167	204		291	2799		43	2484	
v/s Ratio Prot	c0.02	0.02			0.03		c0.05	c0.46		0.01	0.22	
v/s Ratio Perm	0.10		0.02	c0.09								
v/c Ratio	0.55	0.08	0.08	0.69	0.21		0.55	0.77		0.42	0.41	
Uniform Delay, d1	44.9	39.9	39.9	54.0	50.5		56.6	19.5		62.3	18.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.9	0.1	0.1	11.2	0.5		2.3	2.1		6.5	0.5	
Delay (s)	47.8	40.0	40.0	65.2	51.0		58.8	21.6		68.8	18.8	
Level of Service	D	D	D	E	D		E	C		E	B	
Approach Delay (s)		43.7			59.3			24.2			19.6	
Approach LOS		D			E			C			B	

Intersection Summary			
HCM 2000 Control Delay	26.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	26.7
Intersection Capacity Utilization	80.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	3	50	39	2	11	23	1850	58	9	920	13
Future Volume (vph)	5	3	50	39	2	11	23	1850	58	9	920	13
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		50.0	110.0		0.0
Storage Lanes	0		0	0		0	1		1	1		0
Taper Length (m)	15.0			15.0			15.0			95.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.884			0.971				0.850		0.998	
Flt Protected		0.996			0.964		0.950			0.950		
Satd. Flow (prot)	0	1536	0	0	1633	0	1658	1745	1483	1658	1742	0
Flt Permitted		0.996			0.964		0.950			0.950		
Satd. Flow (perm)	0	1536	0	0	1633	0	1658	1745	1483	1658	1742	0
Link Speed (k/h)		50			30			80			80	
Link Distance (m)		100.3			69.7			79.0			213.6	
Travel Time (s)		7.2			8.4			3.6			9.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	5	3	50	39	2	11	23	1850	58	9	920	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	58	0	0	52	0	23	1850	58	9	933	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	119.2%	ICU Level of Service	H
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	50.3

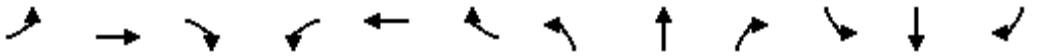
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	3	50	39	2	11	23	1850	58	9	920	13
Future Vol, veh/h	5	3	50	39	2	11	23	1850	58	9	920	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	30	-	50	110	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	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	5	3	50	39	2	11	23	1850	58	9	920	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2877	2899	927	2867	2847	1850	933	0	0	1908	0	0
Stage 1	945	945	-	1896	1896	-	-	-	-	-	-	-
Stage 2	1932	1954	-	971	951	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	10	16	325	~ 11	17	92	734	-	-	311	-	-
Stage 1	314	340	-	90	118	-	-	-	-	-	-	-
Stage 2	85	110	-	304	338	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	8	15	325	~ 8	16	92	734	-	-	311	-	-
Mov Cap-2 Maneuver	8	15	-	~ 8	16	-	-	-	-	-	-	-
Stage 1	304	330	-	87	114	-	-	-	-	-	-	-
Stage 2	71	107	-	248	328	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	226.5	$ 2627.4	0.1	0.2
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	734	-	-	59	10	311	-	-
HCM Lane V/C Ratio	0.031	-	-	0.983	5.2	0.029	-	-
HCM Control Delay (s)	10.1	-	-	226.5	$ 2627.4	16.9	-	-
HCM Lane LOS	B	-	-	F	F	C	-	-
HCM 95th %tile Q(veh)	0.1	-	-	4.6	7.8	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	38	0	0	60	0	743	31	0	1794	1
Future Volume (vph)	0	0	38	0	0	60	0	743	31	0	1794	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		50.0	110.0		0.0
Storage Lanes	0		1	0		1	0		1	0		0
Taper Length (m)	15.0			15.0			15.0			95.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			0.865			0.850			
Flt Protected												
Satd. Flow (prot)	0	0	1510	0	0	1510	0	1745	1483	0	1745	0
Flt Permitted												
Satd. Flow (perm)	0	0	1510	0	0	1510	0	1745	1483	0	1745	0
Link Speed (k/h)		50			30			80			80	
Link Distance (m)		84.7			77.2			81.1			262.6	
Travel Time (s)		6.1			9.3			3.6			11.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	38	0	0	60	0	743	31	0	1794	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	38	0	0	60	0	743	31	0	1795	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	109.7%	ICU Level of Service	H
Analysis Period (min)	15		

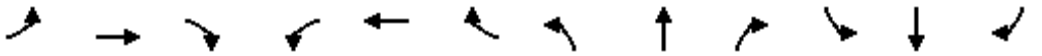
Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	38	0	0	60	0	743	31	0	1794	1
Future Vol, veh/h	0	0	38	0	0	60	0	743	31	0	1794	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	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	38	0	0	60	0	743	31	0	1794	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	1795	-	-	743	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.22	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	-	-	3.318	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	100	0	0	415	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	100	-	-	415	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	61.6	15.1	0	0
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	100	415	-	-
HCM Lane V/C Ratio	-	-	0.38	0.145	-	-
HCM Control Delay (s)	-	-	61.6	15.1	-	-
HCM Lane LOS	-	-	F	C	-	-
HCM 95th %tile Q(veh)	-	-	1.5	0.5	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	58	0	0	52	0	1903	67	0	934	13
Future Volume (vph)	0	0	58	0	0	52	0	1903	67	0	934	13
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		50.0	110.0		0.0
Storage Lanes	0		1	0		1	0		1	0		0
Taper Length (m)	15.0			15.0			15.0			95.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			0.865			0.850		0.998	
Flt Protected												
Satd. Flow (prot)	0	0	1510	0	0	1510	0	1745	1483	0	1742	0
Flt Permitted												
Satd. Flow (perm)	0	0	1510	0	0	1510	0	1745	1483	0	1742	0
Link Speed (k/h)		50			30			80			80	
Link Distance (m)		100.3			69.7			88.6			213.6	
Travel Time (s)		7.2			8.4			4.0			9.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	58	0	0	52	0	1903	67	0	934	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	58	0	0	52	0	1903	67	0	947	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 115.8%		ICU Level of Service H	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	58	0	0	52	0	1903	67	0	934	13
Future Vol, veh/h	0	0	58	0	0	52	0	1903	67	0	934	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	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	58	0	0	52	0	1903	67	0	934	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	941	-	-	1903	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.22	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	-	-	3.318	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	319	0	0	86	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	319	-	-	86	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.8	96.8	0	0
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	319	86	-	-
HCM Lane V/C Ratio	-	-	0.182	0.605	-	-
HCM Control Delay (s)	-	-	18.8	96.8	-	-
HCM Lane LOS	-	-	C	F	-	-
HCM 95th %tile Q(veh)	-	-	0.7	2.8	-	-