REPORT NO. 17M-02201-00

Transportation Impact Assessment

Phoenix Homes Subdivision Old Montreal Road

March 2018

CONFIDENTIAL





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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
- I am either a licensed¹ or registered² 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

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Dated at Ottaw	$a \subset ON$ this <u>29</u> day of <u>March</u> , 20 <u>18</u> .
(Ci	ity)
Name:	Sarah McDonald, P. Eng. (Please Print)
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Sign	ature of Individual certifier that s/he meets the above four criteria

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City of Ottawa 2017 TIA Guidelines Screening Form

1. Description of Proposed Development			
Municipal Address	1154, 1172, 1180, and 1208 Old Montreal Road		
Description of Location	South side of Old Montreal Road, 800m east of Trim Road		
Land Use Classification			
Development Size (units)	16 semi-detached, 467 town/terrace		
Development Size (m ²)			
Number of Accesses and Locations	2 x full movement (800m + 1000m east of Trim), 2 x RIRO (880m + 940m	e of	
Phase of Development			
Buildout Year			

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

2. Trip Generation Trigger

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

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

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

If the proposed development size is greater than the sizes identified above, <u>the Trip Generation</u> <u>Trigger is satisfied.</u>



3. Location Triggers

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

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

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

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

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

5. Summary		
	Yes	No
Does the development satisfy the Trip Generation Trigger?	х	
Does the development satisfy the Location Trigger?	Х	
Does the development satisfy the Safety Trigger?		Х

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



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TRANSPORTATION IMPACT ASSESSMENT SCOPING REPORT

DATE:	November 2017
SUBJECT:	Phoenix Homes, Proposed Subdivision Old Montreal Road, Ottawa, ON
FROM:	Sarah McDonald, P. Eng. Project Manager, Transportation Planning, WSP
TO:	Asad Yousfani, Project Manager, Infrastructure Approvals, City of Ottawa

SCREENING FORM

This Transportation Impact Assessment (TIA) is being prepared in support of a Plan of Subdivision and Zoning By-Law Amendment Application. The screening form and preliminary site plan are attached.

DESCRIPTION OF PROPOSED DEVELOPMENT

The proposed development is located at 1154, 1172, 1180, and 1208 Old Montreal Road. It is approximately 800m east of Trim Road and within the general urban area defined by the City of Ottawa's Official Plan. The existing zoning on the properties is:

- Rural Residential (RR7), 1154 and 1180 Old Montreal Road
- RR7(19r), 1172 Old Montreal Road
- Rural Countryside (RU), 1208 Old Montreal Road

The rural exception on 1172 Old Montreal Road notes that the property is developable despite the lack of frontage onto a public street (Zoning By-Law 2008-250 Consolidation, Section.59).

The proposed development by Phoenix Homes includes 432 terrace flats, 35 townhomes, and 16 semi-detached homes. It includes the construction of one new public road and one private street as shown in the attached preliminary development plan (SP-1).

The timeline for the development has not been determined. For the purpose of this TIA it is assumed that the development will be fully occupied in December 2022, five years from now.

The exact number of parking spaces provided has not been determined at the time of this report. However, each of the 12 blocks with terrace flats will have two levels of indoor parking. Additionally, the following surface parking facilities are proposed:

- 25 street parking spaces on the south side of Private Street One
- 16 parking stalls on the north side of Private Street One
- 36 parking stalls for Blocks 9 & 10; 20 parking stalls adjacent to Block 11
- 12 parking stalls adjacent to Block 12
- 7 parking stalls behind the 5 townhomes that front onto the new public road
- Private driveways at each of the 16 semi-detached homes

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There are four proposed accesses to this development from Old Montreal Road as described in Table 1.

Table 1. Development Accesses onto Old Montreal Road

IDENTIFIER	LOCATION	RESTRICTIONS	PROVIDES ACCESS TO
West Access	Opposite Famille- Laporte Avenue (800m east of Trim)	Full movement	New public road
Block 2/3 Parking	880m east of Trim	Right-In / Right-Out (RIRO)	Second level parking for Block 2 and Block 3
Block 1 Parking	940m east of Trim	RIRO	Second level parking for Block 1
East Access	1000m east of Trim	Full movement	New public road

EXISTING CONDITIONS

ROAD NETWORK

All roads in the study area are under the jurisdiction of the City of Ottawa.

Old Montreal Road is a two-lane arterial road that runs in an east-west direction between Trim Road and Ottawa Road 174 near the eastern edge of the City. The posted speed limit adjacent to the development property is 60 km/h.

Trim Road is a four-lane divided arterial road that runs in a north-south direction south from Ottawa Road 174. The posted speed limit is 70 km/h.

Dairy Drive is a two-lane local road that connects to Trim Road at a two-lane roundabout and to Old Montreal Road at stop control. It provides access to business and industry.

Famille-Laporte Avenue is a two-lane collector road that is part of the new Cardinal Creek subdivision. It is directly opposite the development property on Old Montreal Road.

INTERSECTIONS AND DRIVEWAYS

There are three intersections in the study area:

- Old Montreal Road and Trim Road (two lane roundabout, new summer 2015)
- Old Montreal Road and Dairy Drive (two-way stop control)
- Old Montreal and Famille-Laporte Avenue (one-way stop control, new 2014/2015)

There are a number of private residential driveways along Old Montreal Road in the study area. However, there are no existing commercial accesses.

CYCLE AND TRANSIT FACILITIES

There are eastbound and westbound cycling lanes on Old Montreal Road from Trim Road to Dairy Drive. There is a paved shoulder that could be used by cyclists from Dairy Drive eastward.

There is a separated sidewalk on the north side of Old Montreal Road between Trim Road and Dairy Drive that can be used by pedestrians.

OC Transpo bus route #221 travels along Old Montreal Road east of Trim Road, providing a connection between Cumberland and Downtown Ottawa. Bus service on this route includes two westbound trips in the morning and two eastbound trips in the evening.

The Trim Transit Station / Trim Park & Ride is located at Trim Road and Ottawa Road 174 and is accessible from Dairy Drive. It is served by rapid transit route 95, route 22, connection route 221, and local route 122. This Park & Ride can currently accommodate 1,089 vehicles.

AREA TRAFFIC MANAGEMENT MEASURES

There does not appear to be existing Area Traffic Management (ATM) measures along this section of Old Montreal Road.

PEAK HOUR TRAVEL DEMAND BY MODE

The results from the 2011 Origin-Destination (O-D) survey were reviewed to identify the existing peak hour travel demands by mode. Given the proximity of the development near the eastern boundary of the Orléans district, it was assumed that any trip without an O-D of the Rural East district would be to/from the Old Montreal Road / Trim Road intersection. According to the O-D survey, in the AM peak 2% of all Orléans trips go to Rural East and 5% originate from Rural East.

Based on the O-D survey, the peak hour travel demands by mode are:

Table 2. Peak Hour Travel Demands

MODE	AM PEAK (TO/FROM)	PM PEAK (TO/FROM)
Auto Driver	55% / 61%	64% / 56%
Auto Passenger	8% / 13%	21% / 11%
Transit	35% / 10%	12% / 32%
Bicycle	1% / 0%	0% / 1%
Walk	0% / 0%	0% / 0%
Other (primarily school bus)	2% / 16%	3% / 1%

CRASH HISTORY

The past 5-years of crash data (January 2012 – January 2017) for the three intersections in our study area and the section of Old Montreal Road adjacent to the development were obtained from the City of Ottawa and reviewed to determine any trends in collision history. The data available along Old Montreal Road is for the 1500m section between Grand Chene Cour Du Court and Ted Kelly Lane making it difficult to identify crash trends in the vicinity of the proposed development.

The intersection of Old Montreal Road and Trim Road was reconstructed from a signalized intersection to a two-lane roundabout in the summer of 2015. The crash history of the previous configuration has not been reviewed.

LOCATION	TOTAL CRASHES	PROPERY DAMANGE ONLY	NON-FATAL
Old Montreal / Trim*	35	32	3
Old Montreal / Dairy	1	0	1
Old Montreal / Famille-Laporte	0	0	0
Old Montreal Segment (Frank Kenny Road to Grand- Chene Cour du Court)	16	12	4

Table 3. Five-Year Review of Crash History (January 2012-January 2017)

* reviewed with roundabout configuration only (September 2015 – January 2017)

Some of the crash trends identified from the crash reports include:

Old Montreal Road / Trim Road

- Majority of crashes occur between 12:00pm and 4:00pm
- 86% of all crashes occurred during clear weather with dry roads
- 17 angle and 12 sideswipe crashes indicate that drivers are adjusting to entering and manoeuvring through the roundabout
- The average crash rate doubled with the introduction of the roundabout (signalized 1.1 crashes per month, roundabout 2.2 crashes per month)

Old Montreal Road Segment

- 40% of crashes occur between 6:00pm and 11:00pm
- More than half the crashes occurred on adverse surface conditions (snow, ice, wet)
- 13 of 16 crashes involved a single motor vehicle
- There were no crashes reported between September 2015 and January 2017

PLANNED CONDITIONS

In the City of Ottawa's 2013 Transportation Master Plan (TMP), the section of Old Montreal Road between Trim Road and the edge of the urban boundary is planned to be widened from two to four lanes by 2031. The widening is proposed to provide capacity for development areas east of Trim Road. To be conservative, this widening will not be included in the traffic impact assessment for this development. This section of Old Montreal Road is designated as part of the cycling Spine Route and as a conceptual future transit corridor in the TMP.

Cardinal Creek Village is a large subdivision being developed opposite our proposed development on the north side of Old Montreal Road. The subdivision will ultimately accommodate 569 single/semi-detached dwellings and 681 attached dwellings, and several large blocks for mixeduse/commercial, school, and parkland purposes. We can use the Transportation Impact Study (October 2013) completed for the development to estimate vehicle trips generated by Cardinal Creek Village.

There is a proposed commercial development at 1015 Dairy Drive to relocate the corporate headquarters of Drytech International (disaster restoration equipment and services). The Transportation Brief (December 2013) for this development can be used to estimate vehicle trips generated by this development. The application file has been pending since February 2014.

There is a proposed commercial development at 1375 Trim Road, in the north-east corner of the Old Montreal Road / Trim Road intersection. The development includes a high-end coffee shop, a restaurant with a drive-thru, a sit-down restaurant, a retail building, and a medical building. One of the proposed accesses is directly onto Old Montreal Road. The Transportation Impact Study (July 2016) can be used to estimate vehicle trips generated by this development. The agreement was registered and final legal clearance given in July 2017.

STUDY AREA

Our proposed study area includes:

- Old Montreal Road between Trim Road and 200m east of the proposed development
 - Three intersections along Old Montreal Road at:
 - Trim Road
 - Dairy Drive
 - Famille-Laporte Avenue

TIME PERIODS

Our proposed analysis periods for this traffic impact assessment are based on the 2017 turning movement counts at Old Montreal Road and Trim Road. We have selected the AM and PM peak hours: 7:15am – 8:15am and 4:30pm – 5:30pm.

HORIZON YEARS

Our assumed horizon years for the traffic analysis are:

- Full occupancy: 2022
- Occupancy plus five years: 2027

EXEMPTIONS REVIEW

The following table identifies the exemptions to the fourth step (Analysis) of the TIA process.

Table 4. Traffic Impact Module Exemptions

MODULE	ELEMENT	REQUIRED
4.1 Development Design	4.1.2 Circulation and Access	NO, only required for site plans
	4.1.3 New Street Networks	YES, plan of subdivision
4.2 Parking	4.2.1 Parking Supply	NO, only required for site plans
	4.2.2 Spillover Parking	NO, only required for site plans
4.5 Transportation Demand Management	All elements	NO, no employees or students
4.6 Neighbourhood Traffic Management	4.6.1 Adjacent Neighbourhoods	NO, does not rely on local or collector streets
4.8 Network Concept	-	NO, will not generate more than 200 person-trips in excess of the established zoning permissions

TRAFFIC IMPACT ASSESSMENT FORECASTING REPORT

DATE:	Revised March 9, 2018
SUBJECT:	Phoenix Homes, Proposed Subdivision Old Montreal Road, Ottawa, ON
CC:	Paul Black, FOTENN
FROM:	Sarah McDonald, P. Eng. Project Manager, Transportation Planning, WSP
TO:	Asad Yousfani, Project Manager, Infrastructure Approvals, City of Ottawa

DEVELOPMENT GENERATED TRAFFIC

TRIP GENERATION

TRIP GENERATION RATES

Residential trip generation rates were selected from the 2009 TRANS Trip Generation Study. The semi-detached dwellings, townhouses, rowhouses land use from the TRANS Trip Generation Study was used to identify trip generation rates for the proposed development (Table 1).

Table 1. Trip Generation Rates, Semi-Detached, Townhouses, Rowhouses (Land Use 224)

PEAK PERIOD	TRANS RATE	INBOUND	OUTBOUND
АМ	0.52	37%	64%
РМ	0.61	53%	47%

The 2009 TRANS study provides residential mode shares by dwelling type for urban and suburban areas. The travel mode share for suburban areas is shown in Table 2.

Table 2. TRANS Trip Generation Study Suburban Mode Shares for Townhouses

TRAVEL MODE	AM	PM
Vehicle	55%	61%
Transit	27%	22%
Non-Motorised	8%	6%

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The development has 538 units whose vehicle trips were estimated using the TRANS trip generation rates (Table 1). To forecast the person trips, the total calculated vehicle trips were

divided by the vehicle percentage (Table 2). The resulting trips generated by this development are shown in the following table.

	AM			РМ		
Trips	Total	Enter	Exit	Total	Enter	Exit
Vehicle	251	93	161	295	156	138
Person	457	169	292	483	256	227

Table 3. Development Generated Vehicle and Person Trips

There are no existing trips to deduct since this is a new development and not a redevelopment.

Since this is a residential development, it is not expected to attract any trips from the adjacent roadway (pass-by trips). Furthermore, there will be no synergy (internal capture) since this is a single use development.

MODE SHARES

The study mode shares were estimated by averaging the peak hour travel demands from the 2011 O-D survey data provided in the TIA Scoping Report. Mode share targets were applied to the person trips calculated in Table 3 to determine the number of peak period trips for each mode.

The following table summarizes the mode share targets and person trips generated by the proposed development.

Table 4. Future Mode Share Targets for the Development (TIA Guidelines Table 5)

TRAVEL MODE	MODE SHARE TARGET	AM PERSON TRIPS	PM PERSON TRIPS	TARGET RATIONALE
Transit	20%	102	108	Limited transit service along corridor, but close to Trim Transit Station. Old Montreal Road is part of a conceptual future transit corridor which will likely not be implemented during our study timeframe.
Walk	0%	0	0	Rural cross section with few amenities within walking distance.
Bicycle	5%	25	27	Rural cross section with few amenities within cycling distance.

Auto Passenger	15%	76	81	Vehicle occupancy unlikely to deviate significantly from existing O-D tendencies.
Auto Driver	60%	305	323	Rural cross section with no significant transit or pedestrian improvements in our study timeframe.

TRIP DISTRIBUTION

According to the O-D survey, in the AM peak 2% of all Orléans trips go to Rural East and 5% originate from Rural East. Therefore, to be conservative the assumption was made that 5% of all trips in both peak periods are to/from the east and the remaining 95% are to/from the west.

TRIP ASSIGNMENT

Vehicle trips were assigned to development accesses based on the proximity of dwellings to the two full access entrances and the right-in / right-out parking structure entrances. Intersections turning movements were assigned based on existing traffic patterns. The assignment is shown in the following figure.



Figure 1. Development Trip Assignment

BACKGROUND NETWORK TRAFFIC

CHANGES TO THE BACKGROUND TRANSPORTATION NETWORK

The 2016 Ottawa Road 174-Prescott-Russel County Road Study 17 Environmental Assessment proposed widening of OR174 and CR17 to provide an additional arterial lane to address capacity deficiencies across the Frank Kenny screenline. The proposed widening includes:

Widening OR 174 to 3 lanes in each direction between Highway 417 and Trim Road

- Widening OR 174 to 2 lanes in each direction between Trim Road and Canaan Road
- Widening CR 17 to 2 lanes in each direction between Canaan Road and Landry Road

These measures could reduce volumes on Old Montreal Road by attracting a higher percentage of trips from the City of Clarence Rockland to the OR174 / CR17 corridor.

Alternatively, the widening of Old Montreal Road from two lanes to four lanes east of Trim Road is part of the Network Concept in the City of Ottawa's 2013 Transportation Master Plan. The rationale of this widening is to provide capacity for the development areas east of Trim Road.

To be conservative, neither of these potential changes are considered in the analysis since their timeframes are unknown.

GENERAL BACKGROUND GROWTH RATES

The background growth rate along Old Montreal Road east of Trim Road is 1.8%. This is based on an analysis of historical traffic growth.

The 8-hour counts at Old Montreal Road / Trim Road were used to determine the 8-hour traffic volume east of the intersection in 2006, 2010, and 2011. The volumes were then plotted on an x-y scatter chart which identified 1.8% as the growth rate. Traffic counts from 2017 were available, but included the recent development growth from Cardinal Creek Village which is not representative of sustainable background growth. Future growth from Cardinal Creek Village will be considered as part of the other area development.

OTHER AREA DEVELOPMENT

We identified three developments in our Scoping Report that could impact our study area:

- Cardinal Creek Village
- 1015 Dairy Drive (Drytech International Headquarters)
- 1375 Trim Road (multi-use commercial development)

Estimated trips for these developments were taken from their TIAs at the appropriate time horizon.



Figure 2. 2022 Background Traffic



Figure 3. 2027 Background Traffic

DEMAND RATIONALIZATION

DESCRIPTION OF CAPACITY ISSUE(S)

Total traffic volumes for the 2022 and 2027 time horizons were estimated by:

- Applying a 1.8% annual growth rate to the 2017 traffic volumes
- Adding trips generated by other area development
- Adding trips generated by the Phoenix development (Figure 1)

The estimated total traffic volumes are shown in the following two figures.



Figure 4. 2022 Total Traffic (Background + Other Development + Development)



Figure 5. 2027 Total Traffic (Background + Other Development + Development)

The directional capacity of Old Montreal Road across the Frank Kenny screenline is 1050vph (2008 City of Ottawa Road Needs Study). The capacity at the proposed development should also be 1050vph since the same cross section (single lane in each direction) exists at the screenline and through our study area. The directional capacity of Old Montreal Road west of Famille-Laporte will be exceeded in the 2022 total traffic scenario with 1087 AM westbound trips (**Figure 4**). When considering the 2027 total traffic scenario, the AM westbound trips are expected to decrease to 957 vehicles as a result of the proposed Ottawa Road 174 connection in Cardinal Creek Village. The phasing of Cardinal Creek Village and timing of the proposed OR174 connection introduces uncertainty into the trip forecasting of the 2027 time horizon (background and total traffic). Any deviation from the assumptions of the Cardinal Creek Village site generated traffic volumes as shown in the Cardinal Creek Village Phases 1-7 TIA (October 2013) Exhibits 10, 11, and 12.

The intersection of Old Montreal Road and Trim Road is a two-lane roundabout and capacity issues are not anticipated (to be confirmed in Step 4 Analysis).

ADJUSTMENT TO DEVELOPMENT GENERATED DEMANDS

Adjustment to the development generated demands will not reduce peak direction traffic volumes along Old Montreal Road enough to mitigate the long term capacity concerns. It is noted that as the area becomes more urbanised, increases in the active modes of transportation can be expected as well as used to access the future LRT station located to the north of this site. In general, the proposed development will generate approximately 165 and 150 peak direction vehicle trips during the AM and PM hour when the 2027 total traffic volumes along Old Montreal Rd, west of Famille-Laporte are 957vph and 1,064vph, respectively. Both the current TMP and the OR174/CR17 EA provide support for additional screenline capacity and would provide relief for the potential capacity deficiencies resulting from the Cardinal Creek Village and the planned office commercial development proposed within the broader area.

ADJUSTMENT TO BACKGROUND NETWORK DEMANDS

Adjustments to the background network demand might be able to reduce capacity issues along Old Montreal Road. However, mitigating network capacity concerns such as proposed in the City's TMP and OR174/CR17 EA are considered beyond the scope of this TIA. As indicated previously, these potential capacity issues within the broader study area are discussed and assessed in the OR174/CR17 EA and considered as part of the City's TMP Network Concept.

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TRAFFIC IMPACT ASSESSMENT STRATEGY REPORT

DATE:	March 12, 2018		
SUBJECT:	Proposed Subdivision Old Montreal Road, Ottawa, ON; Phoenix Homes		
	Don Stephens, P. Eng, Director, Transportation Planning, WSP		
	Michael Boucher, Manager of Planning, Phoenix Homes		
CC:	Paul Black, Senior Planner, FOTENN		
FROM:	Sarah McDonald, P. Eng. Project Manager, Transportation Planning, WSP		
TO:	Asad Yousfani, Project Manager, Infrastructure Approvals, City of Ottawa		

1. INTRODUCTION

This Strategy Report was prepared on behalf of Phoenix Homes in support of a Plan of Subdivision and Zoning By-Law Amendment Application. The format and outline of the Strategy Report is based on the City of Ottawa's Transportation Impact Assessment (TIA) Guidelines (2017). The purpose of the Strategy Report is to confirm the transportation elements of the development align with the City of Ottawa's broader city-building objectives.

2. DEVELOPMENT DESIGN

The proposed development by Phoenix Homes is located at 1154, 1172, 1180, and 1208 Old Montreal Road. It is approximately 800m east of Trim Road and within the general urban area defined by the City of Ottawa's Official Plan. The development includes 432 terrace flats, 35 townhomes, and 16 semi-detached homes. It includes the construction of one new public road and one private street as shown in the attached preliminary development plan (SP-1).

2.1. DESIGN FOR SUSTAINABLE MODES

As required by the TIA Guidelines, the TDM-supportive Development Design and Infrastructure Checklist was completed to assess the opportunity to implement facilities that are supportive of sustainable modes. The checklist should be reassessed as part of the site plan submission when more detailed information is available related to both vehicle and bicycle parking supply and layout. The completed checklist is attached to this report as **Appendix A**.

Sustainable modes include cycling, walking, and transit. The proposed site accommodates these modes in the following ways:

- Provision for pedestrian sidewalks along the new public road and new private road
- The existing transit stops (two) located on Old Montreal Road adjacent to the proposed development.



A westbound transit stop is located at the northwest corner of the Famille-Laporte Avenue intersection. An eastbound transit stop is located at the northeast corner of the Grand Chène Court intersection that is located approximately 70m west of the site.

Approximately 87% and 71% of the proposed units are within a five minute walk (400m) of the westbound bus stop and eastbound bus stop, respectively. The following measures could be implemented to improve the percentage of units within walking distance to transit:

- Remove the deviation in the proposed sidewalk north of Block 9, if not otherwise required to comply with 5% maximum running slope per the Ottawa Accessibility Design Standards (2014)
- The City consider moving the nearby eastbound bus stop from Grand Chène Crescent to the northeast (far-side) corner of the intersection of Old Montreal Road with Famille-Laporte Avenue to reduce the walking distance from both Cardinal Creek Village and the proposed Phoenix development

2.2. CIRCULATION AND ACCESS

These design elements are not required for applications involving plans of subdivisions.

2.3. NEW STREET NETWORKS

The City of Ottawa's Urban Design Guides for Greenfield Neighbourhoods (2007) provide guidance for neighbourhood design during the subdivision review and zoning process. The TIA Guidelines suggest assessing the planned street network using the methods described in the Urban Design Guide. Guidelines relevant to the TIA process and notes on the planned development are shown in **Table 1**. Generally, the network design is consistent with a local road designed to distribute traffic from arterial and collector streets to individual properties. The design encourages travel by sustainable modes by providing side walks and connectivity to existing bus stops and paved shoulders for cycling on Old Montreal Road.

NO.	GUIDELINE DESCRIPTION	PLANNED STREET NETWORK
10	Create a walkable neighbourhood with pathways, trails and sidewalks that are accessible year-round and that connect destinations such as transit stops, commercial areas, schools, community facilities and parks.	The internal street network provides sidewalks that connect to Old Montreal Road. The intersection of Famille Laporte provides access to amenities located within the Cardinal Creek development to the north.
11	Connect new streets to existing streets in adjacent developments and plan for future connections to land that has yet to be developed.	One of the two proposed full-access movements onto Old Montreal Road is opposite the existing access to Cardinal Creek (Famille-Laporte). There is a proposed connection at the south-east corner of the property to a future development at 1296 Old Montreal Road.

Table 1. Urban Design Guidelines Review



NO.	GUIDELINE DESCRIPTION	PLANNED STREET NETWORK
12	Layer collector streets to be direct and continuous through the neighbourhood so homes are within 400m of transit and other destinations along them.	 87% of the proposed units are within 400m of the westbound bus stop at Famille Laporte. 71% of the proposed units are within 400m from the eastbound bus stop at Grand Chène Crescent.
13	Layout local street patterns so that development blocks are easily walkable – between 150 and 250 m in length	The local street patterns are easily walkable with north-south connections to Old Montreal Road at each end of the development.
21	Select the most suitable zoning setback and road ROW width for the land use context and road function. Provide sufficient space for the various elements in the front yard, the boulevard, and the road including trees, sidewalks, utilities, cycling facilities, parking and travel lanes	Space for entrances, sidewalks, some on-street parking, and two drive lanes has been included in the proposed development plan.
25	Design roads at entrances to neighbourhoods to create a sense of arrival with such elements as enhanced landscape treatment in the boulevard and the median.	Inclusion of entrance features to be determined as part of the site planning.
26	Construct sidewalks on both sides of the street that serve key destinations, such as transit stops, greenspaces, or to community facilities like schools. Select the correct road ROW standard to allow sufficient space for sidewalks and all streetscape elements.	Sidewalks are proposed on at least one side of the street as per the site plan P1.
28	Design crosswalks in areas with higher pedestrian and vehicular volumes to be visually different form the street surface. Ensure they are universally accessible.	Inclusion of enhanced pedestrian crossing facilities to be determined as part of the site planning.
31	Create a cycling-supportive neighbourhood with bicycle routes that serve local destinations, and that are linked to the citywide network of bicycle routes. Routes include wide shared-use curb lanes, designated on-road bicycle lanes or multi-use pathways.	Internal road network links to Old Montreal Road that has paved shoulders that can be used by bicycles.
32	Design pathways, trails and walkways that are connected to the road right-of-way so that they link to a sidewalk and cross at an intersection.	Internal sidewalks all connect to Old Montreal Road at proposed intersections.

vsp

	NO.	GUIDELINE DESCRIPTION	PLANNED STREET NETWORK
(· · ·	33	Construct streets, sidewalks, crosswalks and access to buildings that are universally accessible to a wide range of residents and abilities. Refer to accessibility	Accessibility features to be identified as part of the site planning.
		standards such as the CSA (B651-04) "Accessible design for the built environment".	

3. PARKING

The Scoping Report submitted to the City of Ottawa on November 30, 2017 excluded scope associated with Parking.

4. BOUNDARY STREET DESIGN

Old Montreal Road is the only boundary street to the proposed development. The City of Ottawa has not prepared a Complete Street concept for this boundary street. As required by the TIA guidelines, we are providing a high level complete street concept for this boundary street considering mobility, road safety, and neighbourhood traffic management. This complete street concept could be considered as part of a larger study determining the feasibility of widening Old Montreal Road to provide additional arterial capacity in the rural east area of Ottawa.

4.1. MOBILITY

The City's Multi-Modal Level of Service (MMLOS) targets consider road classification, adjacent land-use designation, and special policy areas. The segment of Old Montreal Road adjacent to the development is an arterial road within the general urban area. It is not an arterial main street, within 600m of a rapid transit station, or within 300m of a school. The 2013 City of Ottawa Transportation Master Plan also designates this segment of Old Montreal Road as a Full Load Truck Route, a Cycling Spine Route, and a Conceptual Future Transit Corridor. Note that the 2015 MMLOS Guidelines do not specify a transit target for Conceptual Future Transit Corridor, and this study has instead used the target for Isolated Transit Priority Measures.

The resulting MMLOS targets range from 'C' for pedestrians and cycling to 'D' for transit and trucks, see **Table 2**.

	PLOS	BLOS	TLOS	TKLOS	VLOS
Target	С	С	D	D	VLOS Not
Status Quo	F	Е	D	С	Reported
Proposed Development	D	Е	D	C	for
Conceptual Complete Street	С	A	D	А	Segments

Table 2. Segment MMLOS for Old Montreal Road Adjacent to the Proposed Development (2027)

PLOS = Pedestrian Level of Service, BLOS = Bike Level of Service, TLOS = Transit Level of Service, TkLOS = Truck Level of Service, VLOS = Vehicle Level of Service



The **Status Quo** option assumes that infrastructure remains as is along Old Montreal Road. The MMLOS was assessed as:

- No sidewalk = PLOS 'F'
- Paved shoulder of 1.8m which is assessed as a bike lane without parking = BLOS 'E'
- Transit operating in mixed traffic with limited to no parking = TLOS 'D'
- Bi-directional traffic in two travel lanes of 3.5m = TkLOS 'C'

The **Development Buildout** option assumes that infrastructure is built as proposed by the current development plan. The MMLOS was assessed as:

- NEW 2.0m sidewalk along Old Montreal Road within the development = PLOS 'D'
- No changes to the cycling infrastructure = BLOS 'E'
- No changes to the existing lane geometry = TLOS 'D' and TkLOS 'C'

The **Conceptual Complete Street** concept considers the City's Official Plan (which protects Old Montreal Road between Trim Road and the East Urban Community limit for a 37.5m right-of-way) and City's Transportation Master Plan (which indicates that this section of Old Montreal Road is planned to be widened from two to four lanes by 2031). A conceptual complete street concept could be considered as part of a larger road widening project. Such a project might consider a road design similar to Cross-Section 2 proposed in the City of Ottawa's Arterial Road Cross-sections (**Figure 1**). This cross section was used to assess the Conceptual Complete Street MMLOS.



Figure 1. City of Ottawa Arterial Road Concept 2 - Separated Cycle Tracks / Sidewalks

4.2. ROAD SAFETY

Historical collision records for the study area were reviewed in the Collision Analysis section of the Scoping Report. The analysis reviewed the past 5-years of City of Ottawa crash data (January 2012 – January 2017) for roads and intersections within the study area. The data available along Old Montreal Road was for the 1500m section between Grand Chène Court and Ted Kelly Lane, which makes it difficult to identify specific crash trends in the more limited length of road that borders the proposed development. Following the TIA Guidelines we have identified patterns with six or more crashes in five years along this 1500m road segment; they include:



- Seven crashes occurred between 6:00pm and 11:00pm

The area reviewed has a rural cross section and illumination is only provided in some sections which could have contributed to the time of day of the seven crashes. The City of Ottawa's Arterial Road Concept 2 (**Figure 1**) includes illumination on each side of the road.

5. ACCESS INTERSECTIONS

5.1. LOCATION AND DESIGN OF ACCESS

There are four proposed access points for this development from Old Montreal Road. They are all located at a distance greater than 800m from the nearest major intersection, which is the existing roundabout located at Montreal and Trim Road.

The existing cross section of Old Montreal Road in this area does not include a median. Therefore access restriction, such as left turn restrictions could be implemented at the two proposed "right-in and right-out" (RIRO) accesses to the Block 1, 2, 3 parking structures include a channelized triangular island similar to the one shown in **Figure 2**.



Source: Figure 8.9.1 of Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads

Figure 2. Left-Turn Restrictions, Undivided Road



5.2. INTERSECTION CONTROL

Traffic control signal warrants following Ontario Traffic Manual (OTM) Book 12 (2012) were completed for the four proposed accesses to the development under both scenarios (background and total) and future planning horizons (2022 and 2027).

Justification 7 (future volumes) was used to determine if a signal will be warranted. Justification 7 uses Average Hourly Volumes (AHV), which is defined as follows:

Average Hourly Volume (AHV) = (AM Peak Hour Volume + PM Peak Hour Volume) / 4

Based on future volumes, none of the accesses to the proposed development trigger a traffic signal warrant. The traffic signal warrant sheets are provided in **Appendix B**.

A capacity analysis was completed for both accesses and is provided in Section 9.2.2.

5.3. INTERSECTION DESIGN

An auxiliary left-turn lane analysis for the new accesses was completed for the worst case (2027 future total) traffic conditions. The analysis followed the left-turn warrant in the MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads, June 2017 – Appendix 9A.

In the peak hours, the forecasted number of vehicles making a left turn into one of the site accesses is 3 or less. The percent left-turn volume compared to advancing traffic volumes is 1%. The left-turn warrant charts in the MTO Design Supplement are provided for locations where the perfect left-turn volume compared to advancing traffic volumes is 5% or higher. Therefore, the implementation of a left-turn lane is not warranted for either of the development accesses. Transportation Demand Management

The Scoping Report submitted to the City of Ottawa on November 30, 2017 excluded scope associated with Transportation Demand Management.

6. NEIGHBOURHOOD TRAFFIC MANAGEMENT

The Scoping Report submitted to the City of Ottawa on November 30, 2017 excluded scope associated with Neighbourhood Traffic Management.

7. TRANSIT

7.1. ROUTE CAPACITY

OC Transpo bus route #221 travels along Old Montreal Road east of Trim Road, providing a connection between Cumberland and Downtown Ottawa. Bus service on this route includes two westbound trips in the morning and two eastbound trips in the evening.

The Trim Transit Station / Trim Park & Ride is located at Trim Road and Ottawa Road 174 and is accessible from Dairy Drive. It is served by rapid transit route 95, route 22, connection route 221, and local route 122. This Park & Ride can currently accommodate 1,089 vehicles.

The Forecasting Report submitted to the City of Ottawa on December 12, 2017 indicated that this development would generate 102 new transit trips in the AM peak hour and 108 new transit trips in the PM peak hour. Applying the inbound and outbound trip percentages from the Forecasting Report provides an estimate of transit trips generated by this development as presented in the following table.



PEAK HOUR	TOTALTRANSIT TRIPS	INBOUND %	INBOUND #	OUTBOUND %	OUTBOUND #
АМ	102	37%	38	64%	65
РМ	108	53%	57	47%	51

Table 3. Estimated Transit Trips Generated by Development (AM and PM Peak Hours)

A measured and need based increase in transit service through the Old Montreal Road corridor should be provided. It is expected that the need for transit services will be driven by Cardinal Creek Village with a smaller ridership contribution from the proposed Phoenix development.

7.2. TRANSIT PRIORITY

This is a rural area transitioning into an urban area. It is not a candidate for transit priority measures.

8. REVIEW OF NETWORK CONCEPT

The Scoping Report submitted to the City of Ottawa on November 30, 2017 excluded scope associated with the Review of Network Concept.

9. INTERSECTION DESIGN

The study area includes three existing network intersections in the study area:

- Old Montreal Road and Trim Road (two lane roundabout)
- Old Montreal Road and Dairy Drive (two-way stop control)
- Old Montreal and Famille-Laporte Avenue (one-way stop control)

The development also proposes two new full-movement accesses:

 the West Access opposing the existing Famille-Laporte Avenue the East Access approximately 200m east of the West Access / Famille-Laporte Avenue intersection

The study area intersections were evaluated in the morning and afternoon (AM and PM) peak hour traffic conditions at the following planning horizons:

- Existing (2017)
- Future Background (2022 and 2027)
- Future Total (2022 and 2027)

9.1. INTERSECTION CONTROL

Traffic control signal warrants following Ontario Traffic Manual (OTM) Book 12 (2012) Justification 7 were completed the Dairy Drive intersection under both scenarios (background and total) and future planning horizons (2022 and 2027). Traffic signal warrants for the two full movement accesses were presented in **Section 5**. The warrant calculations are provided in **Appendix B**.

At the Old Montreal Road and Dairy Drive intersection a traffic signal is not warranted under either future background scenario. However, they are warranted under both future total scenarios. When considering the 2022 background scenario, the Average Hourly Volume (equation in **Section 0**) on Old Montreal is within



45 vehicles of triggering the traffic signal warrant. This indicates that any proposed development growth on Old Montreal Road that generates vehicular traffic would likely satisfy the warrant.

The following table provides the AM and PM peak hour traffic volumes on Old Montreal Road in the existing, 2022 total, and 2027 total traffic scenarios to compare the estimated traffic contribution from both Cardinal Creek Village and the proposed Phoenix Development. In 2022, Cardinal Creek contributes over 65% of the new development traffic growth along this corridor. The contribution of Cardinal Creek in 2027 is highly dependent on the availability of the proposed Ottawa Road 174 access; without this new access then the contribution of Cardinal Creek to traffic on Old Montreal Road will increase instead of decrease as presented in the Cardinal Creek TIA and shown below.

TRAFFIC	2018	2022	2027
Old Montreal Road at Dairy Drive (Total)	668 / (753)	1321 / (1519)	1155 / (1596)
Trips to/from Cardinal Creek Village	159 / (205)	478 / (618)	243 / (293)
Trips to/from Proposed Development	0 / (0)	264 / (277)	264 / (277)

Table 4. AM and PM volumes on Old Montreal Road at Dairy Drive

Following the OTM Book 12 traffic signal warrants (Justification 7), the Dairy Drive / Old Montreal Road intersection warrants a traffic signal with known development traffic. An upgrade to the intersection should be considered by the City of Ottawa to provide more capacity through the maturing rural east sector

9.2. INTERSECTION DESIGN (OPERATIONS)

9.2.1. MMLOS ANALYSIS

Multi-Modal Level of Service (MMLOS) analysis methodology outlined in the City of Ottawa's MMLOS Guidelines (2015) states that intersection LOS measures are only to be evaluated at signalized intersections. Analysis of Vehicle Level of Service (VLOS) is detailed in **Section 9.2.2**.

Based on the traffic signal warrants (**Section 9.1**), Dairy Drive will warrant a traffic signal under 2022 and 2027 total traffic conditions. As discussed in **Section 9.1**, total traffic volumes are expected to be highest in 2022 at this intersection since the proposed OR 174 connection to Cardinal Creek will not have been constructed. Therefore, we have prepared an MMLOS analysis at this intersection for the 2022 total traffic scenario only since it will represent the worst case. Targets are taken from the General Urban Area Arterial Road Class.



Table 5. Intersection MMLOS for Old Montreal Road / Diary Drive under 2022 Total Traffic Conditions

	PLOS	BLOS	TLOS	TKLOS	VLOS
Target	С	С	D	D	Castian
Old Montreal Road / Dairy Drive Intersection	С	F	D	Е	9.2.2

PLOS = Pedestrian Level of Service, BLOS = Bike Level of Service, TLOS = Transit Level of Service, TkLOS = Truck Level of Service, VLOS = Vehicle Level of Service

9.2.2. VEHICLE CAPACITY ANALYSIS

METHODOLOGY

The existing and future conditions were analyzed using the weekday peak hour traffic volumes presented during the previous Traffic Impact Assessment Forecasting Report.

All intersections in the study area are currently roundabouts or unsignalized (stop controlled) intersections. The Highway Capacity Manual (HCM) 2010, assigns the vehicle level of service (VLOS) based on ranges of movement delay, as indicated in **Table 6**. Delay is the increase in travel time due to an intersection control.

	UNSIGNALIED	SIGNALIZED
	INTERSECTIONS	INTERSECTIONS
VLOS	DELAY (SECONDS)	DELAY (SECONDS)
А	0-10	0-10
В	>10-15	>10-20
С	>15-25	>20-35
D	>25-35	>35-55
E	>35-50	>55-80
F	>50	>80

Table 6. Highway Capacity Manual 2010, LOS Criteria

The City's MMLOS Guidelines recommend a target VLOS of 'E' for the City's Central Area, for within 600m of a rapid transit station, or for within 300m of a school. The Guidelines recommend a target VLOS of 'D' for locations, such as the study area, that are not located in the aforementioned policy areas.

The following sections present the results of the intersection capacity analysis. Movement delay and VLOS are shown alongside volume, volume / capacity (v/c), and 95th percentile queue length. Unsignalized (stop-controlled) intersections were analyzed using Synchro 9, while the roundabout at Old Montreal Road and Trim Road was analyzed using SIDRA 7. **Appendix C** contains the detailed Synchro analysis sheets.

EXISTING CONDITIONS (2017)

The existing (2017) intersection capacity analysis results are summarized in **Table 7**. Both AM peak hour and PM peak hour are shown within the table, with the PM peak results shown within brackets. All three intersections currently operate with an acceptable VLOS. The highest volume to capacity (v/c) ratios are the southbound movements in the PM peak hour at the Old Montreal Road / Trim Road roundabout. The v/c ratio is 0.77 which indicates there is available capacity for future volumes.

Table 7. Intersection Capacity Summary – Existing (2017)

	VOLUME	DELAY	VLOS	V/C	Q50th	Q95th	
MOVEMENT	(VPH)	(SEC)			(m)	(m)	
	Old	d Montreal R	oad and Trir	n Road			
		(Rou	ndabout)				
EBL	21 (17)	5.2 (16.7)	A (C)	0.03 (0.23)	-	0.9 (5.6)	
EBT	24 (116)	4.7 (15.3)	A (C)	0.03 (0.23)	-	0.9 (5.6)	
EBR	42 (234)	4.7 (24.4)	A (C)	0.05 (0.62)	-	1.4 (22.6)	
WBL	98 (77)	14.6 (5.8)	B (A)	0.30 (0.11)	-	8.1 (3.0)	
WBT	130 (70)	12.4 (6.4)	B (A)	0.30 (0.11)	-	8.2 (3.1)	
WBR	147 (89)	10.3 (5.3)	B (A)	0.29 (0.12	-	8.2 (3.2)	
NBL	195 (123)	9.3 (8.3)	A (A)	0.54 (0.40)	-	28.1 (14.7)	
NBT	910 (490)	9.1 (8.1)	A (A)	0.54 (0.40)	-	28.1 (14.7)	
NBR	61 (77)	9.2 (7.9)	A (A)	0.54 (0.40)	-	27.3 (14.7)	
SBL	68 (199)	7.2 (18.1)	A (C)	0.26 (0.77)	-	8.0 (67.6)	
SBT	300 (1186)	7.0 (17.6)	A (C)	0.26 (0.77)	-	8.0 (67.6)	
SBR	23 (61)	6.8 (17.2)	A (C)	0.26 (0.77)	-	7.9 (67.2)	
Old Montreal Road and Dairy Drive							
		(Two-Way	Stop Contro	ol)			
EBL	14 (1)	8.6 (7.7)	A (A)	0.02 (0.00)	-	0.3 (0.0)	
EBTR	134 (354)	0.0 (0.0)	A (A)	0.09 (0.23)	-	0.0 (0.0)	
WBL	1 (0)	7.5 (0.0)	A (A)	0.00 (0.00)	-	0.0 (0.0)	
WBTR	522 (210)	0.0 (0.0)	A (A)	0.34 (0.14)	-	0.0 (0.0)	
NBTLR	16 (15)	15.9 (14.2)	C (B)	0.05 (0.04)	-	1.1 (0.9)	
SBL	14 (190)	15.3 (23.6)	C (C)	0.04 (0.52)	-	1.0 (20.6)	
SBTR	9 (48)	11.6 (10.0)	B (A)	0.02 (0.07)	-	0.4 (1.5)	
	Old Monta	real Road and	d Famille-La	aporte Avenue	2		
(Two-Way Stop Control)							
EBL	57 (101)	8.8 (7.7)	A (A)	0.06 (0.08)	-	1.4 (1.8)	
EBTR	69 (418)	0.0 (0.0)	A (A)	0.05 (0.27)	-	0.0 (0.0)	
WBTLR	516 (132)	0.0 (0.0)	A (A)	0.34 (0.09)	-	0.0 (0.0)	
NBTLR	0 (0)	0.0 (0.0)	A (A)	0.00 (0.00)	-	0.0 (0.0)	
SBTLR	123 (84)	14.6 (10.2)	B (B)	0.27 (0.12)	-	7.7 (3.0)	

Movement Legend:

NB / SB / EB / WB – northbound, southbound, eastbound, westbound

L / T / R - left, through, right

Examples: WBL - westbound left-turn, SBTLR - shared southbound through / left-turn / right-turn lane.

FUTURE BACKGROUND CONDITIONS (2022)

The 2022 background intersection capacity analysis results are summarized in **Table 8**. Both AM peak hour and PM peak hour are shown within the table, with the PM peak results shown within brackets. Results that do not meet the City's target VLOS of 'D' are highlighted in red. With the future background and other development traffic the southbound left turning movements at both Trim Road and Dairy Drive are expected to experience a poor LOS in the PM peak hour. Notably drivers making a SBL at Dairy Drive are expected to experience approximately 110s (just under 2 minutes) of delay with a stop control.

MOVEMENT	VOLUME	DELAY (SEC)	VLOS	V/C	Q50th	Q95th	
	(VIII)		1 170 '	D 1	(111)	(111)	
	Old	Rour	ndabout)	n Koad			
EBL	67 (44)	5.4 (29.1)	A (D)	0.09 (0.49)	-	2.4 (14.1)	
EBT	66 (234)	5.9 (26.3)	A (D)	0.09 (0.49)	-	2.4 (14.4)	
EBR	46 (256)	4.8 (25.0)	A (C)	0.06 (0.62)	-	1.5 (22.6)	
WBL	160 (130)	21.7 (7.8)	C (A)	0.53 (0.21)	-	17.7 (6.1)	
WBT	286 (173)	19.2 (7.2)	C (A)	0.53 (0.21)	-	18.1 (6.1)	
WBR	279 (167)	15.4 (6.3)	C (A)	0.50 (0.20)	-	18.2 (5.8)	
NBL	213 (134)	11.7 (12.7)	B (B)	0.61 (0.52)	-	35.7 (22.5)	
NBT	1017 (549)	11.5 (12.2)	B (B)	0.61 (0.52)	-	35.7 (22.5)	
NBR	88 (121)	11.2 (11.8)	B (B)	0.61 (0.52)	-	34.6 (22.4)	
SBL	125 (353)	9.3 (35.8)	A (E)	0.33 (0.92)	-	10.5 (129.2)	
SBT	328 (1297)	9.0 (34.6)	A (D)	0.33 (0.92)	-	10.5 (131.1)	
SBR	25 (67)	8.8 (34.0)	A (D)	0.33 (0.92)	-	10.3 (131.1)	
	Old	Montreal Ro	ad and Dair	y Drive		•	
		(Two-Way	Stop Contro	ol)			
EBL	40 (4)	9.7 (8.0)	A (A)	0.05 (0.00)	-	1.1 (0.1)	
EBTR	216 (654)	0.0 (0.0)	A (A)	0.13 (0.38)	-	0.0 (0.0)	
WBL	1 (0)	7.7 (0.0)	A (A)	0.00 (0.00)	-	0.0 (0.0)	
WBTR	827 (380)	0.0 (0.0)	A (A)	0.49 (0.22)	-	0.0 (0.0)	
NBTLR	18 (16)	25.1 (23.5)	C (C)	0.08 (0.08)	-	1.9 (1.8)	
SBL	17 (211)	24.7 (111.3)	C (F)	0.08 (1.00)	-	1.9 (62.5)	
SBTR	12 (79)	14.3 (11.5)	B (B)	0.03 (0.12)	-	0.7 (3.0)	
Old Montreal Road and Famille-Laporte Avenue							
(Two-Way Stop Control)							
EBL	60 (99)	9.8 (8.1)	A (A)	0.07 (0.08)	-	1.7 (1.8)	
EBTR	148 (736)	0.0 (0.0)	A (A)	0.09 (0.43)	-	0.0 (0.0)	
WBTLR	826 (298)	0.0 (0.0)	A (A)	0.49 (0.18)	-	0.0 (0.0)	
NBTLR	0 (0)	0.0 (0.0)	A (A)	0.00 (0.00)	-	0.0 (0.0)	
SBTLR	122 (84)	19.7 (11.9)	C (B)	0.34 (0.15)	-	10.3 (3.6)	

Table 8. Intersection Capacity Summary – Future Background (2022)

Movement Legend:

NB / SB / EB / WB – northbound, southbound, eastbound, westbound

L / T/ R – left, through, right

Examples: WBL - westbound left-turn, SBTLR - shared southbound through / left-turn / right-turn lane.



FUTURE BACKGROUND CONDITIONS (2027)

The 2027 background intersection capacity analysis results are summarized in **Table 9**. Both AM peak hour and PM peak hour are shown within the table, with the PM peak results shown within brackets. Results that do not meet the City's target VLOS of 'D' are highlighted in red. Under 2027 background traffic conditions, all the SB movements at the Trim Road roundabout are expected operate with a LOS 'F' in the PM peak hour. The EBL movement has a reduction in LOS to an 'E' as a result of high SB volumes. The SBL movement at Dairy Drive continues to operate with a LOS 'F' and high delays with a stop control.

	VOLUME	DELAY	VLOS	V/C	Q50th	Q95th	
MOVEMENT	(VPH)	(SEC)			(m)	(m)	
	Old	l Montreal Ro (Rour	oad and Trin ndabout)	n Road			
EBL	74 (45)	9.3 (36.1)	A (E)	0.09 (0.56)	-	2.6 (16.6)	
EBT	56 (246)	8.9 (32.6)	A (D)	0.08 (0.56)	-	2.2 (17.0)	
EBR	50 (280)	8.7 (34.9)	A (D)	0.06 (0.73)	-	1.6 (29.9)	
WBL	168 (138)	25.0 (8.5)	D (A)	0.54 (0.24)	-	17.8 (6.8)	
WBT	241 (180)	21.6 (7.8)	C (A)	0.54 (0.24)	-	18.2 (6.8)	
WBR	162 (176)	12.3 (6.8)	B (A)	0.32 (0.22)	-	9.4 (6.4)	
NBL	233 (147)	12.7 (14.5)	B (B)	0.66 (0.58)	-	42.9 (27.1)	
NBT	1121 (599)	12.4 (13.9)	B (B)	0.66 (0.58)	-	42.9 (27.1)	
NBR	103 (129)	12.2 (13.5)	B (B)	0.66 (0.58)	-	41.4 (27.0)	
SBL	93 (373)	9.3 (59.4)	A (F)	0.34 (1.03)	-	10.8 (243.8)	
SBT	368 (1418)	8.9 (58.1)	A (F)	0.34 (1.03)	-	10.8 (254.6)	
SBR	34 (73)	8.7 (57.3)	A (F)	0.34 (1.03)	-	10.6 (254.6)	
Old Montreal Road and Dairy Drive							
		(Two-Way	Stop Contro	ol)			
EBL	41 (4)	9.1 (8.1)	A (A)	0.04 (0.00)	-	1.0 (0.1)	
EBTR	187 (689)	0.0 (0.0)	A (A)	0.11 (0.41)	-	0.0 (0.0)	
WBL	1 (0)	7.6 (0.0)	A(A)	0.00 (0.00)	-	0.0 (0.0)	
WBTR	689 (402)	0.0 (0.0)	A(A)	0.41 (0.24)	-	0.0 (0.0)	
NBTLR	19 (17)	20.3 (25.9)	C (D)	0.07 (0.09)	-	1.5 (2.1)	
SBL	18 (231)	19.6 (177.5)	C (F)	0.07 (1.20)	-	1.5 (84.0)	
SBTR	13 (84)	12.6 (11.7)	B (B)	0.03 (0.14)	-	0.6 (3.3)	
Old Montreal Road and Famille-Laporte Avenue (Two-Way Stop Control)							
EBL	55 (109)	9.3 (8.1)	A (A)	0.06 (0.09)	-	1.4 (2.0)	
EBTR	123 (779)	0.0 (0.0)	A (A)	0.07 (0.46)	-	0.0 (0.0)	
WBTLR	722 (311)	0.0 (0.0)	A (A)	0.42 (0.18)	-	0.0 (0.0)	
NBTLR	0 (0)	0.0 (0.0)	A (A)	0.00 (0.00)	-	0.0 (0.0)	
SBTLR	100 (93)	16.3 (12.4)	C (B)	0.24 (0.17)	-	6.6 (4.3)	

Table 9. Intersection Capacity Summary – Future Background (2027)

Movement Legend: NB / SB / EB / WB - northbound, southbound, eastbound, westbound

L / T / R - left, through, right.



FUTURE TOTAL CONDITIONS (2022)

The 2022 future total (future background plus additional site generated traffic) intersection capacity analysis results are summarized in **Table 10**. Both AM peak hour and PM peak hour are shown within the table, with the PM peak results shown within brackets. Results that do not meet the City's target VLOS of 'D' are highlighted in red.

With the addition of the development traffic, the SB movements at Trim Road experience a LOS 'F' in the 2022 planning horizon instead of the 2027 planning horizon that was anticipated as part of the background traffic analysis.

The delay experienced by vehicles making a SBL at Dairy Drive in the PM period increases from 110s to over 420s. This assumes that regular commuters do not adjust their route based on known conditions; it is unlikely that over 260 drivers will knowingly wait over 7 minutes at an intersection when there are other routes with less delay available.

Vehicles exiting the development at Famille-Laporte will experience high delay in the peak hours due to the existing high volumes along Old Montreal Road. It is likely that some residents will shift their exit point from the west access to the east access based on known traffic conditions. Anticipated delay is lower at the east access since there is not a north leg to the intersection, which results in fewer turning movements competing for the same gaps in traffic. Alternative future scenarios for Famille-Laporte, including traffic re-assignment and alternative intersection control, are presented in **Section 0**.

	VOLUME	DELAY	VLOS	V/C	Q50th	Q95th
MOVEMENT	(VPH)	(SEC)			(m)	(m)
	Old	I Montreal R	oad and Trin	n Road		
		(Rou	ndabout)			
EBL	67 (44)	6.4 (36.0)	A (E)	0.10 (0.57)	-	2.8 (17.3)
EBT	80 (262)	5.8 (32.6)	A (D)	0.10 (0.57)	-	2.8 (17.6)
EBR	46 (256)	4.9 (26.2)	A (D)	0.06 (0.63)	-	1.5 (23.2)
WBL	188 (167)	25.2 (8.5)	D (A)	0.60 (0.26)	-	21.9 (7.8)
WBT	324 (206)	22.4 (7.8)	C (A)	0.60 (0.26)	-	22.5 (7.8)
WBR	321 (210)	18.0 (6.9)	C (A)	0.58 (0.26)	-	22.9 (7.6)
NBL	213 (134)	13.5 (14.7)	B (B)	0.66 (0.57)	-	42.7 (25.6)
NBT	1017 (549)	13.2 (14.1)	B (B)	0.66 (0.57)	-	42.7 (25.6)
NBR	123 (140)	12.9 (13.6)	B (B)	0.66 (0.57)	-	41.7 (25.6)
SBL	164 (401)	10.6 (55.6)	B (F)	0.38 (1.01)	-	12.8 (208.9)
SBT	328 (1297)	10.2 (54.2)	B (F)	0.38 (1.01)	-	12.8 (217.5)
SBR	25 (67)	10.0 (53.4)	A (F)	0.38 (1.01)	-	12.5 (217.5)

Table 10. Intersection Capacity Summary – Future Total (2022)



MOVEMENT	VOLUME	DELAY	VLOS	V/C	Q50th	Q95th
MOVEMENT	(VPH)	(SEC)			(m)	(m)
	Old	Montreal Ro	ad and Dair	y Drive		
	40.740			0.00 (0.01)	1.2 (0.2)	4.5.(1.0)
EBL	40 (4)	4.7 (6.6)	A (A)	0.22 (0.01)	1.3 (0.2)	4.7 (1.3)
EBTR	304 (741)	4.3 (18.0)	A (B)	0.25 (0.84)	10.1 (50.0)	17.1 (117.6)
WBL	1 ()	3.5 (0.0)	A(A)	0.00 (0.00)	0.0 (0.0)	0.3 (0.0)
WBTR	733 ()	13.7 (10.0)	B (A)	0.84 (0.57)	60.6 (27.2)	110.5 (54.9)
NBTLR	18 ()	21.6 (12.5)	C (B)	0.07 (0.03)	1.7 (0.9)	6.7 (3.9)
SBL	27 ()	21.9 (18.7)	C (B)	0.12 (0.64)	2.5 (21.4)	8.8 (41.1)
SBTR	12 ()	21.3 (12.6)	C (B)	0.01 (0.06)	0.1 (0.2)	4.0 (6.9)
Old Montreal Road and Famille-Laporte Avenue / West Access						
		(Two-Way	Stop Contro	ol)		
EBL	60 (99)	10.1 (8.2)	B (A)	0.08 (0.08)	-	1.8 (1.9)
EBTR	245 (884)	0.0 (0.0)	A (A)	0.14 (0.52)	-	0.0 (0.0)
WBL	1 (2)	7.7 (9.7)	A (A)	0.00 (0.00)	-	0.0 (0.1)
WBTR	895 (352)	0.0 (0.0)	A(A)	0.53 (0.21)	-	0.0 (0.0)
NBTLR	103 (78)	210.4 (133.6)	F (F)	1.19 (0.89)	-	51.0 (34.0)
SBTLR	122 (84)	22.9 (13.7)	C (B)	0.38 (0.17)	-	12.0 (4.2)
Old Montreal Road and East Access						
(Two-Way Stop Control)						
EBTR	201 (806)	0.0 (0.0)	A (A)	0.12 (0.47)	-	0.0 (0.0
WBL	2 (3)	7.6 (9.4)	A (A)	0.00 (0.00)	-	0.0 (0.1)
WBT	828 (301)	0.0 (0.0)	A (A)	0.49 (0.18)	-	0.0 (0.0)
NBLR	72 (55)	22.8 (23.8)	C (C)	0.26 (0.22)	-	7.2 (5.9)

Movement Legend: NB / SB / EB / WB – northbound, southbound, eastbound, westbound L / T/ R – left, through, right

Examples: WBL - westbound left-turn, SBTLR - shared southbound through / left-turn / right-turn lane.



FUTURE TOTAL CONDITIONS (2027)

The 2027 future total (future background plus additional site generated traffic) intersection capacity analysis results are summarized in **Table 11**. Both AM peak hour and PM peak hour are shown within the table, with the PM peak results shown within brackets. Results that do not meet the City's target VLOS of 'D' are highlighted in red.

Movements that had high delay and a poor LOS in the 2022 total traffic scenario continue to experience high delays.

	VOLUME	DELAY	VLOS	V/C	Q50th	Q95th	
MOVEMENT	(VPH)	(SEC)			(m)	(m)	
	Old	d Montreal R	oad and Trir	n Road			
		(Rou	ndabout)				
EBL	74 (45)	5.9 (35.5)	A (E)	0.10 (0.58)	-	2.7 (17.7)	
EBT	69 (274)	6.5 (32.2)	A (D)	0.10 (0.58)	-	2.8 (18.1)	
EBR	50 (280)	5.2 (29.3)	A (D)	0.06 (0.69)	-	1.7 (27.0)	
WBL	196 (175)	29.6 (9.3)	D (A)	0.63 (0.29)	-	22.4 (8.6)	
WBT	279 (213)	25.8 (8.5)	D (A)	0.63 (0.29)	-	23.1 (8.6)	
WBR	204 (219)	14.0 (7.5)	B (A)	0.41 (0.27)	-	12.8 (8.3)	
NBL	233 (147)	14.8 (16.1)	B (C)	0.70 (0.61)	-	51.9 (29.7)	
NBT	1121 (599)	14.4 (15.5)	B (C)	0.70 (0.61)	-	51.9 (29.7)	
NBR	138 (148)	14.1 (14.9)	B (B)	0.70 (0.61)	-	50.6 (29.7)	
SBL	132 (421)	10.6 (91.0)	B (F)	0.38 (1.12)	-	13.1 (374.3)	
SBT	368 (1418)	10.1 (89.6)	B (F)	0.38 (1.12)	-	13.1 (399.6)	
SBR	34 (73)	9.9 (89.9)	A (F)	0.38 (1.12)	-	12.9 (399.6)	
Old Montreal Road and Dairy Drive							
		(Sigi	nalized)				
EBL	41 (4)	5.2 (6.6)	A (A)	0.20 (0.01)	1.3 (0.2)	4.7 (1.3)	
EBTR	275 (784)	5.0 (11.5)	A (B)	0.25 (0.86)	9.0 (5.9)	16.5 (126.4)	
WBL	1 (0)	4.2 (0.0)	A(A)	0.00 (0.00)	0.0 (0.0)	0.4 (0.0)	
WBTR	855 (531)	8.0 (10.2)	A (B)	0.81 (0.59)	42.8 (30.1)	84.2 (58.4)	
NBTLR	18 (17)	16.3 (12.9)	B (B)	0.06 (0.03)	1.4 (0.9)	5.5 (4.2)	
SBL	28 (283)	16.6 (21.1)	B (C)	0.10 (0.69)	2.1 (23.8)	7.2 (44.5)	
SBTR	13 (84)	16.2 (13.0)	B (B)	0.01 (0.06)	0.1 (0.2)	3.4 (7.1)	
Old	Montreal Roa	ad and Famil	le-Laporte A	venue / West	Access		
(Two-Way Stop Control)							
EBL	55 (109)	9.6 (8.3)	A (A)	0.07 (0.09)	-	1.5 (2.1)	
EBTR	221 (927)	0.0 (0.0)	A (A)	0.13 (0.55)	-	0.0 (0.0)	
WBL	1 (2)	7.6 (9.8)	A (A)	0.00 (0.00)	-	0.0 (0.1)	
WBTR	791 (365)	0.0 (0.0)	A (A)	0.47 (0.21)	-	0.0 (0.0)	
NBTLR	102 (78)	85.2 (185.0)	F (F)	0.79 (1.04)	-	33.1 (39.3)	
SBTLR	100 (93)	18.6 (14.8)	C (B)	0.27 (0.20)	-	7.7 (5.1)	

Table 11. Intersection Capacity Summary – Future Total (2027)


MOVEMENT	VOLUME (VPH)	DELAY (SEC)	VLOS	V/C	Q50th (m)	Q95th (m)			
Old Montreal Road and East Access (Two-Way Stop Control)									
EBTR	177 (849)	0.0 (0.0)	A (A)	0.10 (0.50)	-	0.0 (0.0)			
WBL	2 (3)	7.6 (9.5)	A (A)	0.00 (0.00)	-	0.0 (0.1)			
WBT	724 (314)	0.0 (0.0)	A (A)	0.43 (0.18)	-	0.0 (0.0)			
NBLR	72 (55)	19.1 (25.8)	C (D)	0.22 (0.24)	-	5.8 (6.4)			

Movement Legend:

NB / SB / EB / WB - northbound, southbound, eastbound, westbound

L / T/ R – left, through, right

Examples: WBL – westbound left-turn, SBTLR – shared southbound through / left-turn / right-turn lane.

SUMMARY OF VEHICLE CAPACITY ANALYSIS

Old Montreal Road and Trim Road

- Analysed as a roundabout using the existing lane arrangement for all scenarios
- All southbound and the eastbound left movements operate over capacity in the PM peak hour by 2027 under the background traffic scenario

Old Montreal Road and Dairy Drive

- Analysed as a two-way stop control under existing, 2022 background, and 2027 background scenarios
- Analysed as a traffic signal under the 2022 total and 2027 total scenarios (the scenarios that traffic signal warrants were met)
- A traffic signal improves the intersection operations by reducing the delay experienced by vehicles making a northbound or southbound left/through movement

Old Montreal Road and Famille Laporte Avenue

- Analyzed as a two-way stop control using the existing lane arrangement on Old Montreal Road for all scenarios (no traffic signal warrant was met)
- Vehicles making a northbound left movement out of the proposed Phoenix development experience high delay
- Alternative intersection configurations are considered in Section 0

Old Montreal Road and East Access

- Analyzed as a two-way stop control with no eastbound left turn lane (left turn lane warrant not met)
- Intersection operates with an acceptable level of service for all scenarios



9.3. FAMILLE-LAPORTE AVENUE ALTERNATIVES

The analysis of intersection operations for the 2022 and 2027 future total conditions show that vehicles exiting the development at Famille-Laporte will experience high delay in the peak hours due to the existing high volumes along Old Montreal Road and conflicting vehicle movements entering/existing Cardinal Creek Village. Additional alternative scenarios at Famille-Laporte were considered and include

- 1 Reassignment of traffic from the west full movement access to east full movement access to determine if / when a balanced v/c ratio can be achieved
- 2 Roundabout (single lane)
- 3 Traffic signal with east & west left turn lanes

Reassignment: High delay at Famille-Laporte Avenue under baseline conditions would likely see a redistribution of exiting traffic to the East Access. The northbound approach delay at these two intersections is expected to be approximately equal if 95% of exiting left-turn traffic uses the East Access. While feasible as an interim measure, this is not a long-term solution.

Roundabout: Roundabouts are not generally implemented along corridors with insufficient gaps in the major traffic flow to accommodate the minor flow or at intersections with significantly unbalanced traffic volumes on the approach roads which is the case at this location, therefore a roundabout was not further considered.

Crash history at this intersection was provided as part of the larger road segment. Of the nine crashes in this area, eight were single motor vehicle and not the head-on, right angle, or left-turn across crashes that indicate that a roundabout may be suitable. There were no fatal crashes.

Roundabouts are suitable for locations where there is a transition from a rural to an urban environment. In the 2022 and 2027 planning horizon it is expected that there will be two new accesses to Cardinal Creek Village to the east within the general urban area.

Traffic Signals: The addition of a traffic signal reduces the average delay for exiting northbound traffic at the West Access to approximately 20s during both peak hours. A signal introduces some minor delays to eastbound and westbound traffic. Overall average intersection delay is comparable to baseline conditions. See **Table 12** for the intersection operations summary.

MOVEMENT	VOLUME	DELAY (S)	VLOS	V/C	Q50th (M)	Q95th (M)				
Old Montreal Road and Famille-Laporte Avenue / West Access										
EBL	55 (109)	4.1 (3.5)	A (A)	0.12 (0.15)	1.9 (3.8)	6.1 (9.2)				
EBTR	221 (927)	4.0 (8.7)	A (B)	0.18 (0.70)	7.3 (58.7)	16.4 (111.3)				
WBLTR	791 (365)	8.3 (3.9)	B (A)	0.64 (0.28)	43.4 (14.2)	87.7 (26.2)				
NBTLR	102 (78)	26.6 (31.8)	C (C)	0.34 (0.29)	5.9 (4.9)	16.5 (15.2)				
SBTLR	100 (93)	24.8 (30.3)	C (C)	0.09 (0.09)	0.7 (0.8)	10.4 (11.3)				

Table 12. Intersection Capacity Summary – Famille Laporte Avenue Traffic Signal – 2027 Total

Movement Legend:

NB / SB / EB / WB – northbound, southbound, eastbound, westbound

L / T/ R – left, through, right

Examples: WBL - westbound left-turn, SBTLR - shared southbound through / left-turn / right-turn lane.

Considering the baseline conditions and three alternatives, a traffic signal is most appropriate at this location.

10. SUMMARY OF IMPROVEMENTS AND MODIFICATION OPTIONS

10.1. CONCLUSIONS

Background traffic analysed includes known developments in the area. The largest known development is the multi-phased Cardinal Creek Village located directly to the north of the proposed Phoenix Development. Cardinal Creek Village is a major generator of traffic in this area. The 2022 planning horizon has indicated that an additional 374 westbound trips during the AM peak hour and 398 eastbound trips during the PM peak hour have been assigned to Old Montreal Road. By the 2027 planning horizon year, the Cardinal Creek Village will have a new signalized connection to Highway 174 approximately 1.5km east of Trim Road. This new intersection is expected to change internal traffic patterns and reduce the number of trips on Old Montreal Road. Also for the 2027 planning horizon, the Cardinal Creek Village will have added 182 westbound trips during the AM peak hour and 170 eastbound trips during the PM peak hour to Old Montreal Road.

As background traffic continues to increase there is a corresponding decrease in LOS and v/c ratios at existing intersections in the study area. By 2027, SB movements and the EBL movement at the Trim Road / Old Montreal Road roundabout are operating over capacity with a LOS 'E' or 'F'. This represents a degradation in the LOS when compared with the existing conditions. These reductions in LOS are typical as neighborhoods mature and as greenfields are developed for residential, commercial, or industrial uses.

The development of the Phoenix lands will increase pressures on the intersection LOS when compared to the background traffic scenarios. However, it is noted that new development growth along Old Montreal Road will also place additional pressure on the existing intersection conditions and cause similar reductions in LOS. Specifically, changes to the Cardinal Creek Village development (development plan, access locations, phasing) would impact on the Dairy Drive and Famille Laporte intersection operations.

In conclusion, the **proposed development by Phoenix Homes located at 1154, 1172, 1180, and 1208 Old Montreal:**

- a) is appropriately designed for sustainable modes,
- b) is aligned with the City of Ottawa's broader city-building objectives,
- c) generates fewer vehicle trips than the Cardinal Creek Village development,
- d) can be accommodated with impacts to traffic operations for the 2022 and 2027 planning horizons being managed.

The proposed development is appropriate from a transportation planning perspective taking into consideration the City of Ottawa's Transportation Master Plan, Official Plan, and the recommendations of this report (Section 0).

10.2. RECOMMENDATIONS

1. Designing for Sustainable Modes

To reduce walking distance to existing transit stops, consider:

- a) Removing the deviation in the proposed sidewalk north of Block 9, if not otherwise required to comply with a 5% running slope.
- b) Moving the nearby eastbound bus stop from Grand Chène Crescent to the northeast (far-side) corner of the intersection of Old Montreal Road with Famille-Laporte Avenue.

Reference: Section 2.1

2. Boundary Street Design

No modifications to the boundary street design are required to accommodate this development. The future widening of Old Montreal Road in this area proposed in the City's Transportation Master Plan could provide additional capacity and improved facilities for all transportation modes.

Reference: Section 4

3. Intersection Design

- a) <u>Old Montreal Road and Trim Road</u>. No modifications are proposed. It is noted that southbound traffic movements at this location will exceed available intersection capacity without the addition of the proposed development generated traffic.
- b) <u>Old Montreal Road and Dairy Drive</u>. The installation of a traffic signal is proposed as part of a City assessment focused on the provision of increased capacity to serve the rural areas located to the east. Alternatively, potential changes either in scale or phasing of the Cardinal Creek Village development (located to the north) would reduce pressure on Old Montreal Road.
- c) <u>Old Montreal Road and Famille-Laporte Avenue.</u> The installation of a traffic signal is proposed to provide opportunities for vehicles to make left-turns to and from the north and south legs of the intersection without high levels of delay. The intersection should include accessible pedestrian crosswalks following OTM Book 11 (Pavement Markings) and Book 15 (Pedestrian Crossing Treatments).
- d) <u>Right-in / Right-out Accesses</u>. Include a channelized island (**Figure 2**) to restrict left turns onto Old Montreal Road from the Famille-Laporte Avenue access location.
- e) <u>Old Montreal Road and East Access</u>: One-way (northbound) stop control intersection with eastwest accessible pedestrian crosswalk following OTM Book 11 (Pavement Markings) and Book 15 (Pedestrian Crossing Treatments). Westbound left turn volumes are expected to be low and do not require a left turn lane. Traffic signal warrants were not met.

Reference: Sections 0 and 9



11. ROAD MODIFICATION APPROVAL DRAWINGS

Following the City of Ottawa's acceptance of the TIA Strategy Report, one RMA drawings would be prepared and submitted as follows:

- **1** Famille Laporte Intersection to be upgraded to a traffic signal with the following lane arrangement (**Section 0**):
 - Eastbound Left (as existing)
 - Eastbound Through / Right
 - Westbound Left / Through / Right
 - Northbound Left / Through / Right
 - Southbound Left / Through / Right (as existing)



A TDM CHECKLIST

1154, 1172, 1180, and 1208 Old Montreal Road

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: <i>Residential developments</i>				Check if completed & descriptions, explanations 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	N	No parking is located between any multi-unit building and the street / sidewalk
BASIC	1.1.2	Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	R	Direct connections (<10m) between sidewalk and main building entrances. Majority of multi-unit buildings located closer to Old Montreal Road and nearest transit stop
BASIC	1.1.3	Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	N	Building doors and windows face Old Montreal Road or internal site pedestrian facilities
	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 <i>(see Official Plan policy 4.3.3)</i>	M	Trim Road is nearest rapid transit station, at approximately 1250m walking distance. Concrete sidewalks provided on-site to connect to nearest transit stop on Old Montreal Road
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		Direct connections (<10m) between main building entrances and sidewalks on Old Montreal Road or new internal roadways. Sidewalks are located in front of all multi-unit buildings

	TDM-s	supportive design & infrastructure measures: Residential developments	add Ol	Check if completed & descriptions, explanations r plan/drawing references
		weather protection through canopies, colonnades, and other design elements wherever possible <i>(see Official Plan policy 4.3.12)</i>		
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 <i>(see Official Plan policy 4.3.10)</i>		Sidewalks to be constructed of concrete to differentiate pedestrian areas from vehicle areas (to be confirmed during development of site plan). Crosswalks provided at all accesses along Old Montreal Road
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)	M	Sidewalks will have gradual grade transitions, depressed curbs at street corners, and access to the required number of accessible parking spaces. (to be confirmed during development of site plan)
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)	M	Pedestrian connections provided at east and west accesses. The proposed accesses also connect to paved shoulders / future bike lanes on Old Montreal Road. To be detailed during development of site plan.
BASIC	1.2.6	Provide safe, direct and attractive walking routes from building entrances to nearby transit stops	Q	On-site pedestrian pathways / sidewalks connect to existing transit stops on Old Montreal Road
BASIC	1.2.7	Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible	X	Eastbound transit stop on Old Montreal Road without direct pedestrian facilities
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	R	Internal roads designed using a low target operating speed
	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		To be confirmed during site plan development
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)	X	

	TDM-s	supportive design & infrastructure measures: Residential developments	Check if completed & add descriptions, explanations or plan/drawing references
	2.	WALKING & CYCLING: END-OF-TRIP FACILI	TIES
	2.1	Bicycle parking	
REQUIRED	2.1.1	Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible <i>(see Official Plan policy 4.3.6)</i>	To be confirmed during site plan development
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 (<i>see Zoning By-law Section 111</i>)	To be confirmed during site plan development
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 <i>(see Zoning By-law Section 111)</i>	To be confirmed during site plan development
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)	To be confirmed during site plan development
BETTER	2.2.2	Provide secure bicycle parking spaces equivalent to at least the number of units at condominiums or multi- family residential developments	X
	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)	X
	3.	TRANSIT	
	3.1	Customer amenities	
BASIC	3.1.1	Provide shelters, lighting and benches at any on-site transit stops	There are no on-site transit stops proposed
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	The site does not abut any off-site transit stops
BETTER	3.1.3	Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	There are no on-site transit stops proposed

	TDM-s	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 <i>(see Zoning By-law Section 94)</i>	
	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	The proposed number of parking spaces will meet the requirements of the City's Zoning By-law
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	On-road and visitor parking spaces provided for short-term users.
BASIC	6.1.3	Where a site features more than one use, provide shared parking and reduce the cumulative number of parking spaces accordingly <i>(see Zoning By-law</i> <i>Section 104)</i>	
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 <i>(see Zoning By-law Section 111)</i>	
	6.2	Separate long-term & short-term parking areas	I
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)	To be confirmed during site plan development



B TRAFFIC SIGNAL WARRANTS



SCENARIO F	uture Backgrour	nd	YEAR	20	22
MAJOR ROAD C	ld Montreal Roa	ad M	INOR ROAD	Dairy Drive	
FLOW TYPE	Restricted]	ROAD TYPE	1 Lane	
NEW ROAD / INT.	No		"T" INT.	No	
	MINIMUM RE	EQUIREMENT		COMPI	LIANCE
JUSTIFICATION	FLOW	ADJ. FLOW	AHV	%	OVERALL %
1A - All Approaches	470	565	620	110%	62%
1B - Minor Road	120	145	90	62%	0270
2A - Major Road	480	575	530	92%	02%
2B - Crossing Major Road	50	60	65	108%	9270

SCENARIO F	future Backgroui	nd	YEAR	20	22
MAJOR ROAD C	ld Montreal Roa	nd M	INOR ROAD	Famille-Laporte / West Acces	
FLOW TYPE	Restricted]	ROAD TYPE	1 Lane	
NEW ROAD / INT.	No		"T" INT.	No	
	MINIMUM RE	EQUIREMENT		COMPI	LIANCE
JUSTIFICATION	FLOW	ADJ. FLOW	AHV	%	OVERALL %
1A - All Approaches	470	565	595	105%	2107-
1B - Minor Road	120	145	50	34%	54%
2A - Major Road	480	575	545	95%	170%
2B - Crossing Major Road	50	60	10	17%	1/%



SCENARIOF	uture Backgroui	nd	YEAR	20	27
MAJOR ROAD C	ld Montreal Roa	ad M	INOR ROAD	Dairy Drive	
FLOW TYPE	Restricted		ROAD TYPE	1 Lane	
NEW ROAD / INT.	No		"T" INT.	No	
	MINIMUM RE	EQUIREMENT		COMPI	LIANCE
JUSTIFICATION	FLOW	ADJ. FLOW	AHV	%	OVERALL %
1A - All Approaches	470	565	600	106%	66%
1B - Minor Road	120	145	95	66%	00 %
2A - Major Road	480	575	505	88%	880%
2B - Crossing Major Road	50	60	75	125%	0070

SCENARIO <u>F</u>	future Backgroui	nd	YEAR	20	27
MAJOR ROAD C	ld Montreal Roa	nd M	INOR ROAD	Famille-Laporte / West Acces	
FLOW TYPE	Restricted]	ROAD TYPE	1 Lane	
NEW ROAD / INT.	No		"T" INT.	No	
	MINIMUM RE	EQUIREMENT		COMPI	LIANCE
JUSTIFICATION	FLOW	ADJ. FLOW	AHV	%	OVERALL %
1A - All Approaches	470	565	575	102%	2107-
1B - Minor Road	120	145	50	34%	3470
2A - Major Road	480	575	525	91%	170%
2B - Crossing Major Road	50	60	10	17%	1/%



SCENARIO	Future Total		YEAR	2022	
MAJOR ROAD O	ld Montreal Roa	ad M	INOR ROAD	Dairy Drive	
FLOW TYPE	Restricted]	ROAD TYPE	1 Lane	
NEW ROAD / INT.	No		"T" INT.	No	
	MINIMUM RE	EQUIREMENT		COMPI	LIANCE
JUSTIFICATION	FLOW	ADJ. FLOW	AHV	%	OVERALL %
1A - All Approaches	470	565	755	134%	72%
1B - Minor Road	120	145	105	72%	1270
2A - Major Road	480	575	650	113%	113%
2B - Crossing Major Road	50	60	85	142%	11570

SCENARIO	Future Total		YEAR	20	22			
MAJOR ROAD O	ld Montreal Roa	ad M	INOR ROAD	Famille-Laporte / West Acces				
FLOW TYPE	Restricted		ROAD TYPE	1 L	ane			
NEW ROAD / INT.	Yes		"T" INT.	N	lo			
	MINIMUM RE	EQUIREMENT		COMPI	LIANCE			
JUSTIFICATION	FLOW	ADJ. FLOW	AHV	%	OVERALL %			
1A - All Approaches	470	705	735	104%	56%			
1B - Minor Road	120	180	100	56%	30%			
2A - Major Road 480 720 635 88		88%	73%					
2B - Crossing Major Road	50	75	55	73%	1370			

SCENARIO	Future Total	YEAR	2022	
MAJOR ROAD	Old Montreal Road	MINOR ROAD	East Access	_
FLOW TYPE	Restricted	ROAD TYPE	1 Lane	
NEW ROAD / INT.	Yes	"T" INT.	Yes	

	MINIMUM RE	EQUIREMENT		COMPI	LIANCE
JUSTIFICATION	FLOW	ADJ. FLOW	AHV	%	OVERALL %
1A - All Approaches	470	705	570	81%	11%
1B - Minor Road	120	270	30	11%	1170
2A - Major Road	480	720	535	74%	40%
2B - Crossing Major Road	50	75	30	40%	4070



SCENARIO	Future Total		YEAR	20	27
MAJOR ROAD O	ld Montreal Roa	ad M	INOR ROAD	Dairy	Drive
FLOW TYPE	Restricted]	ROAD TYPE	1 L	ane
NEW ROAD / INT.	No		"T" INT.	Ν	lo
	MINIMUM RE	EQUIREMENT		COMPI	LIANCE
JUSTIFICATION	FLOW	ADJ. FLOW	AHV	%	OVERALL %
1A - All Approaches	470	565	735	130%	76%
1B - Minor Road	120	145	110	76%	70%
2A - Major Road	480 57		625	109%	100%
2B - Crossing Major Road	50	60	90	150%	10970

SCENARIO	Future Total		YEAR	20	27
MAJOR ROAD O	ld Montreal Roa	ad M	INOR ROAD	Famille-Laport	e / West Access
FLOW TYPE	Restricted		ROAD TYPE	1 L	ane
NEW ROAD / INT.	Yes		"T" INT.	N	lo
	MINIMUM RE	EQUIREMENT		COMPI	LIANCE
JUSTIFICATION	FLOW	ADJ. FLOW	AHV	%	OVERALL %
1A - All Approaches	470	705	715	101%	530%
1B - Minor Road	120	180	95	53%	5570
2A - Major Road	480	720	620	86%	73%
2B - Crossing Major Road	50	75	55	73%	1370

SCENARIO	Future Total	YEAR_	2027
MAJOR ROAD	Old Montreal Road	MINOR ROAD	East Access
FLOW TYPE	Restricted	ROAD TYPE	1 Lane
NEW ROAD / INT.	Yes	"T" INT.	Yes

	MINIMUM RE	EQUIREMENT		COMPI	LIANCE
JUSTIFICATION	FLOW	ADJ. FLOW	AHV	%	OVERALL %
1A - All Approaches	470	705	550	78%	11%
1B - Minor Road	120	270	30	11%	1170
2A - Major Road	480	720	520	72%	40%
2B - Crossing Major Road	50	75	30	40%	40%



C DETAILED SYNCHRO SHEETS

Intersection														
Int Delay, s/veh	6.3													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations	۲	14		ሻ	4			4		ሻ	4Î			
Traffic Vol, veh/h	1	347	7	0	182	28	9	3	3	190	3	45		
Future Vol, veh/h	1	347	7	0	182	28	9	3	3	190	3	45		
Conflicting Peds, #/hr	0	0	2	2	0	0	2	0	2	2	0	2		
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop		
RT Channelized			None	30 - 20 - 20 Geografia		None	-		None	80 (0) 1999 - 59		None		
Storage Length	500	-	-	400	-	-	-	-	-	200	-	-		
Veh in Median Storage,	# -	0	8 G G	8 H L	0			0		29 AN 29	0			
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-		
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90		
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0	s seres a second de la cal proclata in	na na mana amin' amin
Mvmt Flow	1	386	8	0	202	31	10	3	3	211	3	50		
Major/Minor M	laior1			Maior2		N	Ainor1			Minor2				
Conflicting Flow All	233	٥	<u>،</u> ۱	395	٥	<u>ر</u>	640	627	393	615	616	220		
t anet?	200		·		- -	· ·	394	394	-	218	218			
Stage 2	-	- -	<u>-</u>	-	50597544 -	990/990/990 -	246	233	•	397	398	-		
Critical Hdwy	4 1			41			71	65	6.2	71	6.5	6.2		
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Critical Hdwy Stg 7							61	5.5		6.1	5.5	- 18 - 1		
Follow-up Hdwy	22	- 1000000	-	2.2	•	- -	3.5	4	3.3	3.5	4	3.3		
Pot Can-1 Maneuver	1346		olando) novil Silo Secto - o	1175	-		391	403	660	406	409	825		la de concelación Subscrietadores
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Stage 2	-				9 (.		762	716		633	606			
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Mov Cap-2 Maneuver					na se		364	402		400	408	n pangang ng katang bilang bilang Bilang bilang	naan dhaanna na boo bada bada bada bada bada bada bada	aan oo ah
Stage 1					-		633	608		788	726			
Stage 2			,				711	716		625	605	-		
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Capacity (veh/h)		408	1344	•	•	1173		9 M -	400	775			9 19 19 19 ISB	
HCM Lane V/C Ratio	a weber to a to the	0.041	0.001	- vedstagener (*	- 20052202400	- 	+ 	- 250-050-050-050-050-050-050-050-050-050-	0.528	0.069			na pang pangalan sa talan sa ta	a an
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HCM 95th %tile Q(veh)		0.1	0			0			3	0.2				

Int Delay, s/veh 2.2 Movement EBL EBT WBT WBR SBL SBR Lane Configurations Y Y Y Traffic Vol, veh/h 101 417 128 4 7 77 Future Vol, veh/h 101 417 128 4 7 77 Conflicting Peds, #/hr 2 0 0 2 2 1 Sign Control Free Free Free Stop Stop RT Channelized - None - None Storage Length 1250 - - 0 - Veh in Median Storage, # - 0 0 - 0 - Peak Hour Factor 90 90 90 90 90 90 90 90	The second se							
Movement EBL EBT WBT WBR SBL SBR Lane Configurations 1	Int Delay, s/veh	2.2						
Lane Configurations Image: Amount of the system Traffic Vol, veh/h 101 417 128 4 7 77 Future Vol, veh/h 101 417 128 4 7 77 Future Vol, veh/h 101 417 128 4 7 77 Conflicting Peds, #/hr 2 0 0 2 2 1 Sign Control Free Free Free Stop Stop RT Channelized - None - None Storage Length 1250 - - 0 - Veh in Median Storage, # - 0 0 - - Peak Hour Factor 90 90 90 90 90	Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Traffic Vol, veh/h 101 417 128 4 7 77 Future Vol, veh/h 101 417 128 4 7 77 Conflicting Peds, #/hr 2 0 0 2 2 1 Sign Control Free Free Free Stop Stop RT Channelized - None - None Storage Length 1250 - - 0 - Veh in Median Storage, # - 0 0 - - Grade, % - 0 0 - 0 - Peak Hour Factor 90 90 90 90 90	Lane Configurations	ሻ	个	ĥ		ħ		
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Conflicting Peds, #/hr 2 0 0 2 2 1 Sign Control Free Free Free Stop Stop RT Channelized - None - None Storage Length 1250 - - 0 Veh in Median Storage, # 0 0 - 0 Grade, % - 0 0 - Peak Hour Factor 90 90 90 90	Future Vol, veh/h	101	417	128	4	7	77	
Sign Control Free Free Free Stop RT Channelized - None - None Storage Length 1250 - - 0 Veh in Median Storage, # - 0 0 - Grade, % - 0 0 - Peak Hour Factor 90 90 90 90	Conflicting Peds, #/hr	2	0	0	2	2	1	
RT Channelized - None - None Storage Length 1250 - - 0 - Veh in Median Storage, # 0 0 - 0 - Grade, % - 0 0 - 0 - Peak Hour Factor 90 90 90 90 90	Sign Control F	Free	Free	Free	Free	Stop	Stop	
Storage Length 1250 - - 0 - Veh in Median Storage, # - 0 0 - 0 - Grade, % - 0 0 - 0 - - Peak Hour Factor 90 90 90 90 90 - -	RT Channelized	•	None		None		None	
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Grade, % - 0 0 - 0 - Peak Hour Factor 90 90 90 90 90 90 Henry Vahieles % 0 0 0 0 0 0 0	Veh in Median Storage, #	t -	0	0		0		
Peak Hour Factor 90 90 90 90 90 90	Grade, %	- 	0	0	- 	0	- 98000-112100	
	Peak Hour Factor	90	90	90	90	90	90	
	Heavy Vehicles, %	0	0	0	0	0	0	
Mvmt Flow 112 463 142 4 8 86	Mymt Flow	112	463	142	4	8	86	
Major/Minor Major1 Major2 Minor2	Major/Minor Ma	ajor1	M	ajor2	1	Ainor2		
Conflicting Flow All 149 0 - 0 836 147	Conflicting Flow All	149	0	• •********	0	836	147	
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Stage 2 690 -	Stage 2	- 940,990,980	- 	- 	- 200990059	690	- 	
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Critical Hdwy Stg 2 5.4 -	Critical Hdwy Stg 2		•		an a	5.4	· · ·	
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Pot cap-1 Maneuver 1445	Pot Cap-1 Maneuver	1445				34U 006	905	
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$\frac{1}{100000} \frac{1}{10000000000000000000000000000000000$	Mov Cap 1 Manauvor 1	1111	- 5255255205	9898 <u>-</u> 98		212	ana	
Mov Cap-2 Maneuver 313 -	Mov Cap-2 Maneuver	LTTS-	9,063,958,900 -	1962/1923 -	900000000 -	313	- 300	
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Stane 2	Stage 2		-	-		462	•	
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Approach FB WB SB	Annroach	FR		WR		SB		
HCM Control Delay s 15 0 10.2	HCM Control Delay	15		0		10.2		
HCM LOS B	HCM LOS	(IIY)	689836968	943-96 .9 49		B	8946624793	
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Canacity (vob/b) 1444 - 780	Canacity (vob/b)		1444	- EWI	1101	- TELET	780	
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HCM 95th %tile Q(veh) 0.3 0.4	HCM 95th %tile O(veh)		0.3	-		-	0.4	

Intersection															
Int Delay, s/veh	1.3														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			
Lane Configurations	ሻ	4		ሻ	4		an an airte na anns an			ሻ	Ъ	waran ang kabu			en andre
Traffic Vol, veh/h	40	210	6	1	625	202	10	8 - 8	0	17	1	11	999		
Future Vol, veh/h	40	210	6	1	625	202	10	8	0	17	1	11			
Conflicting Peds, #/hr	0	0	4	4	0	0	0	0	2	2	0	0		5.06	
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop			
RT Channelized			None	-		None			None			None			
Storage Length	500	•	-	400	•	-	-	-	-	200	-	-			
Veh in Median Storage,	# -	0	6 (9 H H - 1	0.3874 7 47	0		8. S. S.	0	19139 (1)		0	s			
Grade. %	anisti netori da	0	-		0	-	-	0	-		0	-			
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100			
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0	2010/06/07/2017/2		
Mymt Flow	40	210	6	1	625	202	10	8	0	17	1	1 1			
In the second	96699 3.7 785	8///9.77.46.17./A		040785/125.268	0840 5.55.2 .47	1999- 55-5 -57-93	889999	1085389379 7 58	1889-1889-17,68 1	624495777495	GEGEV699705.25	20515-607-6283			
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Conflicting Flow All	827	Û	n	220	0	n	1031	1126	219	1027	1028	726			<u></u>
Stane 1							297	297		728	728				
Stane 2	-		<u></u>	-	-	-	734	829	•	299	300	-			
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Cillical nuwy Sty Z				0.0			0.1	0.0		0.1 2 E	0.0	00			
	2.2 010	- 916979690	- 2012/02/02	2.2 4004	- 	- 975-055	3.0 010	4 007	0.0 000	0.0 015	4	3.3			
Pot Cap-1 Marieuver	813		8 / 9 (5) (1301	9,000,650	94680656	213	201	020	210	230	420	ss		
Stage 1	- 884969848	- 19/1824/2008	+ Shifeleach	- 	- 20030/0200	- 995-549898		0/1	- 0520020/05245	410	43Z	- 1060/65/1650	00//80/56/	Na dia man	
Stage 2					S. S. S. S.		415	388	-	/14	609				
Platoon blocked, %		• ********	- 1911:1911:1911:1911		- Sector (1995) (19	• 2800020			~~~~			100			
Mov Cap-1 Maneuver	813		e (1997/2 . -)	1359	•	•	198	196	822	200	223	428			
Mov Cap-2 Maneuver	- 1996:006:006	- shushmesikh	- 	- 	-	+ 00/69/16/11	198	196	-	200	223	- 	uenskest:		
Stage 1	(jangan)			8 G	gungang e u	5022030A	678	636		397	432			05969/1251	
Stage 2 -	- unstantsona	- 	Sainteinen				403	388	-	669	634		uuinoninaan	den det in Mart	
	ing sa														
Approach	EB			WB			NB			SB					
HCM Control Delay, s	1.5			0			25.1			20.4					
HCM LOS							D			С					
	aay ay ay Galaanaa	lospodza Nakolska	en der dagn og Gruede sækend		lan di nisin Rasian			en an tie Se kenne							
Minor Lane/Major Mvmt	h	IBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1 S	SBLn2					
Capacity (veh/h)		197	813	•		1359	Sec.		200	398	58.783.783				
HCM Lane V/C Ratio		0.091	0.049			0.001	•••••	•	0.085	0.03	ng gang pang panang bang bang bang bang bang bang bang				
HCM Control Delay (s)		25.1	9.7	er and Anna Se stando	ki Galandi Senados II d	7.7			24.7	14.3					
HCM Lane LOS	n posta na prista de la secon		A			A	•		С	B	portori este de Cardo		a da mana sa	e y confirmente el 1923 (1939)	ana ya ay maha a sasari a bagariyo ta'i ka a s
HCM 95th %tile Q(veh)		0.3	0.2			0			0.3	0.1					

Intersection Int Delay, s/veh	2.6											
Movement	EBL	EBT	WBT	WBR	SBL	SBR						
Lane Configurations	ሻ	个	Ŷ		¥1							
Traffic Vol, veh/h	60	148	805	21	7	115						
Future Vol, veh/h	60	148	805	21	7	115						
Conflicting Peds, #/hr	0	0	0	0	0	0		S 19 2 2 2				
Sign Control	Free	Free	Free	Free	Stop	Stop						
RT Channelized		None		None	•	None						
Storage Length	1250	-	-	-	0	-						
Veh in Median Storage	,# -	0	0		0	-						
Grade, %	-	0	0	-	0	-						
Peak Hour Factor	100	100	100	100	100	100						
Heavy Vehicles, %	0	0	0	0	0	0		en an estatut				
Mvmt Flow	60	148	805	21	7	115						
Major/Minor	Major1	٨	Aajor2	N	1inor2							
Conflicting Flow All	826	0	-	0	1084	816						
Stage 1					816	<u>en en e</u> reier en an ad		grid-relationed		i an		Heis
Stage 2			•		268	-						
Critical Hdwy	4.1				6.4	6.2						
Critical Hdwy Stg 1	-	+	-	-	5.4	-						
Critical Hdwy Stg 2					5.4							
Follow-up Hdwy	2.2	-	-	-	3.5	3.3						
Pot Cap-1 Maneuver	813	800 (÷)	-	-	242	380						
Stage 1	+	-	-	-	438	-						
Stage 2	•				782							
Platoon blocked, %		-	-	-								
Mov Cap-1 Maneuver	813	-			224	380						
Mov Cap-2 Maneuver	•	-	-	-	224	-		han a she at a second start of the		n Wangang yang kanala kanala kanala ka		
Stage 1			6-16-1	•	438	66. . .	4400					
Stage 2-	-	•	e e e e e e e e e e e e e e e e e e e	-	724		e Brod se nesos o e norte contra fo	nondy being a gin entratelation	, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,		e name i se al le fai angli ta subdites e en bete si t	
Approach	EB		WB		SB							
HCM Control Delay, s	2.8		0		19.7					Shin Malu		
HCM LOS					С	a an	a a go an					
Minor Lane/Maior Mym	nt	EBL	EBT	WBT	WBR .	SBLn1						
Canacity (veh/h)		813	<u>.</u>			365						
HCM Lane V/C Ratio	9899999999 1	0.074	- -			0.334	ne Sternike (Stille		-15-47-00-550-550) -	aa ay ahay shid	en e	237
HCM Control Delay (s)		9.91				19.7						8
HCM Lane LOS	9963916271	Δ	4849494949 -			 С	useus se su	senten senten Senten senten s	an a	en contratilit	ana ana ang ang ang ang ang ang ang ang	-969
HCM 95th %tile O(veh	<u>Neses</u>	<u>ر</u> ا				14	ki na kata na kata kata kata kata kata kat					
	exaction	eene tatte	an dhadhaith			eren en e	ecconserve a composition de la composit	sente por de Mede	yaan sa ka sa k	extraction filt	eponoso eto tel 6000000	

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Intersection																	
Int Delay, s/veh	18.4																
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR					
Lane Configurations	۲	el 🗍		ሻ	4Î			ф,		ሻ	4						
Traffic Vol, veh/h	4	646	8	0	349	31	10	3	- 3	211	3	76					
Future Vol, veh/h	4	646	8	0	349	31	10	3	3	211	3	76					
Conflicting Peds, #/hr	0	0	2	2	0	0	2	0	2	2	0	2			an en en	ener er	
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop					
RT Channelized		-	None		•	None			None			None					
Storage Length	500	-	-	400	-	-	-	-	-	200	-	-					
Veh in Median Storage	,# -	0			0	909 -	00-00 (.	0	8 G 🔹	e (* •)	0	1997 S. •1			63 (S) (S)		
Grade, %	•	0	-	-	0	-	•	0	-	-	0	-					
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100					
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0					
Mvmt Flow	4	646	8	0	349	31	10	3	3	211	3	76					
Major/Minor N	/lajor1		١	Major2		1	Minor1		١	Ainor2							
Conflicting Flow All	380	0	0	656	0	0	1066	1040	654	1028	1029	367	and and the sector of		and an entry for the		
Stage 1	-						660	660	-	365	365						
Stage 2						-	406	380	-	663	664	-					
Critical Hdwy	4.1	0.00 (R _)	5.00 (C . .)	4.1			7.1	6.5	6.2	7.1	6.5	6.2					
Critical Hdwy Stg 1	- 	-		••••••••••••••••••••••••••••••••••••••	-	-	6.1	5.5	-	6.1	5.5	-					
Critical Hdwy Sto 2			5005202 - 0				6.1	5.5	•	6.1	5.5	8 8 ·					
Follow-up Hdwv	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3			12.0404.00004.0404.0404.0404.		
Pot Cap-1 Maneuver	1190		200220000 •	941			202	232	470	214	236	683					
Stage 1	96868.07.67.09 -	95,45003659765 •		894927348488 •	1999/11824/1999/au	-	455	463	-	658	627	•	n an		020020002010000	999999999999999999999999	
Stage 2	_	1000 in <u>-</u> 1		1	9 39 2 1		626	617	W.90749	454	461			5153-624			
Platoon blocked %	linen Sant	88/48/10/45/00/ =	- -	277555355	48999689965899 •	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 	antan Tan akan Tan		800994090760		9808936575 <u>5</u> 5	n fili kultur e Ge	Alesta Antonia a Antonia Alesta Antonia a Antonia a Alesta Antonia a Anto	89449644878644		Nefteringer Setter of	
Mov Can-1 Maneuver	1188			939			177	231	468	~210	235	682				ne de la composition	
Mov Cap-2 Maneuver	-	-	•		-	-	177	231	-	~ 210	235						
Stage 1							1.1	201 161		656	627						
Stage 1		595862574 	3/4391/1554 _	30397855 _	194930718787 -	59,250,050	552	617	90.450454	1/16	450	999902099 					:
Slaye 2				- 1000					- 1919-191	440	400			1969/1999			
Anneach	ro			IND						20							
	CO			AND V						100							
HUM Control Delay, s	U		055	U	91. (Series)		23.5			04.1	18 (9 S			0.65.U.W	ans se		
HCM LOS	ursocoxestatio	sansonasaan	sevennesta a	enseren a	vonstannessa	unus no dece	U Ceneros	nasi dalahini dalahir		۲ دورویویو	94201500050	anostoro da la	Tekinisinisi		osulasinin		
		an sa da ka													ZZUŻ.		
Minor Lane/Major Mvm	t l	VBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2							
Capacity (veh/h)		211	1188	-	•	939	1919 ()	8 8 .	210	636							
HCM Lane V/C Ratio		0.076	0.003	+	-	-	-	-	1.005	0.124							
HCM Control Delay (s)		23.5	8			0	storige sy Gorden die		111.3	11.5							
HCM Lane LOS	er ander trade tilde	C	A		• • • • • • • • • • • • •	A	•	•	F	В							
HCM 95th %tile Q(veh)		0.2	0			0		994	9	0.4							
Mateo																	
	14	¢. De	Jourova	aada 0	000	Com	outation		finad	*· All	majors	volumo	in nlata	ion.			

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

Future Background (2022) PM WSP Canada Inc.

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Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBT WB	r wbr	SBL	SBR	
Lane Configurations	ħ	<u> </u>	<u>م</u>	¥		
Traffic Vol, veh/h	99	735 29	53	6	78	
Future Vol, veh/h	99	735 29	53	6	78	
Conflicting Peds, #/hr	2	0	0 2	2	1	
Sign Control	Free	Free Fre	e Free	Stop	Stop	
RT Channelized	•	None	- None	•	None	
Storage Length	1250			0		
Veh in Median Storage,	# -	0	0 -	0		
Grade, %		0	0-	0	- 	
Peak Hour Factor	100	100 10	0 100	100	100	
Heavy Vehicles, %	0	0	00	0	0	
Mvmt Flow	99	735 29	5 3	6	78	
Major/Minor N	Aajor1	Major	2	Minor2		
Conflicting Flow All	300	0	- 0	1234	300	
Stage 1	in state in the		S. C.	299	ili si	
Stage 2	-	-		935	-	
Critical Hdwy	4.1			6.4	6.2	
Critical Hdwy Stg 1	-	-		5.4	-	
Critical Hdwy Stg 2		•	- 0.0	5.4		
Follow-up Hdwy	2,2	-	÷ ÷	3.5	3.3	
Pot Cap-1 Maneuver	1273	9 9 - 19 2	•	197	744	
Stage 1	- 20000000000	- 	- 	757	- 1800-101-101-101-101-101-101-101-101-101	
Stage 2				385	10-03-0 - 0-1	
Platoon blocked, %	1070	- 68.85.058.058.058		101	740	
Mov Cap-1 Maneuver	12/2		•	101	742	
Nov Cap-2 Maneuver	- 2020-20	- 22.020.020.020		101	-	
Stage 2				700	- 1000 (1000 -	
Sidye 2		- 7.19.25.27.20	Maistin ia		-	
					8396839339	
Approach	EB	W	В	SB		
HCM Control Delay, s	1		0	11.9		
HCM LOS		na na sana na sana na sana sana sana sa		B		en el esta companya el esta de la tradeción de
			u su an S			
Minor Lane/Major Mvm	t	EBL EB	T WBT	WBR	SBLn1	
Capacity (veh/h)		1272			608	
HCM Lane V/C Ratio		0.078			0.138	
HCM Control Delay (s)		8,1			11.9	
HCM Lane LOS		A		•	В	
HCM 95th %tile Q(veh)		0.3	2		0.5	



Intersection																
Int Delay, s/veh	1.3						_	_								
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Lane Configurations	ሻ	4Î		ሻ	4			(]}		٢	Þ					n santa ana barta
Traffic Vol, veh/h	41	180	7	1	468	221	11	8	0	18	1	12		9998 2		
Future Vol, veh/h	41	180	7	1	468	221	11	8	0	18	1	12	an a		and and all a large to a large	all should should be
Conflicting Peds, #/hr	0	0	4	4	0	0	0	0	<i>⊜</i> ⊘ 2	2	0	0	19 Q Q	6003442		
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	traduction to even	nertulo antinest	ar et e totost e statust e	ala sala sala sala sa
RT Channelized			None	•		None		6. d. d.	None			None				
Storage Length	500	•	-	400	Caral const denot sola	-	•	-	-	200		•		in-ologonia	North March 1990	entersettertert (
Veh in Median Storage,	# •	0		- -	0		<u>.</u>	0			0					
Grade, %	-	0		-	0	-	-	0	-	-	0	-	aren beraria	u da servada e de serva	elatari astronik	n an
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100	Savig			
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0	a ta a sta mba a sheka a	a torat as we get a formals		o recebblacter e
Mvmt Flow	41	180	7	1	468	221	11	8	0	18	1	12	nga Tan ina	S.69.8	1990 E 1994 B	
Major/Minor N	laior1			Maior2		١	Ainor1		١	Minor2						
Conflicting Flow All	689	0	0	191	0	0	857	961	190	853	854	579				
Stage 1							270	270		581	581					
Stage 2							-587	691	-	272	- 273					ga in contraction
Critical Hdwv	41		9.09.09_9	41	9.859.6 1 1		7.1	6.5	6.2	7.1	6.5	6.2				
Critical Hdwy Sto 1	84672014347894		•	37//2565e//136	9078076089 -	69705266666 -	6.1	5.5	2590-1077-29 -	6.1		000000000000000 -	aanii in sin sin sin sin sin sin sin sin s	63693436534668	assanasinas	eneren anderen. E
Critical Hdwy Stg 2			(469.46 1 9				61	5.5		6.1	5.5					
Follow-up Hdwy	22	•9333334	-	22	- 1485	- 1000	3.5	4	3.3	3.5	4	3.3		nepasanse	despite place	ecenter o
Pot Cap-1 Maneuver	915	anda ana ang ang ang	•	1395	940940944 2012-00		280	258	857	281	298	519				
Stage 1		9/MORE//7859//7 -			9/029/029900 -	-	740	690	- 12.000	503	503	•*****	997993254979	665666666759	845555975455	8709909904
Stage 2			8008404				499	449		738	688	1999-1999-20				
Platoon blocked. %		1009-2008 De -	2008020382248 =		97039940493 -	99099966999 -	CREATITICS CREATITICS	907944475495 9	994 <i>99999</i> 99	ana ang ang ang ang ang ang ang ang ang	appen of Frederika A	************	an a	ussenans-Schass.	sa per constante de la constant La constante de la constante de	isadenaninan arr
Mov Cap-1 Maneuver	915		6000 - 1	1393			262	245	853	264	283	519				
Mov Cap-2 Maneuver	i ing talah setarah s	•	- -	<i>-</i>	-	-	262	245		264	283	45945.245.845 -	980 e constante 1		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
Stage 1		n de la comunicación Notable de la comunicación de la comu		Sec		00-28-769 28-769-6 . 9-9	704	657		480	503					
Stade 2							-486=	<u> </u>		- 695=	=655		<u></u>		in and the second s	
Approach	FQ			MB			MR			SR						
HCM Central Dalay	16			110			20.2			16.7						
HOW CONTROL Delay, S	0.1			U			20.0		89/100195/		1997-941-93					
	okiotsinis	<i>019094</i> 93	Seriesse			iyeseesees				U Second	enerati		3920200033			
						in den Ann	ang kan	51/000550	57 / S. (- S		GSA ZA GA					
Minor Lane/Major Mvmt	٨	IBLn1	EBL	EBT	EBR	WBL	WBT	WBRS	SBLn1 8	SBLn2						
Capacity (veh/h)		255	915		•	1393			264	488	8.90		6.6.6		100596	
HCM Lane V/C Ratio	a data at a sa t	0.075	0.045	.	-	0.001	-	-	0.068	0.027		and rate area to	tyrteren oct to		na sengasta ere	
HCM Control Delay (s)		20.3	9.1	5 - S - S		7.6			19.6	12.6	9. S.S.					
HCM Lane LOS		C	Α		-	А	-	-	С	В			an and at starts		alaan ah ah ah	
HCM 95th %tile Q(veh)		0.2	0.1			0			0.2	0.1						

Intersection							
Int Delay, s/veh	2.1						
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	ሻ	۴			¥4		
Traffic Vol. veh/h	55	123	698	24		92	
Future Vol. veh/h	55	123	698	24	8	92	a de la martineza de la construcción de la construcción de la construcción de la construcción de la construcción A de la martineza de la construcción
Conflicting Peds. #/hr	0	0	0	0	0	0	
Sian Control	Free	Free	Free	Free	Stop	Stop	allann oll malmain finn an an maga mara na sana na mana panana an manana ana mara mara mara ana ana ana ana an Allann oli malmain finn da mala manana an ana ana ana ana ana ana ana
BT Channelized		None		None		None	
Storage Length	1250	- -			0		
Veh in Median Storage.	#	0	0		0		
Grade %	6.000000.63. •	0	аноносо да О		متر 1993 (1995) 0	80.000.000.000 -	
Peak Hour Factor	100	100	100	100	100	100	
Heavy Vehicles %	0	0	0	0	0	ын тайын О	i ana na na manana ana na manana ang ang kanana ang ang kanang kanang kanang kanang kanang ang kanang kanang ka Na na
Mymt Flow	55	123	698	- 24	8	92	
	1.111.777		66677778	1999-9997 1999-997	-0-64-64.78 -	i Angonio Jugano.	an bha na she ann an an an an ann ann ann an ann an a
1.2 . 1.4			11-1-0				
Major/Minor N	najori		viajor2		winor2	~~~~	
Conflicting Flow All	/22	0	- 000000000	0	943	/10	
-Stage 1			•	•	/10	•	
Stage 2	- Series perfec	- 1.2551-12-12-12-12-12-12-12-12-12-12-12-12-12	- 	• populasses pop	233	- 	
Critical Hdwy	4.1				6.4	6.2	
Critical Hdwy Stg 1	- 	- 	• ////////////////////////////////////	- •••••••••••	5.4	•	
Critical Hdwy Stg 2			- 		5.4		
Follow-up Hdwy	2.2	-	•	•	3.5	3.3	
Pot Cap-1 Maneuver	889	- 10 -			294	437	
Stage 1	ہ - 1	-	-	-	491	• 	
Stage 2		•			810	•	
Platoon blocked, %		-	•	-			
Mov Cap-1 Maneuver	889				276	437	
Mov Cap-2 Maneuver	-	-	-	•	276		
Stage 1		9 C .	<u>.</u>		491	•	
Stage 2	-		-	-	760	-	
				an si 19 Katapaté			
Annroach	FR		WR		SB		
HCM Control Delay	20		<u></u> ∩		16.2		
HCM1 OS	2.3		V	99038HE	0.01 0		
					U Second		
	entikke/A	es local		99999936	980346		
Minor Lane/Major Mvm	it 🔄	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)		889				418	
HCM Lane V/C Ratio		0.062	-	-		0.239	
HCM Control Delay (s)		9.3		-		16.3	
HCM Lane LOS		А	•			С	
HCM 95th %tile Q(veh)		0.2				0.9	

Intersection														
Int Delay, s/veh	29.7													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations	ሻ	Þ		ሻ	Ę,	و المراجع المراجع الم		4		ሻ	4Î		en e fan se	an a
Traffic Vol, veh/h	4	681	8	0	368	34	11	3	3	231	3	81		
Future Vol, veh/h	4	681	8	0	368	34	11	3	3	231	3	81	entet 11. a trentatione de dictetad	na a stanti da cada terito da
Conflicting Peds, #/hr	0	0	2	2	0	0	2	0	2	2	0	2	ante Grégies.	222202
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	nosa da estatu nos distati nomentato.	
RT Channelized			None		5 (S	None			None			None		
Storage Length	500	-	-	400	-	-	-	-	-	200	•	-		
Veh in Median Storage	, # •	0		009-708-0	0			0	•		0	1910 - P	53564	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-		
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100	18 (G. S. (S. (S.	
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0	· · · · · · · · · · · · · · · · · · ·	
Mvmt Flow	4	681	8	0	368	34	11	3	3	231	3	81		
Mained	1-1			Intern			diment			lineso				
		<u> </u>			<u></u>	<u> </u>		1007	000		1004	007		
Conflicting Flow All	402	0 *******	U	691	0 	0 2005/2005	1124	1097	689	1083	1084	387	gassasterier	
Stage 1						60.0 <u>0</u> .0 <u>7</u> .	695	695		385	385			
Stage 2	- 1995-1994	- 	-	- 	- Silaksiikaa	• 	429	402	- -	698	699	-		
Critical Hdwy	4.1	949939 - 9		4,1			7.1	6,5	6.2	/.1	6.5	6.2		
Critical Hdwy Stg 1	- 29222200	- 1993-1994	- 	• 2005/2002	- 	- **********	6,1	5.5	-	6.1	5.5	- 838555		
Critical Hdwy Stg 2		949-9 - 9	2080 9 -3			9.69.50	6.1	5.5		6.1	5.5			
Follow-up Hdwy	2.2	- 53805900004	- 	2.2	- 	- 98088089	3.5	4	3.3	3.5	4	3.3		3459459484444
Pot Cap-1 Maneuver	1168	162.63 . 6	2018 (Z.)	913	in the desire	5153 (Q.	184	215	449	~ 197	219	665	6	
Stage 1	- 11881-1840-14	-	•	-	-	• Generation and and a	436	447	- 190854480	642	614	- 		
Stage 2				998999 9 0 Geografia			608	604		434	445	-		
Platoon blocked, %	er Marzieler	• 20/222-2200	- 60.0590.000	ಜ್ಞಾನವಾ	- 	- 2000-05-			· · · ·					
Mov Cap-1 Maneuver	1166	915012 - 3	9.49.8 . -2	911		9 C 🔸	159	214	447	~ 193	218	664		
Mov Cap-2 Maneuver	= unsseursterrer	- Selejaretekat	- 	- Sagisterra	- nguntadatete	-	159	214	- 	~ 193	218	- 1993-1995-1996	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	ni ang kanadalar
Stage 1					8		434	445	0.000. 5 0	640	614			
Stage 2	-	-	-	-	-		530	604	- 	426	443	•		
Approach	EB			WB			NB			SB				
HCM Control Delay s	0			0			25.9			133.3				
HCM LOS	yndoleittille 7 .68	anteriotii (A	andasinini tiriki	statistika 18	az200760100000	estrationes del	D	erste stell 1990 k	zantetitiztin	F	neer ter ter ter ter ter ter ter ter ter	anes estat de Sin	nessannan metalahiki kana kana kana kana kana kana kana k	~~~~
			84854394					9.97%)						
N # 1 # # * **			en e		estation Cene	() () () () () () () () () ()	11100	VAIPER	101	201		nenatikes		
Minor Lane/Major Mvm	t	VBLn1	EBL	EBT	EBH	WBL	WBT	WBH	SBLn1	SBLn2				
Capacity (veh/h)		189	1166	8000 - 1	9494¢•	911	(1995 -)		193	619	6.00			
HCM Lane V/C Ratio	and and a state of the state of	0.09	0.003	- 9909999999999999999999999999	- 22/22/2006/01	- 	- 500565547774	•	1.197	0.136		ana ang ang ang ang ang ang ang ang ang		gayennaaraan.
HCM Control Delay (s)		25.9	8.1			0			177.5	11.7				
HCM Lane LOS		D	А	-	-	А	-	-	F	В		enderlig of the second		
HCM 95th %tile Q(veh)		0.3	0		•	0			12	0.5	1999 - Y			
Notes														
	acity	¢. Do		aade 9	nne		nutation		fined	*• \ 	maiory	inluma li	n nlatoon	

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

Future Background (2027) PM WSP Canada Inc.

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	WBT	WBR	SBL	SBR						
Lane Configurations	ሻ	Ŷ	个		M							
Traffic Vol, veh/h	109	778	308	3	7	86						
Future Vol, veh/h	109	778	308	3	7	86						
Conflicting Peds, #/hr	2	0	0	2	2	1					5.5.8.8	
Sian Control	Free	Free	Free	Free	Stop	Stop						
RT Channelized		None		None		None						
Storage Length	1250	-	-	-	0	-						
Veh in Median Storage	, # -	0	0		0							
Grade, %		0	0	•	0		a a gang ang ang ang ang ang ang ang ang	a a come a contra da la co				
Peak Hour Factor	100	100	100	100	100	100						
Heavy Vehicles, %	0	0	0	0	0	0		a a construction for				
Mvmt Flow	109	778	308	3	7	86						
Maior/Minor	Major1		Major2		Minor2							
Conflicting Flow All	313	0	-	0	1310	313						
Stage 1					312			energia de la compositione de la co	ada daga aya aya aya			
Stage 2	·				998	•	unstanna (2000) (2004)			e _{na s} anta penangentatipa terdikan	agua pe ann an Anna Anna Anna Anna	
Critical Hdwv	4.1		oyongoologi Silanga S		6.4	6.2						
Critical Hdwv Stg 1	- 2013 (2013) (2014) -				5.4	en de Felita Pele ve	e e esta foi produci de Araba a	an nan stansen tea teaster	en and statements de Colombia	de 1949 en en en el este	and in proceeding	
Critical Hdwv Sto 2					5.4							
Follow-up Hdwv	2.2	ender (* 1999) •		e den tel	3.5	3.3	en verste steret sterfolge	ang dan salah sina baran Sir	a gaga an en de terter por t			
Pot Cap-1 Maneuver	1259				177	732						
Stage 1	ಎಂದನನ -		0.0000300000 •		747		e per esta per per per per en esta de la d	anga panangkan Konstitution	an an an an tha an a' an dir a' an an an a' an	a gori naviga të gradarë far	n - Ersterne Staarde	
Stage 2					360							
Platoon blocked. %	aan soonaadh	ente ente de Gr -	anta a constanta da Sin •		na tradada Ba	en en se seine bereiten er her	a da antista da sector de la sec	an a	an ana ang ang ang barang baran			a and an and a shift
Mov Cap-1 Maneuver	1258	8 G 🗳			161	730						h in the second s
Mov Cap-2 Maneuver	99999999999999 •			pananteritikiski =	161		egen brock en er forste er selfer for	,, 1, 2, 3,	eren andere andere betalde andere			
Stage 1					746							
Stage 2			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	-	328			- y-		, ang	an a	
	enneenteer Stadstads	yan organisan Sila sila sila	una dipu dina Principa									
Approach	EB		WB		SB							
HCM Control Delay	1		0		12 4							
HCMLOS	999999 1 9	get en bege	********	REEN AL PROPERTY OF STATES	R		Nethers and the second seco	Rocae Robert de Creares	Arende Finletine autorien.	ng jede skrijnji na kolen	an an an an Ann Ann an Ann Ann Ann Ann A	1491 - 1747 - 1744 - 1846 - 18
		- m	essente de la companya de la company La companya de la comp	14/DT	VAIDD	CO) -4	a para salata sina sina si	seen te teen treff (1993)		eyele minnen (MDA)	en graan ee Songerelan	a provinci de 1979 de
Minor Lane/Major MVm	11	EBL	ERI	WB1	H							
Capacity (veh/h)		1258				5//						
HCM Lane V/C Hatio		0.087	- 8000304090	- 2000-0-0-0	- 201227023	U.161					0.096036949	
HCM Control Delay (s)		8.1	1999 (1			12.4						97969960
HCM Lane LOS		A Second	- 2001030009/	- 1990-9999-999	- 2008/09/000	В				NECESSION (CONTRACTOR)	5008000080	
HCM 95th %tile Q(veh))	0.3				0.6						an ang ng tining 1997. Ang ng n



	≯	\$ -	~	*	4	Ł	*	Ť	1	\$	Ļ	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	শ	î.,		٣	€			¢,		ኻ	ĥ	
Traffic Volume (vph)	40	298	6	i	733	260	10	8	0	27	1	11
Future Volume (vph)	40	298	6	1	733	260	10	8	0	27	1	11
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	5.2	5.2		5.2	5.2			5.2		5.2	5.2	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	national and an and a state
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00	anta ta sang milatakin	1.00	0.96			1.00	ana ana ana ana ang ang ang ang ang ang	1.00	0.86	
Fit Protected	0.95	1.00		0.95	1.00			0.97	2009-00-00 2009-00-00-00-	0.95	1.00	
Satd. Flow (prot)	1729	1814	lation the states to a	1721	1749	en an		1771	onna an tao ao a	1723	1570	waadaada waxaa
Flt Permitted	0.15	1.00		0.57	1.00			0.86		0.75	1,00	
Satd. Flow (perm)	277	1814		1042	1749			1574		1353	1570	
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)	40	298	6	1	733	260	10	8	0	27	1 	11
RTOR Reduction (vph)	0	1	0	0	14	0	0	0	0	0	9	0
Lane Group Flow (vph)	40	303	0	1	979	0	0	18	0	27	3 	0
Confl. Peds. (#/hr)			4	4					2	2		~~~
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	usensteinetstenstigenste	4	Harriston and the	a las single <u>s</u> aar	8		usseren 1969	2	ne an		6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	40.5	40.5		40.5	40.5	en de la companya de		10.2	externation et	10.2	10.2	eennemistes
Effective Green, g (s)	40.5	40.5		40.5	40.5			10.2		10.2	10.2	
Actuated g/C Hatio	0.66	0.66	ana ana ang ang ang ang ang ang ang ang	0.66	0.66			0.17		0.17	0.17	
Clearance Time (s)	5.2	5.2		5.2	5,2			5.2		5.2	5.2	
Venicle Extension (s)	3.0	3.0		3.0	3.0	-		3.0		3.0	3.0	VIIIIIIIIIII
Lane Grp Cap (vph)	183	1202		690	1159			262		225	262	
v/s Ratio Prot	~ ~ 7 1	0.17	ugagigagie znami		CU.56		gangangangang	~~~	anan ana	~ ~ ~ ~	0.00	
V/s Hatio Perm	0.14		1990 (1991)	0.00	0.04			0.01	ku shara	CU.U2	0.01	
V/C Hatio	0.22	0.25	782/15522359	0.00	U.84			0.07		0.12	0.01	
Uniform Delay, di	4.1	4.2		- 3.D 1 00	1.9			21.4		1.0	- 1 00	
Progression Factor	1.00	1.00		1.00	1.UU E 0			1.00		1.00	1.00	
Incremental Delay, d2	U.D	U.I		0.0	0.0 10 7			01.0		01.2	0.0	
Delay (S)	4./ A	4.0 A		0.0 A	10.7 D			21.0	en generate	21.9 C	د اے م	Alexandre de la composición de la comp
Approach Doloy (a)	n.	/ 2		A	127			01 G		v	01 7	
Approach LOS		4.3 A			10.7 D			21.0			21.7 C	
Approach LOS		~ ^ ~			D			U			v	
Intersection Summary									_			
HCM 2000 Control Delay		18-19-18-1 <u>8</u>	11.7	H	CM 2000	Level of S	Service		В			
HCM 2000 Volume to Capa	city ratio	an a	0.70	unin Uniternation	en en en stad an en en se	the state the state of the		a gang paranakan a	ana ang ang ang ang ang ang ang ang ang	van en anderen der	series statisticae de com	ana kata kata kata kata kata kata kata k
Actuated Cycle Length (s)			61.1	S	um of los	t time (s)			10.4			
Intersection Capacity Utiliza	ation		74.9%	IC	U Level (ot Service			D		(), depaired a second	egelogicade Contan
Analysis Period (min)			15									

c Critical Lane Group

Intersection																
Int Delay, s/veh	17.4															
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Lane Configurations	ሻ	4			4			4	n escalarat de carac		4					
Traffic Vol, veh/h	60	219	26	eset.	874	21	97	0	5		0	115				
Future Vol, veh/h	60	219	26	1 محققات	874	21	97	0	5 ^	(0	115				inginis
Conflicting Peds, #/nr	U.	U. 	U. 				U	Ctop	U	Oten D	U Chan	U Cian		MESING S		
Sign Control	ree	⊢ree	Free Nana	rree	riee.	991-1	Stop	Stop	Stop	Stop	Stop	Stop				1008 <i>7</i> 03
Ri Gnannelizeu	1050	to the second	INOTIC	Saldar Shia	an teachtrai	INOLIE		annai sa	INOTIE	-		INOLLE	See Startes			a. George
Storage Length	1250	- ^	- 	- 19465-1974	- ^	- 8-8164	•	- ^	- 1997-1997 - 1997	• 220061786	- ^	- 1951-1962-56				
Grada %	# *	0	-		0 0	-	-	0 0	-	-	0 0	-				
Deak Hour Factor	<100°	100	100	-	្មរណ៍	-	100	100	100	100	100	100				
Heavy Vehicles %	oor م	00 (۱	100 0	001	001 ا	001 0	00 ا 0	001 0	۰00 ۵	100 0	001 0	יייי ה	80,200,33	94899489409	442355243	9,839///69
Mymt Elow	08	219	26	Ĭ	874	21	97	Ň	5	7	Ő	115	(S. S. S. S.			
MININE FROM	1996 - 22 (1)	ana tanàna sa kaominina dia kaominina dia kaominina dia kaominina dia kaominina dia kaominina dia kaominina dia Ikang tanàng t		864764464.97	888 X 1833	89985	998-995 - 1980 -	98833664 5 4		8881000.48		unten stadu			845865866	8026466
Malaza	Ania-d			Maino		1	diment		1	linean						
	najori			viajorz	<u> </u>		MINOFI	1010	000		4050	005				
Conflicting Flow All	895	U Nationalis	0 (1000-000	245	U	U	1296	1249	232	1242	1252	885	550.455.065	00006264		
Stage 1	o de la compañía de l	Sosta Sterra					044	007		067 055	007				a de la constanció	
Stage 2	- -	- 202002305	-	- 	- 68488489	-	944	897 6 F	- 00	300 7 1	305 6 E	-	Sector de la compañía	nisi (Srê	- 8/167/69140	
Critical Howy	4,1		8-8-0 - 1	4.1		noriosta S ≡ Ventosta dasso	6 1.1	С,0 С С	0.2	6 1	0.0 5.5	0,2			andrede en Statesta	
Critical Howy Stg 1	-	• 1620-534	•	•	-	-	0.1	0.0 5 5	-	0.1	0.0 5 5					
Critical Howy Stg 2	- -	9789-19 - 1		- -			0.1	0.0 A	- -	0.1	0.0 A	00°			949/29/9	
Pot Con 1 Manauwar	4.4 767	- Dependent	- Singnash	2.2 1000	- 89999494	19499495	0.0 170	4 175	0.0	0.0 160	4	0.0 2/7	n sy se g		99896978	i Har
Pot Cap-1 Maneuver	/0/		enencen:	1000		01/262/05	660	625	012	0/11 2/11	265	047	1194 (MAR)	01690/66026	5.53.494.08	65.6457.878
Stage 1	-	- 9900070	- 6005016040	- 9/9/9/9/		- 19103-1940	009	120	- ////////////////////////////////////	041 999	600 607	1999:30/ <u>6</u> 6		460/664	Istalia	
Diateon blocked %		-				-	017	וסט		000	027					
Mov Cap 1 Manauver	767	-	- 	1000		-	. 88	161	812	1/12	160	347				
Mov Cap-1 Maneuver	- 101		99900071	000			~ 88	161	210	143	160		0201223			
Stane 1			9059194r	e na den			617	585		314	365				V du sa k	
Stage 2	1920-955 -	20090418554 -	99119949949 -	SS SSUEDA	39125513556	92730 <i>1</i> 7897	212	361	- -	610	578	1559-1519-1499. -	ASA BUDE	889985999	14966058452 ?	934954959
Oldye z	1609 (1656 (165				95-83-89/	8. Se No										
	e n			1100			ND			00						
Approach	EB	100 100 - 100	<u></u>	WB	<u></u>		INB			58						
HCM Control Delay, s	2	9.851/634		0		8.968	210.4		e e e e e e e e e e e e e e e e e e e	22.9						
HCM LOS	ana ang ang ang ang ang ang ang ang ang	ana	8565566656		um san		۲ مسمعمومی	sentitation		U Seriester	nas seines	XSQVASASSE	noonenes			un de la compañsión de la
	an a			Secondaria Secondaria	don dan kar	en Burea	65 a 2 a 2 a 2 a 2 a 2 a 2 a 2 a 2 a 2 a			Sa Steri de						
Minor Lane/Major Mvmt	۱ ۱	VBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1						1	
Capacity (veh/h)		92	767			1333		e	321							
HCM Lane V/C Ratio		1.109	0.078	-	-	0.001	-	-	0.38							
HCM Control Delay (s)		210.4	10.1		isplender Gestender	7.7	0		22.9				esseine Salaine			
HCM Lane LOS		F	В	-	-	А	А	-	С							
HCM 95th %tile Q(veh)		6.8	0.3			0			1.7							
Notes																
HARD		<u>.</u>	<u></u>		00-				_ <u>r</u>	*. AH						

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

Intersection Int Delay, s/veh 0 EBT Movement EBR WBL WBT NBL NBR ř Lane Configurations Þ 个 897 Traffic Vol, veh/h 213 0 19 0 0 Future Vol, veh/h 213 19 0 897 0 0 0 0 0 Conflicting Peds, #/hr 0 0 0 Stop Sign Control Free Free Free Free Stop **RT** Channelized None None • None -Storage Length 0 -_ -0 Veh in Median Storage, # 0 0 ŝ Grade, % 0 0 0 Peak Hour Factor 100 100 100 100 100 100 0 0 0 0 Ó Heavy Vehicles, % 0 Mvmt Flow 213 19 0 897 0 0 Major1 Major2 Minor1 Major/Minor **Conflicting Flow All** 0 0 223 ---٢ Stage 1 . . Stage 2 * . . ---6.2 Critical Hdwy -Critical Hdwy Stg 1 -----. Critical Hdwy Stg 2 . • Follow-up Hdwy 3.3 ---. Pot Cap-1 Maneuver . 0 0 822 0 Stage 1 0 --Stage 2 j 0 0 -Platoon blocked, % . --Mov Cap-1 Maneuver . 822 Mov Cap-2 Maneuver ----Stage 1 . ۲ • • . Stage 2 _ --. --NB Approach EB WB HCM Control Delay, s 0 0 0 HCM LOS А Minor Lane/Major Mvmt EBT EBR WBT NBLn1 Capacity (veh/h) 1 1 1 HCM Lane V/C Ratio --.... _ HCM Control Delay (s) 0 • • HCM Lane LOS A -

HCM 95th %tile Q(veh)

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<u></u>			养		<u>7</u>
Traffic Vol. veh/h	201	11	0	897	0	ø 0
Future Vol. veh/h	201	11	0	897	Ō	0
Conflicting Peds. #/hr	0	0	Ō	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized		None	0.2002 <u>-</u> 15	None		None
Storage Length	-	-	-	*	-	0
Veh in Median Storage,	,# 0	2.92. - .		0	0	
Grade, %	0	-		0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	201	11	0	897	0	0
Major/Minor M	Aaior1	٨	Jainr2	٨	Ainor1	
Conflicting Elow All	najvi i A	1 1	najore	1	MINUT I	207
	V	U S	909900 -		engine.	/۷۷
Stage 7			-			
Critical Hdwa			Ngjara			- 6.2
Critical Hdwy Sta 1		507265 5 765 •		10503578 -	9.025109.d	ے، <i>پ</i>
Critical Hdwy Stg 2						
Follow-up Hdwy	9439149 <i>5</i> 14 -		9/19/1959/22 -			33
Pot Can-1 Maneuver			n	daddardydad Coddinad e	٥	839
Stage 1	200331955207 -	oci68948948 -		593559355965 -		- XXX
Stage 2			Ň		õ	9. S.
Platoon blocked. %		na 1999. •	a Albardo T illa.		anterita Fri	an net tit det
Mov Cap-1 Maneuver				•	6158 C .	839
Mov Cap-2 Maneuver	e.ceenteetee +				-	
Stage 1						-
Stage 2				an	5,00,00,00,000,000 *	•
Assessab	CÓ		MD		NIP	
Approach	ED		dvv		<u>B</u> KI	
HUM Control Delay, s	0		0		0	
HCM LUS	thestolesiles				A	-
		0.000	an dhu da da		San San Anna	
Minor Lane/Major Mvm	t I	VBLn1	EBT	EBR	WBT	
Capacity (veh/h)				- 180 (- 1		
HCM Lane V/C Ratio	augusta (1997) 1997			•	-	
HCM Control Delay (s)		0	artan arta Gradia T ai			

А

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- - - -

HCM Lane LOS

HCM 95th %tile Q(veh)

Intersection							
Int Delay, s/veh	1.5						
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	\$			র্ম	ک ې		
Traffic Vol, veh/h	161	40	2	828	69	3	
Future Vol, veh/h	161	40	2	828	69	3	
Conflicting Peds, #/hr	_ 0	0	_ 0	0	0	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	en e
RT Channelized		None		None		None	
Storage Length	- 1825	- 2008:03:00:00:00	- everenek	- 1910-1	0	- 1989-1999-1999	
Ven in Median Storage,	# 0			0	0		
Grade, %	0	-		U 100	U 100	- 	
Peak Hour Factor	100	100	100	100	ା୦୦୦ ୦	100	
Heavy vehicles, %	U 101	U 10	U Q	0	0 00	0	
	101	40	1999 - 199	020	09	•	
			1.2.11/ <u>12/11/11/11/11</u>				
Major/Minor M	lajor1	١	Major2		Minor1		
Conflicting Flow All	0	0	201	0	1013	181	
Stage 1	9067 (S -)	ilija di se	99.800 . -0	91891 - 1	181	No signetica	
Stage 2	- 	- 	+ cernerieren	• •	832	= 10510-11 <u>2</u> 01 <u>0</u> 1010	
Critical Hdwy			4.1		6.4	6.2	
Critical Hdwy Stg 1	- 1975:1975:197	- ####################################	- 	- -	5.4	- 	
Critical Hdwy Stg 2			-		5.4	• •	
Follow-up Hdwy	- 06904000)	- 	2.2	- 20000000	3.5	3.3	
Pot Cap-1 Maneuver			1383		207	801	
Stage I	- 2022-00	- 2013:21:200	- 07/02/02/03	- 2223222	000	- 1999-1999	
Distoon blocked V		Ren de Harrie de			401		
May Cap 1 Manauvar	- 1965-1969	- 	1202		066	867	
Mov Cap 2 Manauver	1999/9 . -	999 989 98 5 9 _	1300	20266	200	- 00	
Stand 1		Sa ka 20	-		855	-	
Stage 2	900900000 -				430		
Oldge L				5//25//55/			
Assesse	ro	0.0000000000000000000000000000000000000	14/0	aporta (Arp	NID	na esta da seda	
Approach	ED ^		D¥V 0				
HOM CONTROL Delay, S	U		U	87.989	22.0 C	학자학원들은	
					U Second		
	94891999 9			999999			
Minor Lane/Major Mvm1	t 🖉	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)		274		-	1383	•	
HCM Lane V/C Ratio		0.263	.	• • • • • • • • • • • • • • • • •	0.001	-	
HCM Control Delay (s)		22.8			7.6	0	
HCM Lane LOS		C	- 20032200000-000	-	A	A	
HCM 95th %tile Q(veh)		1		•	0		



	٨		7	*	-	٨.	*	Å	p	1	Ļ	1
Movement	EBL	EBT	EBA	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	د î		ኻ	1 ,			¢.		ሻ	4	<u></u>
Traffic Volume (vph)	4	741	8	Ō	461	48	10	3	3	264	ંગ	76
Future Volume (vph)	4	741	8	0	461	48	10	3	3	264	3	76
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	5.2	5.2			5.2			5.2		5.2	5.2	
Lane Util. Factor	1.00	1.00			1.00			1.00	6.0000	1.00	1.00	
Frpb, ped/bikes	1.00	1.00			1.00	en an tract a de la compte de destre e	a tata da sa akataran ta a	1.00		1.00	0.98	ta da anti salista da serie da d
Flpb, ped/bikes	1.00	1.00			1.00			1.00	185750 (d. 14	1.00	1.00	
Frt	1.00	1.00	en e	un ante d'Ante d'Ante de	0.99	www.colutionalisements.colu		0.97		1.00	0.86	
Fit Protected	0.95	1.00	ne en en en Ne ne en en en		1.00			0.97		0.95	1.00	
Satd. Flow (prot)	1729	1817	weiten werden die die state	er alle et alle alle and alle alle a	1794	an a	an a	1710	e and an	1724	1523	Antonionen
Fit Permitted	0,38	1.00			1.00			0.87		0:75	1.00	
Satd. Flow (perm)	695	1817			1794			1529	an fan a fam an a na an an a' an an	1356	1523	
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)	4	741	8	0	461	48	10	3	3	264	3	76
RTOR Reduction (vph)	0	1	0	0	6	0	0	2	0	0	53	0
Lane Group Flow (vph)	4	748	0	0	503	0	0	14	0	264	26	0
Confl. Peds. (#/hr)			2	2			2		2	2		- 2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	59 (54 (5) (S)	Perm	NA	
Protected Phases	an a	4	and and a state of the state of the	www.com	8	Versiense brecken	area waariinaa	2	seven and and a		6 	conectores
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	24.9	24.9	adaa aa ahaa	e ween weerstere	24.9	una ana ang ang ang ang ang ang ang ang a	stens venstitentins	15.3	i Servicia de Calendaria	15.3	15.3	energenergenere
Effective Green, g (s)	24,9	24.9			24.9			15.3		15.3	15.3	
Actuated g/C Ratio	0.49	0.49			0.49			0.30		0.30	0.30	
Clearance Lime (s)	5.2	5.2			5,2			5.2		5.2	5.2	
Vehicle Extension (s)	3.0	3.0			3.0		-	3.0		3.0	3.0	
Lane Grp Cap (vph)	342	894			882			462		410	460	
v/s Ratio Prot		c0.41	Xeomoines a	dationia da	0.28	la su an					0.02	allan assaalla
v/s Hatio Perm	0.01							0.01		CO.19	A A A	
V/C Hatio	0.01	U.84			0.57			0.03		0.64	0.05	
Uniform Delay, d1	6.6	11.1			9.1			12.4		10.3	12,5	
Progression Factor	1.00	1.00			1.00			1.00		1.00	1.00	
Incremental Delay, 02	0.0	19.0			10.9			105		ن.ت 10.7	10.6	
Delay (S)	0.0 A	10.U D			10.0			12.0 D		10.7 D	12.0 D	
Level of Service	A.,	170			40.0			10 E		D.	17 Q	
Approach LOS		17.9			10.0 A			12.0 P			/.J	
Approach LOS		D			A			Þ			D	
Intersection Summary									_			
HCM 2000 Control Delay			15.2	H	CM 2000	Level of S	Service		В			
HCM 2000 Volume to Capa	acity ratio		0.76	alan sana ara	ana ang ang ang ang ang ang ang ang ang	1919-000-01-01-00	anan sana an sa	anagara awara.	noologigger ver		ere einen vien sich	
Actuated Cycle Length (s)			_50.6	Su	im of lost	time (s)			10.4			
Intersection Capacity Utiliza	ation		72.5%	IC	U Level c	ot Service		a	С		stelucio ante ante	an a
Analysis Period (min)			15									

c Critical Lane Group
Intersection																
Int Delay, s/veh	8.3															
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Lane Configurations	ሻ	4		an a	4	an a		4	en e	na na sana sa	♠		essen and	da se da		in an
Traffic Vol, veh/h	99	844	40	2	349	3	75	0	ଁ	<u> </u>	0	78	(9) (9) (9)			
Future Vol, veh/h	99	844	40	2	349	3	75	0	3	6	0	/8 19	(Shukojati)	uren uren inte	9793/2479	
Conflicting Peds, #/hr	20 F	0	- U	0	- U	2] 	0	<u> </u>	2 Chao	0	Chan				enencia.
	⊢ree	Free	ree	Free	ree	Free Name	Stop	Stop	Stop	Stop	Stop	None				
R Unannelized	1050	9.469.46 5 0	None	57.002555 5 006		none	8.000.050	Geografia.	INOTIC	508-4 - -	un anomes.	INONE	an seal an	kan da ka		
Veh in Median Storage	1250	- ^			- ^			- ^			- 0	-				avian con r
Grade %	π	ں ۵		-	<u>ر</u> ۱	-		0 N	-	-	0	- -				
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100				
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0	1990/19950/665	00453056792455	20107122022791	
Mymt Flow	99	844	40	2	349	3	75	0	3	6	0	78				
an a	providuo di Sendera di Adra		~~~~~~~~~~						-57 (16,220 - 16 6,667)	- 1999 - A. J. Constant of Source of						
Maior/Minor N	laior1			Maior2			dinor1		ļ	Ainor2						
Conflicting Flow All	354	0	0	884	0	n	1457	1420	866	1423	1439	354				
Stage 1				eni Contratorio Statistica			1062	1062		357	357					
Stage 2	•			0225555999564855 -	-	-	395	358	-	1066	1082	,	1999-1992-1992	a (ay yan da sina da si	549999494924449	101100000000000
Critical Hdwy	4.1			4.1			7.1	6,5	6.2	7.1	6.5	6.2				
Critical Hdwy Stg 1	-	-			-	-	6.1	5.5	-	6.1	5.5	-				
Critical Hdwy Stg 2	1991 (. - 3	- -	67203 - 1	- 187 A.			6.1	5.5	5 6 -	6.1	5.5	19.49 • 7				
Follow-up Hdwy	2.2	<u>.</u>	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3	under ander	or restances to the	aa ka sunakaan ti t	
Pot Cap-1 Maneuver	1216	1999 - 1999 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 -	5 - 25 - 26 5 - 26 - 26 - 26 - 26 - 26 - 26 - 26 - 26	774	energi Magazoti		109	138	356	115	134	694				
Stage 1	• •	-	• minantalia	-	-	- 	273	303	-	665	632	• ///////////	un de de comb			in an
Stage 2	9202 - 2					-	634	631		271	296					
Platoon blocked, %		- 1993-1992-10	- 9/95/02/23		- 	• 838389		400	OFF	100	400	000				
Mov Cap-1 Maneuver	1215	999) (9 . -	99999 - 7	//3		900 S -	90	120	300	106	122	092				
Nov Cap-2 Maneuver	-	• 2020/2020	-	- 199999	- 999-109-	- 1910-1910	90 251	120 079		001	620					
Stare 2	- -		300900555 -	501992958 -	90600-554. -	5595990000	560	628	5859)/949/H	246	272			98901991199	uasine nine	9989999999
Oldye 2						5.5769/							5 A A			
Augusta	rn			MD			ND		San Galanti an	00						
Approach							QKI 3.001			10.7						
HOM Control Delay, s	0.8			U. I			ା ୪୪.୦ ୮	Gynten, Ogen	821931,990.	ິ I J./ ⊐	0.000008		6867699989		9,399,694	
			11701S94		9009000		r Seger	<u>.</u>		D						
						sonensen						nasi nasinasin				
Minor Lane/Major Mvmt	<u> </u>	VBLn1	EBL	EBT	EBH	WBL	WBT	WBHS	SHLN1							
Capacity (veh/h)		93	1215	•	•	773		() () .	496			6207089				néng i
HCM Lane V/C Hatio	1990-1999-1999-1999-1999-1999-1999-1999	0.839	0.081	- 2010 <i>000</i> 000	- ennada	0.003	- 	- 9445949490	U.169	999999999999	anena	nganatati	NG WARNE			34690533
HUM CONTROL Delay (S)		133.0 F	8.2	enderse n le	enia 307.	9./ ^	U A	e se an	່ ເ <i>ປ.1</i> D		21.0778) 					
HOM 05th 9/410 O(uch)		ר א <i>ו</i>	۳ د م	- 2/20/02/3	- 1999/1990	н Л	A N	- 201801-201	ດ ຈິດ	9997 Br					ne da	Ménan
HCM Lane LOS HCM 95th %tile Q(veh)		⊦ 4.6	A 0.3	-	• •	A 0	A _	-	о.6 О.6							949407

Int Delay, siveh 0 Movement EBT EBR WBL WBT NBL NBR Lane Configurations > > ? ? Traffic Vol, veh/h 825 29 0 355 0 Conflicting Peds, #hr 0 0 0 0 0 Conflicting Peds, #hr 0 0 0 0 0 Storage Length - - - 0 Storage Length - - - 0 Veh in Median Storage, # 0 - 0 0 - Grade, % 0 - - 0 - - Peak Hour Factor 100 100 100 100 100 Heavy Vehicles, % 0 0 0 0 0 0 Mign/Minor Major1 Major2 Minor1 - - - Conflicting Flow All 0 0 - - 840 - Stage 1 - - - - -
Movement EBT EBR WBL WBT NBR Lane Configurations h h f Traffic Vol, veh/h 825 29 0 355 0 Conflicting Peds, #/hr 0 0 0 0 0 Conflicting Peds, #/hr 0 0 0 0 0 Storage Length - - - 0 0 Storage Length - - 0 0 - Storage Length - - 0 0 - Veh in Median Storage, # 0 - 0 0 - Grade, % 0 - 0 0 - - Peak Hour Factor 100 100 100 100 100 100 Heavy Vehicles, % 0 0 - - - - Stage 1 - - - - - - - Conflicting Flow All
Lane Configurations ↑ ↑ ↑ Traffic Vol, veh/h 825 29 0 355 0 Future Vol, veh/h 825 29 0 355 0 0 Conflicting Peds, #hr 0 0 0 0 0 0 Sign Control Free Free Free Storage Length - - 0 Tarafic Vol, veh/h 825 29 0 355 0 0 0 Storage Length - - - 0 0 - 0 Grade, % 0 - - 0 0 - 0 0 - Peak Hour Factor 100 100 100 100 100 100 100 100 100 Heavy Vehicles, % 0
Traffic Vol, veh/h 825 29 0 355 0 0 Future Vol, veh/h 825 29 0 355 0 0 Conflicting Peds, #hr 0 0 0 0 0 0 Sign Control Free Free Free Storage Length - - 0 Attem Antiper Length - - 0 0 - 0 - Veh in Median Storage, # 0 - 0 0 - 0 - Storage Length - - 0 0 - 0 - - Veh in Median Storage, # 0 - 0 0 - 0 0 - Peak Hour Factor 100 100 100 100 100 100 100 Heavy Vehicles, % 0 0 0 0 0 0 0 Stage 1 - - - - - - - - Stage 2 - - - -
Future Vol, veh/h 825 29 0 355 0 0 Conflicting Peds, #/hr 0 0 0 0 0 0 0 Sign Control Free Free Free Free Stop Stop Stor RT Channelized - None - 0 0 - 0 Storage Length - - 0 0 - 0 - Grade, % 0 - - 0 0 - - 0 Peak Hour Factor 100 100 100 100 100 100 100 Heavy Vehicles, % 0 0 0 0 0 0 0 0 Migor/Minor Major1 Major2 Minor1 Major2 -
Conflicting Peds, #/hr 0 0 0 0 0 Sign Control Free Free Free Stop RT Channelized - None - None Storage Length - - 0 - Grade, % 0 - 0 0 - Qarade, % 0 - 0 0 - Peak Hour Factor 100 100 100 100 100 Heavy Vehicles, % 0 0 0 0 0 Major/Minor Major1 Major2 Minort East Conflicting Flow All 0 0 - - 840 Stage 1 - - - - - Stage 2 - - - - - Critical Hdwy Stg 1 - - - - - Critical Hdwy Stg 2 - - - - - Follow-up Hdwy - - - - - Stage 1 - </th
Sign Control Free Free Free Free Stop 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 Heavy Vehicles, % 0 0 0 0 0 Major/Minor Major1 Major2 Minor1 Minor1 Conflicting Flow All 0 0 - - 840 Stage 1 - - - - - Stage 2 - - - - - Critical Hdwy - - - - - Follow-up Hdwy - - - - - Critical Hdwy Stg 2 - - - - - Follow-up Hdwy - - - - - Stage 1
RT Channelized - None - None Storage Length - - - - 0 0 - Grade, % 0 - 0 0 Peak Hour Factor 100 100 100 100 100 Heavy Vehicles, % 0 0 0 0 0 Median Storage, # 0 0 0 0 - Heavy Vehicles, % 0 0 0 0 0 Mont 825 29 0 355 0 0 Minort Major1 Major2 Minort - - - Conflicting Flow All 0 0 - - - - Stage 1 - - - - - - - Stage 2 - - - - - - - - Follow-up Hdwy - - - 3.3 - - - - - - - - - - <
Storage Length - - - 0 Véh in Median Storage, # 0 - - 0 - Grade, % 0 - - 0 0 - Peak Hour Factor 100 100 100 100 100 100 Heavy Vehicles, % 0 0 0 0 0 0 Major/Minor Major1 Major2 Minor1 - - - 840 Stage 1 - - - - - - - - - Stage 2 -
Veh in Median Storage, # 0 - 0 0 - Grade, % 0 - 0 0 - Peak Hour Factor 100 100 100 100 100 Heavy Vehicles, % 0 0 0 0 0 Major/Minor Major1 Major2 Minor1 Conflicting Flow All 0 0 - - 840 Stage 1 - - - - - - Stage 2 - - - - - - - Critical Hdwy Stg 1 - <td< th=""></td<>
Grade, % 0 - - 0 0 - Peak Hour Factor 100 100 100 100 100 Heavy Vehicles, % 0 0 0 0 0 Mymt Flow 825 29 0 355 0 0 Major/Minor Major1 Major2 Minor1 - - 840 Stage 1 - - - - - - Stage 1 - - - - - - Critical Hdwy - - - - - - Critical Hdwy Stg 1 - - - - - Follow-up Hdwy - - - - - Follow-up Hdwy - - - - - Stage 1 - 0 0 - - - Follow-up Hdwy - - - - - - Stage 2 - 0 0 - - - -
Peak Hour Factor 100 100 100 100 100 Heavy Vehicles, % 0 0 0 0 0 0 Major/Minor Major1 Major2 Minor1 Major2 Minor1 Conflicting Flow All 0 0 - - 840 Stage 1 - - - - - Stage 2 - - - - - Critical Hdwy - - - - - Critical Hdwy Stg 1 - - - - - Critical Hdwy Stg 2 - - - - - Follow-up Hdwy - - - - - Follow-up Hdwy - - - - - Stage 1 - 0 - 0 - - Platoon blocked, % - - - - - Mov Cap-1 Maneuver - - - - - Platoon blocked, % - -
Heavy Venicies, % 0
Major/Minor Major1 Major2 Minor1 Conflicting Flow All 0 0 - - 840 Stage 1 - - - - 840 Stage 2 - - - - - Critical Hdwy - - - - - Critical Hdwy Stg 1 - - - - - Critical Hdwy Stg 2 - - - - - Follow-up Hdwy - - - 3.3 - Follow-up Hdwy - - 0 368 - - Stage 1 - 0 - 0 - - Stage 2 - 0 - 0 - - Platoon blocked, % - - - 368 - - Mov Cap-1 Maneuver - - - 368 - - Stage 1 - -
Major/Minor Major2 Minor1 Conflicting Flow All 0 0 - - 840 Stage 1 - - - - - Stage 2 - - - - - Critical Hdwy - - - - - Critical Hdwy Stg 1 - - - - - Critical Hdwy Stg 2 - - - - - Critical Hdwy Stg 2 - - - - - Follow-up Hdwy - - - 3.3 - Follow-up Hdwy - - 0 368 - Stage 1 - 0 0 - - Stage 2 - 0 - 0 - Platoon blocked, % - - - 368 Mov Cap-2 Maneuver - - - - Stage 1 - -
Major1 Major2 Minor1 Conflicting Flow All 0 0 - - 840 Stage 1 - - - - - Stage 2 - - - - - Critical Hdwy - - - 6.2 Critical Hdwy Stg 1 - - - - Critical Hdwy Stg 2 - - - - Critical Hdwy Stg 2 - - - - Follow-up Hdwy - - - 3.3 Pot Cap-1 Maneuver - 0 - 0 Stage 1 - 0 - - Stage 2 - 0 - - Platoon blocked, % - - - 368 Mov Cap-2 Maneuver - - - -
Conflicting Flow All 0 0 - - B40 Stage 1 - - - B40 Stage 2 - - - - Critical Hdwy - - - 6.2 Critical Hdwy Stg 1 - - - 6.2 Critical Hdwy Stg 2 - - - - Follow-up Hdwy - - - - - Follow-up Hdwy - - - - - Follow-up Hdwy - - - - 3.3 Pot Cap-1 Maneuver - 0 - 0 - Stage 1 - 0 0 - - Mov Cap-1 Maneuver - - - 368 Mov Cap-1 Maneuver - - - - Mov Cap-1 Maneuver - - - - - Stage 1 - - - - - - Mov Cap-1 Maneuver - - - -
Stage 1 - </th
Stage 2 - </th
Critical Howy - - - 6.2 Critical Hdwy Stg 1 - - - - Critical Hdwy Stg 2 - - - - Follow-up Hdwy - - - 3.3 Pot Cap-1 Maneuver - 0 - 0 Stage 1 - 0 - 0 Stage 2 - 0 - 0 Platoon blocked, % - - - Mov Cap-1 Maneuver - - 368 Mov Cap-1 Maneuver - - - Stage 1 - - 0 - Stage 2 - 0 - - Mov Cap-1 Maneuver - - - Stage 1 - - - -
Critical Howy Sig 1 -
Follow-up Hdwy - - - - 3.3 Pot Cap-1 Maneuver - 0 - 0 368 Stage 1 - - 0 - - Stage 2 - - 0 - - Platoon blocked, % - - - 368 Mov Cap-1 Maneuver - - 368 Mov Cap-2 Maneuver - - - Stage 1 - - - 368
Pot Cap-1 Maneuver - 0 - 0 368 Stage 1 - 0 - 0 - Stage 2 - - 0 - - Platoon blocked, % - - - - - Mov Cap-1 Maneuver - - - 368 Mov Cap-2 Maneuver - - - - Stage 1 - - - -
Stage 1 - - 0 - 0 - Stage 2 - - 0 - 0 - Platoon blocked, % - - - - - Mov Cap-1 Maneuver - - - 368 Mov Cap-2 Maneuver - - - - Stage 1 - - - -
Stage 2 - - 0 - Platoon blocked, % - - - Mov Cap-1 Maneuver - - - Mov Cap-2 Maneuver - - - Stage 1 - - -
Platoon blocked, %
Mov Cap-1 Maneuver
Mov Cap-2 Maneuver
Stage 1
omdo i
Stage 2
Approach EB WB NB
HCM Control Delay, s 0 0 0
HCM LOS A
Minor Long/Major Mumt NIPL of ERT ERP WRT
Capacity (Venini)
HOW Cantrol Dalay (c) 0
HCM Lane LOS A
HCM 95th %tile O(veh)

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1.			۴		ř
Traffic Vol, veh/h	807	17	0	355	0	0
Future Vol, veh/h	807	17	0	355	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized		None		None		None
Storage Length	-	-	ب مىرىمىرىمىرى	•	•	0
Veh in Median Storage	e,#0	2000-0		0	0	•
Grade, %	0	•	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	807	17	0	355	0	0
Major/Minor	Major1	٨	Aajor2		Minor1	
Conflicting Flow All	0	0	-	-	+	816
Stage 1	en son sei e Geologi Ait	in des antes de Constitution	60060/09/00 50060/00 - 0		in airean an a	egi ayai keta se San desanas
Stage 2		a	•			
Critical Hdwy					•	6.2
Critical Hdwy Stg 1	•	•	-	-	-	-
Critical Hdwy Stg 2		•	•			
Follow-up Hdwy				•	•	3.3
Pot Cap-1 Maneuver		si ografisia Sidgesta	0	9 92 92 94 6 99 9	0	380
Stage 1			0		0	
Stage 2	0/30/0 / -		0		0	an a
Platoon blocked, %	•	•	a an ar trandit	-		
Mov Cap-1 Maneuver	- 	•	•	•	•	380
Mov Cap-2 Maneuver	•		-	-		-
Stage 1	al na staine Raisean airthic			84400 (1997) 1998 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997		
Stage 2				•	•	
Approach	CD		1//2		NP	
Approach	03					
HOM CONTROL Delay, S	U		U		U	61.9281.9
		50650577	tingunan		A	
	en espectador de	6		landina sha		

Minor Lane/Major Mvmt N	BLn1 EBT EBR W	BT		
Capacity (veh/h)		•		
HCM Lane V/C Ratio		-	a senta menteri internati con tradici a di se a celebrita de	
HCM Control Delay (s)	0	•		
HCM Lane LOS	A	- 		
HOW ADIU MIIIE (MAN)	• • •	•		

Intersection Int Delay, s/veh 1.1 EBT EBR WBL WBT NBL NBR Movement ¥ Lane Configurations Þ ŧÎ 53 60 301 2 Traffic Vol, veh/h 746 3 Future Vol, veh/h 60 3 301 53 2 746 0 0 0 Conflicting Peds. #/hr 0 0 0 Stop Sign Control Free Free Free Free Stop **RT** Channelized None -None • None • Storage Length 0 ... 0 Veh in Median Storage, # 0 4 0 Grade, % 0 0 0 100 100 100 100 Peak Hour Factor 100 100 Heavy Vehicles, % 0 0 0 0 0 0 Mvmt Flow 746 60 3 301 53 2 Major1 Major2 Minor1 Major/Minor Conflicting Flow All 0 0 806 0 1083 776 776 Stage 1 8.**6**. 1 Stage 2 307 ---.... . 6.2 Critical Hdwy 4.1 6.4 Critical Hdwy Stg 1 5.4 -. -Critical Hdwy Stg 2 • 5.4 Follow-up Hdwy 2.2 3.5 3.3 -. • Pot Cap-1 Maneuver 828 243 401 -Stage 1 457 . -. --Stage 2 751 -2 1 Platoon blocked, % . Mov Cap-1 Maneuver 828 242 401 -. -Mov Cap-2 Maneuver 242 ... 457 . Stage 1 . • • Stage 2 * ---748 ... NB Approach EB WB 23.8 HCM Control Delay, s 0 0.1 С HCM LOS Minor Lane/Major Mvmt WBL WBT NBLn1 EBT EBR Capacity (veh/h) 246 828 • HCM Lane V/C Ratio 0.224 0.004 -... HCM Control Delay (s) 23.8 -9.4 0 HCM Lane LOS Ċ А А -

HCM 95th %tile Q(veh)

0.8

0



	٨	Þ	>	1	4	۹.,	٩	Î	1	\$	Ļ	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	4		ሻ	ţ,			4		ሻ	4	
Traffic Volume (vph)	41	268	7	1	576	279	11	8	0	28	\$140.09 1 3	12
Future Volume (vph)	41	268	7	1	576	279	11	8	0	28	1	12
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	5.2	5.2		5.2	5.2			5.2	la - Distance de la com	5.2	5.2	an a
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	an an the state of t	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.95	ta and the second second second second	tan marka da sa an	1.00		1.00	0.86	and and the second states of the
Fit Protected	0.95	1.00		0.95	1.00			0.97		0.95	1.00	
Satd. Flow (prot)	1729	1812		1722	1731		n an an an ann an an 2010 Mar	1769	ener i direttari di Santa tandi	1724	1568	ulenne en la secto
Fit Permitted	0.19	1.00		0.59	1.00			0.86		0.75	1.00	
Satd. Flow (perm)	348	1812		1070	1731			1567		1352	1568	
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)	41	268	7	1	576	279	11	8	0	28	1	12
RTOR Reduction (vph)	0	1	0	0	24	0	0	0	0	0	10	0
Lane Group Flow (vph)	41	274	0	1	831	0	0	19	0	28	3	0
Confl. Peds. (#/hr)			4	4					2	2		
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4	10.00		8			2		98.8S	6	0.00.918	
Actuated Green, G (s)	29.9	29.9		29.9	29.9			10.1		10.1	10.1	
Effective Green, g (s)	29.9	29.9		29.9	29.9			10.1		10.1	10.1	
Actuated g/C Ratio	0.59	0.59		0.59	0.59			0.20		0.20	0.20	entrative to a statute of
Clearance Time (s)	5.2	5.2		5.2	5.2			5.2		5.2	5.2	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	206	1074	1942 (B) (B	634	1026			314	18-00-19-09	270	314	
v/s Ratio Prot		0.15			c0.48				unda tarta titatan ara		0.00	1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.
v/s Ratio Perm	0.12			0.00		iente de la co		0.01		c0.02		
v/c Ratio	0.20	0.25		0.00	0.81			0.06		0.10	0.01	a na farant a commence and the star
Uniform Delay, d1	4.7	4.9		4.2	8.0			16.3		16.5	16.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00	eta en en en en entre de transferencia	1.00	1.00	•• 2000 - 1977 • - 201 •
Incremental Delay, d2	0.5	0.1		0.0	4.9			0.1		0.2	0.0	
Delay (s)	5.2	5.0		4.2	13.0	n marta antista da anti	r et al an tha diadh dhea	16.4	energen ann ae an an Anna Sa	16.6	16.2	an a
Level of Service	A	Α		A	В	10.000		В		В	В	
Approach Delay (s)		5.1		e tana ta wasila sa ƙasar	13.0	a na sina ang katalan ang ka		16.4		ran waaraatiina	16.5	NASIMANA ALAS NA
Approach LOS		Α			В			В			В	
Intersection Summary												
HCM 2000 Control Delay			11.1	Н	CM 2000	Level of S	ervice		В	3.3.3		
HCM 2000 Volume to Capa	city ratio	aan ah	0.63	a an an an an an Annaich an Annai An t-annaich an Annaich	en en standeren te stad.							
Actuated Cycle Length (s)			50.4	St	im of lost	time (s)			10.4			
Intersection Capacity Utiliza	tion	a a an	67.4%	IC	U Level o	of Service	a na ann an tar tha tha th		С			
Analysis Period (min)			15									

c Critical Lane Group

Intersection																
Int Delay, s/veh	8.7															
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Lane Configurations	ሻ	4			4			4			44					
Traffic Vol, veh/h	55	195	26	1	767	24	97	0	5	8	0	92		19.59.59	5 B B A	
Future Vol, veh/h	55	195	26	1	767	24	97	0	5	8	0	92			ta ta sel to ta sel al socia and selected	tana a
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	ି ୦୦୦	0	0	0				
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	uso (uno (uro)	constant and a		1957 A.
RT Channelized			None			None			None			None				
Storage Length	1250	- ::::::::::::::::::::::::::::::::::::	- 25105-8078-806	- 	- -	• 2005/02003	- •	- 1910-1912-19	- 	- 	- 	- 	ana kaka sa	1000000000		
Veh in Median Storage,	# -	0	•		0			0		-	0	•				
Grade, %	- *****	0	-	-	0	-	-	0	-	- -	0	-	993/4374(8).			1991 1991
Peak Hour Factor	100	100	100	100	100	100	100	100	001	100	100	100				
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0 	0 •••••••••	0 Seeting	U	1999/1997	SSEMATAS	ogu destantadad	6063X
Mvmt Flow	55	195	26		767	24	97	0	5	8	0	92	(dentration)	de state	an te devela	
Major/Minor N	lajor1			Major2		٨	Ainor1		١	Ainor2						
Conflicting Flow All	791	0	0	221	0	0	1145	1111	208	1102	1112	779				
Stage 1				-	- -		318	318		781	781					
Stage 2	-	-	•	*	•	-	827	793	-	321	331	-				
Critical Hdwy	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6,2				
Critical Hdwy Stg 1	-		-	-	-	-	6.1	5.5	-	6.1	5.5	-				
Critical Hdwy Stg 2	- (•		•		6.1	5.5	6 12 .	6.1	5.5	- <u>19</u>				
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3,3	3.5	4	3.3				
Pot Cap-1 Maneuver	838	•		1360			178	211	837	191	211	399		160 (67 (6)		
Stage 1	-	-	-	-	-	-	698	657	-	391	408	-			det ner state et servert i sur est suit.	
Stage 2		- 		2.2.9		•	369	403		695	649					
Platoon blocked, %			-		-	-					a an	ور ور ور ور ور و		n an		
Mov Cap-1 Maneuver	838	-	8 (g) (- (1360			130	197	837	180	197	399				
Mov Cap-2 Maneuver		-	- 200000000000000	-	-	-	130	197	-	180	197	• -	enered and a real	and and a start of the start of t	n taska taska kilansa kila tat	n-enr
Stage 1		(1997) (1997)	-		9.40.40		652	614		365	408		69 69 69			
Stage 2		-	-	-	• Statisticais	- 1917-1935-1940	284	403	-	646	606	-	ana	usahintanteta		uest-u
						allandon kanga Tanang kangana										
Approach	EB			WB			NB			SB						
HCM Control Delay, s	1.9		0.000	0			85.2			18.6						
HCM LOS		8001800/001/+	edikterretetik	in an			F	920499949201	ERCLARSON AND AN	С	lar bela sa					(1993)
Marri mali laisa bi		101 - 4	COL	EDT	EDD	MOL	A/DT	MOD	201							
MINOT Lane/Major MVMI	۲ ر		EBL	EBI	EBH	VVBL	I COVV	WON								
Capacity (veh/h)		136	838	9 99 (•)		1360		989Q-)	364	ESS &						1999) 1999) 1999)
HUM Lane V/C Hatio	agaggaada	0.75	0.066	- Anaginesia	- 999 <i>900</i> 9090	0.001	-	- *******	U.2/5	49492499			ay a	uyyyyyyys	i den staden and	
HUM CONTROL Delay (S)		85.2	9.6			/,b	U A	8. S. S.	0.01		12010101100		9249068			
HUM Lane LUS	alaki-uka	ا دوموزورون	A	- 1998/1999/19	- 31 506550	A	A	- 1911/101944	ں د د	us as an		(April Autor	Selected			286
HUM 95th %tile Q(veh)		4.4	0.2		-	U	e on ang kang ing ka Kanang kang kang kang kang kang kang kang		1.1							

Intersection							
Int Delay, s/veh	0						
Movement	EBT EBR	WBL WBT	NBL NBR				
Lane Configurations	4	Ą	ሻ				
Traffic Vol, veh/h	189 19	0 793	0 0				
Future Vol, veh/h	189 19	0 793	0 0				
Conflicting Peds, #/hr	0 0	0 0	0 0				
Sign Control	Free Free	Free Free	Stop Stop				
HI Channelized	- None	- INONE					
Veh in Median Storage :	# <u>0 -</u>		- v				
Grade %		- 0	0 -		kirkin tota (1994) S	a shire e pe la suk dwa kuwa pekanan	andaantaga saasing sa sa sa sa sa sa
Peak Hour Factor	100 100	100 100	100 100				
Heavy Vehicles, %	0 0	00	0 0	enen alemanda geen elastrae d'henne (aleman) -			
Mvmt Flow	189 19	0 793	0 0				
Major/Minor M	aior1 1	Vlaior2	Ainor1				
Conflicting Flow All	0 0		- 199				
Stage 1	- 10 Sec.		ğığı - 1816 -	ee ale gelale			
Stage 2						an a	e en el construction de la constru
Critical Hdwy		-	- 6.2				
Critical Hdwy Stg 1					n an an ann an Arrain aige agus a' chuireachar	lenene and failed a friend all daile	
Critical Hdwy Stg 2							
Follow-up Hdwy	 -		- 3.3				
Pot Cap-1 Maneuver	(1117): + (1177): 118. + 1 	0 -	0 04/				
Stage 2		0 - 0 -	- 0 0 -				
Platoon blocked %		- -	Y		en de la Calendar en la Calendar en la		ga dan perantahan dari kerekan d Barta dari persentahan dari kerekan dari kerekan dari kerekan dari kerekan dari kerekan dari kerekan dari kereka
Mov Cap-1 Maneuver			- 847				
Mov Cap-2 Maneuver		-		tent profession at the second statement of the second statement of the second second second second second secon			
Stage 1	-	e e e -					
Stage 2							
Approach	EB	WB	NB				
HCM Control Delay, s	0	0	0				
HCM LOS			A				
Minor Lane/Maior Mvmt	NBLnt	EBT EBR	WBT				
Capacity (veh/h)	-		-				
HCM Lane V/C Ratio	n per per de la la constant de la del de En la del de la del de En la del de		en e	a un accesso a sector a subscuerto un tra a tra de Referención (de	, nego y provinskom konstruktur (* 1997) 1997 - Alexandria Alexandria (* 1997)	e y se vere en	
HCM Control Delay (s)	0	•	90 . 048				
HCM Lane LOS	А		-	an a	ne bet same de resta de cui i durante en entre tra de cui		
HCM 95th %tile Q(veh)		-	•				

Intersection										
Int Delay, s/ven	U									,
Movement E	BT EBR	WBL WBT	NBL N	BR						
Lane Configurations	4	<u>^</u>		7						
Traffic Vol, veh/h	77 11	0 793	0	0						
Future Vol, ven/n 1	// 11	U 793	0	0						
Connicting Peas, #/nr	0 U	Eroo Eroo	Stop St	U top						
BT Channelized	- None	- None		iop Sne						ļ
Storage Length			- -	0					n de stratension	
Veh in Median Storage. #	0 -	- 0	0	-						
Grade, %	0 -	- 0	0	-					i po deservo po de de la construcción de	
Peak Hour Factor 1	00 100	100 100	100 1	00						
Heavy Vehicles, %	0 0	0 0	0	0				e na seu la constante de la con	t na ten balance ta date mata ta anna ta	
Mvmt Flow 1	77 11	0 793	0	0						
Maior/Minor Maio	ort I	Major2 N	/linor1							
Conflicting Flow All	0 0		- 1	83						
Stage 1			- 							
Stage 2	a a	-	-							÷
Critical Hdwy	<u> </u>		- (6.2						
Critical Hdwy Stg 1			-	-	وروار وروار وروار وروار وروار وروار وروار وروار	an a	n an eil an eile eile eile eile eile eile eile eil	e el español a clored de la solution	en esta a substant en 1722	
Critical Hdwy Stg 2	: -			- 19 19 19 19 19 19	0.5-5 (S. 6)					
Follow-up Hdwy			- (3.3	a an		erseeste state			v
Pot Cap-1 Maneuver		0 -	8 0	165						
Stage 1		U -	U	- -						
Stage 2 Distoon blocked %		0 -	U	-						
Mov Can-1 Maneuver		-	- 9	85						
Mov Cap-2 Maneuver			- -	-						
Stage 1		-								
Stage 2				- -		ayan ana ang ang ang ang ang ang ang ang a				·
		5 16 15 16 16 16 16				196-65 106 28 28	1981 (S. 16) (S. 10)			
Appreach	CD		NR							1
HCM Control Dolay 6		0	0							2 •
HCM LOS	V	U	0 ۵							
1 1 1 1 1 1		FOT FOF	11/02							
Minor Lane/Major Mvmt	NBLn1	ERI FRH	WBI							2
Capacity (veh/h)	•		9 (2 - 12) (2							
HUM Lane V/C Hatio	-		- 0.010.010.010							\$
HOM LODITOL Delay (S)	U A	0.000 (3. 1000) (3. 10 -								2
HCM 95th %tile Q(veh)	A _		•							

Intersection							
Int Delay, s/veh	1.4						
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	ĥ			ą,	ዪø		
Traffic Vol. veh/h	137	40	2	724	69	3	
Future Vol, veh/h	137	40	2	724	69	3	n ban hat hawaann na maana ann wee a san mar an an caeal maan maana marka a keel anna a maana kunaa a san aana a
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
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, %	0	U 01	0	U 1070	0	0	
wivmt Flow	13/	40	<u> </u>	124	09	3	
Major/Minor	Major1		Major2		Minor1		
Conflicting Flow All	0	0	177	0	885	157	
Stage 1			19210321-35T	i Materia an B	157	i de sterræster	
Stage 2	- 2012/2012/2017	- 	- seequae	• 2010-001-001	/28 ~ ^	- 	
Critical Hdwy	R. C.		4.]		6.4 C 4	b. 2	
Critical Howy Stg 1	- 37132132	- Vindensen	- 9868888	- 1993-1993	5.4 E 4	• 88.89.89	
Chilcal Huwy Sig 2					0.4 0.5	- -	
Fullow-up ⊓uwy Pot Cap_1 Manouver	- 882682	-	ے۔ے 1711 -	-	218	0.0 80 <i>1</i>	
r or cap-r Maneuver	8498878 -	99699833 -	<u> 199</u>	98866993 •	876		
Stare 2				- 	482	1993 - 1 2 189	
Platoon blocked. %	99999999999 -		90.000 (CCC) 1	- -	99999 77 76	00.01090.0190.920	
Mov Cap-1 Maneuver	8 <i>22</i> 4 -		1411		317	894	
Mov Cap-2 Maneuver					317		e en presentan en entre etter er en presiden er en trefte Brækkenne etter fillen etter fikken fikken fikken fik
Stage 1			2. (S. 1.		876		
Stage-2					481	-	
	WIGWEI State		anner etale e solori				
Approach	EB		WB		NB		
HCM Control Delay. s	0		0		19.1		
HCMLOS	ena sere T i	a strenten tit de	1999 - 1997 -	esta secta di S	C	un na saiste	n nei hann an eilen in eilen anneilen eilen status eilen anneilt ster tagen anneilte eilen seiter er status est
Minor Lane/Major Mym	nt	NBI n1	FRT	FRR	WBI	WBT	
Capacity (veh/h)		326		-	1411	-	
HCM Lane V/C Ratio	88679889	0.221	64999994 -	- 	0.001	999999999999 -	
HCM Control Delay (s)		19.1	1944-1949 2017-2016 – 1		7.6	0	
HCM Lane LOS	reauseut de la	C	awaratatati -	93070700070 -	A	A	ada a la Carde el la cheche de la contra d'esta della contra de competente en contra per personante proposi de La contra contra della contra della contra della contra de contra de contra per personante de la contra persona

HCM 95th %tile Q(veh) 0.8 - - 0 -



	٨		\mathbf{i}	4	♣—		*	1	p	\$	Ļ	1
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	٢	Ъ		ሻ	₽			\$		5	¢Î	
Traffic Volume (vph)	<u> </u>	776	8	Ō	480	51	11	3	3	283	3	81
Future Volume (vph)	4	776	8	0	480	51	11	3	3	283	3	81
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	5.2	5.2			5.2			5.2		5.2	5.2	
Lane Util. Factor	1.00	1.00			1.00			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00			1.00			1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00			1.00			1.00		1.00	1.00	
Frt	1.00	1.00			0.99	en stellen er site som		0.98		1.00	0.86	unant contra da
Flt Protected	0.95	1.00			1.00			0.97		0.95	1.00	
Satd. Flow (prot)	1729	1817			1794			1711		1724	1522	te sanata stanta da stanta
Fit Permitted	0.36	1.00			1.00			0.86		0.75	1.00	
Satd. Flow (perm)	662	1817			1794			1520		1355	1522	
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)	4	776	8	0	480	51	11	3	3	283	3	81
RTOR Reduction (vph)	0	1	0	0	7	0	0	2	0	0	-57	0
Lane Group Flow (vph)	4	783	0	0	524	0	0	15	0	283	27	0
Confl. Peds. (#/hr)			2	2			2		2	2		2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Son Son aldon me	Perm	NA	(Perm	NA	
Protected Phases	ten en en de der den men en stange	4	and a straight for	en e	8	unitation and an annual and an air	an tanàna manjara amin' ara-	2	er en en andere ander ka	n ja kopanana papatra ana k	6	anta di barra da an
Permitted Phases	4			8	9989		2		8 (A. A. A.	6		
Actuated Green, G (s)	26.0	26.0	recense de la constance de la constance d	entre energiale e constraire	26.0	•••••••••••		15.7	versional esta factoria	15.7	15.7	aseta santa sa
Effective Green, g (s)	26.0	26.0			26.0			15.7		15.7	15.7	
Actuated g/C Ratio	0.50	0.50			0.50		ana ana amin' ar	0.30	uses Adress Adres data	0.30	0.30	arrena arren
Clearance Time (s)	5.2	5.2			5,2			5.2		5.2	5.2	
Vehicle Extension (s)	3.0	3.0			3.0	·····	en e	3.0		3.0	3.0	
Lane Grp Cap (vph)	330	906			895			458		408	458	
v/s Ratio Prot	da antonio a contra mante	c0.43	an a	ana ang ang ang ang ang ang ang ang ang	0.29	yaasa waxay waxay waxa	anna an tarainte	*****	ana ana ang ang ang ang ang ang ang ang	nasa <u>nas</u> tean	0.02	alara karatar
v/s Ratio Perm	0.01							0.01	den se de se	c0.21		
v/c Ratio	0.01	0.86			0.59	Managan ang ang ang ang ang ang ang ang a		0.03	254X7594334777	0.69	0.06	
Uniform Delay, d1	6.6	11.5			9,2		a da serie de la companya de la comp	12.8		16.1	12.9	
Progression Factor	1.00	1.00		an a	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.0	8.6			1.0			0.0		5.0	0.1	
Delay (s)	6.b	20.1			10.2		an in the second second second	12.9		21.1	13.U	aggi Hongles -
Level of Service	A	C A			B			40 O		U	- B	
Approach Delay (s)		20.1	keere eeste		10.2	ada kana kana ka	Marina di Balanda di Balanda	12.9			19.3	
Approach LOS		U			В			В			B	
Intersection Summary												
HCM 2000 Control Delay			16.8	H	CM 2000	Level of S	Service		В			
HCM 2000 Volume to Capa	acity ratio	و منه و و و و و و و و و و و و و	0.80		و معالم و معالم و معالم مورد م					ann an		
Actuated Cycle Length (s)			52.1	S	um of lost	time (s)			10.4			
Intersection Capacity Utiliza	ation	والمتحدية سيرفي فترجره والمراج	75.5%	IC	U Level c	of Service	و با من محمد و مرود و مورد مرود و		D			
Analysis Period (min)			15									

c Critical Lane Group

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Intersection													
Int Delay, s/veh	10.7												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	ሻ	4Î			\$			4			\$		
Traffic Vol, veh/h	109	886	41	2	362	3	75	0	3	7	0	86	
Future Vol, veh/h	109	886	41	2	362	3	75	0	3	7	0	86	
Conflicting Peds, #/hr	2	0	0	0	0	2	1	0	2	2	0	1	
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	
RT Channelized		1 1 1	None			None	-		None			None	
Storage Length	1250	-	-	-	-	-	-	-	-	-	-	-	
Veh in Median Storage	,# -	0	8 68 7 . 1	8424 .	0	6 S (*	949 -	0	· (*)	•	0	188 al •1	999999
Grade, %	-	0	-	-	0	-	-	0	•	-	0	····	ha na mara ta manda da antinta m
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100	
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0	en statue erent etnis elektristetstaat (e
Mvmt Flow	109	886	41	2	362	3	75	0	3	7	0	86	
Major/Minor N	Aajor1		١	Aajor2		١	Ainor1			Minor2			
Conflicting Flow All	367	0	0	927	0	0	1537	1496	909	1498	1515	367	
Stage 1		•		aribiyi kayar Generalar			1125	1125	•	370	370		
Stage 2	-	-	- 	-	•	•	412	371		1128	1145	•	
Critical Hdwy	4.1			4.1	() (S (_)		7.1	6.5	6.2	7.1	6.5	6.2	
Critical Hdwy Stg 1	•	-		•	-	-	6.1	5.5	*	6.1	5.5	-	
Critical Hdwy Stg 2					9 10 O.	ý 20 🔸	6.1	5.5	•	6.1	5.5	1995 - 1996 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	
Follow-up Hdwy	2.2	-	-	2,2	-	-	3.5	4	3.3	3.5	4	3.3	
Pot Cap-1 Maneuver	1203			746		ter også sigen Gender Konst	96	124	336	102	121	683	
Stage 1	-	-	-	-	-	-	251	283	-	654	624	-	
Stage 2	•						621	623		250	277		
Platoon blocked, %	ور مرو منطقه مند و	-	•	en an	-	-		والمستعدية والمعاري المساه	n an	na say and an array.	tradigation de constances	and the second secon	eller verselikisteren en e
Mov Cap-1 Maneuver	1202	•	() 	745		•	78	112	335	93	109	681	
Mov Cap-2 Maneuver	• ooleadasarar	- 	- 	- 	- 5345564-1841	-	78	112	• Representation	93	109	-	
Stage 1			Su <i>ltane</i> us	le Roman			228	257		593	621		
Stage 2	- 	-	-	·· •		•	540	620		225	252	- 645.666.66	
						genitiketen in Stationen Stati Stationen Stationen Stati							
Approach	EB			WB			NB			SB			
HCM Control Delay, s	0.9			0.1		o sa isan Sa isisana	185			14.8			
HCM LOS	atal da sala sectores	lan en	an di damini di salamini sa s	entre duck i medicia the	in price and a	per contra contra	F	lander of the state of the stat		B	un de contra de contra	an a	
Minor Lane/Major Mvm	t N	IBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)		80	1202	•	•	745			461			S. 13 - 20	
HCM Lane V/C Ratio		0.975	0.091			0.003			0.202				
HCM Control Delay (s)		185	8.3			9.8	0		14.8				
HCM Lane LOS		F	A	-	-	Α	А	+	В				
LICM OF the P/tile ()(ush)		E 3	A			∩ _			0.7	ile source		(in the second	

Intersection

Int Delay, s/ven	U						
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	ቕ			个		ሻ	
Traffic Vol, veh/h	868	29	0	368	0	0	
Future Vol, veh/h	868	29	0	368	0	0	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
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, %	0	0	0	0	0	0	
Mvmt Flow	868	29	0	368	0	0	
Major/Minor M	lajor1		Major2		Minor1		
Conflicting Flow All	0	0	-	-	-	883	
Stage 1						-	
Stage 2	•	-	-	•	•	•	
Critical Hdwy						6.2	
Critical Hdwy Stg 1	-	-	-	-	-	-	
Critical Hdwy Stg 2							
Follow-up Hdwy	-	-	-		-	3.3	
Pot Cap-1 Maneuver	•	07 40 C.	0	•	0	348	
Stage 1	-	-	0	-	0	-	
Stage 2			0		0		
Platoon blocked, %	-	-		-			
Mov Cap-1 Maneuver			2000 - 1		•	348	
Mov Cap-2 Maneuver	•	-	-	-	-	+ 	
Stage 1		(), (), (), (), (), (), (), (), (), (),		1000 (s.	1999 (B	0.62 🚭	
Stage 2	- Maturopathere	- Nation Reprint	•	-	-	-	
						angang Sukanga	
Approach	EB		WB		NB		
HCM Control Delay, s	0		0		0		
HCM LOS					А		
Minor Lane/Major Mym		NBI n1	FRT	FRR	WRT		
Canacity (yeh/h)							
HCM Lang V/C Batic	948484B	2019/10/20 -	erestad. L	878875 -	4999996588 -		
HOW LANE V/O HALU	ungstande type	-	- 	e energenes	- 		

HCM Control Delay (s)	C)	•	•	
HCM Lane LOS	A	l	-	-	-
HCM 95th %tile Q(veh)			- 1930) -		¥

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	ĥ			Å		آ م
Traffic Vol, veh/h	850	17	0	368	0	0
Future Vol. veh/h	850	17	0	368	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized		None		None		None
Storage Length	-	-	-	-	-	0
Veh in Median Storage	,# 0		1999 -)	0	0	89.82.4 . (
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	850	17	0	368	0	0
Major/Minor N	Vlajor1	٨	Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	859
Stage 1	•		o changailte Guirteanna an	rosiet adae Sautenia		
Stage 2		ni ja seni se				
Critical Hdwy	-				83-159-19 ⁻ 1	6.2
Critical Hdwy Stg 1		•	-	-	-	-
Critical Hdwy Stg 2	•	6 (j. 19 . - 1			5 (B) (S)	6 69 6 -
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	en de rocie Griebes-le		0	-	0	359
Stage 1	-	-	0	-	0	-
Stage 2			0		0	
Platoon blocked, %		- 	sandsettere dat er	-	an a	
Mov Cap-1 Maneuver	- 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 1	1993 (• 6			9 S -	359
Mov Cap-2 Maneuver	-	-	- 	-	-	- webskiere
Stage 1		10490-005 10490-005	0.0650.65		8 6. S.	60.061.0 5 .0
Stage 2	- 	-	+ Saloketooloo	-	- 	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		0	
HCM LOS		er son en			A	ang per segera and sectores and de de la
Miner Long/Mainet	1 K		CDT	CDD	MDT	
	u i		CØI	EDH	AAD I	
Capacity (ven/n)		1499 - 1	•	9 (9) (9)		
HUM Lane V/C Hallo		-	- 98699999	- 40980984	- 9892859	
HCM Lang LOS	solon (sel s	لا کې ۸	91899999999 -	in an	on in order i -	
HCM Lane LOS		A	-	-	-	

HCM 95th %tile Q(veh) - - - -

Intersection							
Int Delay, s/veh	1.2						
Movement	EBT	EBR	WBL	WBT N	BL I	NBR	
Lane Configurations	(Î)			ر ا	¥.4		
Traffic Vol, veh/h	789	60	3	314	53	2	
Future Vol, veh/h	789	60	3	314	53	2	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Free	Free	Free	Free St	ор	Stop	
RT Channelized	-	None		None	- 1	lone	
Storage Length	-	-	-	-	0	-	
Veh in Median Storage,	# 0			0	0		
Grade, %	0	-	•	0	0	-	a se
Peak Hour Factor	100	100	100	100 1	00	100	
Heavy Vehicles, %	0	0	0	0	0	0	
Mvmt Flow	789	60	3	314	53	2	
Major/Minor M	lajor1	1	Major2	Mino	or1		
Conflicting Flow All	0	0	849	0 11	39	819	
Stage 1	1993/19 7 4			8	319		
Stage 2		-		- 3	320		
Critical Howy	sessionen Sideria	en an	4.1	- (6.4	6.2	
Critical Hdwy Stg 1		•	•	- (5.4	•	
Critical Hdwy Stg 2					5.4		
Follow-up Hdwy	+	•	2.2	- (3.5	3.3	· · · · · · · · · · · · · · · · · · ·
Pot Cap-1 Maneuver			798	- 2	225	379	
Stage 1	-	-	-	- 4	137	-	
Stage 2	9.00 			- 7	741		
Platoon blocked, %	-	-		-			
Mov Cap-1 Maneuver	•		798	- 2	224	379	
Mov Cap-2 Maneuver	-	-	-	- 2	224	-	
Stage 1	e/66/65	8 (§ 6 .)	6. Q.S.	- 4	137		
Stage 2	-	-	•	7	737		
Approach	EB		WB		NB		
HCM Control Delay. s	0		0.1	2	5.9		
HCM LOS	uper to tif to	ant a trait a trait	under 7 Mer	ang ang ang tang tang Ta	D		an a
Minor Long/Major March			Сот		/D)	w/at	
	t S		CDI	- 103		NAMI	
Lapacity (ven/n)		227		- 1	(90 204	-	•
HUM Lane V/C Hatio	999999999	0.242	- 420100000000	- 0.(JU4 0 r	- ~~~~	
HGM Control Delay (s)		25.9		0.000.2000.	A'2	U	
HCM Lane LOS	8003688308	D	- 	-	A	A	
HCM 95th %tile Q(veh)		0.9		-	ິບ	energia delasti Alexanderateria	



	٨		V	F		*	*	Ť	M	1	¥	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	1.			ф э			43			\$	
Traffic Volume (vph)	55	195	26	1	767	24	97	Ō	5	8	Ō	92
Future Volume (vph)	55	195	26	1	767	24	97	0	5	8	0	92
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	4.8	3.7
Total Lost time (s)	5.9	5.9			5.9			6.0			6.0	
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	
Frt	1.00	0.98			1.00			0.99			0.88	
Fit Protected	0.95	1.00			1.00			0.95			1.00	
Satd. Flow (prot)	1729	1788			1812			1726			1780	
Fit Permitted	0.37	1.00			1.00			0.82			0.96	
Satd. Flow (perm)	671	1788			1812			1480			1720	
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)	55	195	26	1	767	24	97	0	5	8	0	92
RTOR Reduction (vph)	0	4	0	0	1	0	0	35	0	0	80	0
Lane Group Flow (vph)	55	217	0	0	791	0	0	67	0	0	20	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	44.4	44.4			44.4			8.7			8.7	
Effective Green, g (s)	44.4	44.4			44.4			8.7			8.7	
Actuated g/C Ratio	0.68	0.68			0.68			0.13			0.13	
Clearance Time (s)	5.9	5.9			5.9			6.0			6.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)	458	1221			1237			198			230	
v/s Ratio Prot		0.12										
v/s Ratio Perm	0.08				0.44			c0.05			0.01	
v/c Ratio	0.12	0.18			0.64			0.34			0.09	
Uniform Delay, d1	3.6	3.7			5.8			25.5			24.7	
Progression Factor	1.00	1.00			1.00			1.00			1.00	
Incremental Delay, d2	0.5	0.3		*	2.5			1.0			0.2	· · · · · · · ·
Delay (s)	4.1	4.0			8.3			26.6			24.8	
Level of Service	А	А			А			С			С	
Approach Delay (s)		4.0			8.3			26.6			24.8	
Approach LOS		А			А			С			С	
Intersection Summary												
HCM 2000 Control Delay			10.2	Н	CM 2000	Level of S	Service		В			
HCM 2000 Volume to Capaci	ty ratio		0.59									
Actuated Cycle Length (s)			65.0	S	um of lost	time (s)			11.9			
Intersection Capacity Utilization	on		69.9%	IC	CU Level o	of Service			С			
Analysis Period (min)			15									

c Critical Lane Group

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	î,		<u> </u>	¢\$>	<u> </u>		¢.			4	
Traffic Volume (vph)	109	886	41	2	362	3	75	ō	3	7	0	86
Future Volume (vph)	109	886	41	2	362	3	75	0	3	7	0	86
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	4.8	3.7
Total Lost time (s)	5.9	5.9			5.9			6.0			6.0	
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	
Frnb. ped/bikes	1.00	1.00			1.00			1.00			0.98	
Finh ned/hikes	1.00	1.00			1.00			1.00			1.00	
Frt	1.00	0.99			1.00			0.99			0.88	
Fit Protected	0.95	1 00			1 00			0.95			1.00	
Satd Flow (prot)	1726	1808			1817			1724			1743	
Elt Permitted	0.54	1 00			1 00			0.80			0.97	
Satd Flow (nerm)	986	1808			1812			1441			1691	
Deak hour faster PUE	1.00	1.00	1.00	1 00	1 00	1.00	1 00	1 00	1 00	1.00	1.001	1 00
Adi Clow (unb)	1.00	1.00	1.00	1.00	060	00.1	75	1.00	1.00	7	1.00	38
Auj. Flow (vpi)	109	000	41	2	302	0	70	21	0 0	0	76	00
HIOR Reduction (vpn)	100	000	0	0	067	0	0	47	0	0	17	0
Lane Group How (vpn)	109	920	U	U	307	U 0	U 1	47	0	0	17	U 4
Conii. Peas. (#/nr)	2	00/	00/	00/	00/	<u>~</u>	1	00/	ے /0/	ے /0/	<u>00/</u>	1
Heavy venicies (%)	0%	0%	0%	0%	0%	0%	0%	0%	076	0% Darm	070	070
Turn Type	Perm	NA		Perm	NA		Perm	INA O		Perm	NA 4	
Protected Phases	0	2		0	b		•	8			4	
Permitted Phases	2			6	65 4		8			4	0.4	
Actuated Green, G (s)	55.1	55.1			55.1			8.4			8.4	
Effective Green, g (s)	55.1	55.1			55.1			8.4			8.4	
Actuated g/C Hatio	0.73	0.73			0.73			0.11			0.11	
Clearance Time (s)	5.9	5.9			5.9			6.0			6.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)	720	1321			1324			160			188	
v/s Ratio Prot		c0.51										
v/s Ratio Perm	0.11				0.20			c0.03			0.01	
v/c Ratio	0.15	0.70			0.28			0.29		······	0.09	
Uniform Delay, d1	3.1	5.6			3.4			30.8			30.1	
Progression Factor	1.00	1.00			1.00			1.00			1.00	
Incremental Delay, d2	0.4	3.1			0.5			1.0			0.2	
Delay (s)	3.5	8.7			3.9			31.8			30.3	
Level of Service	А	А			А			С			С	
Approach Delay (s)		8.2			3.9			31.8			30.3	
Approach LOS		А			А			C			С	
Intersection Summary												
HCM 2000 Control Delay			9.7	Н	CM 2000	Level of S	Service		А			
HCM 2000 Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			75.4	S	um of lost	time (s)			11.9			
Intersection Capacity Utilization			99.5%	ICU Level of Service F								
Analysis Period (min)			15									
c Critical Lane Group												

Future Total (2027) PM - Signalized Access WSP Canada Inc.