



1 Rosetta Street, Town of Halton Hills Transportation Impact and Parking Study Update

Paradigm Transportation Solutions Limited

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Executive Summary

Content

Lev Developments Inc. retained Paradigm Transportation Solutions Limited to conduct this Transportation Impact Study (TIS) and Parking Study for a residential development located at 1 Rosetta Street in the Town of Halton Hills.

This study is an update to the May 2023 Transportation Impact Study and Parking Study completed for the site. This study reflects changes in the development concept and is intended to address comments received from the Town of Halton Hills.

Development Concept

The development proposal includes an 8-storey residential building containing 151 residential units and two interconnected 12-storey residential buildings containing 508 residential units with a 118 m² (1,267 sq.ft.) amenity flex space. The proposal includes approximately 659 residential units.

Vehicle access to the site is proposed by a driveway to Rosetta Street and a driveway to Caroline Street. As part of the proposed development, St. Michaels Street will be extended from its current terminus at Caroline Street north through an unopened road allowance to John Street.

The site's parking supply is identified as 847 parking spaces (1.29 spaces per unit). The site plan identifies an allocation of 776 occupant spaces (1.18 spaces per unit) and 71 visitor spaces (0.11 spaces per unit).

Conclusions

Based on the investigations carried out, it is concluded that:

Transportation Impact Assessment

- ▶ **Base Year Traffic Operations:** All study area intersections are forecast to operate at acceptable levels of service during the AM and PM peak hour with the following critical movements noted:

Mountainview Road North and River Drive (AM Peak Hour):

- Westbound approach is forecast to operate with delays in the LOS E range with a v/c ratio surpassing 0.85.



- ▶ **Estimated Site Generated Traffic:** The subject site is estimated to generate approximately 207 vehicle trips during the AM peak hour and 236 vehicle trips during the PM peak hour.
- ▶ **Transportation Demand Management:** The site concept plan includes a robust TDM program that can assist in mitigating the site's transportation and parking impacts on the adjacent road network, promote a strong and vibrant economy, and create a livable community that has a balanced transportation network.
- ▶ **Background Traffic Operations – Five-Year Horizon:** The study area intersections are forecast to operate at acceptable levels of service similar to existing traffic conditions during the AM and PM peak hours with the following additional critical movements noted:

Mountainview Road North and River Drive (PM Peak Hour):

- Westbound approach is forecast to operate with delays in the LOS D range with a v/c ratio surpassing 0.85.

Mountainview Road North and John Street (PM Peak Hour):

- Northbound left-turn movement is forecast to have a 95th percentile queue length surpassing the available storage lane length.

- ▶ **Background Traffic Operations – Ten-Year Horizon:** The study area intersections are forecast to operate at acceptable levels of service similar to five-year background traffic conditions during the AM and PM peak hours with the following additional critical movement noted:

Mountainview Road North and River Drive (PM Peak Hour):

- Overall, the intersection is forecast to operate with delays in the LOS C range and a v/c ratio of 0.85.

- ▶ **Total Traffic Operations – Five-Year Horizon:** The study area intersections are forecast to operate at acceptable levels of service similar to the five-year background traffic conditions during the AM and PM peak hours with the following additional critical movements noted:

Mountainview Road North and River Drive (PM Peak Hour):

- Northbound left-turn/through movement is forecast to operate with delays in the LOS E range with a v/c ratio surpassing 1.00; and
- Overall, the intersection is forecast to operate with delays in the LOS D range and a v/c ratio equal to 1.00.



- ▶ **Total Traffic Operations – Ten-Year Horizon:** The study area intersections are forecast to operate at acceptable levels of service similar to ten-year background traffic conditions during the AM and PM peak hours with the following additional critical movement noted:

Mountainview Road North and River Drive (PM Peak Hour):

- Northbound left-turn/through movement is forecast to operate with delays in the LOS F range with a v/c ratio surpassing 1.00.

- ▶ **Sensitivity Analysis**

- **McNab Street Underpass Closure:** The closure of the McNab Street underpass will have a negligible impact on site traffic impacts. Under ten-year total traffic conditions, the reported critical movements will remain the same regardless of if the McNab Street underpass is closed or not.

The town should conduct a thorough study to understand the full impact of the underpass on traffic, active transportation users and any potential impacts on local businesses and area residents.

- **130 Mountainview Road:** The addition of the 130 Mountainview Road development is forecast to cause traffic operations to deteriorate at the intersection of Mountainview Road and River Drive. A detailed assessment of the capacity deficiencies and any required mitigation measures should be explored and addressed by the applicant of 130 Mountainview Road.

- ▶ **Remedial Measures:** To manage the expected traffic growth (background and site generated traffic) at the Mountainview Road North and River Drive intersection, the road authority should consider the following changes:

- Optimize signal timings with permissive-protected northbound and westbound left-turn phases;
- Reduce the southbound approach to one shared through/right lane and one left-turn lane with 50 metres of storage; and
- Provide a northbound left-turn lane with 60 metres of storage.

The reconfiguration of the northbound and southbound lane groupings appears to be feasible without modifications to the existing pavement width. The revised lane configuration can



likely be achieved by modifying the existing pavement markings and signage.

Parking Study

The site's proposed parking supply is identified as 847 spaces with an allocation of 776 spaces for occupants and 71 spaces for visitors.

- ▶ The site's parking supply does not meet the Town's zoning by-law requirement.
- ▶ The Town's TMP and the Region's OP both emphasise the need of influencing travel behaviour to encourage transit and active transportation in order to achieve multi-modal access through policies such as Transportation Demand Management (TDM), transit programmes, and walking and cycling.
- ▶ Vehicle ownership data from the Transportation Tomorrow Survey (TTS) for apartment units in zones surrounding GO Transit stations along the Kitchener Line between Kitchener and Mount Pleasant indicate an occupant parking demand for the subject site of 396 spaces. Visitor parking is not included in this calculation. Including the visitor parking demand, estimated by the Zoning By-law, 165 visitor parking spaces, the overall parking demand for the site is estimated to be 561 spaces.
- ▶ The ITE Parking Generation Manual indicates a parking demand ranging from 693 to 704 parking spaces (occupant and visitor).
- ▶ Proxy site data from multiple sites with similar neighbourhood characteristics indicates a parking demand of approximately 618 spaces (occupant and visitor). With a parking supply of 847 spaces, the site's parking demand is forecast to be less than the proposed supply.
- ▶ The TDM Checklist from the Region of Waterloo identifies a total of 13% reduction in parking spaces based on the proposed TDM program. This results in a forecast parking demand of 538 spaces.
- ▶ Using several different methodologies, the proposed development is estimated to have a parking demand in the order of 538 spaces to 704 spaces. With a parking supply of 847 spaces, the site's parking demand is forecast to be accommodated by the on-site parking.
- ▶ The following site-specific parking rates are suitable for the proposed development and supported by published and proxy site parking data:



- Phase 1 – 1.36 spaces per unit (1.15 occupant spaces/unit and 0.21 visitor spaces/unit);
- Phase 2 – 1.38 spaces per unit (1.26 occupant spaces/unit and 0.12 visitor spaces/unit); and
- Phase 3 – 1.29 spaces per unit (1.18 occupant spaces/unit and 0.11 visitor spaces/unit).

Recommendations

Based on the findings of this study, it is recommended that:

- ▶ The site's TDM program be implemented and monitored over time to help manage the site's transportation and parking impacts.
- ▶ The road authority considers the following at the intersection of Mountainview Road North and River Drive:
 - Optimize signal timings with permissive-protected northbound and westbound left-turn phases;
 - Reduce the southbound approach to one shared through/right lane and one left-turn lane with 50 metres of storage; and
 - Provide a northbound left-turn lane with 60 metres of storage.

The revised lane configuration can likely be achieved by modifying the existing pavement markings and signage.



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1 Introduction

This study is an update to the May 2023 Transportation Impact Study and Parking Study¹ completed for the site. This study reflects changes in the development concept and is intended to address comments received from the Town of Halton Hills.

1.1 Overview

Lev Developments Inc. retained Paradigm Transportation Solutions Limited to conduct this Transportation Impact Study (TIS) and Parking Study for a residential development located at 1 Rosetta Street in the Town of Halton Hills (Georgetown). The development application requires an Official Plan Amendment and Zoning By-law Amendment

Figure 1.1 illustrates the site location. The subject site is located at 1 Rosetta Street in the Town of Halton Hills. The site borders the Georgetown GO Station, and the area is designated as a Major Transit Station Area (MTSA).

The scope of the study includes:

- ▶ Assessment of the current traffic conditions within the study area;
- ▶ Estimates of background traffic growth;
- ▶ Estimates of additional traffic generated by the subject site;
- ▶ Analyses of the impact of the future traffic on the study area road network;
- ▶ Recommendations necessary to mitigate the site generated traffic in a satisfactory manner;
- ▶ A preliminary review of truck turning plans to ensure compliance with review agency requirements and applicable industry guidelines. Additional truck turning plans may be required at the Site Plan Approval stage of development (SPA).
- ▶ A preliminary signage plan. Revisions to the plan may be required at SPA.
- ▶ Forecast of the site's parking generation; and
- ▶ Development of a Transportation Demand Management (TDM) plan to mitigate the site's transportation and parking impacts. Updates to the TDM plan may be required at SPA.

¹ Paradigm Transportation Solutions Ltd., 1 Rosetta Street, Town of Halton Hills, ON Transportation Impact and Parking Study, May 2023.



Appendix A contains the pre-study consultation material and responses from Town of Halton Hills. The study generally follows the Halton Region Transportation Impact Study Guidelines.²

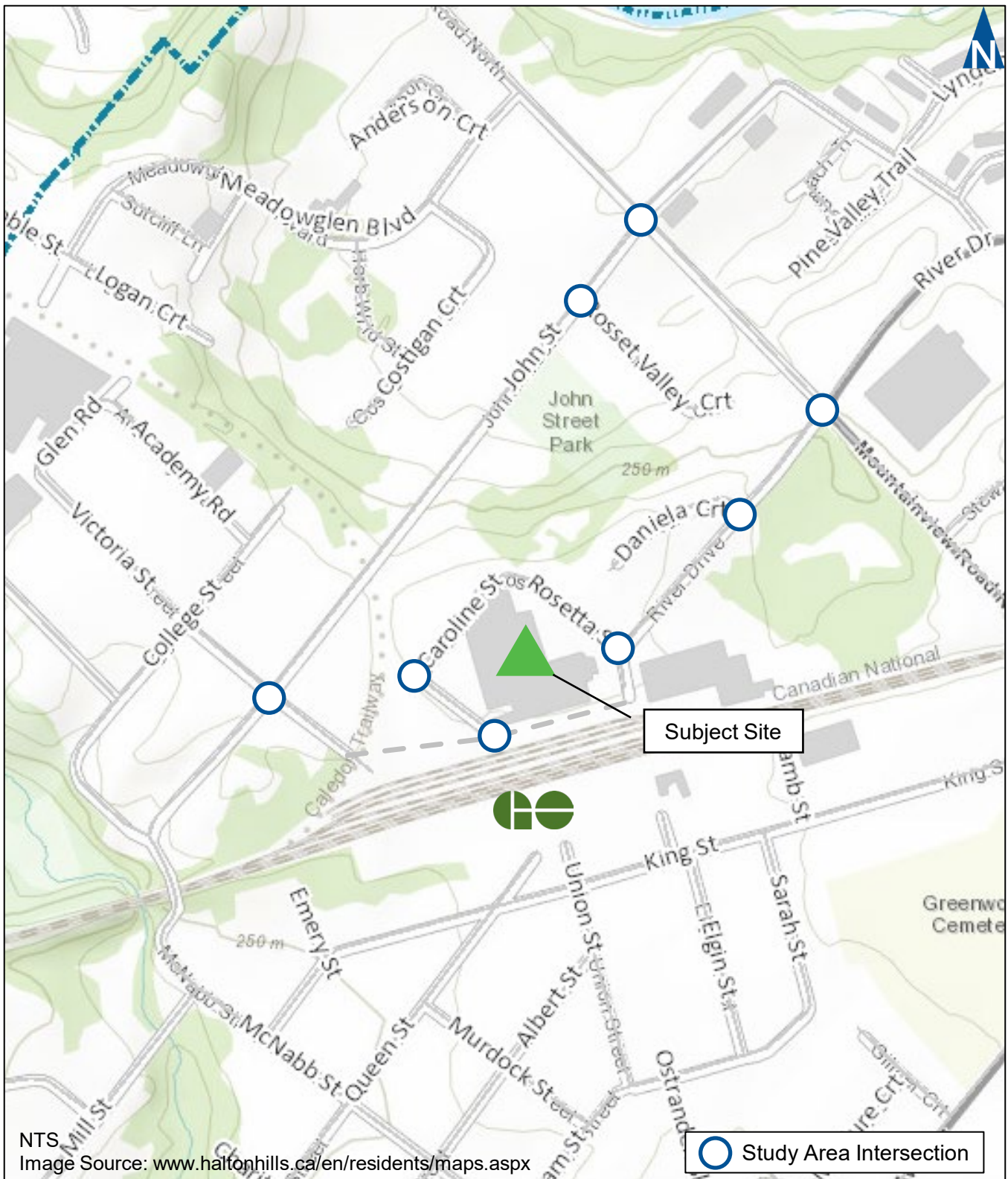
1.2 Study Area

The study area intersections assessed in this study include:

- ▶ Mountainview Road North and River Drive (signalized);
- ▶ Mountainview Road North and John Street (unsignalized);
- ▶ River Drive and Daniela Street (unsignalized);
- ▶ River Drive and Rosetta Street (unsignalized);
- ▶ River Drive and St. Michaels Street/GO Parking Driveway (unsignalized);
- ▶ St. Michaels Street (existing and future) and Caroline Street (uncontrolled);
- ▶ John Street and Rosset Valley Court. (unsignalized);
- ▶ John Street and Victoria Street (unsignalized); and
- ▶ The two proposed site driveways.

² Transportation Impact Study Guidelines, Halton Region, January 2015





Site Location

Figure 1.1

2 Existing Conditions

2.1 Road Characteristics

The roadways of interest within the study area include:

- ▶ **Mountainview Road North** is a north-south minor arterial³ roadway with an urban cross-section and a posted speed limit of 50 km/h. South of River Drive the roadway has a four-lane cross section. North of River Drive, the roadway has a two-lane cross-section and a posted speed limit of 50 km/h. Sidewalks are provided on both sides of this roadway. The intersection with River Drive is signalized.
- ▶ **River Drive** is an east-west two-lane roadway with a posted speed limit of 50 km/h. East of Mountainview Road North, the roadway is classified as a minor arterial and sidewalks are provided on both sides of this roadway. West of Mountainview Road North, the roadway is classified as a local roadway and is a part of a traffic calmed neighbourhood with sidewalk on the north side of this roadway. Two speed humps are located between Mountainview Road North and Rosetta Street.
- ▶ **Rosetta Street** is a north-south two-lane roadway with a statutory speed limit of 50 km/h. No sidewalks are provided along this roadway and no on-street parking restrictions are noted. The intersection with River Road is unsignalized with stop control on the southbound approach and yield control on the northbound approach. For analysis purposes the intersection is assumed to operate as stop control for the southbound leg only.
- ▶ **John Street** is an east-west two-lane local roadway with a posted speed limit of 50 km/h. West of Mountainview Road North the roadway is part of a traffic calmed neighbourhood. Two speed humps are located between Mountainview Road North and Victoria Street. Sidewalks are provided along the south side of this roadway with intermittent sections where sidewalks are provided on both sides. A parking lane is provided on the north side of this roadway between Victoria Street and Mountainview Road North and on-street parking is restricted on the south side of this roadway. The intersections with Mountainview Drive North and Victoria Street are unsignalized with all-way stop control.

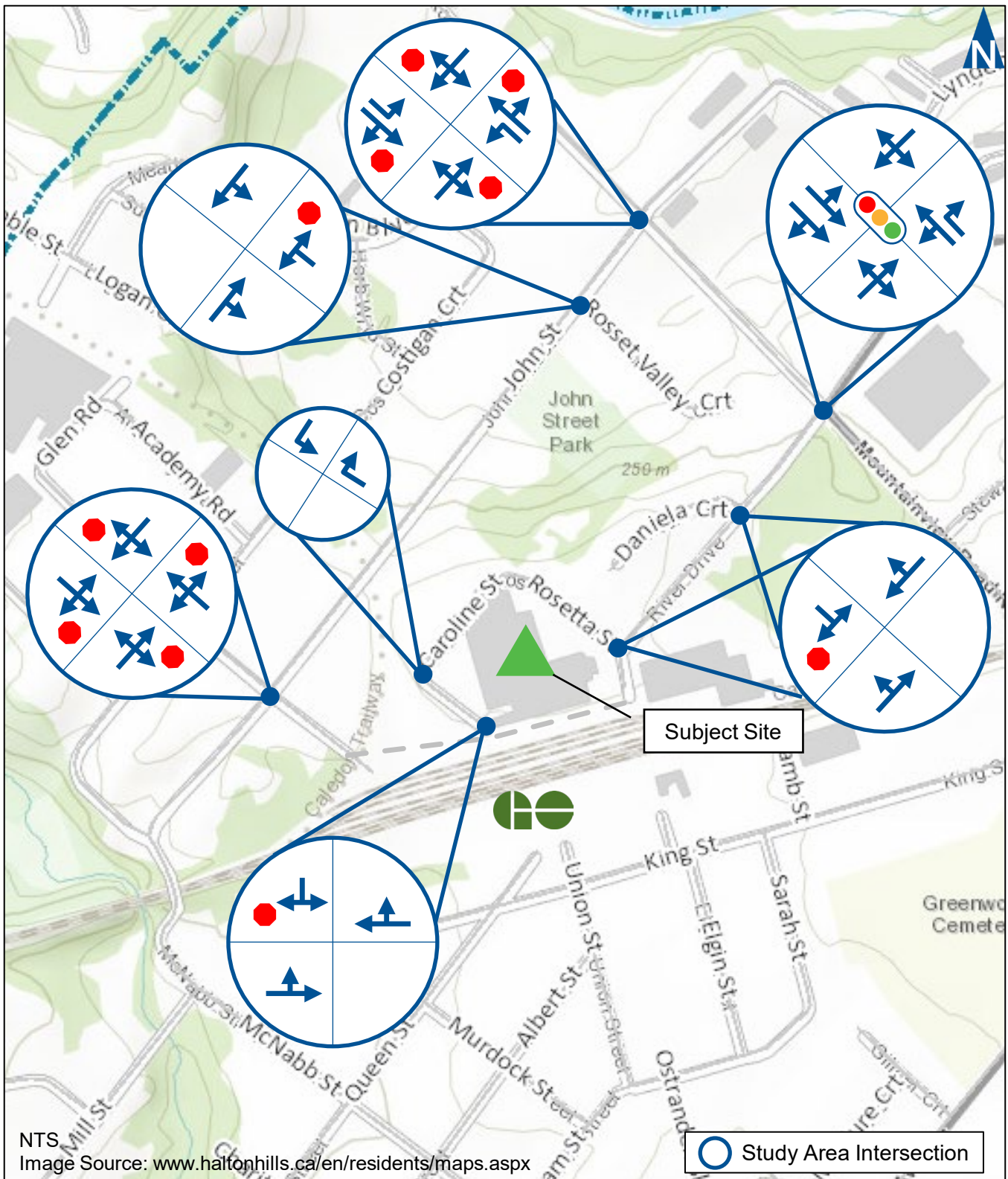
³ Town of Halton Hills Official Plan, Schedule B1: Functional Plan of Major Transportation Facilities, December 2020



- ▶ **St. Michaels Street** is a north-south two-lane roadway with a statutory speed limit of 50 km/h. No sidewalks are provided along this roadway and no on-street parking restrictions are noted. The intersection with River Road is unsignalized, stop control is provided on the St. Michaels Street approach and the GO transit driveway approach. For analysis purposes, stop control on only the southbound approach is assumed.
- ▶ **Caroline Street** is an east-west two-lane roadway with a statutory speed limit of 50 km/h. Sidewalks are provided along the north side of this roadway and no on-street parking restrictions are noted. The intersections with St. Michaels Street and Rosetta Street are uncontrolled and function as a bend in the roadway.
- ▶ **Victoria Street** is a north-south two-lane roadway with a statutory speed limit of 50 km/h. Sidewalks are provided along the east side of this roadway and on-street parking is restricted on the west side of this roadway.

Figure 2.1 illustrates the existing traffic control and lane configurations at the study area intersections.





Existing Traffic Control and Lane Configuration

2.2 Walking

Sidewalks are provided on both sides of Mountainview Road North and on one side of John Street, Victoria Street and River Street and Caroline Street. There are no sidewalks provided on Rosetta Street and St. Michaels Street.

Crosswalks are provided on the west and north legs of the signalized Mountainview Road North and River Drive intersection. No crosswalks are provided on the east and south legs as sidewalks do not exist on the south side of River Drive or the west side of Mountainview Road North. Crosswalks are provided on all approaches at the all-way stop controlled intersections of John Street at Victoria Street and Mountainview Road North.

2.3 Cycling

The Town of Halton Hills' active transportation network provides some cycling facilities within the immediate area. A signed bike route is provided on John Street from McNabb Street to the off-road route from John Street to Wildwood Road (Wildwood Trail) and an urban shoulder is provided on River Drive east of Mountainview Road North.

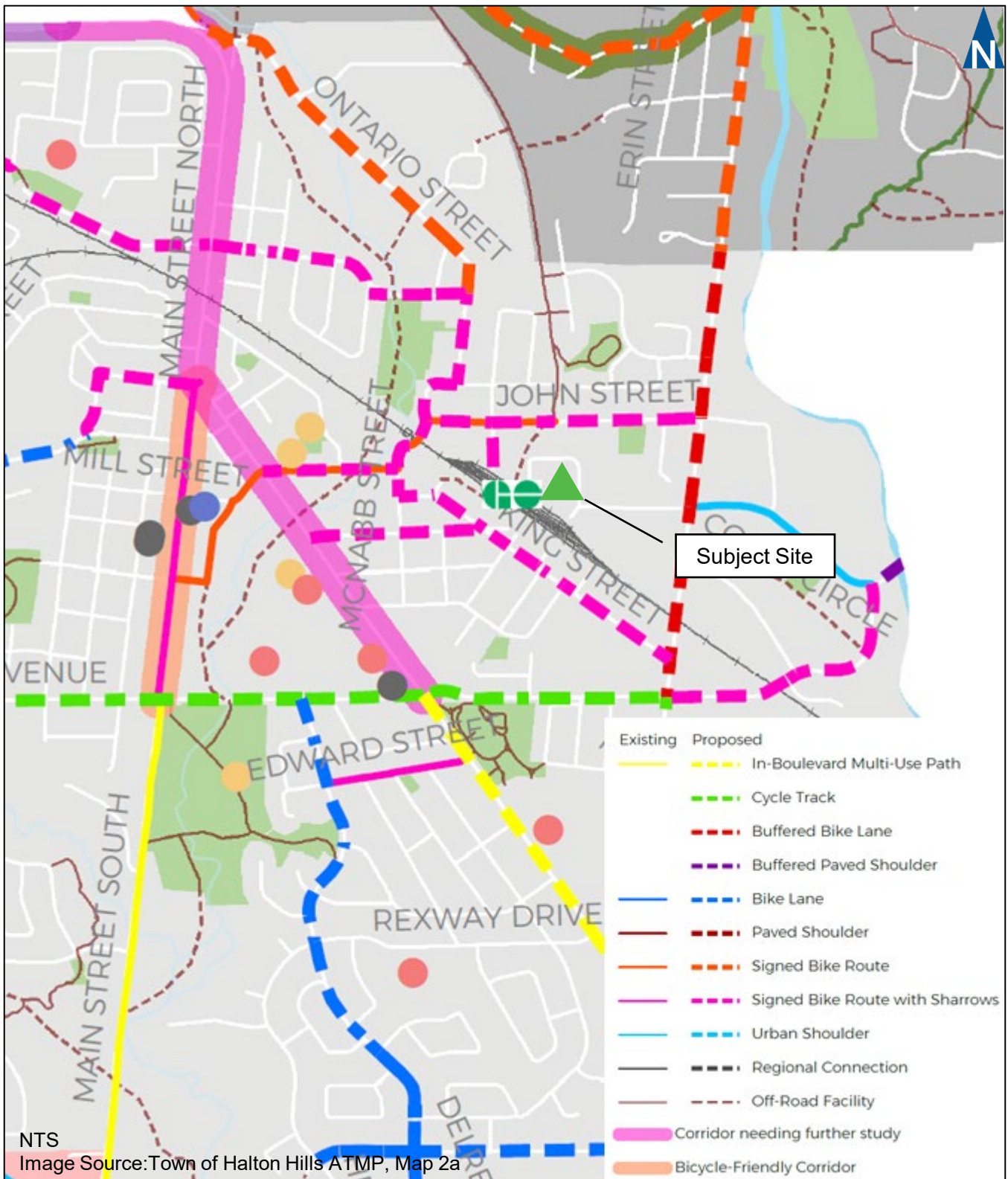
The Town of Halton Hills Active Transportation Master Plan (ATMP)⁴ identifies the following proposed cycling facilities within the immediate area:

- ▶ Signed bike route with sharrows on John Street (from McNab Street to Mountainview Road North);
- ▶ Signed bike route with sharrows on Victoria Street (from John Street to GO Transit station);
- ▶ Buffered bike lane on Mountainview Road North; and
- ▶ Off-road route connection from GO Transit station to existing off-road route on John Street.

Figure 2.2 illustrates the existing and proposed cycling network.

⁴ Town of Halton Hills Active Transportation Master Plan, Map 2a – Proposed On-Road Facility Types, October 2020





Cycling Network

Figure 2.2

2.4 Transit Service

Transit service in the area is provided by GO Transit and is centralized around the Georgetown GO Station located at 55 Queen Street. GO Transit offers both train and bus service from the Georgetown GO Station.

The walking time to the Georgetown GO Station from the subject site is under 2 minutes (200 m) with stops located directly opposite the site north of the rail line. Longer walk times are needed to reach the Georgetown GO Station building located on the south side of the rail line. The cycling time to the Georgetown GO Station is also under 2 minutes.

The Georgetown GO Train station platforms are accessible from areas north and south of the tracks and are connected via an underground walkway. GO Train service is provided Monday to Friday in the eastbound direction in the morning peak period and in the westbound direction during the evening peak period, with headways generally every 30 to 45 minutes. Metrolinx is planning to improve GO Train service along the Kitchener Line with two-way, all-day service.

The GO Bus station is located on the north side of the rail corridor on River Drive. GO Bus Route 31 and 33 service the Georgetown GO Station, GO Bus service is provided 7 days a week.

Figure 2.3 illustrates the existing transit network⁵.

Figure 2.4 illustrates the existing transit stops within 500 m of the subject site⁶. The closest bus stops to the subject site are located at the Georgetown GO Bus station on River Drive.

⁵ Go Transit System Map, 2023

⁶ <https://www.triplinx.ca/>





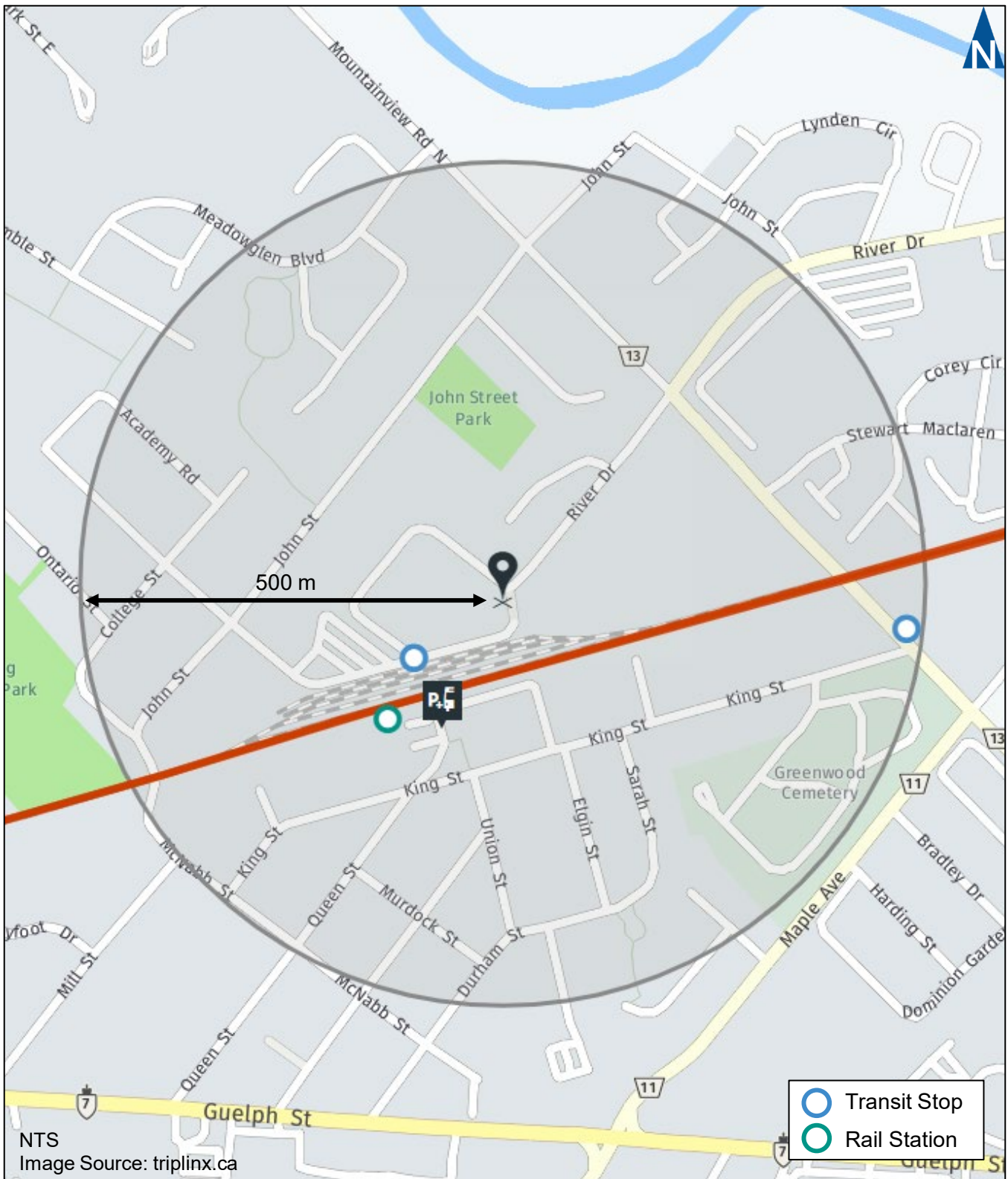
System Map Plan du réseau



NTS
Image Source: Go Transit System Map, 2023



Existing Transit Network



Existing Transit Stops

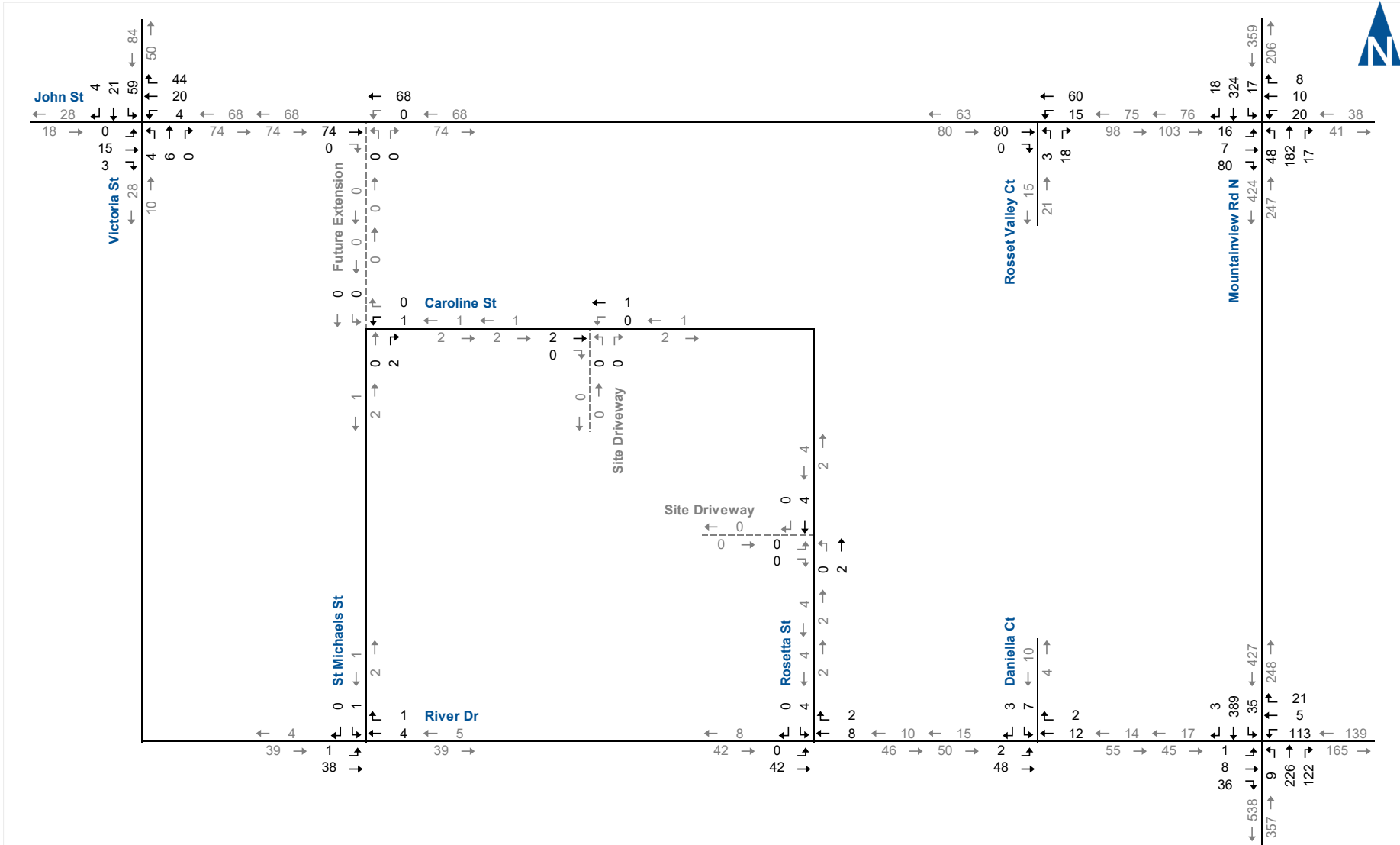
Figure 2.4

2.5 Traffic Volumes

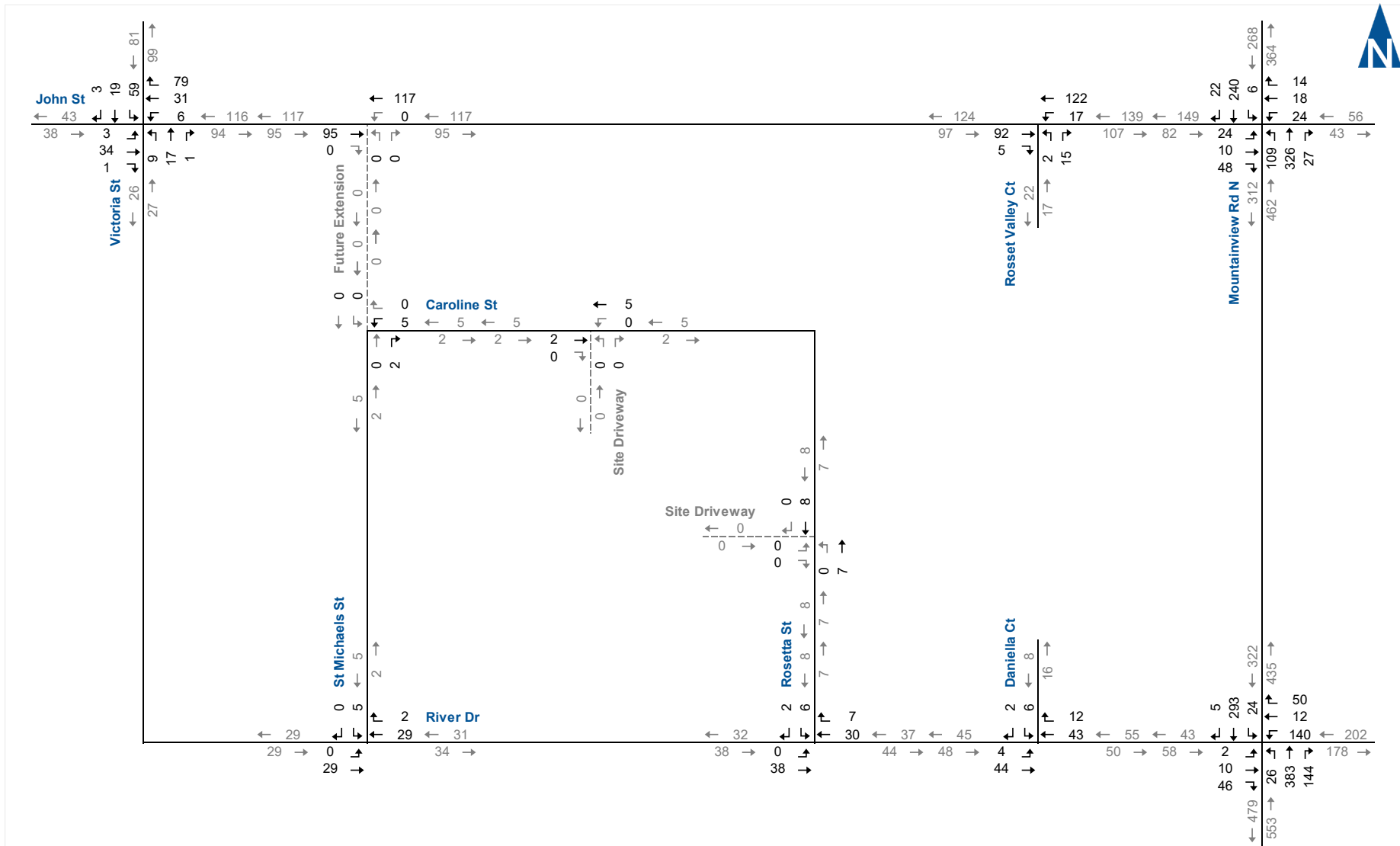
Turning movement counts were collected at the study area intersections by Paradigm in March 2022 at the direction of the Town of Halton Hills. Traffic counts were grown to a Year 2024 base year using a 2% per annum growth rate as outlined by the Town.

Figures 2.5 and 2.6 illustrate the base year weekday AM and PM peak hour traffic volumes at the study area intersections. **Appendix B** contains the existing count and signal timing data.





Base Year Traffic Volumes AM Peak Hour



Base Year Traffic Volumes PM Peak Hour

2.6 Traffic Operations

Intersection level of service (LOS) is a recognized method of quantifying the efficiency of traffic flow at intersections. It is based on the delay experienced by individual vehicles executing the various movements. The delay is related to the number of vehicles desiring to make a movement, compared to the estimated capacity for that movement. The capacity is based on several criteria related to the opposing traffic flows. The highest possible rating is LOS A, under which the average total delay is equal or less than 10 seconds per vehicle. When the average delay exceeds 80 seconds at signalized intersections (50 seconds at unsignalized), the movement is considered to have a LOS F, and remedial measures are usually implemented if they are feasible.

The operations of the intersections in the study area were evaluated using the existing lane configuration, traffic control, existing base year traffic volumes and signal timings. The intersection analysis considered the following measures of performance:

- ▶ The LOS for each turning movement: LOS is based on the average control delay per vehicle;
- ▶ The volume to capacity ratio for each intersection; and
- ▶ 95th percentile queue length (m), which are estimated from an average of five 60-minute simulations with a 15-minute seeding interval from the SimTraffic module.

Synchro 11 was used to determine traffic operations at the study area intersections. In accordance with the Halton Region's TIS Guidelines⁷, the following criteria were used in the determination of critical movements:

- ▶ At signalized intersections,
 - Overall intersection operations, through movements, or shared through/turning movements increased to 0.85 or above.
 - V/C ratios for exclusive movements increased to 0.95 or above; or
 - Queues for an individual movement are projected to exceed turning lane storage.
- ▶ At unsignalized intersections,

⁷ Transportation Impact Study Guidelines, Halton Region, January 2015



- LOS, based on average delay per vehicle, on individual movements exceeds LOS “D”; or
- The estimated 95th percentile length for an individual movement exceeds the available queue storage.

Table 2.1A-B summarizes the results of the analysis for the base year intersection operations. The following critical movement is noted:

AM Peak Hour:

- ▶ Mountainview Road North and River Drive:
 - Westbound approach is forecast to operate with delays in the LOS E range with a v/c ratio surpassing 0.85.

Appendix C contains the supporting detailed Synchro and SimTraffic reports.



TABLE 2.1A: BASE YEAR OPERATIONS – AM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall	
				Eastbound				Westbound				Northbound				Southbound					
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach		
AM Peak Hour	Mountainview Road N & River Drive	TCS	LOS Delay V/C Q	< < < <	C 25 0.07 16	> > > >	C 25	< < < <	E 64 0.87 52	> > > >	E 64	< < < <	A 8 0.25 32	> > > >	A 7	< < < <	A 8 0.25 26	> > > >	A 8	B 16 0.38	
	Mountainview Road N & John Street	AWSC	LOS Delay D. Util Q Stor. Avail.	< < < <	A 9 0.16 16 - -	> > > >	A 9	< < < <	A 9 0.07 15 - -	> > > >	A 9	< < < <	A 8 0.09 18 30 12	> > > >	A 9	< < < <	A 8 0.03 11 30 19	> > > >	B 12		
	River Drive & Daniella Street	TWSC	LOS Delay V/C Q	< < < <	A 0 0 0	> > > >	A 0	< < < <	A 0 0.01 0	> > > >	A 0	< < < <		> > > >		< < < <	A 9 0.01 10	> > > >	A 9		
	River Drive & Rosetta Street	TWSC	LOS Delay V/C Q	< < < <	A 0 0.00 0	> > > >	A 0	< < < <	A 0 0.01 0	> > > >	A 0	< < < <		> > > >		< < < <	A 9 0.00 7	> > > >	A 9		
	Victoria Street/River Drive & St Michaels Street	TWSC	LOS Delay V/C Q	< < < <	A 0 0.00 0	> > > >	A 0	< < < <	A 0 0.00 0	> > > >	A 0	< < < <		> > > >		< < < <	A 9 0.00 2	> > > >	A 9		
	Rosset Valley Court & John Street	TWSC	LOS Delay V/C Q	< < < <	A 0 0.06 0	> > > >	A 0	< < < <	A 2 0.01 2	> > > >	A 2	< < < <	A 9 0.03 11	> > > >		< < < <	A 9	> > > >			
	Victoria Street & John Street	AWSC	LOS Delay D. Util Q	< < < <	A 7 0.02 12	> > > >	A 7	< < < <	A 7 0.09 16	> > > >	A 7	< < < <	A 7 0.01 8	> > > >		< < < <	A 7	< < < <	A 8 0.12 16	> > > >	A 8

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TCS - Traffic Control Signal

TWSC - Two-Way Stop Control

AWSC - All-Way Stop Control

</> - Shared Movement

D. Util - Degrees of Utilization



TABLE 2.1B: BASE YEAR OPERATIONS – PM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall	
				Eastbound				Westbound				Northbound				Southbound					
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach		
PM Peak Hour	Mountainview Road N & River Drive	TCS	LOS < < < < Delay < < < < V/C < < < < Q < < < <	C 23 0.07 17	>	C 23	<	D 42 0.79 46	>	D 42	<	B 12 0.49 52	>	A 9 0.13 24	>	B 11	<	A 9 0.22 24	>	A 9	B 17 0.57
	Mountainview Road N & John Street	AWSC	LOS < < < < Delay < < < < D. Util < < < < Q < < < < Stor. < < < < Avail. < < < <	A 9 0.13 13 - -	>	A 9 0.09 14 - -	>	A 9 0.18 20 30 10	>	A 9	>	B 12 0.52 28 - -	>	B 12	<	A 8 0.01 6 30 24	>	B 11 0.40 23 - -	>	B 11	
	River Drive & Daniella Street	TWSC	LOS < < < < Delay < < < < V/C < < < < Q < < < <	A 1 0.00 1	>	A 0 0.04 0	>	A 0	>	A 0	>		>		>	A 9 0.01 8	>		>	A 9	
	River Drive & Rosetta Street	TWSC	LOS < < < < Delay < < < < V/C < < < < Q < < < <	A 0 0.00 0	>	A 0 0.03 0	>	A 0	>	A 0	>		>		>	A 9 0.01 8	>		>	A 9	
	Victoria Street/River Drive & St Michaels Street	TWSC	LOS < < < < Delay < < < < V/C < < < < Q < < < <	A 0 0.00 0	>	A 0 0.02 0	>	A 0	>	A 0	>		>		>	A 9 0.01 7	>		>	A 9	
	Rosset Valley Court & John Street	TWSC	LOS < < < < Delay < < < < V/C < < < < Q < < < <	A 0 0.07 0	>	A 1 0.01 2	>	A 1	>	A 9 0.02 9	>		>		>	A 9	>		>		
	Victoria Street & John Street	AWSC	LOS < < < < Delay < < < < D. Util < < < < Q < < < <	A 8 0.05 13	>	A 8 0.14 17	>	A 8	>	A 8 0.04 13	>		>		>	A 8	>	A 8 0.11 19	>	A 8	

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TCS - Traffic Control Signal

TWSC - Two-Way Stop Control

AWSC - All-Way Stop Control

</> - Shared Movement

D. Util - Degrees of Utilization



3 Development Concept

3.1 Development Description

The subject site is located at 1 Rosetta Street in the Town of Halton Hills. The development concept includes a total of 659 residential units. The proposal includes an 8-storey residential building containing 151 residential units and two interconnected 12-storey residential buildings containing 508 residential units with a 118 m² (1,267 sq.ft.) amenity flex space. The programming for the amenity flex space is not yet confirmed.

Figure 3.1 illustrates the concept plan.

The site is proposed to be built in three phases. Phase 1 will see one of the 12-storey towers built, containing 249 units. Phase 2 will be the second 12-storey tower with 259 units. Phase 3 will build out the 8-storey building with 151 units. Phases 1, 2, and 3 are assumed to be built-out by 2028, 2031, and 2033, respectively.

Vehicle access is proposed by a driveway to Rosetta Street and a driveway to Caroline Street. The Rosetta Street driveway is located approximately 30 metres (CL to CL) north of River Drive. Driver sightlines at the driveway are unobstructed to the stop-controlled intersection to the south and are limited to approximately 95 metres by the physical length of Rosetta Street.

The Rosetta Street driveway has been shifted north compared to the position of the driveway in the first submission. In addition, a raised centre median is proposed on Rosetta Street between the Driveway and River Drive. The raised centre median and the repositioned driveway prevents drivers from completing turning movements on shallow angles.

The Caroline Street driveway is located approximately 40 metres (CL to CL) west of Rosetta Street. Driver sightlines at the driveway are limited by the physical length of Caroline Street to approximately 40 metres to the east and 85 metres to the west.

The clear throat length for the Rosetta Street driveway is approximately 9 m; the distance to the travelled way of Rosetta Street is approximately 20 m. The clear throat length for the Caroline Street driveway is approximately 3.0 m; the distance to the travelled way of Caroline Street is approximately 12 m.



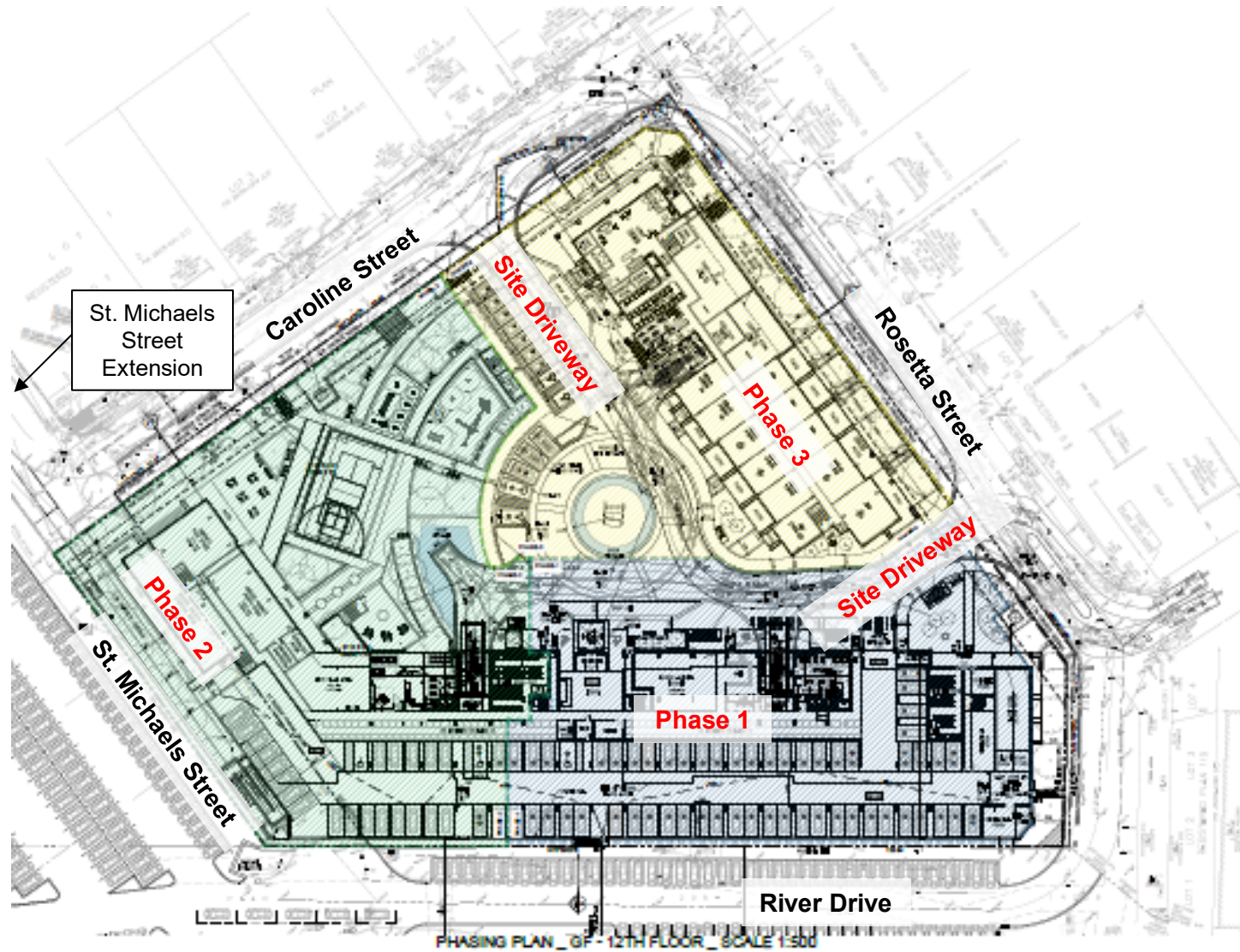
Two areas are provided on site to accommodate passenger pick-up and drop-off activity and are located near the lobby entrance of each building.

As part of the development, Rosetta Street, Caroline Street and St. Michaels Street will be urbanized with sidewalks provided along the site frontage to these roadways. Sidewalks are provided throughout the site and sidewalk connections to the road network are provided at the proposed driveways and from building exits fronting Rosetta Street and St. Michaels Street. A crash wall prevents sidewalk connection to the GO Transit drive aisle across the site's southern frontage.

As part of the development, St. Michaels Street will be extended from its current terminus at Caroline Street north through an unopened road allowance to John Street. The Town of Halton Hills will complete the detailed engineering review and construction of the extension. The St. Michaels Street extension will include sidewalks and a multi-use path connection to the GO Station.

The site's parking supply is identified as 847 parking spaces (1.29 spaces per unit). The site plan identifies an allocation of 776 occupant spaces (1.18 space per unit) and 71 visitor spaces (0.11 spaces per unit).





NTS



Site Concept Plan

3.2 Transportation Demand Management

To manage the sites' transportation and parking impacts, a robust TDM program is proposed. The following TDM measures are included in the site plan or will be provided by the site operator upon build-out:

► Walking

- Safe, attractive, and direct walkways for pedestrians linking building entrances with public sidewalks;
- All on-site sidewalks will conform to the Town of Halton Hills' design standards and the Accessibility for Ontarians with Disabilities Act (AODA) design standards;
- Continuous sidewalks along the site's frontage to Rosetta Street, Caroline Street, and St. Michaels Street (plus the extension),
- A proposed multi-use path connecting St. Michales Street to the GO Station; and
- The outdoor space will have amenities such as benches, seating areas, pedestrian scale lighting, sports court, playground, and wide sidewalks.

► Cycling

- A total of 508 bicycle parking spaces (0.77 spaces per unit)⁸ are proposed.
 - Long-term bicycle parking (442 spaces) is provided in secure indoor locations with four bicycle repair stations for occupants;
 - Short-term bicycle parking (66 spaces) are provided near main entrances and on the ground floor for ease of access; and
- Curb cut ramps adjacent to any bicycle parking will be considered to allow for improved accessibility.

► Transit

- Adaptive Transit Information – Accurate and live transit information that is accessible and delivered efficiently to encourage travel by transit. The provision of transit screens or message boards can inform occupants of when the next bus or train is arriving/departing. The screens can also provide other information such as weather or other important messages.

⁸ Town of Halton Hills Zoning By-Law 2010-0050, July 2010



- Subsidized transit passes will be provided to first time buyers who do not purchase a parking space;
- Transit information will be provided to residents.
- ▶ **Parking**
 - Reduced parking supply due to proximity to transit and provision of bike parking facilities;
 - Parking will be unbundled from the cost of the units, allowing occupants to purchase a unit without a parking space;
 - The parking supply will be managed by limiting the initial sale of parking spaces to one space per unit with the opportunity for units to purchase another space after the initial sale;
 - Parking costs will reflect the full cost of building and operating the parking facility; and
 - Visitor parking will be monitored and enforced to avoid disruption to the local community.
- ▶ **Car Share**
 - Two car share spaces and vehicles are proposed at-grade.
- ▶ **Wayfinding, Travel Planning, Education/Promotion**
 - Travel planning resources will be provided to residents (individualized marketing, active transportation maps, community resources, transit schedules);
 - Wayfinding signage to major destinations such as schools, public amenities, GO transit and commercial areas will be provided in the main lobbies of all buildings or near the main entrances; and
 - Marketing material will promote a strong TDM brand.

The above TDM measures can assist in mitigating the site's transportation and parking impacts on the adjacent road network, promote a strong and vibrant economy, and create a livable community that has a balanced transportation network. The monitoring and adjustment of the site's TDM program will be critical to the site's success. The TDM program may be updated at SPA.

Section 6.9 estimates the effectiveness of the proposed TDM program on parking generation.



3.3 Site Trip Generation

The Institute of Transportation Engineers (ITE) Trip Generation⁹ methods are used to estimate the site trip generation. The following Land Use Codes (LUC) were used to estimate the site's trip generation:

- ▶ 221 – Multifamily Housing, Mid-Rise (General Urban/Suburban);
- ▶ 222 – Multifamily Housing, High-Rise (General Urban/Suburban); and
- ▶ 565 – Day Care Center.

Table 3.1 summarizes the estimated trip generation for each phase and horizon year.

The subject site is forecast to generate approximately 207 vehicle trips during the AM peak hour and approximately 236 vehicle trips during the PM peak hour. As indicated by Town staff, it is preferred that no trip reductions are applied and to use the more conservative trip generation totals between the average and equation rates for all LUCs during the AM and PM peak hours.

The average rates for LUC 222 and LUC 221 (AM peak hour only) were selected for the trip generation as the rates forecast the more conservative trip totals. It is noted that the equation and average rates for LUC 221 during the PM peak hour forecast the same trip totals.

For Phase 2, it is noted that an amenity flex space totaling 117.7 m² (1,266 sq.ft.) of Gross Floor Area (GFA) is proposed. LUC 565 (Day Care Center) was selected for the amenity flex space trip generation as the resulting trip totals are conservative. Although, the amenity flex space could also function similar to a small office space.

⁹ Trip Generation Manual 11th Edition, Institute of Transportation Engineers, September 2021



TABLE 3.1: FORECAST SITE-GENERATED TRIPS

Phase	LUC	Units of Measure	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Phase 1 & 2	222	508 units	36	101	137	101	62	163
Phase 2	565	1.27 ft ² /1000	7	7	14	7	7	14
Phase 3	221	151 Units	13	43	56	36	23	59
Total Trip Generation			56	151	207	144	92	236

LUC 221 – AM: Average Rate = 0.37 | PM: $T = 0.39(X) + 0.34$

LUC 222 – AM: Average Rate = 0.27 | PM: Average Rate = 0.32

LUC 565 – AM: Average Rate = 11.00 | PM: Average Rate = 11.12

3.4 Trip Distribution and Assignment

The site generated automobile trips were assigned to the road network based on the information provided in the 2016 Transportation Tomorrow Survey (TTS)¹⁰ for the zone containing the subject site.

Table 3.2 summarizes the estimated site trip distribution. **Appendix D** contains the TTS data.

The majority of trips to the site are expected to use the Rosetta Street driveway. The Rosetta Street driveway provides the most direct connection to the existing road network. The entrance/exit to the site's parking structure is also located closest to Rosetta Street.

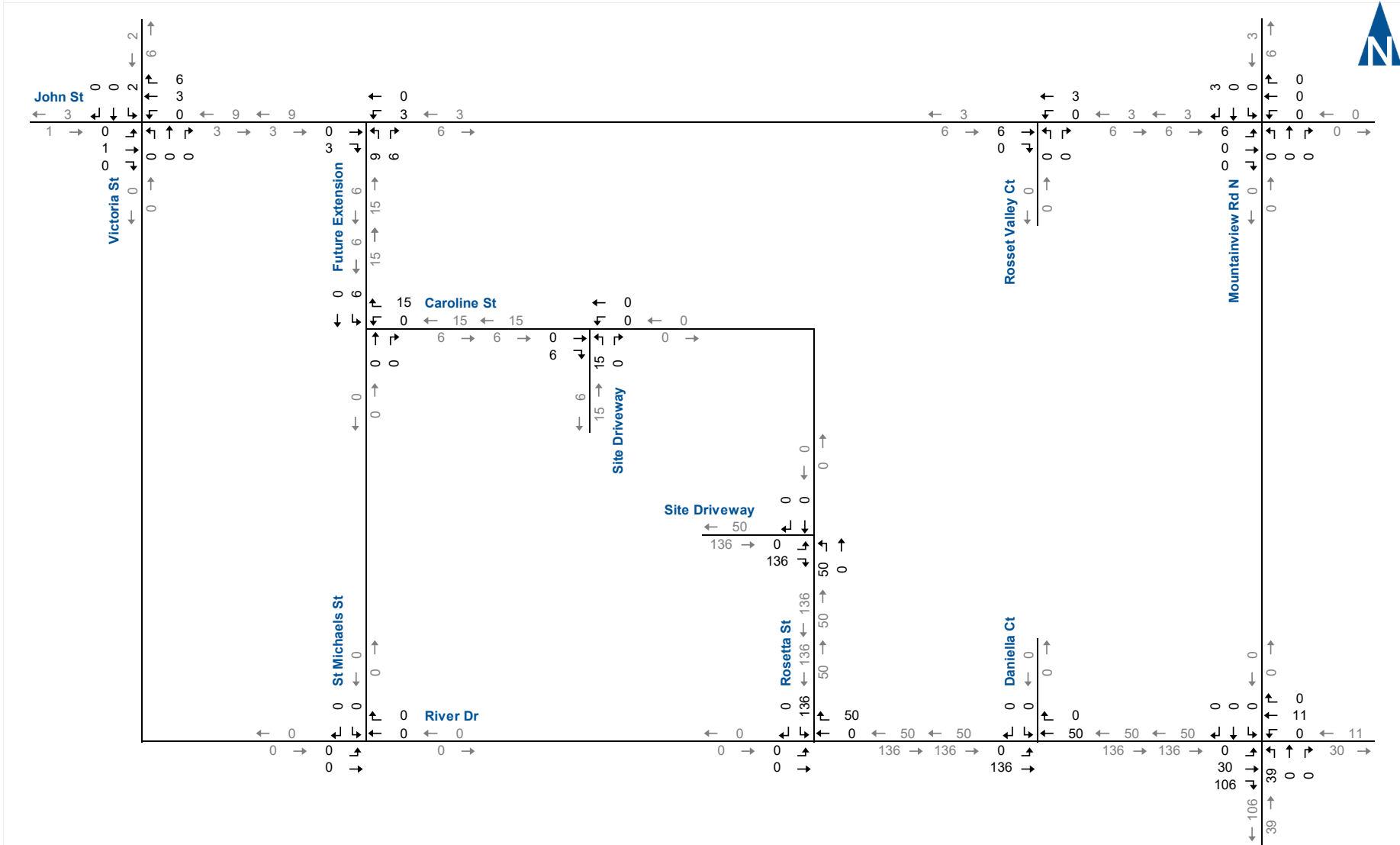
TABLE 3.2: TRIP DISTRIBUTION

Origin/Destination	Inbound / Outbound
North via Mountainview Road North	4%
North via Victoria Street	4%
East via River Drive	20%
South via Mountainview Road North	70%
West via John Street	2%
Total	100%

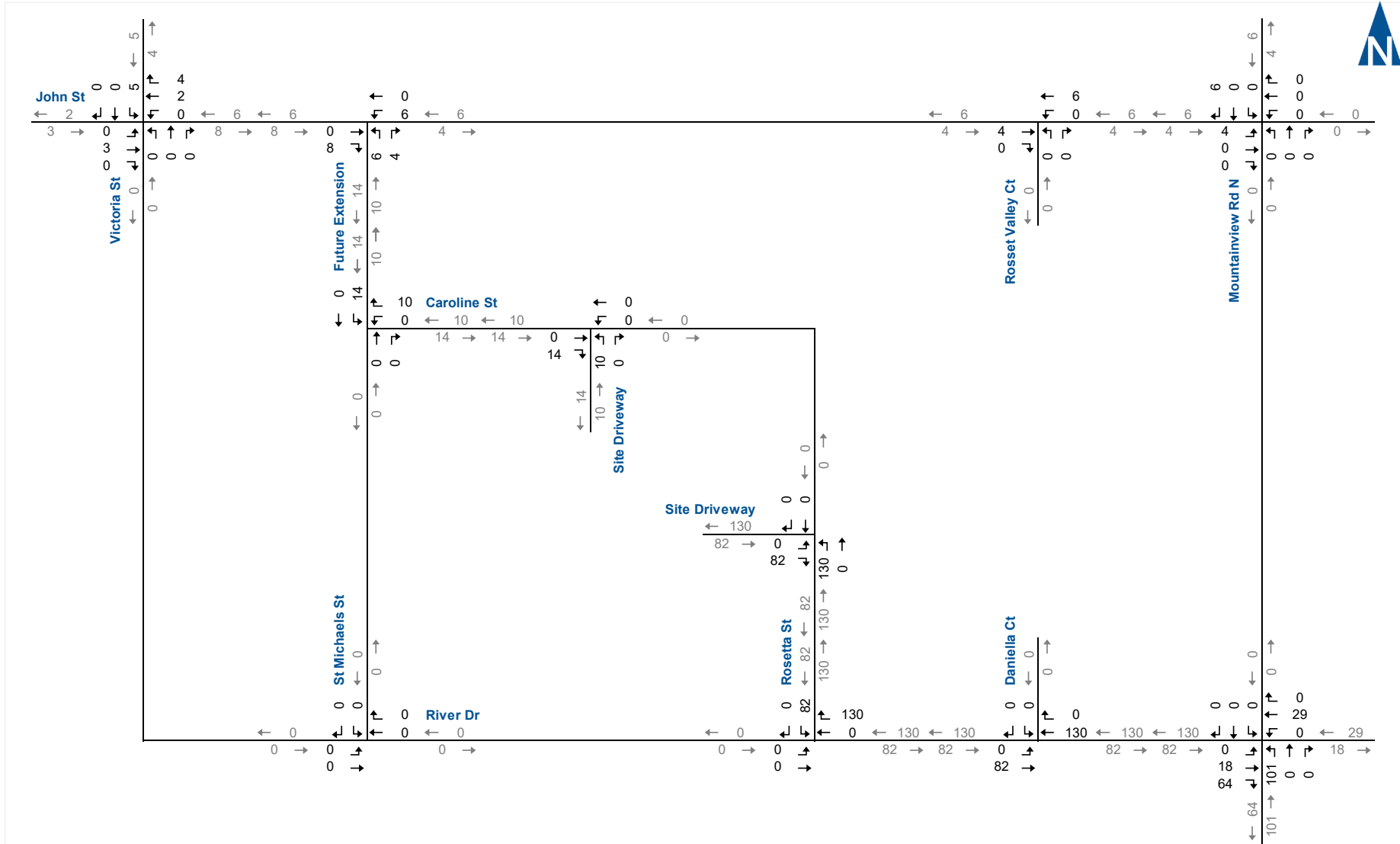
Figure 3.2 and **Figure 3.3** illustrate the site generated traffic volumes for the weekday AM and PM peak hours, respectively.

¹⁰ Transportation Tomorrow Survey 2016, Traffic Zone 4164





Site-Generated Traffic Volumes AM Peak Hour



Site-Generated Traffic Volumes PM Peak Hour

Figure 3.3

3.5 Truck Turning Plans (AutoTURN)

Appendix E contains the truck turning plans for the site concept. The drawings are produced using AutoTURN swept path analysis software.

Based on the analysis the design vehicles can circulate the site without conflicting with the proposed on-site geometry. Additional truck turning plans may be required at SPA to reflect any changes to the site layout or design.

3.6 Signage Plan

Appendix E contains the preliminary signage and pavement marking plan for the subject site. Prior to SPA, the signage and pavement marking plan may need to be updated to reflect any changes in layout.



4 Future Traffic Conditions

The assessment of the future traffic conditions contained in this section includes the forecast traffic volumes and the level of service analysis.

4.1 Forecast Traffic Volumes

Two horizon years, five-years from the date of full build-out (Year 2038) and ten-years from the date of full build-out (Year 2043) have been assessed to estimate the impact of the subject site and background traffic.

The likely future traffic volumes are estimated to consist of:

- ▶ The generalized background traffic growth forecast assumes an annual growth rate of 2% per annum as identified during pre-consultation.
- ▶ Traffic generated by adjacent future developments including;
and
 - 167-171 Mountainview Road North – proposed residential development consisting of 10-unit condominium bungalofs. **Appendix F** contains the detailed traffic forecasts for the adjacent development application.
- ▶ Traffic generated by the subject site.

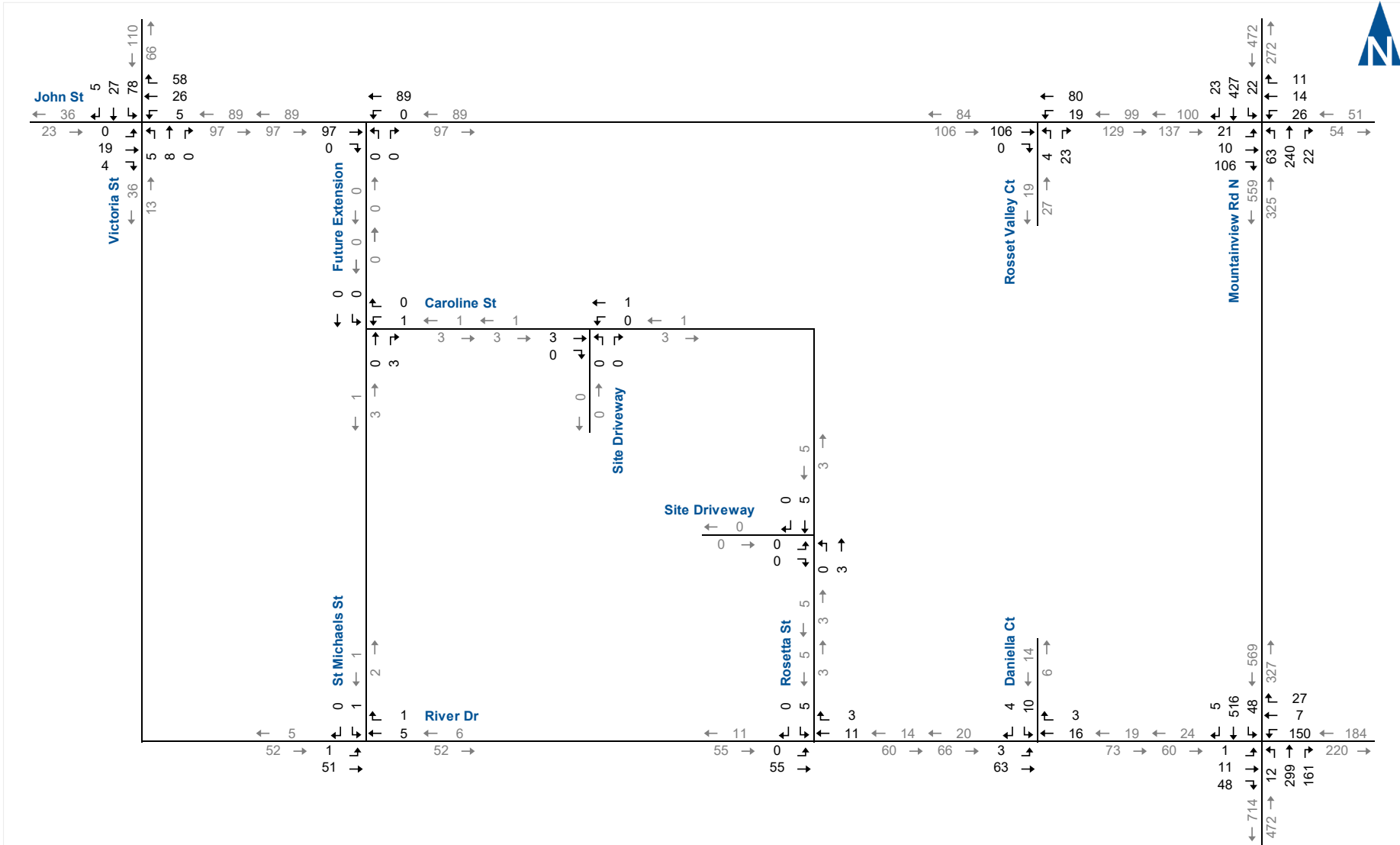
Figures 4.1 to 4.4 illustrate the forecast background traffic volumes for the weekday AM and PM peak hours.

Figures 4.5 to 4.8 illustrate the forecast total traffic volumes for the weekday AM and PM peak hours.

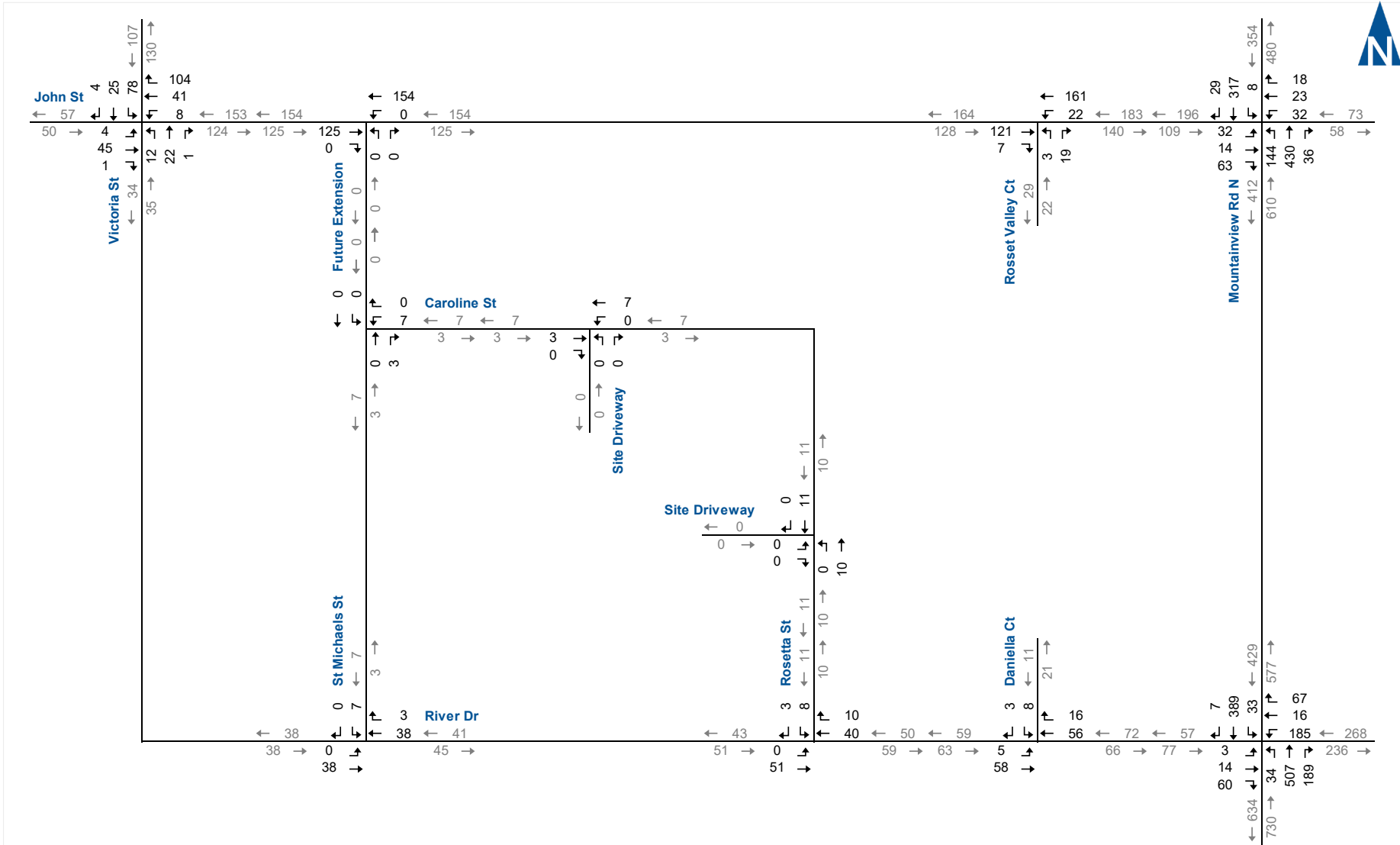
Under future traffic conditions, it is assumed the McNab Street underpass is open to traffic (existing condition). It is our understanding that the Town of Halton Hills is completing a comprehensive review of the underpass, which may include the possible closure. **Section 4.2.5** contains a high-level assessment on the site traffic impacts with the possible closure of the underpass.

The Town has identified a potential development within the study area of 1,000 residential units at 130 Mountainview Road. As the status and details of the development are uncertain, a high-level assessment of the 130 Mountainview Road site is included in a sensitivity analysis contained in **Section 4.2.6**.

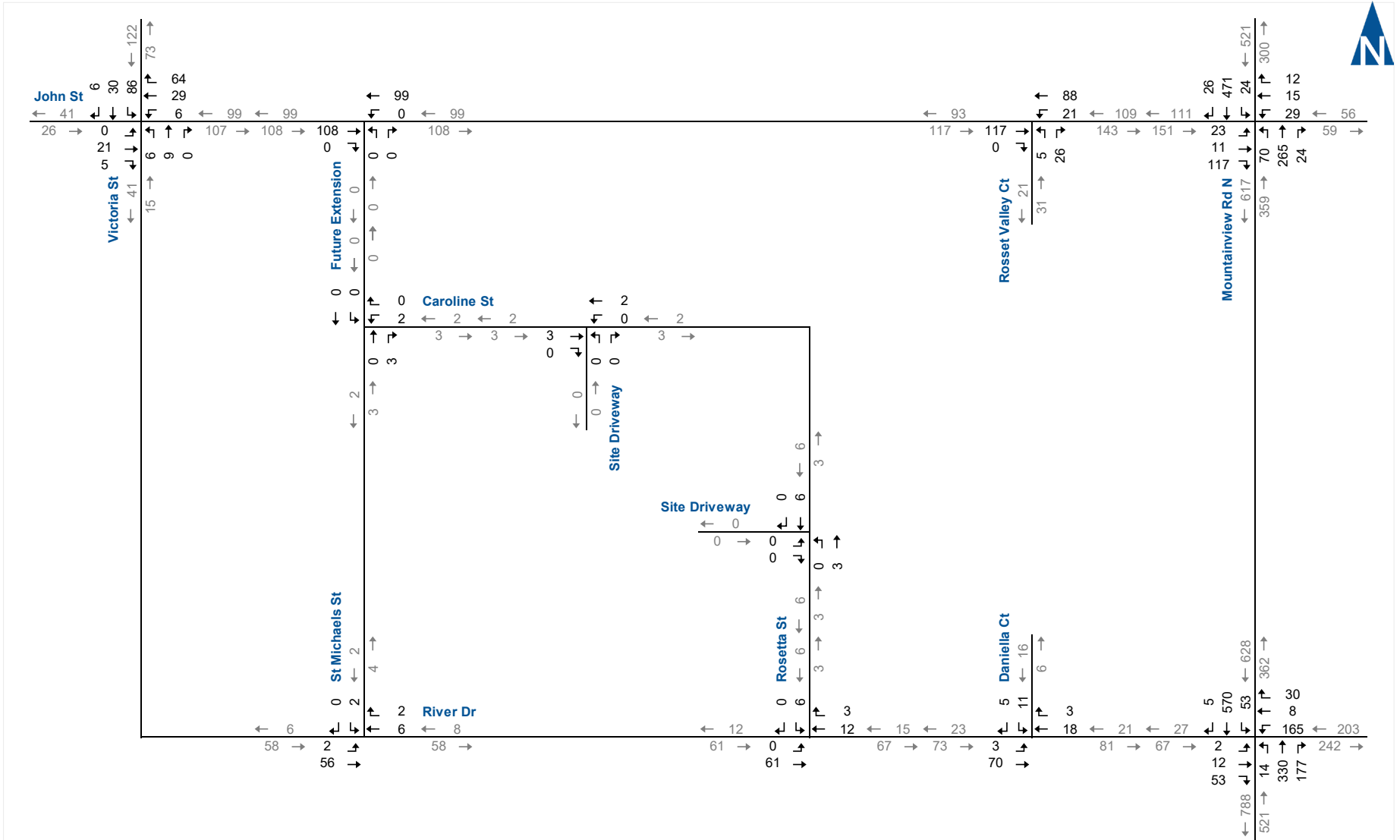




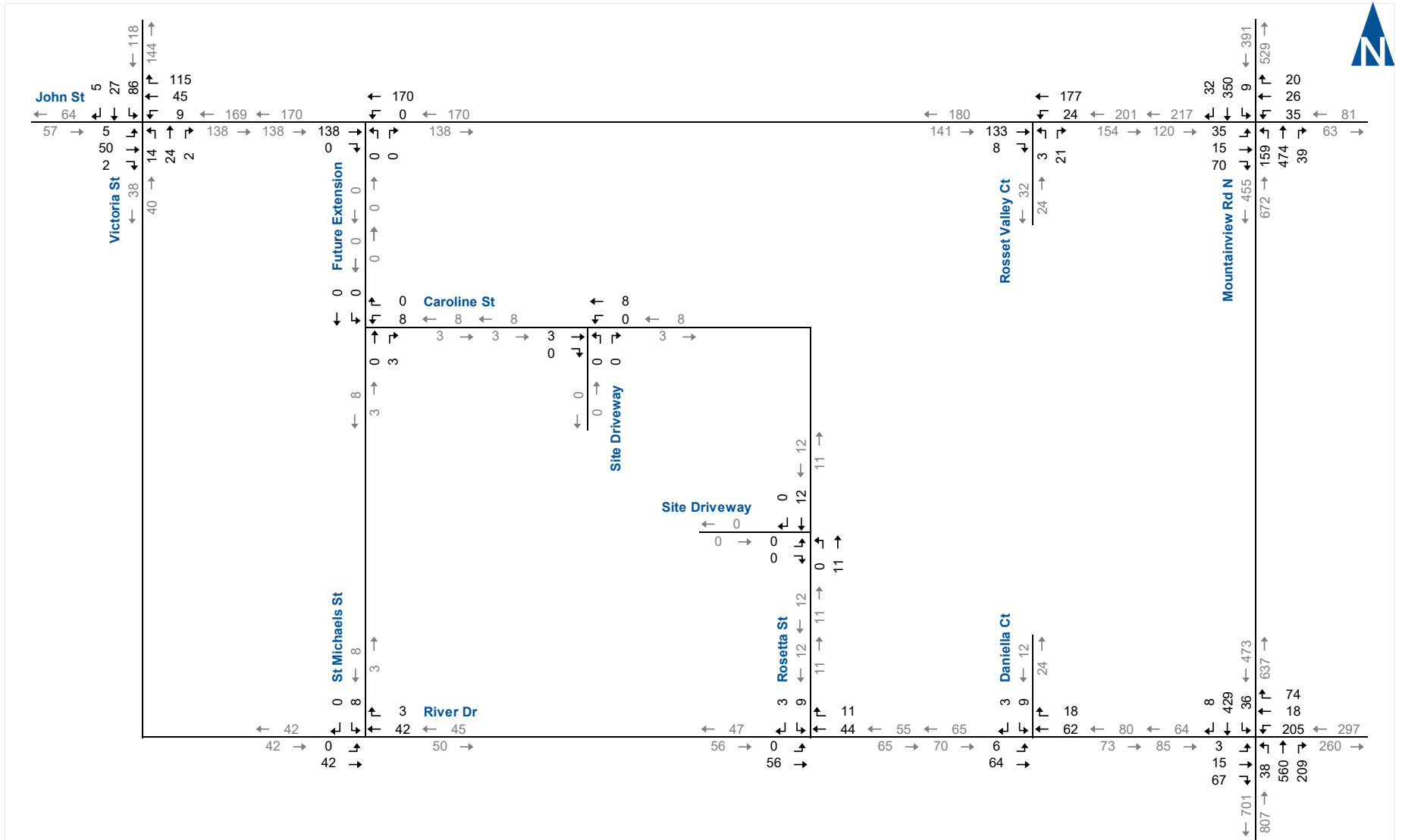
Five-Year Background Traffic Volumes AM Peak Hour



Five-Year Background Traffic Volumes PM Peak Hour

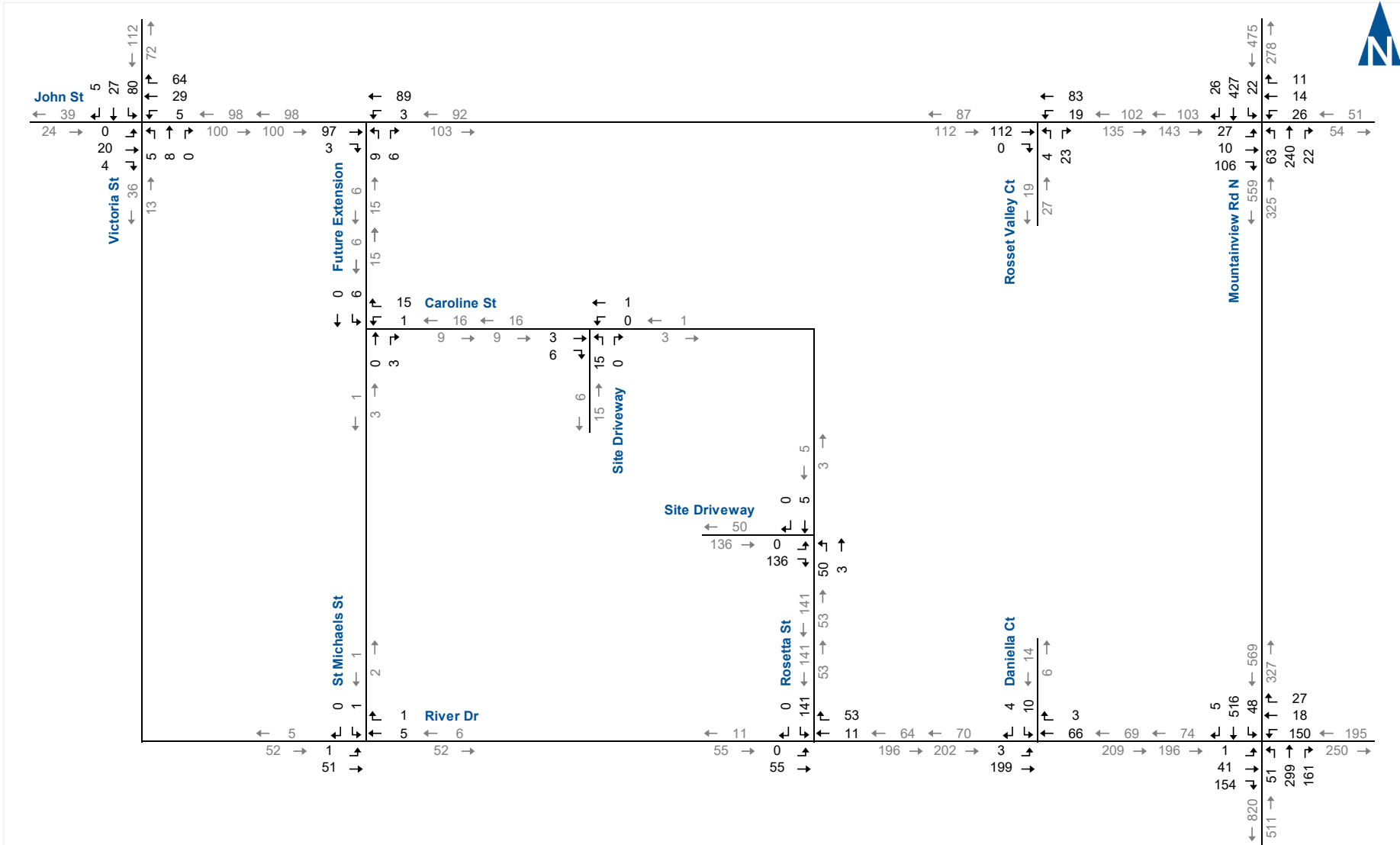


Ten-Year Background Traffic Volumes AM Peak Hour

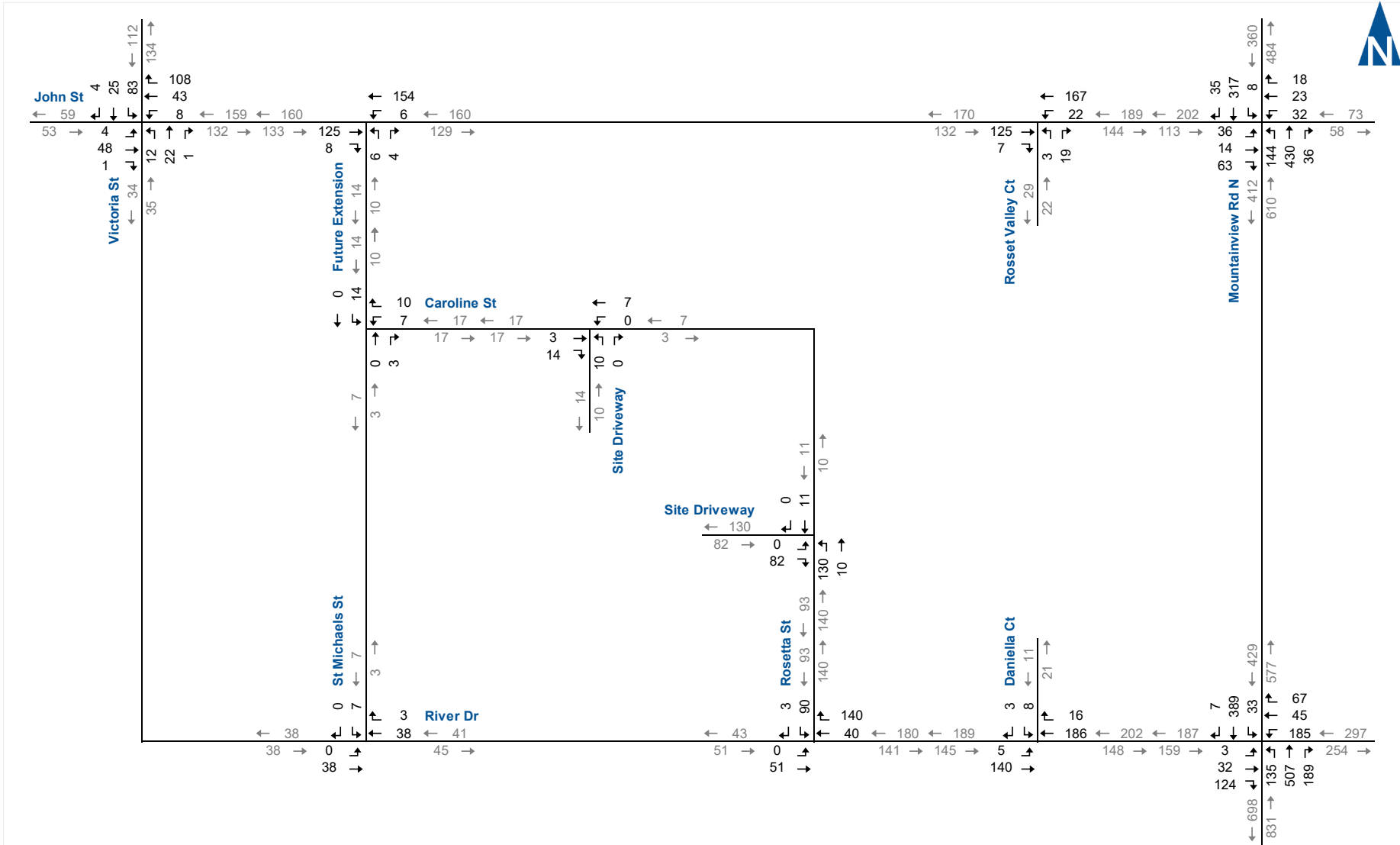


Ten-Year Background Traffic Volumes PM Peak Hour

Figure 4.4

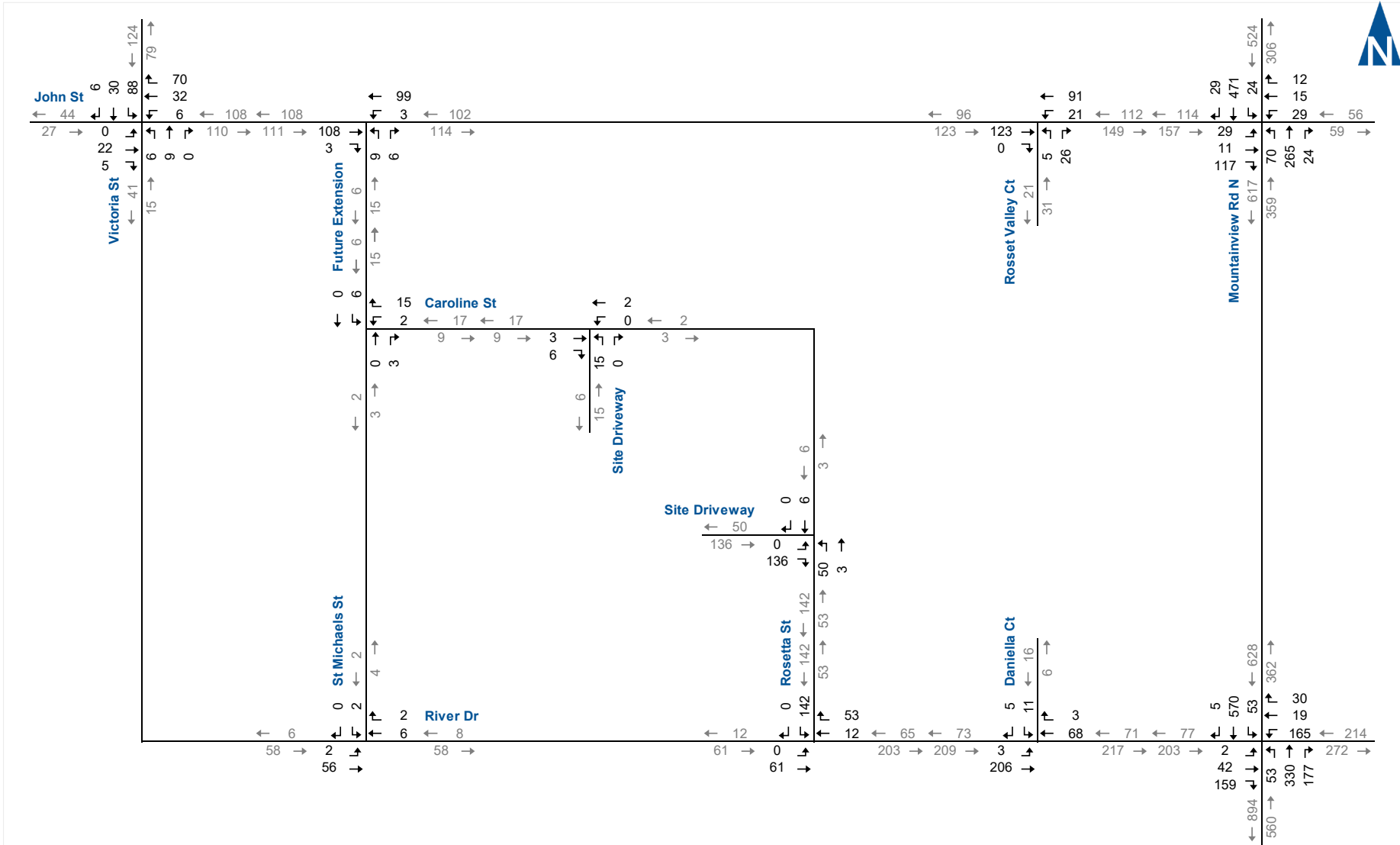


Five-Year Total Traffic Volumes AM Peak Hour

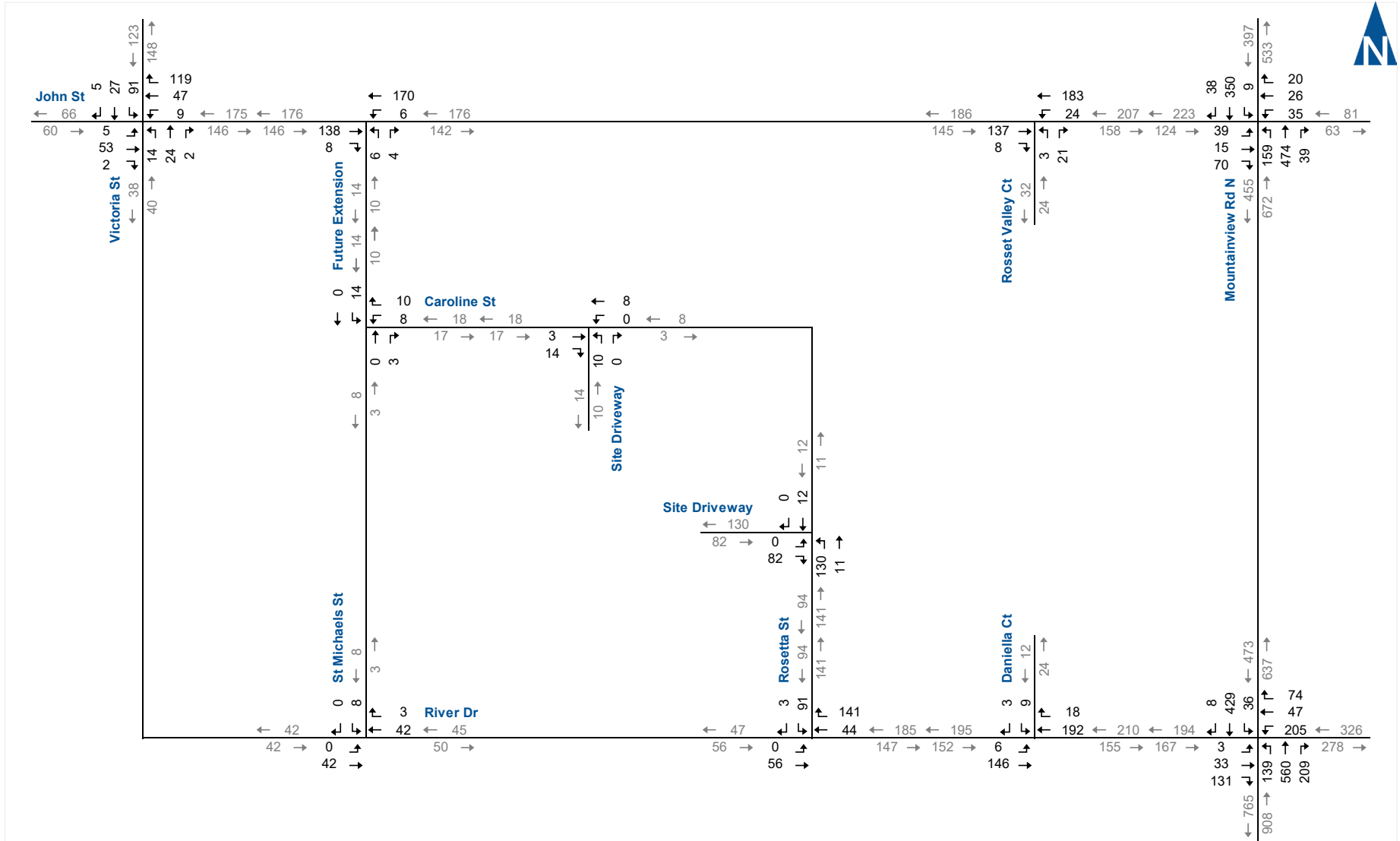


Five-Year Total Traffic Volumes PM Peak Hour

Figure 4.6



Ten-Year Total Traffic Volumes AM Peak Hour



Ten-Year Total Traffic Volumes PM Peak Hour

Figure 4.8

4.2 Forecast Traffic Operations

The study area intersection operations analysis for the future background and future total traffic forecast followed the same methodology used for existing conditions. No changes to existing signal timings and lane configurations are assumed. Although, the extension of St. Michaels Street to John Street is considered.

4.2.1 Background Operations – Five Year Horizon

Table 4.1A-B summarizes the level of service conditions for the AM and PM peak hours. The following critical movements are noted:

AM Peak Hour:

- ▶ Mountainview Road North and River Drive:
 - Westbound approach is forecast to operate with delays in the LOS E range with a v/c ratio surpassing 0.85.

PM Peak Hour:

- ▶ Mountainview Road North and River Drive:
 - Westbound approach is forecast to operate with delays in the LOS D range with a v/c ratio surpassing 0.85.
- ▶ Mountainview Road North and John Street:
 - Northbound left-turn movement is forecast to have a 95th percentile queue length surpassing the available storage lane length by 4 metres.

Appendix G contains the supporting detailed Synchro 11 and SimTraffic reports.



TABLE 4.1A: FIVE-YEAR BACKGROUND OPERATIONS – AM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall		
				Eastbound				Westbound				Northbound				Southbound						
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach			
AM Peak Hour	Mountainview Road N & River Drive	TCS	LOS Delay V/C Q	< < < <	C 23 0.08 18	> > > >	C 23	< < < <	E 55 0.86 56	> > > >	E 55	< < < <	B 11 0.36 42	> > > >	A 9 0.13 20	> > > >	B 10	< < < <	B 10 0.37 35	> > > >	B 10	B 17 0.51
	Mountainview Road N & John Street	AWSC	LOS Delay D. Util Q Stor. Avail.	< < < < < <	B 10 0.23 18 - -	> > > > > >	B 10	< < < < < <	B 10 0.10 16 - -	> > > > > >	B 10	< < < < < <	A 9 0.12 21 30 9	> > > > > >	B 12	> > > > > >	A 8 0.04 12 30 18	> > > > > >	C 22 40 - -	> > > > > >	C 21	
	River Drive & Daniella Street	TWSC	LOS Delay V/C Q	< < < <	A 0 0.00 1	> > > >	A 0	< < < <	A 0 0.01 0	> > > >	A 0	< < < <		> > > >		> > > >	A 9 0.02 11	> > > >		> > > >	A 9	
	River Drive & Rosetta Street	TWSC	LOS Delay V/C Q	< < < <	A 0 0.00 0	> > > >	A 0	< < < <	A 0 0.01 0	> > > >	A 0	< < < <		> > > >		> > > >	A 9 0.01 6	> > > >		> > > >	A 9	
	Victoria Street/River Drive & St Michaels Street	TWSC	LOS Delay V/C Q	< < < <	A 0 0.00 0	> > > >	A 0	< < < <	A 0 0.00 0	> > > >	A 0	< < < <		> > > >		> > > >	A 9 0.00 2	> > > >		> > > >	A 9	
	Rosset Valley Court & John Street	TWSC	LOS Delay V/C Q	< < < <	A 0 0.07 0	> > > >	A 0	< < < <	A 2 0.02 5	> > > >	A 2	< < < <	A 9 0.04 11	> > > >		> > > >	A 9	> > > >		> > > >	A 9	
	Victoria Street & John Street	AWSC	LOS Delay D. Util Q	< < < <	A 7 0.03 12	> > > >	A 7	< < < <	A 8 0.12 20	> > > >	A 8	< < < <	A 8 0.02 10	> > > >		> > > >	A 8 0.15 16	> > > >		> > > >	A 8	

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TCS - Traffic Control Signal

TWSC - Two-Way Stop Control

AWSC - All-Way Stop Control

</> - Shared Movement

D. Util - Degrees of Utilization



TABLE 4.1B: FIVE-YEAR BACKGROUND OPERATIONS – PM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall		
				Eastbound				Westbound				Northbound				Southbound						
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach			
PM Peak Hour	Mountainview Road N & River Drive	TCS	LOS Delay V/C Q	< < < <	C 21 0.09 20	> > > >	C 21	< < < <	D 53 0.90 54	> > > >	D 53	< < < <	B 19 0.70 88	> > > >	B 10 0.17 38	> > > >	B 17	< < < <	B 11 0.32 33	> > > >	B 11	C 22 0.77
	Mountainview Road N & John Street	AWSC	LOS Delay D. Util Q Stor. Avail.	< < < < < <	B 10 0.19 16 - -	> > > > > >	B 10	< < < < < <	B 10 0.14 15 - -	> > > > > >	B 10	A 10 0.25 34 30 -4	> > > > > >	C 18	A 8 0.01 10 30 20	> > > > > >	C 15	A 15 0.58 28 - -	> > > > > >	C 15		
	River Drive & Daniella Street	TWSC	LOS Delay V/C Q	< < < <	A 1 0.00 2	> > > >	A 1	A 0 0.05 0	> > > >	A 0								A 9 0.01 9	> > > >	A 9		
	River Drive & Rosetta Street	TWSC	LOS Delay V/C Q	< < < <	A 0 0.00 0	> > > >	A 0	A 0 0.04 0	> > > >	A 0								A 9 0.02 10	> > > >	A 9		
	Victoria Street/River Drive & St Michaels Street	TWSC	LOS Delay V/C Q	< < < <	A 0 0.00 0	> > > >	A 0	A 0 0.03 0	> > > >	A 0								A 9 0.01 7	> > > >	A 9		
	Rosset Valley Court & John Street	TWSC	LOS Delay V/C Q	< < < <	A 0 0.09 0	> > > >	A 0	A 1 0.02 5	> > > >	A 1	A 10 0.03 10	> > > >	A 10					A 10	> > > >	A 10		
	Victoria Street & John Street	AWSC	LOS Delay D. Util Q	< < < <	A 8 0.07 14	> > > >	A 8	A 8 0.19 22	> > > >	A 8	< < < <	A 8 0.05 13	> > > >	A 8	< < < <	A 9 0.16 21	> > > >	A 9	> > > >	A 9		

MOE - Measure of Effectiveness
 LOS - Level of Service
 Delay - Average Delay per Vehicle in Seconds
 V/C - Volume to Capacity Ratio
 Q - 95th Percentile Queue Length (m)
 Stor. - Existing Storage (m)
 Avail. - Available Storage (m)
 TCS - Traffic Control Signal
 TWSC - Two-Way Stop Control
 AWSC - All-Way Stop Control
 </> - Shared Movement
 D. Util - Degrees of Utilization



4.2.2 Background Operations – Ten Year Horizon

Table 4.2A-B summarizes the level of service conditions for the AM and PM peak hours. The following critical movements are noted:

AM Peak Hour:

- ▶ Mountainview Road North and River Drive:
 - Westbound approach is forecast to operate with delays in the LOS E range with a v/c ratio surpassing 0.85.

PM Peak Hour:

- ▶ Mountainview Road North and River Drive:
 - Westbound approach is forecast to operate with delays in the LOS E range with a v/c ratio surpassing 0.85; and
 - Overall, the intersection is forecast to operate with delays in the LOS C range and a v/c ratio of 0.85.
- ▶ Mountainview Road North and John Street:
 - Northbound left-turn movement is forecast to have a 95th percentile queue length surpassing the available storage lane length by 6 metres.

Appendix H contains the supporting detailed Synchro 11 and SimTraffic reports.



TABLE 4.2A: TEN-YEAR BACKGROUND OPERATIONS – AM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall			
				Eastbound				Westbound				Northbound				Southbound							
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach				
AM Peak Hour	Mountainview Road N & River Drive	TCS	LOS Delay V/C Q	< < < <	C 22 0.08 19	> > > >	C 22	< < < <	E 59 0.89 60	> > > >	E 59	< < < <	B 12 0.41 47	> > > >	A 10 0.14 20	> > > >	B 11	< < < <	B 12 0.42 36	> > > >	B 12	B 19 0.57	
	Mountainview Road N & John Street	AWSC	LOS Delay D. Util Q Stor. Avail.	< < < < < <	B 11 0.27 20 - -	> > > > > >	B 11	< < < <	B 11 0.11 16 - -	> > > > > >	B 11	< < < <	A 10 0.14 23 30 7	> > > > > >	B 14 0.51 33 - -	> > > > > >	B 13	< < < <	A 8 0.05 14 30 16	> > > > > >	D 31 0.85 39 - -	D 30	
	River Drive & Daniella Street	TWSC	LOS Delay V/C Q	< < < <	A 0 0.00 0	> > > >	A 0	< < < <	A 0 0.01 0	> > > >	A 0	< < < <		> > > >		> > > >	A 9 0.02 11	< < < <	A 9 0.01 7	> > > >	A 9		
	River Drive & Rosetta Street	TWSC	LOS Delay V/C Q	< < < <	A 0 0.00 0	> > > >	A 0	< < < <	A 0 0.01 0	> > > >	A 0	< < < <		> > > >		> > > >	A 9 0.01 7	< < < <	A 9 0.01 2	> > > >	A 9		
	Victoria Street/River Drive & St Michaels Street	TWSC	LOS Delay V/C Q	< < < <	A 0 0.00 0	> > > >	A 0	< < < <	A 0 0.01 0	> > > >	A 0	< < < <		> > > >		> > > >	A 9 0.00 2	< < < <	A 9 0.00 2	> > > >	A 9		
	Rosset Valley Court & John Street	TWSC	LOS Delay V/C Q	< < < <	A 0 0.08 0	> > > >	A 0	< < < <	A 2 0.02 6	> > > >	A 2	< < < <	A 9 0.04 11	> > > >		> > > >	A 9 0.04 11	< < < <	A 9 0.04 11	> > > >	A 9		
	Victoria Street & John Street	AWSC	LOS Delay D. Util Q	< < < <	A 7 0.04 13	> > > >	A 7	< < < <	A 8 0.13 18	> > > >	A 8	< < < <	A 8 0.02 10	> > > >		> > > >	A 8 0.02 10	< < < <	A 8 0.17 17	> > > >	A 8		

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TCS - Traffic Control Signal

TWSC - Two-Way Stop Control

AWSC - All-Way Stop Control

</> - Shared Movement

D. Util - Degrees of Utilization



TABLE 4.2B: TEN-YEAR BACKGROUND OPERATIONS – PM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall	
				Eastbound				Westbound				Northbound				Southbound					
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach		
PM Peak Hour	Mountainview Road N & River Drive	TCS	LOS Delay V/C Q	< < < <	C 20 0.10 20	> > > >	C 20	< < < <	E 56 0.92 63	> > > >	E 56	< < < <	C 25 0.81 90	B 12 0.18 40	> > > >	C 22	< < < <	B 13 0.39 35	> > > >	B 13	C 25 0.85
	Mountainview Road N & John Street	AWSC	LOS Delay D. Util Q Stor. Avail.	< < < < < <	B 11 0.22 17 - -	> > > > > >	B 11	< < < < < <	B 11 0.16 15 - -	> > > > > >	B 11	B 11 0.29 36 30 -6	D 30 0.84 55 - -	> > > > > >	D 25	A 8 0.02 8 30 22	> > > > > >	C 19	> > > > > >	C 19	
	River Drive & Daniella Street	TWSC	LOS Delay V/C Q	< < < <	A 1 0.00 1	> > > >	A 1	< < < <	A 0 0.05 0	> > > >	A 0					> > > >	A 9 0.02 10	> > > >	A 9		
	River Drive & Rosetta Street	TWSC	LOS Delay V/C Q	< < < <	A 0 0.00 0	> > > >	A 0	< < < <	A 0 0.04 0	> > > >	A 0					> > > >	A 9 0.02 10	> > > >	A 9		
	Victoria Street/River Drive & St Michaels Street	TWSC	LOS Delay V/C Q	< < < <	A 0 0.00 0	> > > >	A 0	< < < <	A 0 0.03 0	> > > >	A 0					> > > >	A 9 0.01 9	> > > >	A 9		
	Rosset Valley Court & John Street	TWSC	LOS Delay V/C Q	< < < <	A 0 0.10 1	> > > >	A 0	< < < <	A 1 0.02 4	> > > >	A 1	A 10 0.04 10	> > > >	A 10		> > > >	A 10	> > > >	A 10		
	Victoria Street & John Street	AWSC	LOS Delay D. Util Q	< < < <	A 8 0.08 14	> > > >	A 8	< < < <	A 8 0.22 22	> > > >	A 8	< < < <	A 8 0.06 14	> > > >	A 8	< < < <	A 9 0.18 20	> > > >	A 9	A 9	

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TCS - Traffic Control Signal

TWSC - Two-Way Stop Control

AWSC - All-Way Stop Control

</> - Shared Movement

D. Util - Degrees of Utilization



4.2.3 Total Operations – Five Year Horizon

Table 4.3A-B summarizes the level of service conditions for the AM and PM peak hours. The following critical movements are noted:

AM Peak Hour:

- ▶ Mountainview Road North and River Drive:
 - Westbound approach is forecast to operate with delays in the LOS E range with a v/c ratio surpassing 0.85.

PM Peak Hour:

- ▶ Mountainview Road North and River Drive:
 - Westbound approach is forecast to operate with delays in the LOS D range with a v/c ratio surpassing 0.85;
 - Northbound left-turn/through movement is forecast to operate with delays in the LOS E range with a v/c ratio surpassing 1.00; and
 - Overall, the intersection is forecast to operate with delays in the LOS D range and a v/c ratio equal to 1.00.

Appendix I contains the supporting detailed Synchro and SimTraffic reports.

With the addition of the site generated traffic, the approach delays at the existing study area intersections increase by two seconds or less during the AM and PM peak hours. Although, the northbound left-turn/through movement at the intersection of Mountainview Road North and River Drive increases by 38 seconds during the PM peak hour.

The proposed driveways with Rosetta Street and Caroline Street are forecast to operate with minimal delay and v/c ratios well within capacity during the AM and PM peak hours.



TABLE 4.3A: FIVE-YEAR TOTAL OPERATIONS – AM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Mountainview Road N & River Drive	TCS	LOS Delay V/C Q	<< 22 >> << 0.24 >> << 38 >>	C >> >> >> >> >>	C 22	<< >> << >> << >>	E >> >> >> >> >>	56 >> >> >> >> >>	E 56	<< >> << >> << >>	B >> >> >> >> >>	14 >> >> >> >> >>	A 10	B 12	<< >> << >> << >>	B >> >> >> >> >>	12 >> >> >> >> >>	B 12	B 19 0.61
	Mountainview Road N & John Street	AWSC	LOS Delay D. Util Q Stor. Avail.	<< 11 >> << 0.25 >> << 19 >> << - >> << - >>	B >> >> >> >> >> >> >> >> >>	B 11	<< >> << >> << >> << >> << >>	B >> >> >> >> >> >> >> >> >>	10 >> >> >> >> >> >> >> >> >>	B 10	<< >> << >> << >> << >> << >>	A >> >> >> >> >> >> >> >> >>	9 >> >> >> >> >> >> >> >> >>	B 12	<< >> << >> << >> << >> << >>	A >> >> >> >> >> >> >> >> >>	8 >> >> >> >> >> >> >> >> >>	C >> >> >> >> >> >> >> >> >>	22 >> >> >> >> >> >> >> >> >>	C 22
	River Drive & Daniella Street	TWSC	LOS Delay V/C Q	<< 0 >> << 0.00 >> << 0 >>	A >> >> >> >> >>	A 0	<< >> << >> << >>	A >> >> >> >> >>	0 >> >> >> >> >>	A 0	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	A 10
	River Drive & Rosetta Street	TWSC	LOS Delay V/C Q	<< 0 >> << 0.00 >> << 2 >>	A >> >> >> >> >>	A 0	<< >> << >> << >>	A >> >> >> >> >>	0 >> >> >> >> >>	A 0	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	A 10
	Victoria Street/River Drive & St Michaels Street	TWSC	LOS Delay V/C Q	<< 0 >> << 0.00 >> << 0 >>	A >> >> >> >> >>	A 0	<< >> << >> << >>	A >> >> >> >> >>	0 >> >> >> >> >>	A 0	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	A 9
	Rosset Valley Court & John Street	TWSC	LOS Delay V/C Q	<< 0 >> << 0.08 >> << 0 >>	A >> >> >> >> >>	A 0	<< >> << >> << >>	A >> >> >> >> >>	2 >> >> >> >> >>	A 2	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	A 9
	Victoria Street & John Street	AWSC	LOS Delay D. Util Q	<< 7 >> << 0.03 >> << 13 >>	A >> >> >> >> >>	A 7	<< >> << >> << >>	A >> >> >> >> >>	8 >> >> >> >> >>	A 8	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	A 8
	Rosetta Street & Site Driveway	TWSC	LOS Delay V/C Q	A 9 0.14 20	>> >> >> >> >> >>	A 9	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	A 0
	Site Driveway & Caroline Street	TWSC	LOS Delay V/C Q	<< 0 >> << 0.01 >> << 0 >>	A >> >> >> >> >>	A 0	<< >> << >> << >>	A >> >> >> >> >>	0 >> >> >> >> >>	A 0	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	A 9
	St. Michaels Street & John Street	TWSC	LOS Delay V/C Q	<< 0 >> << 0.06 >> << 0 >>	A >> >> >> >> >>	A 0	<< >> << >> << >>	A >> >> >> >> >>	0 >> >> >> >> >>	A 0	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	A 9
	St Michaels Street & Caroline Street	TWSC	LOS Delay V/C Q	<< >> << >> << >>	A >> >> >> >> >>	A 8	<< >> << >> << >>	A >> >> >> >> >>	8 >> >> >> >> >>	A 8	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	<< >> << >> << >>	A 7

MOE - Measure of Effectiveness
 LOS - Level of Service
 Delay - Average Delay per Vehicle in Seconds
 V/C - Volume to Capacity Ratio
 Q - 95th Percentile Queue Length (m)
 Stor. - Existing Storage (m)
 Avail. - Available Storage (m)
 TCS - Traffic Control Signal
 TWSC - Two-Way Stop Control
 AWSC - All-Way Stop Control
 </> - Shared with through movement
 D. Util - Degrees of Utilization

TABLE 4.3B: FIVE-YEAR TOTAL OPERATIONS – PM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall			
				Eastbound				Westbound				Northbound				Southbound							
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach				
PM Peak Hour	Mountainview Road N & River Drive	TCS	LOS Delay V/C Q	< < <	C 21 0.18 28	> > >	C 21	< < <	D 53 0.91 63	> > >	D 53	< < <	E 68 1.05 142	> > >	B 12 0.17 35	< < <	E 55	< < <	B 13 0.37 31	> > >	B 13	D 41	1.00
	Mountainview Road N & John Street	AWSC	LOS Delay D. Util Q Stor. Avail.	< < <	B 11 0.20 16 - -	> > >	B 11	< < <	B 10 0.14 16 - -	> > >	B 10	< < <	A 10 0.25 30 30 0	> > >	C 21 0.74 - -	< < <	C 19	< < <	A 8 0.01 8 30 22	> > >	C 16 28 28 - -	C 16	
	River Drive & Daniella Street	TWSC	LOS Delay V/C Q	< < <	A 0 0.00 4	> > >	A 0	< < <	A 0 0.14 0	> > >	A 0	< < <		> > >		< < <			B 11 0.02 10	> > >	B 11		
	River Drive & Rosetta Street	TWSC	LOS Delay V/C Q	< < <	A 0 0.00 0	> > >	A 0	< < <	A 0 0.13 0	> > >	A 0	< < <		> > >		< < <			B 10 0.14 14	> > >	B 10		
	Victoria Street/River Drive & St Michaels Street	TWSC	LOS Delay V/C Q	< < <	A 0 0.00 0	> > >	A 0	< < <	A 0 0.03 0	> > >	A 0	< < <		> > >		< < <			A 9 0.01 5	> > >	A 9		
	Rosset Valley Court & John Street	TWSC	LOS Delay V/C Q	< < <	A 0 0.09 0	> > >	A 0	< < <	A 1 0.02 6	> > >	A 1	< < <	A 10 0.03 10	> > >		< < <				> > >	A 10		
	Victoria Street & John Street	AWSC	LOS Delay D. Util Q	< < <	A 8 0.07 14	> > >	A 8	< < <	A 8 0.20 20	> > >	A 8	< < <	A 8 0.05 13	> > >		< < <			A 9 0.17 19	> > >	A 9		
	Rosetta Street & Site Driveway	TWSC	LOS Delay V/C Q	A 9 0.08 17	> > >	A 9	< < <		> > >		A 9	< < <	A 7 0.09 3	> > >		< < <			A 0 0.01 0	> > >	A 0		
	Site Driveway & Caroline Street	TWSC	LOS Delay V/C Q	A 0 0.01 0	> > >	A 0	< < <	A 0 0.00 0	> > >		A 0	< < <	A 9 0.01 9	> > >		< < <				> > >	A 9		
	St. Michaels Street & John Street	TWSC	LOS Delay V/C Q	A 0 0.09 0	> > >	A 0	< < <	A 0 0.00 1	> > >		A 0	< < <	A 10 0.01 10	> > >		< < <				> > >	A 10		
	St Michaels Street & Caroline Street	TWSC	LOS Delay V/C Q	A 8 0.02 11	> > >	A 8	< < <	A 8 0.00 0	> > >		A 8	< < <	A 0 0.00 0	> > >		< < <			A 7 0.01 0	> > >	A 7		

MOE - Measure of Effectiveness
 LOS - Level of Service
 Delay - Average Delay per Vehicle in Seconds
 V/C - Volume to Capacity Ratio
 Q - 95th Percentile Queue Length (m)
 Stor. - Existing Storage (m)
 Avail. - Available Storage (m)
 TCS - Traffic Control Signal
 TWSC - Two-Way Stop Control
 AWSC - All-Way Stop Control
 </> - Shared with through movement
 D. Util - Degrees of Utilization



4.2.4 Total Operations – Ten Year Horizon

Table 4.4A-B summarizes the level of service conditions for the AM and PM peak hours. The following critical movements are noted:

AM Peak Hour:

- ▶ Mountainview Road North and River Drive:
 - Westbound approach is forecast to operate with delays in the LOS E range with a v/c ratio surpassing 0.85.

PM Peak Hour:

- ▶ Mountainview Road North and River Drive:
 - Westbound approach is forecast to operate with delays in the LOS E range with a v/c ratio surpassing 0.85;
 - Northbound left-turn/through movement is forecast to operate with delays in the LOS F range with a v/c ratio surpassing 1.00; and
 - Overall, the intersection is forecast to operate with delays in the LOS E range and a v/c ratio surpassing 1.00.
- ▶ Mountainview Road North and John Street:
 - Northbound left-turn movement is forecast to have a 95th percentile queue length surpassing the available storage lane length by 4 metres.

Appendix J contains the supporting detailed Synchro and SimTraffic reports.

With the addition of the site generated traffic, the approach delays at the existing study area intersections increase by three seconds or less during the AM and PM peak hours. Although, the northbound left-turn/through movement at the intersection of Mountainview Road North and River Drive increases by 72 seconds during the PM peak hour.

The proposed driveways with Rosetta Street and Caroline Street are forecast to operate with minimal delay and v/c ratios well within capacity during the AM and PM peak hours.



TABLE 4.4A: TEN-YEAR TOTAL OPERATIONS – AM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Mountainview Road N & River Drive	TCS	LOS Delay V/C Q	<<< 22 36 >>>	C 0.24 36 >>>	>>> C 22 <<<	<<< E 58 66 >>>	>>> E 58 <<<	<<< B 16 59 >>>	>>> B 11 23 <<<	<<< B 11 23 >>>	>>> B 14 <<<	<<< B 13 41 >>>	>>> B 13 <<<	<<< D 32 41 >>>	>>> D 32 <<<	<<< B 13 41 >>>	>>> B 13 <<<	C 21 0.67	
	Mountainview Road N & John Street	AWSC	LOS Delay D. Util Stor. Avail. Q	<<< 12 21 >>>	B 0.28 21 >>>	>>> B 12 <<<	<<< B 11 17 >>>	>>> B 11 <<<	<<< A 10 24 30 6 >>>	>>> B 14 31 <<<	<<< B 13 31 >>>	>>> B 13 <<<	<<< A 8 17 30 13 >>>	>>> D 32 49 <<<	<<< D 32 49 >>>	>>> D 31 <<<	<<< D 31 49 >>>	>>> D 31 <<<		
	River Drive & Daniella Street	TWSC	LOS Delay V/C Q	<<< 0 1 >>>	A 0.00 1 >>>	>>> A 0 <<<	<<< A 0 0 >>>	>>> A 0 <<<	<<< A 0 0 >>>	>>> A 0 <<<	<<< A 0 0 >>>	>>> A 0 <<<	<<< A 10 11 >>>	>>> A 10 <<<	<<< A 10 11 >>>	>>> A 10 <<<	<<< A 10 11 >>>	>>> A 10 <<<		
	River Drive & Rosetta Street	TWSC	LOS Delay V/C Q	<<< 0 0 >>>	A 0.00 0 >>>	>>> A 0 <<<	<<< A 0 0 >>>	>>> A 0 <<<	<<< A 0 0 >>>	>>> A 0 <<<	<<< A 0 0 >>>	>>> A 0 <<<	<<< A 10 13 >>>	>>> A 10 <<<	<<< A 10 13 >>>	>>> A 10 <<<	<<< A 10 13 >>>	>>> A 10 <<<		
	Victoria Street/River Drive & St Michaels Street	TWSC	LOS Delay V/C Q	<<< 0 0 >>>	A 0.00 0 >>>	>>> A 0 <<<	<<< A 0 0 >>>	>>> A 0 <<<	<<< A 0 0 >>>	>>> A 0 <<<	<<< A 9 3 >>>	>>> A 9 <<<	<<< A 9 3 >>>	>>> A 9 <<<	<<< A 9 3 >>>	>>> A 9 <<<	<<< A 9 3 >>>	>>> A 9 <<<		
	Rosset Valley Court & John Street	TWSC	LOS Delay V/C Q	<<< 0 0 >>>	A 0.09 0 >>>	>>> A 0 <<<	<<< A 2 4 >>>	>>> A 2 <<<	<<< A 9 12 >>>	>>> A 9 <<<	<<< A 9 12 >>>	>>> A 9 <<<	<<< A 9 12 >>>	>>> A 9 <<<	<<< A 9 12 >>>	>>> A 9 <<<	<<< A 9 12 >>>	>>> A 9 <<<		
	Victoria Street & John Street	AWSC	LOS Delay D. Util Q	<<< 8 13 >>>	A 0.04 13 >>>	>>> A 8 <<<	<<< A 8 19 >>>	>>> A 8 <<<	<<< A 8 11 >>>	>>> A 8 <<<	<<< A 8 11 >>>	>>> A 8 <<<	<<< A 8 16 >>>	>>> A 8 <<<	<<< A 8 16 >>>	>>> A 8 <<<	<<< A 8 16 >>>	>>> A 8 <<<		
	Rosetta Street & Site Driveway	TWSC	LOS Delay V/C Q	A 9 0.14 20 >>>	>>> A 9 <<<	<<< A 9 >>>	>>> A 9 <<<	<<< A 7 2 >>>	>>> A 7 <<<	<<< A 7 2 >>>	>>> A 7 <<<	<<< A 7 2 >>>	>>> A 7 <<<	<<< A 7 2 >>>	>>> A 7 <<<	<<< A 7 2 >>>	>>> A 7 <<<	<<< A 7 2 >>>	>>> A 7 <<<	
	Site Driveway & Caroline Street	TWSC	LOS Delay V/C Q	<<< 0 0 >>>	A 0.01 0 >>>	>>> A 0 <<<	<<< A 0 0 >>>	>>> A 0 <<<	<<< A 9 11 >>>	>>> A 9 <<<	<<< A 9 11 >>>	>>> A 9 <<<	<<< A 9 11 >>>	>>> A 9 <<<	<<< A 9 11 >>>	>>> A 9 <<<	<<< A 9 11 >>>	>>> A 9 <<<		
	St. Michaels Street & John Street	TWSC	LOS Delay V/C Q	<<< 0 0 >>>	A 0.07 0 >>>	>>> A 0 <<<	<<< A 0 2 >>>	>>> A 0 <<<	<<< A 10 11 >>>	>>> A 10 <<<	<<< A 10 11 >>>	>>> A 10 <<<	<<< A 10 11 >>>	>>> A 10 <<<	<<< A 10 11 >>>	>>> A 10 <<<	<<< A 10 11 >>>	>>> A 10 <<<		
	St Michaels Street & Caroline Street	TWSC	LOS Delay V/C Q	<<< 0 0 >>>	A 0.02 11 >>>	>>> A 8 <<<	<<< A 8 >>>	>>> A 8 <<<	<<< A 0 0 >>>	>>> A 0 <<<	<<< A 0 0 >>>	>>> A 0 <<<	<<< A 0 0 >>>	>>> A 0 <<<	<<< A 0 0 >>>	>>> A 0 <<<	<<< A 0 0 >>>	>>> A 0 <<<		

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 LOS - Level of Service
 Delay - Average Delay per Vehicle in Seconds
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 Q - 95th Percentile Queue Length (m)
 Stor. - Existing Storage (m)
 Avail. - Available Storage (m)
 TCS - Traffic Control Signal
 TWSC - Two-Way Stop Control
 AWSC - All-Way Stop Control
 </> - Shared with through movement
 D. Util - Degrees of Utilization

TABLE 4.4B: TEN-YEAR TOTAL OPERATIONS – PM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Mountainview Road N & River Drive	TCS	LOS Delay V/C Q	<<< 20 28	>>> C 20	<<< 0.93 66	>>> E 57	<<< 1.18 187	>>> F 13	<<< 0.18 101	>>> B 13	<<< 1.18 187	>>> F 94	<<< 0.47 36	>>> B 16	<<< 0.47 36	>>> B 16	E 61 1.09		
	Mountainview Road N & John Street	AWSC	LOS Delay D. Util Stor. Avail. Q	<<< 0.23 16 - -	>>> B 11	<<< 0.16 16 - -	>>> B 11	<<< 0.29 34 30 -4	>>> D 30 51 -	<<< 0.02 9 30 21	>>> C 20 30 -	<<< 0.68 30 -	>>> D 26	<<< 0.02 9 30 21	>>> C 19	<<< 0.68 30 -	>>> C 19			
	River Drive & Daniella Street	TWSC	LOS Delay V/C Q	<<< 0.01 3	>>> A 0	<<< 0.14 0	>>> A 0	<<< 0.14 0	>>> A 0	<<< 0.02 11	>>> B 11	<<< 0.02 11	>>> A 0	<<< 0.02 11	>>> B 11	<<< 0.02 11	>>> B 11			
	River Drive & Rosetta Street	TWSC	LOS Delay V/C Q	<<< 0.00 0	>>> A 0	<<< 0.13 0	>>> A 0	<<< 0.13 0	>>> A 0	<<< 0.14 13	>>> B 10	<<< 0.14 13	>>> A 0	<<< 0.14 13	>>> B 10	<<< 0.14 13	>>> B 10			
	Victoria Street/River Drive & St Michaels Street	TWSC	LOS Delay V/C Q	<<< 0.00 0	>>> A 0	<<< 0.03 0	>>> A 0	<<< 0.03 0	>>> A 0	<<< 0.01 9	>>> A 9	<<< 0.01 9	>>> A 0	<<< 0.01 9	>>> A 9	<<< 0.01 9	>>> A 9			
	Rosset Valley Court & John Street	TWSC	LOS Delay V/C Q	<<< 0.1 1	>>> A 0	<<< 0.02 6	>>> A 1	<<< 0.04 11	>>> A 10	<<< 0.04 11	>>> A 10	<<< 0.04 11	>>> A 10	<<< 0.04 11	>>> A 10	<<< 0.04 11	>>> A 10			
	Victoria Street & John Street	AWSC	LOS Delay D. Util Q	<<< 0.09 14	>>> A 8	<<< 0.23 22	>>> A 8	<<< 0.06 14	>>> A 8	<<< 0.19 20	>>> A 9	<<< 0.19 20	>>> A 8	<<< 0.19 20	>>> A 9	<<< 0.19 20	>>> A 9			
	Rosetta Street & Site Driveway	TWSC	LOS Delay V/C Q	<<< 0.08 18	>>> A 9	<<< 0.09 3	>>> A 7	<<< 0.09 3	>>> A 7	<<< 0.01 0	>>> A 0	<<< 0.01 0	>>> A 7	<<< 0.01 0	>>> A 0	<<< 0.01 0	>>> A 0			
	Site Driveway & Caroline Street	TWSC	LOS Delay V/C Q	<<< 0.01 0	>>> A 0	<<< 0.00 0	>>> A 0	<<< 0.01 9	>>> A 9	<<< 0.01 9	>>> A 9	<<< 0.01 9	>>> A 9	<<< 0.01 9	>>> A 9	<<< 0.01 9	>>> A 9			
	St. Michaels Street & John Street	TWSC	LOS Delay V/C Q	<<< 0.09 0	>>> A 0	<<< 0.00 2	>>> A 0	<<< 0.02 10	>>> B 10	<<< 0.02 10	>>> B 10	<<< 0.02 10	>>> B 10	<<< 0.02 10	>>> B 10	<<< 0.02 10	>>> B 10			
	St Michaels Street & Caroline Street	TWSC	LOS Delay V/C Q	<<< 0.02 11	>>> A 9	<<< 0.02 11	>>> A 9	<<< 0.00 0	>>> A 0	<<< 0.00 0	>>> A 0	<<< 0.00 0	>>> A 0	<<< 0.00 0	>>> A 0	<<< 0.00 0	>>> A 0			

MOE - Measure of Effectiveness
 LOS - Level of Service
 Delay - Average Delay per Vehicle in Seconds
 V/C - Volume to Capacity Ratio
 Q - 95th Percentile Queue Length (m)
 Stor. - Existing Storage (m)
 Avail. - Available Storage (m)
 TCS - Traffic Control Signal
 TWSC - Two-Way Stop Control
 AWSC - All-Way Stop Control
 </> - Shared with through movement
 D. Util - Degrees of Utilization



4.2.5 Total Operations – McNabb Street Underpass Closure

The Town of Halton Hills is conducting a detailed review of the McNabb Street underpass. The underpass is a single-lane, two-way section of roadway beneath the rail line located west of Victoria Street.

As part of this study, for the proposed development of 1 Rosetta Street, Town staff requested a scenario assessing the potential closure of the underpass. A sensitivity analysis was completed to review the high-level impacts of potentially closing the McNabb Street underpass.

With the potential closure of the underpass site generated traffic forecast to use John Street is expected to travel east towards Mountainview Road North. The impacts of the closure of the existing/background traffic volume using John Street west of Victoria Street is unknown. The Town of Halton Hills will conduct a thorough assessment to examine the potential impact of the underpass closure. This includes analyzing how it might affect traffic patterns, active transportation users, and potentially local businesses and residents beyond the immediate study area.

Figure 4.9 and **Figure 4.10** illustrate the site generated traffic volumes with the closure of the underpass for the weekday AM and PM peak hours, respectively.

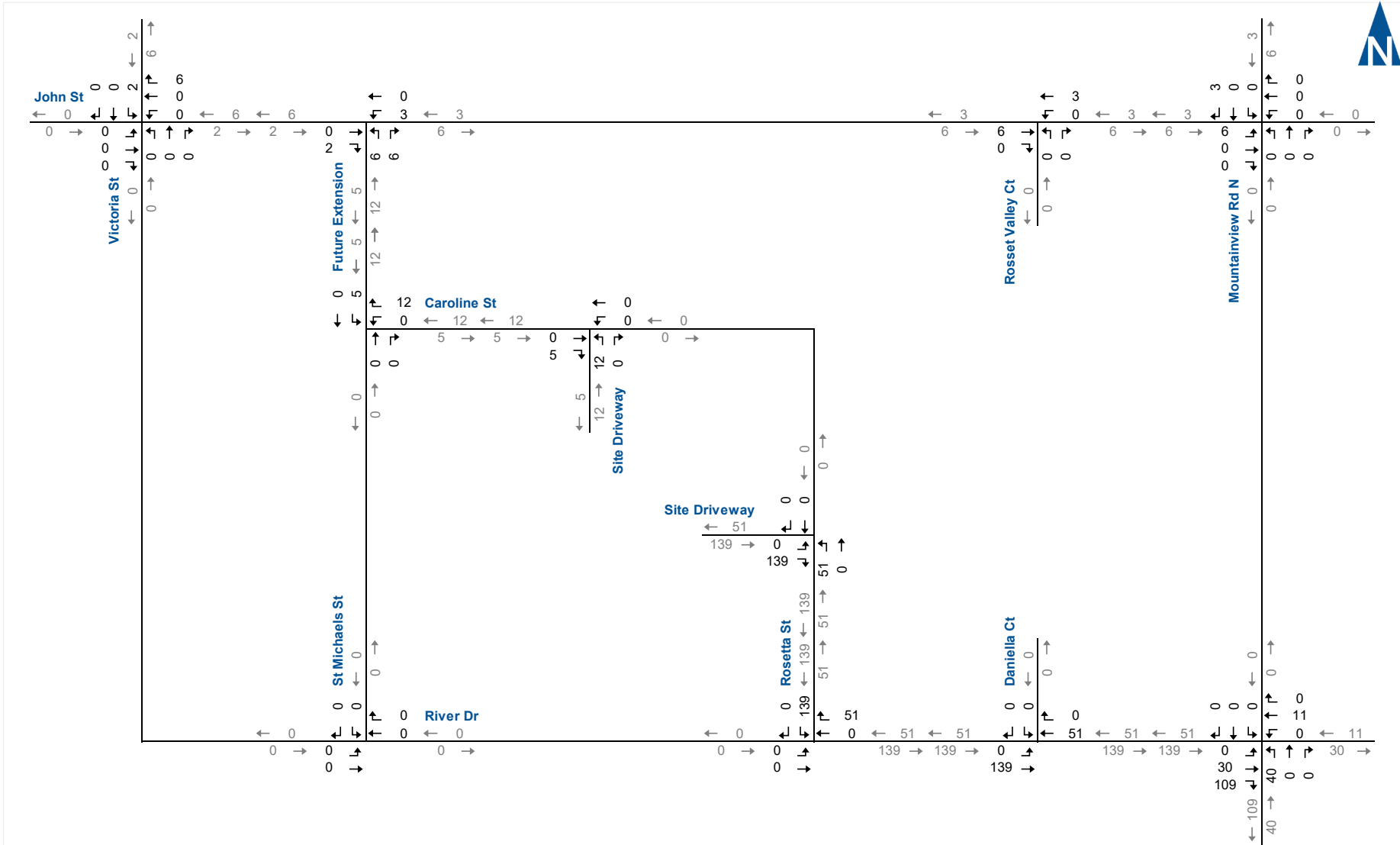
Figure 4.11 and **Figure 4.12** illustrate the forecast ten-year total traffic volumes with the closure of the underpass for the AM and PM peak hours, respectively.

Table 4.5A-B summarizes the level of service conditions for the AM and PM peak hours with closure of the underpass. **Appendix K** contains the supporting detailed Synchro and SimTraffic reports.

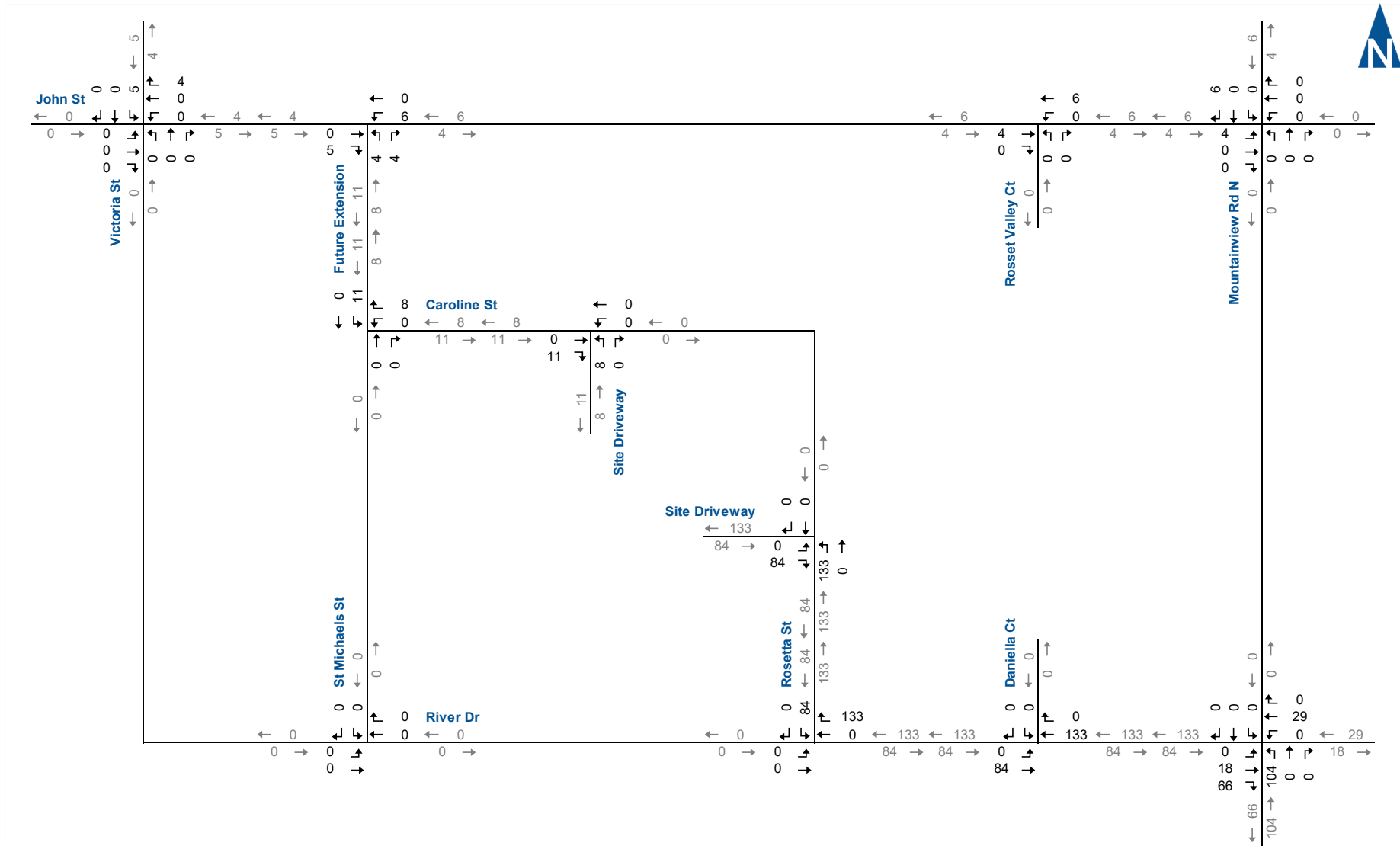
Overall, the closure of the McNab Street underpass will have a negligible impact on site traffic operations throughout the study area. Under ten-year total traffic conditions, the reported critical movements are consistent with the scenario where the underpass is open.

The town should conduct a thorough study to understand the full impact of the underpass on traffic, active transportation users and any potential impacts on local businesses and area residents.

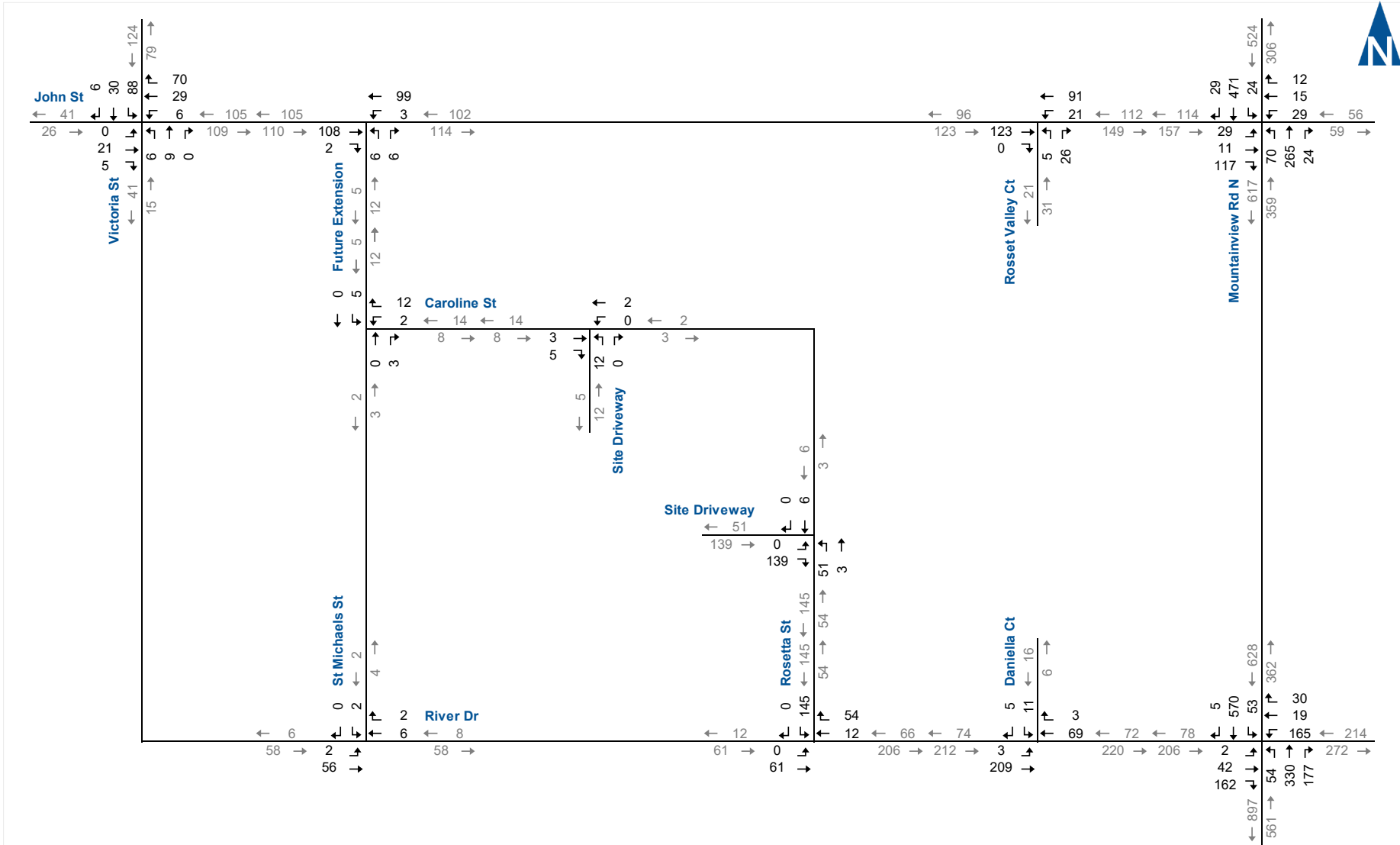




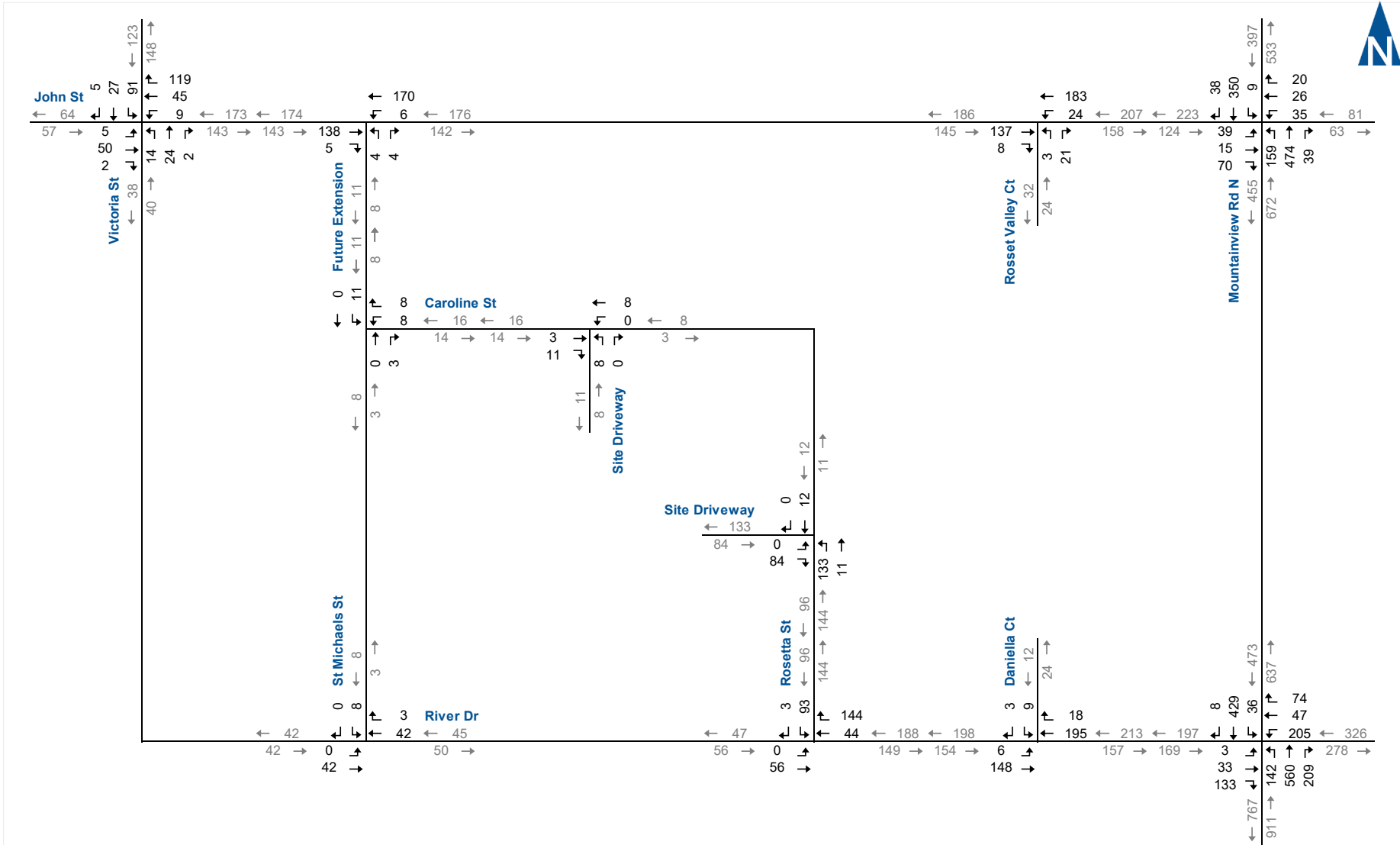
Site-Generated Traffic AM Peak Hour – No Underpass



Site-Generated Traffic PM Peak Hour – No Underpass



Ten-Year Total Traffic Volumes AM Peak Hour – No Underpass



Ten-Year Total Traffic Volumes PM Peak Hour – No Underpass

TABLE 4.5A: MCNABB UNDERPASS CLOSURE – AM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall	
				Eastbound				Westbound				Northbound				Southbound					
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach		
AM Peak Hour	Mountainview Road N & River Drive	TCS	LOS Delay V/C Q	< < <	C 22 0.24 38	> > >	C 22	< < <	E 58 0.90 69	> > >	E 58	< < <	B 16 0.56 53	B 11 0.14 23	> > >	B 15	< < <	B 13 0.45 40	> > >	B 13	C 21 0.68
	Mountainview Road N & John Street	AWSC	LOS Delay D. Util Q Stor. Avail.	< < <	B 12 0.28 23 - -	> > >	B 12	< < <	B 11 0.11 16 - -	> > >	B 11	A 10 0.14 24 30 6	B 14 0.51 34 - -	> > >	B 13	A 8 0.05 21 30 9	D 32 0.86 56 - -	> > >	D 31		
	River Drive & Daniella Street	TWSC	LOS Delay V/C Q	< < <	A 0 0.00 1	> > >	A 0	< < <	A 0 0.05 0	> > >	A 0						A 10 0.03 10	> > >	A 10		
	River Drive & Rosetta Street	TWSC	LOS Delay V/C Q	< < <	A 0 0.00 0	> > >	A 0	< < <	A 0 0.04 0	> > >	A 0						A 10 0.18 15	> > >	A 10		
	Victoria Street/River Drive & St Michaels Street	TWSC	LOS Delay V/C Q	< < <	A 0 0.00 0	> > >	A 0	< < <	A 0 0.01 0	> > >	A 0						A 9 0.00 3	> > >	A 9		
	Rosset Valley Court & John Street	TWSC	LOS Delay V/C Q	< < <	A 0 0.09 0	> > >	A 0	< < <	A 2 0.02 4	> > >	A 2	A 9 0.04 11					A 9	> > >			
	Victoria Street & John Street	AWSC	LOS Delay D. Util Q	< < <	A 7 0.04 12	> > >	A 7	< < <	A 8 0.14 20	> > >	A 8	< < <	A 8 0.02 11	> > >	A 8	< < <	A 8 0.17 18	> > >	A 8		
	Rosetta Street & Site Driveway	TWSC	LOS Delay V/C Q	A 9 0.14 21	> > >	A 9	< < <					< < <	A 7 0.03 2	> > >	A 7	< < <	A 0 0.00 0	> > >	A 0		
	Site Driveway & Caroline Street	TWSC	LOS Delay V/C Q	A 0 0.00 0	> > >	A 0	< < <	A 0 0.00 0	> > >	A 0	A 9 0.01 11						A 9	> > >			
	St. Michaels Street & John Street	TWSC	LOS Delay V/C Q	A 0 0.07 0	> > >	A 0	< < <	A 0 0.00 0	> > >	A 0	A 9 0.02 11						A 9	> > >			
	St Michaels Street & Caroline Street	TWSC	LOS Delay V/C Q				A 8 0.01 11	> > >	A 8				A 0 0.00 0	> > >	A 0	< < <	A 7 0.00 0	> > >	A 7		

MOE - Measure of Effectiveness
 LOS - Level of Service
 Delay - Average Delay per Vehicle in Seconds
 V/C - Volume to Capacity Ratio
 Q - 95th Percentile Queue Length (m)
 Stor. - Existing Storage (m)
 Avail. - Available Storage (m)
 TCS - Traffic Control Signal
 TWSC - Two-Way Stop Control
 AWSC - All-Way Stop Control
 </> - Shared with through movement
 D. Util - Degrees of Utilization

TABLE 4.5B: MCNABB UNDERPASS CLOSURE – PM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall		
				Eastbound				Westbound				Northbound				Southbound						
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach			
PM Peak Hour	Mountainview Road N & River Drive	TCS	LOS Delay V/C Q	< < <	C 20 0.18 28	> > >	C 20	< < <	E 57 0.93 68	> > >	E 57	< < <	F 123 1.19 168	B 13 0.18 77	> > >	F 98	< < <	B 16 0.47 33	> > >	B 16	E 63 1.09	
	Mountainview Road N & John Street	AWSC	LOS Delay D. Util Q Stor. Avail.	< < <	B 11 0.23 17 - -	> > >	B 11	< < <	B 11 0.16 16 - -	> > >	B 11	< < <	B 11 0.29 33 30 -3	D 30 0.84 - -	> > >	D 26	< < <	A 8 0.02 9 30 21	C 20 0.68 29 - -	> > >	C 19	
	River Drive & Daniella Street	TWSC	LOS Delay V/C Q	< < <	A 0 0.01 2	> > >	A 0	< < <	A 0 0.14 0	> > >	A 0	< < <					> > >	B 11 0.02 9	> > >	B 11		
	River Drive & Rosetta Street	TWSC	LOS Delay V/C Q	< < <	A 0 0.00 0	> > >	A 0	< < <	A 0 0.13 2	> > >	A 0	< < <					> > >	B 10 0.15 14	> > >	B 10		
	Victoria Street/River Drive & St Michaels Street	TWSC	LOS Delay V/C Q	< < <	A 0 0.00 0	> > >	A 0	< < <	A 0 0.03 0	> > >	A 0	< < <					> > >	A 9 0.01 8	> > >	A 9		
	Rosset Valley Court & John Street	TWSC	LOS Delay V/C Q	< < <	A 0 0.1 0	> > >	A 0	< < <	A 1 0.02 7	> > >	A 1	< < <	A 10 0.04 11				> > >	A 10	> > >			
	Victoria Street & John Street	AWSC	LOS Delay D. Util Q	< < <	A 8 0.08 14	> > >	A 8	< < <	A 8 0.22 21	> > >	A 8	< < <	A 8 0.06 14				> > >	A 8	< < <	A 9 0.18 22	> > >	A 9
	Rosetta Street & Site Driveway	TWSC	LOS Delay V/C Q	A 9 0.09 16			A 9										> > >	A 7	< < <	A 0 0.01 0	> > >	A 0
	Site Driveway & Caroline Street	TWSC	LOS Delay V/C Q		A 0 0.01 0	> > >	A 0	< < <	A 0 0.00 0	> > >	A 0	< < <	A 9 0.01 7				> > >	A 9	> > >			
	St. Michaels Street & John Street	TWSC	LOS Delay V/C Q		A 0 0.09 0	> > >	A 0	< < <	A 0 0.00 2	> > >	A 0	< < <	A 10 0.01 7				> > >	A 10	> > >			
	St Michaels Street & Caroline Street	TWSC	LOS Delay V/C Q						A 9 0.02 10	> > >	A 9	< < <	A 0 0.00 0				> > >	A 0	< < <	A 7 0.01 0	> > >	A 7

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4.2.6 Total Operations – 130 Mountainview Road

The potential traffic impacts of the possible future development of 130 Mountainview Road will be reviewed in detail by the applicant. This section provides a high-level assessment of those traffic impacts, as requested by the Town of Halton Hills.

130 Mountainview Road is estimated to consist of 1,092 units comprised of high-rise units and townhouse blocks. Detailed breakdown of the unit types was not available for this study; thus, it was assumed 1,000 of the units would be high-rise units and 92 units would be townhouse units based on the size of the lot. It is assumed the development will have a single access to River Drive between Mountainview Road and Daniela Court. The distribution of site trips is assumed to follow the same distribution as the subject site outlined in Section 3.4. **Table 4.6** outlines the trip generation for 130 Mountainview Road.

TABLE 4.6: 130 MOUNTAINVIEW ROAD TRIP GENERATION

LUC	Units	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
221	92	8	26	34	22	14	36
222	1000	70	200	270	198	122	320
Total		78	226	304	220	136	356

LUC 221 – AM: Average Rate = 0.37 | PM: $T = 0.39(X) + 0.34$

LUC 222 – AM: Average Rate = 0.27 | PM: Average Rate = 0.32

Appendix L contains the 130 Mountainview Road traffic volumes. Overall, the 130 Mountainview Road development is expected to add a significant volume of vehicles to the intersection of Mountainview Road and River Drive. Other study area intersection volumes are expected to increase by less than 15 vehicles per hour during the peak hours.

Figure 4.13 and **Figure 4.14** illustrate the forecast ten-year total traffic volumes with the inclusion of 130 Mountainview Road development during the AM and PM peak hours, respectively.

Table 4.7A-B summarizes the level of service conditions for the AM and PM peak hours with 130 Mountainview Road. **Appendix M** contains the supporting detailed Synchro and SimTraffic reports.

The following critical movements are noted:



AM Peak Hour:

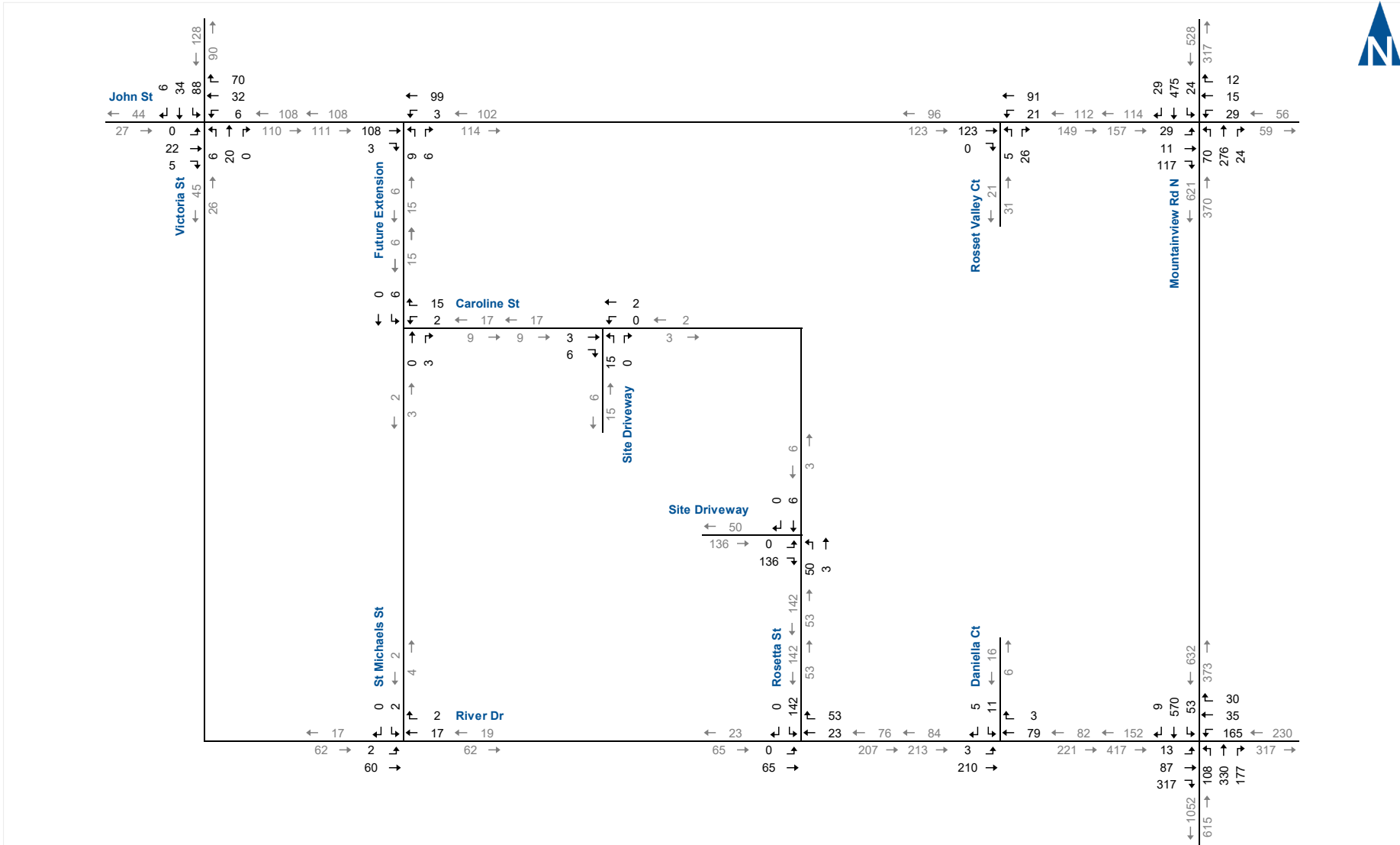
- ▶ Mountainview Road North and River Drive:
 - Westbound approach is forecast to operate with delays in the LOS F range with a v/c ratio surpassing 1.00;
 - Northbound left-turn/through movement is forecast to operate with delays in the LOS D range with a v/c ratio surpassing 0.85; and
 - Overall, the intersection is forecast to operate with delays in the LOS D range and a v/c ratio surpassing 1.00.

PM Peak Hour:

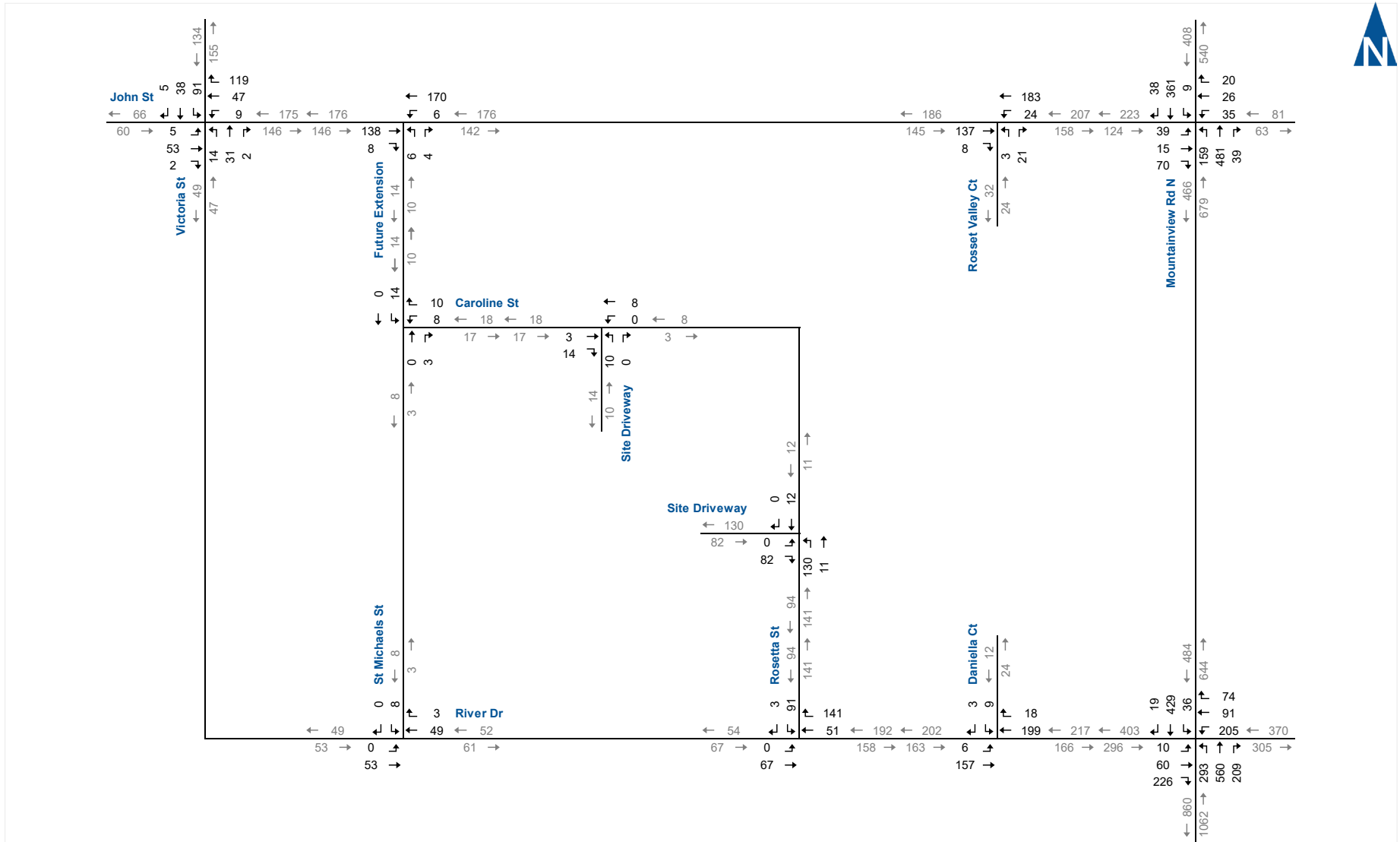
- ▶ Mountainview Road North and River Drive:
 - Westbound approach is forecast to operate with delays in the LOS F range with a v/c ratio surpassing 1.00;
 - Northbound left-turn/through movement is forecast to operate with delays in the LOS F range with a v/c ratio surpassing 1.00; and
 - Overall, the intersection is forecast to operate with delays in the LOS F range and a v/c ratio surpassing 1.00.

Overall, the addition of the 130 Mountainview Road development is forecast to cause traffic operations to deteriorate at the intersection of Mountainview Road and River Drive. Capacity deficiencies and mitigation measures should be explored by the applicant of 130 Mountainview Road.





Ten-Year Total Traffic Volumes AM Peak Hour - With 130 Mountainview Road



Ten-Year Total Traffic Volumes PM Peak Hour - With 130 Mountainview Road

TABLE 4.7A: 130 MOUNTAINVIEW ROAD OPERATIONS – AM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Mountainview Road N & River Drive	TCS	LOS Delay V/C Q	<< 27 >> << 0.66 >> << 83 >>	C >> >> C 27 << >> C 27 <<	>> << >> << >> <<	C 27 << >> C 27 << >> C 27 <<	<< F >> << 138 >> << 1.16 >> << 70 >>	>> << >> << >> <<	F 138 << >> F 138 << >> F 138 <<	<< D >> << 42 >> << 0.90 >> << 96 >>	>> B >> >> 14 >> >> 0.14 >> >> 32 >>	>> C 34 << >> C 34 << >> C 34 <<	<< B >> << 18 >> << 0.52 >> << 43 >>	>> << >> << >> <<	B 18 << >> B 18 << >> B 18 <<	D 40 << >> D 40 << >> D 40 <<	1.01		
	Mountainview Road N & John Street	AWSC	LOS Delay D. Util Q Stor. Avail.	<< B >> << 12 >> << 0.28 >> << 22 >> << - >> << - >>	B >> >> B 12 << >> B 12 <<	>> << >> << >> <<	B 12 << >> B 12 << >> B 12 <<	<< B >> << 11 >> << 0.11 >> << 16 >> << - >> << - >>	>> << >> << >> <<	B 11 << >> B 11 << >> B 11 <<	<< A >> << 10 >> << 0.14 >> << 25 >> << 30 >> << 5 >>	>> B >> >> 14 >> >> >> >> >> >> >> >> >>	>> B 14 << >> B 14 << >> B 14 <<	<< A >> << 8 >> << 0.05 >> << 18 >> << 30 >> << 12 >>	>> D >> >> 34 >> >> 48 >> >> - >> >> - >>	>> << >> << >> <<	D 33 << >> D 33 << >> D 33 <<			
	River Drive & Daniella Street	TWSC	LOS Delay V/C Q	<< A >> << 0 >> << 0.00 >> << 4 >>	A >> >> A 0 << >> A 0 <<	>> << >> << >> <<	A 0 << >> A 0 << >> A 0 <<	<< A >> << 0 >> << 0.06 >> << 0 >>	>> << >> << >> <<	A 0 << >> A 0 << >> A 0 <<	<< >> << >> << >> << >>	>> << >> << >> <<	>> << >> << >> <<	<< B >> << 10 >> << 0.03 >> << 11 >>	>> << >> << >> <<	B 10 << >> B 10 << >> B 10 <<				
	River Drive & Rosetta Street	TWSC	LOS Delay V/C Q	<< A >> << 0 >> << 0.00 >> << 0 >>	A >> >> A 0 << >> A 0 <<	>> << >> << >> <<	A 0 << >> A 0 << >> A 0 <<	<< A >> << 0 >> << 0.05 >> << 0 >>	>> << >> << >> <<	A 0 << >> A 0 << >> A 0 <<	<< >> << >> << >> << >>	>> << >> << >> <<	>> << >> << >> <<	<< B >> << 10 >> << 0.18 >> << 14 >>	>> << >> << >> <<	B 10 << >> B 10 << >> B 10 <<				
	Victoria Street/River Drive & St Michaels Street	TWSC	LOS Delay V/C Q	<< A >> << 0 >> << 0.00 >> << 2 >>	A >> >> A 0 << >> A 0 <<	>> << >> << >> <<	A 0 << >> A 0 << >> A 0 <<	<< A >> << 0 >> << 0.01 >> << 0 >>	>> << >> << >> <<	A 0 << >> A 0 << >> A 0 <<	<< >> << >> << >> << >>	>> << >> << >> <<	>> << >> << >> <<	<< A >> << 9 >> << 0.00 >> << 3 >>	>> << >> << >> <<	A 9 << >> A 9 << >> A 9 <<				
	Rosset Valley Court & John Street	TWSC	LOS Delay V/C Q	<< A >> << 0 >> << 0.09 >> << 0 >>	A >> >> A 0 << >> A 0 <<	>> << >> << >> <<	A 0 << >> A 0 << >> A 0 <<	<< A >> << 2 >> << 0.02 >> << 4 >>	>> << >> << >> <<	A 2 << >> A 2 << >> A 2 <<	<< A >> << 9 >> << 0.04 >> << 11 >>	>> << >> << >> <<	>> << >> << >> <<	<< A >> << 9 >> << >> << >>	>> << >> << >> <<	A 9 << >> A 9 << >> A 9 <<				
	Victoria Street & John Street	AWSC	LOS Delay D. Util Q	<< A >> << 8 >> << 0.04 >> << 13 >>	A >> >> A 8 << >> A 8 <<	>> << >> << >> <<	A 8 << >> A 8 << >> A 8 <<	<< A >> << 8 >> << 0.14 >> << 19 >>	>> << >> << >> <<	A 8 << >> A 8 << >> A 8 <<	<< A >> << 8 >> << 0.04 >> << 12 >>	>> << >> << >> <<	>> << >> << >> <<	<< A >> << 8 >> << 0.18 >> << 17 >>	>> << >> << >> <<	A 8 << >> A 8 << >> A 8 <<				
	Rosetta Street & Site Driveway	TWSC	LOS Delay V/C Q	A >> >> 9 >> >> 0.14 >> >> 19 >>	A >> >> A 9 << >> A 9 <<	>> << >> << >> <<	A 9 << >> A 9 << >> A 9 <<	<< >> << >> << >> << >>	>> << >> << >> <<	A 7 << >> A 7 << >> A 7 <<	<< A >> << 7 >> << 0.03 >> << 2 >>	>> << >> << >> <<	>> << >> << >> <<	<< A >> << 0 >> << 0.00 >> << 0 >>	>> << >> << >> <<	A 0 << >> A 0 << >> A 0 <<				
	Site Driveway & Caroline Street	TWSC	LOS Delay V/C Q	<< A >> << 0 >> << 0.01 >> << 0 >>	A >> >> A 0 << >> A 0 <<	>> << >> << >> <<	A 0 << >> A 0 << >> A 0 <<	<< A >> << 0 >> << 0.00 >> << 0 >>	>> << >> << >> <<	A 0 << >> A 0 << >> A 0 <<	<< A >> << 9 >> << 0.02 >> << 10 >>	>> << >> << >> <<	>> << >> << >> <<	<< A >> << 9 >> << >> << >>	>> << >> << >> <<	A 9 << >> A 9 << >> A 9 <<				
	St. Michaels Street & John Street	TWSC	LOS Delay V/C Q	<< A >> << 0 >> << 0.07 >> << 0 >>	A >> >> A 0 << >> A 0 <<	>> << >> << >> <<	A 0 << >> A 0 << >> A 0 <<	<< A >> << 0 >> << 0.00 >> << 3 >>	>> << >> << >> <<	A 0 << >> A 0 << >> A 0 <<	<< A >> << 10 >> << 0.02 >> << 11 >>	>> << >> << >> <<	>> << >> << >> <<	<< A >> << 10 >> << >> << >>	>> << >> << >> <<	A 10 << >> A 10 << >> A 10 <<				
	St Michaels Street & Caroline Street	TWSC	LOS Delay V/C Q	<< >> << >> << >> << >>	A >> >> A 8 << >> A 8 <<	>> << >> << >> <<	A 8 << >> A 8 << >> A 8 <<	<< A >> << 8 >> << 0.02 >> << 11 >>	>> << >> << >> <<	A 8 << >> A 8 << >> A 8 <<	<< A >> << 0 >> << 0.00 >> << 0 >>	>> << >> << >> <<	>> << >> << >> <<	<< A >> << 7 >> << 0.00 >> << 0 >>	>> << >> << >> <<	A 7 << >> A 7 << >> A 7 <<				

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 TWSC - Two-Way Stop Control
 AWSC - All-Way Stop Control
 </> - Shared with through movement
 D. Util - Degrees of Utilization

TABLE 4.7B: 130 MOUNTAINVIEW ROAD OPERATIONS – PM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Mountainview Road N & River Drive	TCS	LOS Delay V/C Q	< < <	C 21 >	> > >	C 21	< < <	F 112 >	> > >	F 112	< < <	F 383 >	B 14 >	F 311	< < <	C 21 >	> > >	C 21	F 175
	Mountainview Road N & John Street	AWSC	LOS Delay D. Util Q Stor. Avail.	< < <	B 11 >	> > >	B 11	< < <	B 11 >	> > >	B 11	B 11 >	D 32 >	D 27	A 9 >	C 21 >	> > >	C 20		
	River Drive & Daniella Street	TWSC	LOS Delay V/C Q	< < <	A 0 >	> > >	A 0	< < <	A 0 >	> > >	A 0					B 11 >	> > >	B 11		
	River Drive & Rosetta Street	TWSC	LOS Delay V/C Q	< < <	A 0 >	> > >	A 0	< < <	A 0 >	> > >	A 0					B 10 >	> > >	B 10		
	Victoria Street/River Drive & St Michaels Street	TWSC	LOS Delay V/C Q	< < <	A 0 >	> > >	A 0	< < <	A 0 >	> > >	A 0					A 9 >	> > >	A 9		
	Rosset Valley Court & John Street	TWSC	LOS Delay V/C Q	< < <	A 0 >	> > >	A 0	< < <	A 1 >	> > >	A 1	A 10 >	> > >	A 10						
	Victoria Street & John Street	AWSC	LOS Delay D. Util Q	< < <	A 8 >	> > >	A 8	< < <	A 8 >	> > >	A 8	< < <	A 8 >	A 8	> > >	A 8	< < <	A 9 >	> > >	A 9
	Rosetta Street & Site Driveway	TWSC	LOS Delay V/C Q	A 9 >	> > >	> > >	A 9					< < <	A 7 >	A 7		A 0 >	> > >	A 0		
	Site Driveway & Caroline Street	TWSC	LOS Delay V/C Q	< < <	A 0 >	> > >	A 0	< < <	A 0 >	> > >	A 0	A 9 >	> > >	A 9						
	St. Michaels Street & John Street	TWSC	LOS Delay V/C Q	< < <	A 0 >	> > >	A 0	< < <	A 0 >	> > >	A 0	B 10 >	> > >	B 10						
	St Michaels Street & Caroline Street	TWSC	LOS Delay V/C Q	< < <	A 9 >	> > >	A 9	< < <	A 9 >	> > >	A 9		A 0 >	A 0	< < <	A 7 >	> > >	A 7		

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5 Remedial Measures

5.1 Mountainview Road North and River Drive

The intersection of Mountainview Road North and River Drive is forecast to experience capacity constraints (that is, v/c ratio greater than 0.85) on the westbound approach under the five-year background horizon. The capacity constraints are expected to continue to occur under future traffic conditions.

Under total traffic conditions (five- and ten-year horizons), the northbound left-turn/through movement at the intersection of Mountainview Road North and River Drive is forecast to operate with delays in the LOS E to LOS F range with a v/c ratios surpassing 1.00 during the PM peak hour.

To accommodate the northbound left-turn lane within the existing four lane cross section on Mountainview Road North south of River Drive, the southbound approach can be reduced to one shared through/right lane and one left-turn lane. **Figure 5.1** illustrates the functional layout of the recommended lane configuration at the intersection.

The reconfiguration of the northbound and southbound lane groupings appears to be feasible without modifications to the existing pavement width. The revised lane configuration can likely be achieved by modifying the existing pavement markings and signage.

To manage the expected growth in traffic at the Mountainview Road North and River Drive intersection, the road authority should consider:

- ▶ Reduce the southbound approach to one shared through/right lane and one left-turn lane with 50 metres of storage;
- ▶ Provide a northbound left-turn lane with 60 metres of storage; and
- ▶ Optimizing signal timings with permissive-protected northbound and westbound left-turn phases.

Table 5.1 summarizes the level of service conditions for the AM and PM peak hour with the above noted improvements in place.

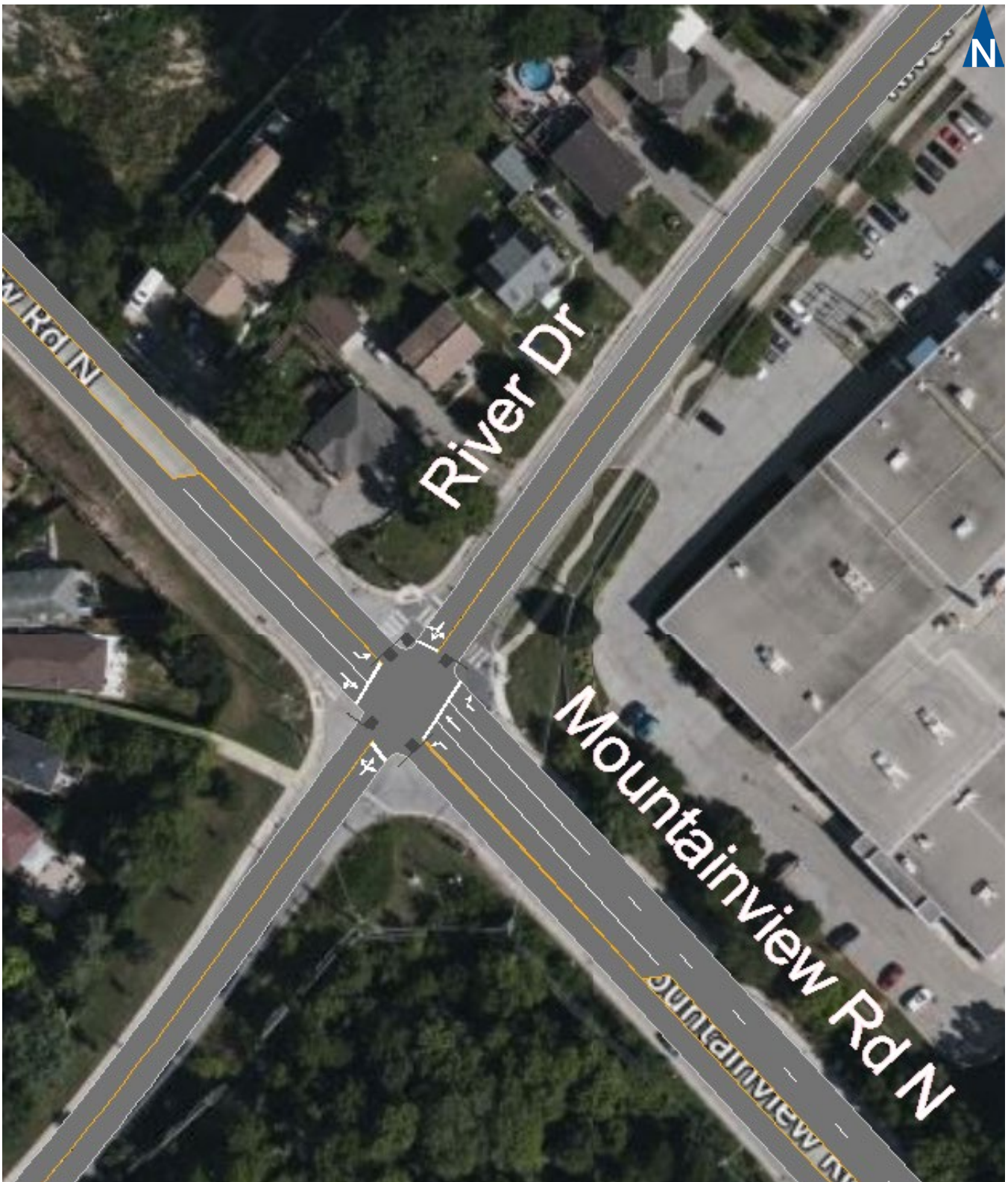
With the inclusion of optimized signal timings and an updated lane configuration at the intersection of Mountainview Road North and River Drive, most forecast critical movements are now operating at acceptable levels of service although, the intersection is forecast to operate with delays in the LOS C range and a v/c ratio surpassing



0.85. However, the intersection still has some left-over capacity, and the level of service is generally acceptable as it operates at LOS C.

Appendix N contains the supporting detailed Synchro and SimTraffic reports.





Recommended Lane Configuration

TABLE 5.1: MOUNTAINVIEW ROAD NORTH AND RIVER DRIVE OPERATIONS WITH IMPROVEMENTS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Mountainview Road N & River Drive	TCS	LOS Delay V/C Q Stor. Avail.	< < < < <	C 26 0.22 54 -	> > > > >	C 26	< < < < <	D 44 0.76 94 -	> > > > >	D 44	B 17 0.23 24 60 36	B 18 0.39 53 -	B 15 0.14 21 -	B 17	C 21 0.15 32 50 18	D 37 0.81 108 -	> > > > >	D 36	C 29 0.83
PM Peak Hour	Mountainview Road N & River Drive	TCS	LOS Delay V/C Q Stor. Avail.	< < < < <	C 21 0.17 32 -	> > > > >	C 21	< < < < <	D 37 0.79 79 -	> > > > >	D 37	B 18 0.52 57 60 3	C 28 0.76 101 -	B 16 0.18 43 -	C 24	C 25 0.19 36 50 14	D 40 0.81 86 -	> > > > >	D 39	C 30 0.90

MOE - Measure of Effectiveness
 LOS - Level of Service
 Delay - Average Delay per Vehicle in Seconds
 V/C - Volume to Capacity Ratio
 Q - 95th Percentile Queue Length (m)
 Stor. - Existing Storage (m)
 Avail. - Available Storage (m)
 TCS - Traffic Control Signal
 </> - Shared with through movement



5.2 Traffic Control Signal Warrant

The potential for implementing traffic signal control at the Mountainview Road North and John Street intersection was assessed using the Ontario Traffic Manual (OTM Book 12 – Justification 7) signal warrant¹¹ procedures. The forecast ten-year horizon total traffic volumes were used in the warrant analysis.

To warrant the installation of a traffic control signal at an existing intersection with forecast traffic volumes (average hourly volume), the minimum vehicular warrant or the delay to cross traffic warrant must be 120% fulfilled.

Traffic control signal warrants are not satisfied. No improvements to the existing form of stop control are recommended. **Appendix O** contains the warrant analysis.

5.3 Left-Turn Lane Warrant

The Ministry of Transportation's Design Supplement for the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads¹² provides guidance on the assessment and/or need for auxiliary left-turn lanes at intersections.

The site driveway intersections to Rosetta Street and Caroline Street have been reviewed using these procedures to determine if the future traffic volumes warrant the need for left-turn lanes to serve the site driveways.

At the site driveway to Rosetta Street, the left-turn volumes are greater than 5% of the advancing volume, but the advancing and opposing volumes too low to warrant a left-turn lane.

No change in the existing lane configuration is recommended. It is reiterated that from an operational perspective, the proposed site driveways will operate at good level of service and well within capacity.

Appendix P contains the left-turn lane warrant nomographs.

¹¹ Ontario Traffic Manual Book 12, Ministry of Transportation of Ontario, July 2001.

¹² MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads, Appendix 9 for Chapter 9 Intersections, June 2017.



6 Parking Justification

As with any equilibrium system, there are a minimum of two components required to be in balance and reach the equilibrium point. With parking systems, this involves the balance of parking supply and demand. Achieving an appropriate supply level is equally important as demand. The ubiquitous oversupply of cheap and accessible parking has long been a significant contributing factor to single-occupant vehicle (SOV) travel growth.

There is a strong focus on the pedestrian environment and an emphasis on active transportation in the Official Plan. As the development proposal focuses on accommodating a suitable pedestrian environment, one that would encourage active transit based on the de-emphasis on parking, the use of blanketly applying the Zoning By-law across the development and the MTSA area does not reflect these goals.

6.1 Proposed Parking Supply

The site's parking demand is proposed to be accommodated on site. The site's parking supply is identified as 847 parking spaces (1.29 spaces per unit). **Table 6.1A** summarizes the site's vehicle parking supply.

TABLE 6.1A: PROPOSED VEHICLE PARKING SUPPLY

Phase	Occupant	Visitor	Accumulative Total
Phase 1	285 spaces 1.15 spaces/unit	53 spaces 0.21 spaces/unit	338 spaces 1.36 spaces/unit
Phase 2	642 spaces 1.26 spaces/unit	59 spaces 0.12 spaces/unit	701 spaces 1.38 spaces/unit
Phase 3	776 spaces 1.18 spaces/unit	71 spaces 0.11 spaces/unit	847 spaces 1.29 spaces/unit

Parking for the non-residential land use is expected to be shared with visitor parking. Since the final programming for the non-residential space is undetermined, it may ultimately be used as amenity space for the site. To ensure that the parking demands of the potential future non-residential land use can be accommodated, the parking demand profile for this land use should be offset from the typical parking demand profile for residential visitor parking. Ideally, the non-residential land uses would have normal business operating hours (9



AM to 5 PM) when residential visitor parking demand is low. This would allow the site to share the visitor parking spaces between uses and not require any additional vehicle parking explicitly for the non-residential land use.

The site statistics indicate 508 proposed bicycle parking spaces with 442 long-term spaces and 66 short-term spaces located near building entrances. **Table 6.1B** summarizes the site's bicycle parking supply.

TABLE 6.1B: PROPOSED BICYCLE PARKING SUPPLY

Phase	Long-Term	Short-Term
Phase 1	162 spaces 0.65 spaces/unit	24 spaces 0.10 spaces/unit
Phase 2	244 spaces 0.48 spaces/unit	32 spaces 0.06 spaces/unit
Phase 3	442 spaces 0.67 spaces/unit	66 spaces 0.10 spaces/unit

6.2 Zoning By-Law Requirements

6.2.1 Town of Halton Hills Zoning By-Law

The Town of Halton Hills Zoning By-Law¹³ prescribes parking ratios for apartment buildings for occupants and visitors. The following minimum parking ratios are noted for apartment dwelling units:

- ▶ 1.50 occupant spaces per unit; and
- ▶ 0.25 visitor spaces per unit where more than four apartment dwelling units are located.

Table 6.2 summarizes the site's Zoning By-Law parking requirements for the current site concept plan. The Zoning By-Law parking requirement is 1,154 spaces.

The site's parking supply is considered deficient by 307 spaces.

¹³ Town of Halton Hills Zoning By-Law 2010-0050, July 2010



TABLE 6.2: ZONING BY-LAW PARKING REQUIREMENT

Land Use	Parking
659 Apartment units (Occupant)	989 spaces
659 Apartment units (Visitor)	165 spaces
Total Parking Required	1,154 spaces

6.2.2 Other Municipalities

Parking standards are increasingly seen as an instrument of planning policy, and parking ratios are now viewed as having the primary role in determining car use. Parking ratios have existed in most cities since the 1950s and have often been amended incrementally. Consequently, it is not surprising that municipalities are often unable to trace the justification or reasoning behind some of the older parking ratios found in their current Zoning By-laws.

Given that parking standards reflect an “average” condition, they will rarely prescribe the number of parking spaces to match the parking demands of any individual development project exactly. Other municipalities recognize the advantages of parking ratios supporting broader Official Plan objectives. The empirical challenge is understanding how parking demand for a given use may vary. The policy question is where the parking standard or ratio should be set in that range.

A review of municipalities who’ve recently updated their parking standards shows a shift in the amount of parking required and the how parking supply is viewed.

The Town of Oakville recently developed a new zoning by-law for lands located north of Dundas Street. The parking rates within this by-law for multiple dwelling units stipulate that a maximum parking rate of 1.25 per unit would be accepted with no prescribed minimum parking requirement. In contrast to generic minimum parking requirements, North Oakville provides maximum limits to restrict the total number of spaces that can be constructed rather than establish a minimum number.

The City of Welland has recently undertaken a comprehensive review of the zoning by-law to ensure that land and growth are appropriately managed and that the zoning regulations are up to date. As part of this work, updated parking requirements were developed, which requires multiple dwellings to provide a parking rate of 1.00 parking space per unit.



City of Hamilton has a staggered approach for parking requirements for multiple dwellings. The minimum parking required depends on the size of the dwellings and the number of units, with a maximum parking rate of 1.25 spaces per unit.

Attitudes towards automobile ownership and its role in an urban lifestyle are changing in the eyes of both consumers and policymakers, and lower parking regulations reflect this. As parking regulations are an attempt for supply to meet demand, regulations that require a lower supply for future buildings are an indication that future demand is likely to be lower with the rise of sustainable travel modes (that is, transit, cycling, and walking).

The parking requirements for the development concept was calculated based on the parking rates used by other municipalities in southern Ontario. This methodology is a test of the reasonableness of the parking rates proposed for the site.

Municipalities include:

- ▶ City of Burlington;
- ▶ City of Guelph;
- ▶ City of Hamilton;
- ▶ City of Kitchener;
- ▶ City of Mississauga;
- ▶ Town of Newmarket;
- ▶ Town of Oakville;
- ▶ City of Toronto;
- ▶ City of Vaughan; and
- ▶ City of Waterloo.

Some of these municipalities have specific areas where lower parking rates are applied. Other municipalities are also reviewing and updating their respective Zoning By-Law parking requirements. It is acknowledged that some of these municipalities have public transit systems and differ contextually from the subject site. **Table 6.3** summarizes the parking rates for the various municipalities.



TABLE 6.3: OTHER JURISDICTIONS PARKING BY-LAWS

Municipality	Land Use	Parking Rate (spaces/unit)
City of Waterloo (Residential Mixed-Use Zones)	Multiple Residential	0.60
	Visitor	0.10
City of Toronto (Parking Zone A)	Multiple Residential	0.30-1.00
	Visitor	0.10
City of Kitchener - 85-1	Multiple Residential	0.165-1.00
City of Vaughan Metropolitan Centre	Multiple Residential	0.40-1.00
	Visitor	0.15
City of Hamilton	Multiple Residential	0.30-1.00
Town of Newmarket	Multiple Residential	0.70-1.20
	Visitor	0.15
Town of Oakville - Mixed Use Zones	Multiple Residential	1.00-1.25
	Visitor	0.20
City of Kitchener - 2019-051	Multiple Residential	1.00
	Visitor	0.10
City of Waterloo (Zone R9)	Multiple Residential	1.00
	Visitor	0.10
City of Guelph - Parking Review - Mixed Use Area	Multiple Residential	1.00
	Visitor	0.10
City of Guelph - Parking Review - Other Areas	Multiple Residential	1.00
	Visitor	0.15
City of Mississauga: Apartment, within CC1 to CC4 Zones)	Multiple Residential	0.80
	Visitor	0.15
City of Burlington: City Wide Intensification	Multiple Residential	1.00
	Visitor	0.25
City of Burlington	Multiple Residential	1.25-1.5
	Visitor	0.25
Town of Halton Hills	Multiple Residential	1.50
	Visitor	0.25

Occupant parking requirements for apartment buildings in the selected municipalities range from 0.165 to 1.5 spaces per unit. Visitor parking requirements for apartment buildings in the municipalities range from zero to 0.25 spaces per unit. Some special planning areas do not require visitor parking.

The Town of Newmarket Zoning By-Law¹⁴ allows for a 30% reduction in the required parking for residential and non-residential uses located

¹⁴ The Corporation of the Town of Newmarket Zoning By-Law 2010-40. Section 5.3.3.3 Reduced Parking Standards for Proximity to Transit in The Urban Centres



within a 500-metre walking distance of either a GO train station or a GO bus terminal.

Table 6.4 summarizes the calculated parking requirement for the site concept based on other Municipal Zoning By-laws.

The data indicates a wide range of parking requirements across southern Ontario. The 847 parking spaces proposed for the site would be considered appropriate in the majority of selected municipalities which demonstrates that the proposed supply is reasonable.

TABLE 6.4: PARKING REQUIREMENTS OTHER MUNICIPALITIES

Source	Parking Requirement		
	O	V	Total
City of Waterloo (Residential Mixed-Use Zones)	396	66	462
City of Toronto (Parking Zone A)	198	66	264
City of Kitchener - 85-1	109	0	109
City of Vaughan Metropolitan Centre	264	99	363
City of Hamilton	198	0	198
Town of Newmarket	462	99	561
Town of Oakville - Mixed Use Zones	659	132	791
City of Kitchener - 2019-051	659	66	725
City of Waterloo (Zone R9)	659	66	725
City of Guelph - Parking Review - Mixed Use Area	659	66	725
City of Guelph - Parking Review - Other Areas	659	99	758
City of Mississauga: Apartment in CC1 to CC4 Zones	528	99	627
City of Burlington: City Wide Intensification	659	165	824
City of Burlington	824	165	989
Average: Municipalities other than Halton Hills	496	85	581
Town of Halton Hills	989	165	1154
Proposed Supply	776	71	847



6.3 Policy Framework

The Growth Plan for the Greater Golden Horseshoe (Ministry of Infrastructure, 2020)¹⁵, Provincial Policy Statement (MMAH, 2020)¹⁶, Halton Regional Official Plan¹⁷, and Town of Halton Hills Transportation Master Plan¹⁸ all directly call for a shift away from automobile travel and towards more sustainable forms of transportation, including transit, and active transportation:

- ▶ The Growth Plan states: “Population and employment growth will be accommodated by ... reducing dependence on the automobile through the development of mixed-use, transit-supportive, pedestrian-friendly urban environments” (Section 4.2.10);
- ▶ The Provincial Policy Statement (PPS) states that land-use patterns should “minimize the length and number of vehicle trips, and support current and future use of transit and active transportation” (Section 1.6.7.4);
- ▶ The Regional Official Plan encourages “alternative development standards, including reduced parking standards in Major Transit Station Areas (MTSAs)” (Section 81.1); and
- ▶ The Town of Halton Hills Transportation Master Plan includes a policy to develop and implement “Transportation Demand Management initiatives to reduce single-occupant vehicle travel, lessen congestion on the Town’s road system, especially during peak periods, and facilitate more sustainable travel behaviour” (Section 7.1).

The Town’s TMP and Region’s OP outline the need to influence travel behaviour to support transit and active transportation to achieve multi-modal access through various policies such as Transportation Demand Management (TDM), transit programs, and walking and cycling initiatives.

6.3.1 Parking and GHG Emissions

While single-occupant vehicle trips are commonly targeted in transport policies, they are only a consequence of the spatial layout and densities of the accompanying land uses. There is merit in targeting

¹⁵ A Place to Grow, Growth Plan for the Greater Golden Horseshoe, 2020.

¹⁶ Provincial Policy Statement, 2020

¹⁷ Regional Municipality of Halton, Halton Region Official Plan, November 2022

¹⁸ Town of Halton Hills, Transportation Master Plan Report, November 2011



the underlying cause of these carbon emissions rather than solely focusing on policies to reduce private vehicle use.

Parking management has an important role to play as an instrument to reduce carbon emissions¹⁹. In this respect, car parking is the “glue” between these facets of the land use and transport environment. In addition, car parking is a critical factor that can be targeted relatively quickly by planners and their municipality plans.

The transportation sector is currently responsible for 23% of Canada’s GHG emissions²⁰ and offers tremendous opportunities for significant emissions reduction. Municipalities in Canada are lagging behind other countries in supporting zero-emission vehicles and other sustainable transportation policies. Cities and towns need to transition towards zero and low-emissions transportation modes, increase cleaner fuels, support public transit ridership, and encourage denser, mixed-use communities to reduce emissions. A significant encouragement is needed to shift travel modes from single-occupant vehicles towards public transit, auto-share and active transportation to reduce greenhouse gas emissions related to the transportation sector.

Halton Hills Town Council declared a climate change emergency in May 2019²¹. The acceptance of the declaration commits the Town to taking real efforts to attain a net-zero objective by 2030.

6.3.2 Affordability

According to the Government of Ontario, housing prices in Ontario almost tripled, far outpacing the income growth. The Government of Ontario has developed a “Housing Affordability Task Force” comprised of industry leaders and experts to produce a report identifying and recommending measures to address the housing supply crisis²².

One of the main recommendations by the Housing Task Force to increase housing supply and affordability is to reduce and streamline urban design rules to lower the costs of development. The Housing Task Force recommends removing or reducing the parking requirements in cities with over 50,000 people.

¹⁹ Parking as a tool to reduce carbon emissions, McCormick Rankin Cagney Pty Ltd, 2009

²⁰ Reducing GHG Emissions in Canada’s Transportation Sector, Clean Energy Canada, June 2016.

²¹ Town of Halton Hills, Climate Change Resolution, <<https://www.haltonhills.ca/en/your-government/climate-change.aspx#Council-reports-and-updates>> May 2019

²² Housing Affordability Task Force Report, Government of Ontario, February 2022



With over 60,000 persons²³, the Town of Halton Hill is one of these municipalities.

Generous parking requirements reduce housing affordability and impose various economic and environmental costs. The Housing Task Force reports that minimum parking requirements add as much as \$165,000 to the price of a new housing unit, and parking space demand is falling, with one in three parking stalls going unsold. Based on typical affordable housing development costs, one parking space per unit increases costs by approximately 12.5%, and two parking spaces can raise prices by 25%.

Residential minimum parking requirements should ensure that a basic, responsible parking level is provided without unduly increasing the development costs.

6.3.3 Parking Reform

Minimum parking requirements have long been a staple of urban planning regulations based on some formulation. These regulations are driven by auto-centric engineering models. Recent changes in transportation technology and services, characterized by ride-hailing and automobile sharing, and the emerging technologies dominated by Autonomous Vehicles (AVs) suggest that automobile ownership will likely experience declines.

The Town's growth objective is to create and develop a sustainable and livable town through urban design criteria and guidelines. The Region's OP embraces sustainability and creates a vision for complete compact communities served by streets made for walking, cycling, and an attractive transit system. This vision is supported by policies to reduce auto dependence and provide connectivity for pedestrian and cycling networks. The transportation policies are deliberately interspersed with the land-use policies to emphasize the importance of considering both areas to achieve the overall vision of complete compact communities.

The intent is to reprioritize mobility to balance the transportation system. A more sustainable community requires an integrated transportation system that supports a compact urban form. Bringing jobs, housing services, and amenities closer encourages non-automobile modes of travel, providing more choice to Halton Hills residents.

²³ Statistics Canada, 2021 Census Profile, <https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/details/>, Accessed May 2023



To encourage active transportation and transit-friendly neighbourhood centred around the Georgetown GO Station as outlined in the Region's OP, the Town needs to recognize that minimum parking requirements present a significant barrier to these goals. It must be remembered that parking carries high costs, heavily subsidizes the choice to drive, and hampers the ability to promote sustainable developments. Parking should not be viewed as only an amenity required to support our towns and our ability to drive; instead, it must be considered a significant economic investment that carries outcomes that shape our towns, cities, and regions.

6.4 Future Transit Plans

The study area currently has transit service in the form of GO train and GO bus service. Future transit plans for the Georgetown GO Station area outline plans to intensify development around the GO Station and improve cycling and pedestrian network connectivity. The Georgetown GO Station Area Secondary Plan²⁴ outlines that at the GO station, various modes of transportation are planned to be supported through consideration for "pedestrians, bicycle routes, bicycle parking, commuter pick-up/drop off areas, carpool parking, car share vehicles, and parking/recharging stations for electric vehicles". GO Train service is expected to increase with improvements to service such as two-way, all-day service.

With future plans for the Georgetown GO Station and the surrounding area as a MTSA, the existing zoning parking rates will not support the orderly development of the Georgetown GO Station area.

6.5 Travel Trends

The Transportation Tomorrow Survey²⁵ (TTS) is a comprehensive travel survey conducted in the southern Ontario once every five years. **Table 6.5** summarizes the TTS mode share estimates for the Town of Halton Hills as a whole. The data is aggregated by survey year (Year 2006, 2011 and 2016). **Appendix Q** contains the TTS data.

Travel by automobile in the Town accounts for approximately 90% of daily trips. Active transportation (AT) and transit-oriented trips account for approximately 6% of daily trips.

²⁴ Town of Halton Hills, Georgetown GO Station Area/Mill Street Corridor – Secondary Plan Review – Background and Policy Options Report, 2022

²⁵ <http://dmg.utoronto.ca/transportation-tomorrow-survey/tts-introduction>



TABLE 6.5: TTS MODE SHARE – HALTON HILLS

Travel Mode	Year 2006	Year 2011	Year 2016
Active Transportation	4%	4%	5%
Cycle	0%	0%	1%
Walk	4%	4%	4%
Auto Oriented	90%	91%	90%
Auto driver	75%	77%	76%
Auto passenger	14%	13%	14%
Motorcycle	0%	0%	0%
Paid rideshare	0%	0%	0%
Taxi passenger	0%	0%	0%
Transit	1%	2%	1%
GO rail only	1%	1%	1%
Joint GO rail and local transit	0%	0%	0%
Transit excluding GO rail	0%	0%	0%
Other (School bus, etc.)	5%	3%	4%
Grand Total	100%	100%	100%

Table 6.6 summarizes the TTS mode share estimates for TTS Zones surrounding GO Transit stations along the Kitchener Line between Kitchener and Mount Pleasant. The data is aggregated by survey year (Year 2006, 2011 and 2016).

Though other transit stations along the Kitchener Line include some cities which contain local transit service, the mode share in these areas provides a look at what the future environment of Georgetown could be with the planned GO Station redevelopment.

Travel by automobile within TTS Zones surrounding GO Transit stations accounts for approximately 88% of daily trips. Active Transportation (AT) and transit-oriented trips account for approximately 8% of daily trips.



TABLE 6.6: TTS MODE SHARE – KITCHENER LINE

Travel Mode	Year 2006	Year 2011	Year 2016
Active Transportation	3%	3%	3%
Cycle	0%	0%	0%
Walk	3%	3%	3%
Auto Oriented	90%	93%	88%
Auto driver	76%	80%	70%
Auto passenger	14%	13%	17%
Motorcycle	0%	0%	0%
Paid rideshare	0%	0%	0%
Taxi passenger	0%	0%	0%
Transit	5%	2%	5%
GO rail only	1%	0%	0%
Joint GO rail and local transit	0%	1%	0%
Transit excluding GO rail	4%	2%	5%
Other (School bus, etc.)	2%	1%	4%
Grand Total	100%	100%	100%

With an existing active transportation and transit mode share in the order of 8%, travel and dependence upon automobile in areas surrounding the Kitchener Line is lower than other areas in Halton Hills.

This data in comparison to the Town of Halton Hills as a whole, alludes that for developments located near a transit rail line results in a higher uptake and use of the adjacent transit services.

The Halton Transportation Master Plan outlines the transit mode share target for a gradual transition to a transit supportive environment over the next 20 years. **Table 6.7** summarizes the Region's Mode Share Targets²⁶.

²⁶ Halton Region Transportation Master Plan (2031). Table 7.1 Transit Mode Share Targets by Horizon.



TABLE 6.7: HALTON REGION TRANSIT MODE SHARE TARGETS

Horizon Year	Internal Trips	External Trips	Total
2016	2%	7%	5%
2021	6%	20%	10%
2026	8%	30%	15%
2031	11%	30%	20%

6.6 Vehicle Ownership

Vehicle ownership data from the Transportation Tomorrow Survey (TTS) for apartment units in zones surrounding GO Transit stations along the Kitchener Line between Kitchener and Mount Pleasant was reviewed. Findings indicate approximately 40% of residents living in apartment units do not own a vehicle.

Table 6.8 summarizes the vehicle ownership characteristics for apartment units for zones surrounding the GO Transit stations along the Kitchener Line. The survey data suggests that vehicle ownership for apartment units is approximately 0.60 vehicles per unit.

Appendix Q contains the TTS data.

TABLE 6.8: VEHICLES PER HOUSEHOLD (2016 TTS)

Dwelling Unit Type	Number of Vehicles in Household					Total
	0	1	2	3	4	
Apartment	170	257	0	0	0	427
Vehicles	0	257	0	0	0	257
Percentage	0%	100%	0%	0%	0%	100%
Vehicles per Unit	0.00	0.60	0.00	0.00	0.00	0.60

The vehicle ownership data along the Kitchener Line provides an outlook at the possible mode shifts the Town of Halton Hills could see with the planned developments and investments.

Applying the Kitchener Line vehicle ownership rate of 0.60 vehicles per unit, the parking demand for occupants is estimated to be 396 spaces. With 776 occupant spaces proposed, the site's occupant parking supply is estimated to exceed the forecast demand by 380 spaces. Visitor parking is not included in this calculation.



Including the visitor parking demand, estimated by the Zoning By-law, 165 visitor parking spaces, the overall parking demand for the site is estimated to be 561 spaces. With 847 spaces proposed, the site's parking demand is estimated to be less than the proposed supply.

6.7 Proposed Parking Guidelines

There are numerous industry associations that are dedicated to the survey and review of parking requirements related to various land uses. These associations, such as the Institute of Transportation Engineers (ITE), collect, review, and publish information related to parking demand, supply, and appropriate design standards.

An accepted industry standard for the determination of potential parking demand is ITE's Parking Generation Manual²⁷. ITE provides data on surveys across the USA and Canada of peak parking demand for different land uses.

ITE Parking Generation is regarded as a reliable source for measured parking demands when local data cannot be readily collected at similar land uses.

Land Use Code 221 – Multifamily Housing (Mid-Rise) and Land Use Code 222 – Multifamily Housing (High-Rise) in the Parking Generation Manual are applicable to the site.

For Land Use Code 221, the setting General Urban/Suburban (Close to Rail Transit) was used since the site is located within half a mile (\pm 800 m) of the Georgetown Go Station.

For Land Use Code 222, there is no setting for a General Urban/Suburban site near rail transit, the setting General Urban/Suburban (Not Close to Rail Transit) was used.

Table 6.9 summarizes the estimated peak parking generation for the subject site.

ITE data does not aggregate the parking generation data by occupant or visitor. The data is an overall rate for both occupant and visitor parking demands. It is also acknowledged that the ITE rates may include some locations where local transit is present which will impact the parking rate.

²⁷ Institute of Transportation Engineers Parking Generation Manual, 6th Edition



The site's parking demand using the ITE methodology is estimated to range from 693 to 704 parking spaces. The site's parking demand is forecast to be less than the proposed supply of 847 parking spaces.



TABLE 6.9: ITE PARKING GENERATION

Land Use	221 - Multifamily Housing – 2+ BR (Mid-Rise)	222 - Multifamily Housing – 2+ BR (High-Rise)	565 – Day Care Center
Variable	Dwelling Units	Dwelling Units	Gross Floor Area (GFA)
Period	Weekday (Monday - Friday)	Weekday (Monday - Friday)	Weekday (Monday to Friday)
Setting	General Urban/Suburban (Close to Rail Transit)	General Urban/Suburban (Not Close to Rail Transit)	General Urban/Suburban
Number of Studies:	7	3	54
Average Variable	269 Units	510 Units	5.60 ft ² /1000
Average Rate:	1.14	1.02	2.27
Range of Rates:	0.64 - 1.45	0.57 – 1.19	1.01 – 4.07
33rd / 85th Percentile:	0.97 / 1.42	0.67 / 1.19	2.13 / 3.42
95% Confidence Interval:	***	***	2.06 - .248
Standard Deviation:	0.19	0.31	0.78
Coefficient of Variation:	17%	30%	34%
Fitted Curve Equation:	$P = 1.08(X) + 17.65$	***	$\ln(P) = 0.58 \ln(X) + 1.53$
R ² :	0.98	***	0.56
Parking Demand	151 Units	508 Units	1.27 ft²/1000
Average Rate	172 Spaces	518 Spaces	3 Spaces
	693 Spaces		
Fitted Curve	181 Spaces	***	5 Spaces
	704 Spaces		



6.8 Parking Survey Data

Another proven method of estimating parking demands is to survey existing sites with similar situational characteristics. Local surveys are perceived to be the best predictor of demands.

A range of parking surveys have been reviewed to assess the parking demand for the subject site. The survey sites have been reviewed based on a neighbourhood multi-modal assessment to ensure they provide comparable environments to the subject site. The tools used to assess the neighbourhood characteristics are the Walk Score, Transit Score, and Bike Score:

- ▶ **Walk Score** is a well-known (but proprietary) measure of walkability – it aggregates several data sources to provide a proxy measure of the quality of the pedestrian environment. It is used to gauge the walkability and destination density of each neighbourhood.
- ▶ **Transit Score** is a measure of transit accessibility. It aggregates information regarding transit frequency, the density of stops and routes, and mode of service. It is used to gauge the transit accessibility of each neighbourhood.
- ▶ **Bike Score** is a measure of the area's ability to accommodate cyclists. A Bike Score is calculated for a given location by measuring bike infrastructure (lanes, trails, etc.), hills, destinations and road connectivity, and the number of bike commuters.

Table 6.10 summarizes the proxy survey sites, their neighbourhood characteristics, and the observed parking rates. Parking proxy survey data can be found in **Appendix R**. The parking studies are generally located at car-dependent sites with little to no transit access. Bike infrastructure around the sites ranges from some infrastructure (i.e. Bikeable) to no infrastructure. Overall, the parking rates at the survey sites range from 0.63 to 1.17 parking spaces per unit; the average parking rate is 0.97 parking spaces per unit.

Similar to ITE's methodology, a parking demand equation was derived from the survey data based on number of units and the observed maximum parking demand. **Figure 6.1** illustrates the proxy sites parking demand and the derived equation.

Based on the derived equation, the subject site with 659 residential units would have a parking demand of 618 parking spaces. The proposed parking of 847 parking spaces would provide 229 more spaces than the anticipated demand.



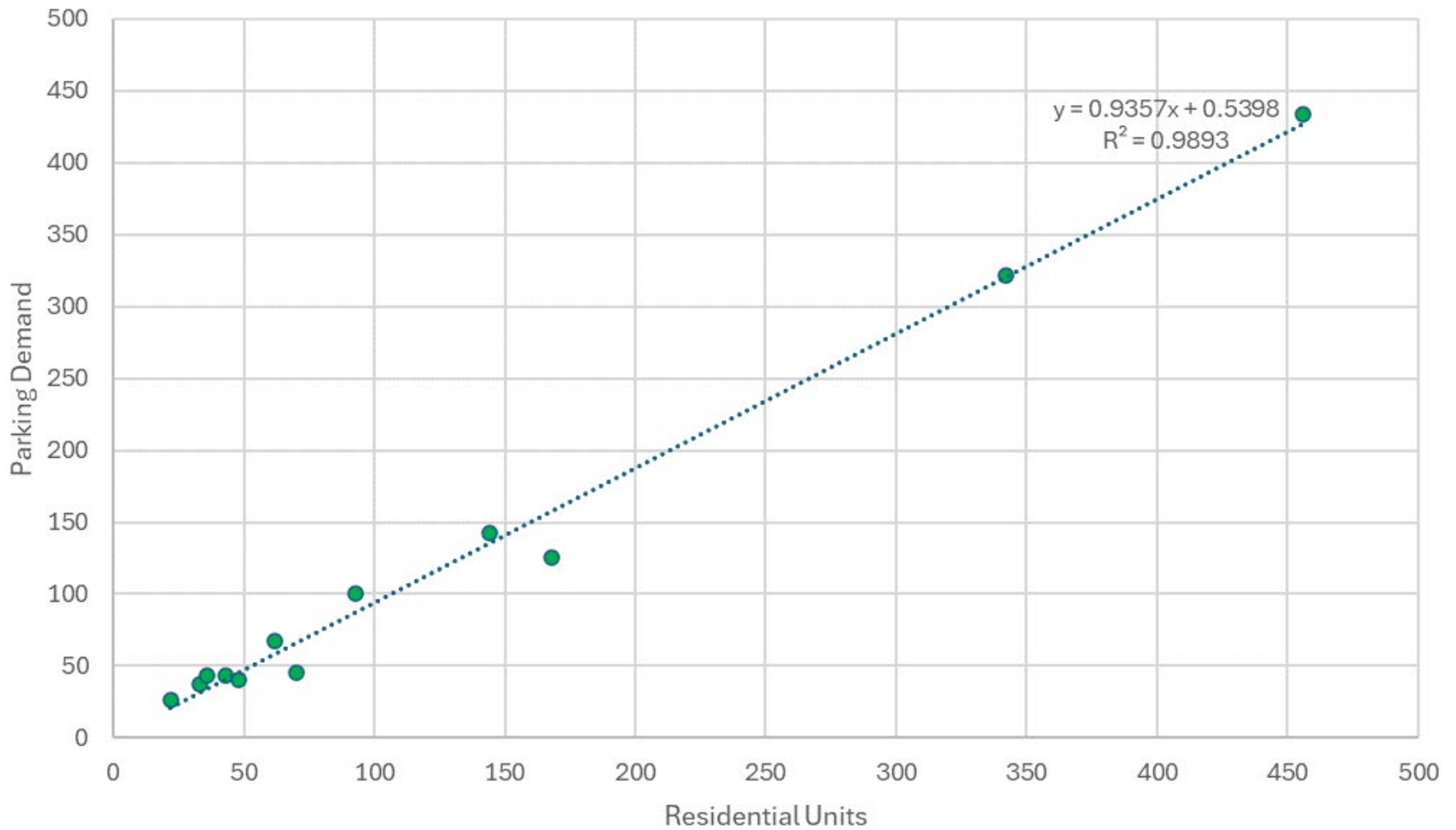
TABLE 6.10: PROXY SURVEY CHARACTERISTICS

Site	Survey Year	Walk Score	Transit Score	Bike Score	Units	Parking Rate
21 Raylawn Crescent, Halton Hills	2020 ¹	Car-Dependent	--	Bikeable	43	0.98
9 Bonheur Court, Brantford		Car-Dependent	--	--	144	0.99
63 Sympatica Crescent, Brantford		Car-Dependent	--	Bikeable	168	0.75
192 Churchill Road South, Halton Hills		Car-Dependent	--	Somewhat Bikeable	22	1.14
196 Churchill Road South, Halton Hills		Car-Dependent	--	Somewhat Bikeable	33	1.12
200 Churchill Road South, Halton Hills		Car-Dependent	--	Somewhat Bikeable	36	1.17
16 4th Street, Orangeville	2017 ¹	Very Walkable	Some Transit	Bikeable	48	0.83
45 Bredin Parkway, Orangeville		Very Walkable	Some Transit	Bikeable	93	1.07
16 Concord Place, Grimsby	2022 ²	Car-Dependent	--	Somewhat Bikeable	342	0.94
100 Shoreview Place, Hamilton		Car-Dependent	Minimal Transit	Somewhat Bikeable	456	0.95
115 John Street, Halton Hills	2015 ²	Car-Dependent	--	Somewhat Bikeable	62	1.07
42 Mill Street, Halton Hills	2024	Very Walkable	-	Somewhat Bikeable	70	0.63
Average Parking Rate						0.97

¹ Amico Properties Inc. Parking Study Update, Proposed Mixed-Use Development 71 Main Street, Town of Halton Hills, Lea Consulting, March 2021

² Parking Survey data collected by Paradigm Transportation Solutions Ltd





Proxy Sites Parking Demand

6.9 Parking Reduction

A Transportation Demand Management (TDM) plan aims to reduce the development's overall traffic and parking impacts by implementing strategies to affect the demand side of the transportation equation. TDM strategies include all the incentives and disincentives that increase people's likelihood of changing their travel behaviour. Strategies include financial incentives, time incentives, new or enhanced commuter services, dissemination of information, and marketing alternative services.

As outlined in the Town's TMP, TDM measures are important initiatives to reduce single-occupant vehicle travel, lessen congestion on the Town's road system and support sustainable travel behaviour.

Generally, applying TDM measures can result in a reduction of parking demand. The Town of Halton Hills currently does not have a method for calculating a parking reduction based on a proposed TDM program.

Parking demand for the subject site is estimated to vary between 561 and 704 parking spaces based on the methodologies explored in this study. For the TDM parking reduction, the proxy survey parking demand estimate of 618 parking spaces is used as the "base parking demand" to which the parking reductions will be applied.

The Region of Waterloo TDM Checklist²⁸ was reviewed to determine potential parking reductions based on the TDM plan outlined in **Section 3.2** of this report.

With the TDM measures proposed, the site's potential parking reduction is calculated to be 13% of the parking requirement. The reduction in parking is related to:

- ▶ **Pedestrian & Cyclist Orientation – 1% reduction**
 - Development incorporates functional building entrances that are oriented to public space or to locations where pedestrians and transit users arrive from such as a street, square, park, or plaza. – 1% reduction
- ▶ **Parking – 3% reduction**
 - 75% of parking or more is located underground or in a structure – 3% reduction
- ▶ **Trip Reduction Incentives – 9% reduction**

²⁸ Region of Waterloo Report P-13-088, Proposed Revisions to the Regional Transportation Impact Study Guidelines, September 10, 2013



- The building owner/occupant will provide subsidized transit passes for all occupants – 4% reduction; and
- The building owner/occupant agrees to charge for parking as a separate cost to occupants – 5% reduction.

A 13% reduction to the local parking survey data results in a parking demand of 538 spaces. With a total parking supply of 847 spaces, the site's parking demand is forecast to be less than the proposed supply.

Appendix S contains the Region of Waterloo TDM Checklist.

6.10 Summary

Using several different methodologies, the proposed 659-unit apartment development is estimated to have a parking demand in the order of 538 to 704 spaces, depending upon the methodology used to forecast the demand. The proposed parking supply of 847 spaces is sufficient to accommodate the estimated demands.

Table 6.11 summarizes the parking demand estimates.

TABLE 6.11: SUMMARY OF PARKING DEMAND ESTIMATES

Methodology	Estimated Parking Demand		
	O	V	Total
Zoning By-Law Other Municipalities Average	496	85	581
TTS Vehicle Ownership + Visitor By-Law	396	165	561
Institute of Transportation Engineers – per Unit	--	--	704
Proxy Site Parking Demand	--	--	618
Waterloo TDM Reduction with Proxy Site Data	--	--	538

The transition from an automobile-dependent environment to one that supports active transportation and transit will require strategies to assist in shifting mode choice and enabling the emergence of a pedestrian-friendly and transit-supportive environment through TDM measures.

To support the proposed parking supply, a shift in travel modes and vehicle ownership for residents plus the integration of TDM measures will be critical to the development's success.



Overall, the parking demand is forecast to be significantly lower than the zoning by-law requirements and the proposed parking supply of 751 parking spaces is expected contain the parking demand on site.



7 Conclusions and Recommendations

7.1 Conclusions

Based on the investigations carried out, it is concluded that:

Transportation Impact Assessment

- ▶ **Base Year Traffic Operations:** All study area intersections are forecast to operate at acceptable levels of service during the AM and PM peak hour with the following critical movements noted:

Mountainview Road North and River Drive (AM Peak Hour):

- Westbound approach is forecast to operate with delays in the LOS E range with a v/c ratio surpassing 0.85.

- ▶ **Estimated Site Generated Traffic:** The subject site is estimated to generate approximately 207 vehicle trips during the AM peak hour and 236 vehicle trips during the PM peak hour.

- ▶ **Transportation Demand Management:** The site concept plan includes a robust TDM program that can assist in mitigating the site's transportation and parking impacts on the adjacent road network, promote a strong and vibrant economy, and create a livable community that has a balanced transportation network.

- ▶ **Background Traffic Operations – Five-Year Horizon:** The study area intersections are forecast to operate at acceptable levels of service similar to existing traffic conditions during the AM and PM peak hours with the following additional critical movements noted:

Mountainview Road North and River Drive (PM Peak Hour):

- Westbound approach is forecast to operate with delays in the LOS D range with a v/c ratio surpassing 0.85.

Mountainview Road North and John Street (PM Peak Hour):

- Northbound left-turn movement is forecast to have a 95th percentile queue length surpassing the available storage lane length.

- ▶ **Background Traffic Operations – Ten-Year Horizon:** The study area intersections are forecast to operate at acceptable levels of service similar to five-year background traffic conditions during the AM and PM peak hours with the following additional critical movement noted:

Mountainview Road North and River Drive (PM Peak Hour):



- Overall, the intersection is forecast to operate with delays in the LOS C range and a v/c ratio of 0.85.
- ▶ **Total Traffic Operations – Five-Year Horizon:** The study area intersections are forecast to operate at acceptable levels of service similar to the five-year background traffic conditions during the AM and PM peak hours with the following additional critical movements noted:

Mountainview Road North and River Drive (PM Peak Hour):

- Northbound left-turn/through movement is forecast to operate with delays in the LOS E range with a v/c ratio surpassing 1.00; and
- Overall, the intersection is forecast to operate with delays in the LOS D range and a v/c ratio equal to 1.00.
- ▶ **Total Traffic Operations – Ten-Year Horizon:** The study area intersections are forecast to operate at acceptable levels of service similar to ten-year background traffic conditions during the AM and PM peak hours with the following additional critical movement noted:

Mountainview Road North and River Drive (PM Peak Hour):

- Northbound left-turn/through movement is forecast to operate with delays in the LOS F range with a v/c ratio surpassing 1.00.
- ▶ **Sensitivity Analysis**
 - **McNab Street Underpass Closure:** The closure of the McNab Street underpass will have a negligible impact on site traffic impacts. Under ten-year total traffic conditions, the reported critical movements will remain the same regardless of if the McNab Street underpass is closed or not.

The town should conduct a thorough study to understand the full impact of the underpass on traffic, active transportation users and any potential impacts on local businesses and area residents.

- **130 Mountainview Road:** The addition of the 130 Mountainview Road development is forecast to cause traffic operations to deteriorate at the intersection of Mountainview Road and River Drive. A detailed assessment of the capacity deficiencies and any required mitigation measures should be explored and addressed by the applicant of 130 Mountainview Road.



- ▶ **Remedial Measures:** To manage the expected traffic growth (background and site generated traffic) at the Mountainview Road North and River Drive intersection, the road authority should consider the following changes:
 - Optimize signal timings with permissive-protected northbound and westbound left-turn phases;
 - Reduce the southbound approach to one shared through/right lane and one left-turn lane with 50 metres of storage; and
 - Provide a northbound left-turn lane with 60 metres of storage.

The reconfiguration of the northbound and southbound lane groupings appears to be feasible without modifications to the existing pavement width. The revised lane configuration can likely be achieved by modifying the existing pavement markings and signage.

Parking Study

The site's proposed parking supply is identified as 847 spaces with an allocation of 776 spaces for occupants and 71 spaces for visitors.

- ▶ The site's parking supply does not meet the Town's zoning by-law requirement.
- ▶ The Town's TMP and the Region's OP both emphasise the need of influencing travel behaviour to encourage transit and active transportation in order to achieve multi-modal access through policies such as Transportation Demand Management (TDM), transit programmes, and walking and cycling.
- ▶ Vehicle ownership data from the Transportation Tomorrow Survey (TTS) for apartment units in zones surrounding GO Transit stations along the Kitchener Line between Kitchener and Mount Pleasant indicate an occupant parking demand for the subject site of 396 spaces. Visitor parking is not included in this calculation. Including the visitor parking demand, estimated by the Zoning By-law, 165 visitor parking spaces, the overall parking demand for the site is estimated to be 561 spaces.
- ▶ The ITE Parking Generation Manual indicates a parking demand ranging from 693 to 704 parking spaces (occupant and visitor).
- ▶ Proxy site data from multiple sites with similar neighbourhood characteristics indicates a parking demand of approximately 618 spaces (occupant and visitor). With a parking supply of 847



spaces, the site's parking demand is forecast to be less than the proposed supply.

- ▶ The TDM Checklist from the Region of Waterloo identifies a total of 13% reduction in parking spaces based on the proposed TDM program. This results in a forecast parking demand of 538 spaces.
- ▶ Using several different methodologies, the proposed development is estimated to have a parking demand in the order of 538 spaces to 704 spaces. With a parking supply of 847 spaces, the site's parking demand is forecast to be accommodated by the on-site parking.
- ▶ The following site-specific parking rates are suitable for the proposed development and supported by published and proxy site parking data:
 - Phase 1 – 1.36 spaces per unit (1.15 occupant spaces/unit and 0.21 visitor spaces/unit);
 - Phase 2 – 1.38 spaces per unit (1.26 occupant spaces/unit and 0.12 visitor spaces/unit); and
 - Phase 3 – 1.29 spaces per unit (1.18 occupant spaces/unit and 0.11 visitor spaces/unit).

7.2 Recommendations

Based on the findings of this study, it is recommended that:

- ▶ The site's TDM program be implemented and monitored over time to help manage the site's transportation and parking impacts.
- ▶ The road authority consider the following at the intersection of Mountainview Road North and River Drive:
 - Optimize signal timings with permissive-protected northbound and westbound left-turn phases;
 - Reduce the southbound approach to one shared through/right lane and one left-turn lane with 50 metres of storage; and
 - Provide a northbound left-turn lane with 60 metres of storage.

The revised lane configuration can likely be achieved by modifying the existing pavement markings and signage.



Appendix A

Pre-Study



Stefan Hajgato

From: Ivan Drewnitski <idrewnitski@haltonhills.ca>
Sent: Wednesday, February 9, 2022 4:50 PM
To: Stefan Hajgato
Cc: Scott Catton; Maureen Van Ravens
Subject: RE: (210781: 1 Rosetta St) Transportation Study - Terms of Reference

Hi Stefan,

Please see my comments below in **green**.

If you have any questions, please do not hesitate to contact me.

Thanks,

Ivan Drewnitski
Transportation Planning Technologist
Transportation & Public Works
Town of Halton Hills
T: 905-873-2601 ext. 2328
idrewnitski@haltonhills.ca

From: Stefan Hajgato <>
Sent: Thursday, January 27, 2022 9:04 AM
To: Ivan Drewnitski <idrewnitski@haltonhills.ca>
Cc: Scott Catton <>
Subject: RE: (210781: 1 Rosetta St) Transportation Study - Terms of Reference

[EXTERNAL EMAIL]

Hi Ivan,

Please see attached.

Stefan Hajgato, P.Eng.
Transportation Engineer
(He/Him)



Paradigm Transportation Solutions Limited
p: 519.896.3163 x209

From: Ivan Drewnitski <idrewnitski@haltonhills.ca>
Sent: Wednesday, January 26, 2022 5:48 PM

To: Stefan Hajgato <shajgato@ptsl.com>; Scott Catton <scatton@ptsl.com>
Subject: RE: (210781: 1 Rosetta St) Transportation Study - Terms of Reference

Hello,

Please send a conceptual site plan to my attention in order for us to be able to comment on the TIS terms of reference.

Thanks,

Ivan Drewnitski

Transportation Planning Technologist
Transportation & Public Works
Town of Halton Hills
T: 905-873-2601 ext. 2328
ldrewnitski@haltonhills.ca

From: Stefan Hajgato <shajgato@ptsl.com>
Sent: Thursday, January 20, 2022 11:35 AM
To: Ivan Drewnitski <ldrewnitski@haltonhills.ca>
Cc: Scott Catton <scatton@ptsl.com>
Subject: RE: (210781: 1 Rosetta St) Transportation Study - Terms of Reference

[EXTERNAL EMAIL]

Hi Ivan,

We've been retained to complete a Traffic Impact Study, Parking Study, and Access Review for the proposed development at 1 Rosetta Street in Georgetown. The site concept plan includes 3 residential buildings ranging in height from 8-storey to 12-storey containing approximately 638 units. The parking supply is approximately 706 parking spaces (1.11 spaces / unit). The build-out year is currently unknown. The study will generally follow the Halton Region TIS guidelines. A copy of the current site plan is attached.

General

- SimTraffic queuing analysis is required for all intersections.
- We agree with the methodology for trip generation, distribution and the proposed study hours. However, query results obtained from the TTS data shall be appended to the report for our reference and review.
- The study must document active transportation (pedestrian and cyclist) and transit opportunities, travel demand management and provide recommendations for infrastructure improvements and other measures to promote active transportation.
- Internal (on-site) pavement marking and signage plan, please reference the Ontario Traffic Manual regarding the type and location of signs and pavement markings. Traffic calming measures, such as Raised Pedestrian Crossings and Speed Humps are strongly encouraged at applicable locations. Signs and pavement markings are to conform to the Ontario Traffic Manual. The plan shall additionally present right-of-way widths, fire routes with appropriate signage, accessible parking with signage, parking spaces and pedestrian connections.

Can you please review our proposed scope of work and provide comment by 01 February 2022?

Key items I would like to have input on include:

1. Method to develop baseline volumes for analysis. See our suggested approach below; **Approach is acceptable.**

2. Adjacent developments to include in the traffic forecast; and [Included below.](#)
3. Any planned geometric or traffic control improvements at the intersections in the study area?
[Information provided below.](#)

Transportation Impact Study

Study Area Intersections:

- Mountainview Road North at River Drive (signalized);
- Mountainview Road North at John Street (unsignalized);
- River Drive at Rosetta Street (unsignalized);
- River Drive at Daniela Street (unsignalized);
- River Drive at St. Michaels Street/GO Parking Driveway (unsignalized);
- St. Michaels Street (existing and future)/Caroline Street (uncontrolled);
- John Street at Rosset Valley Court. (unsignalized);
- John Street at Victoria Street (unsignalized); and
- The two proposed site driveways.

Existing Data

- Weekday Turning Movement Count (TMC) data has been obtained from the Town for the following intersections:
 - Mountainview Road North at River Drive (2019);
 - Mountainview Road North at John Street (2019);
 - River Drive at Rosetta Street (2004); and
 - John Street at Victoria Street (2019).
- New TMC data will be collected at the following intersections as no data is available:
 - River Drive at St. Michaels Street/GO Parking Driveway;
 - St. Michaels Street (existing and future)/Caroline Street;
 - John Street at Rosset Valley Court; and
 - River Drive at Daniela Street.
 - [New counts should be conducted for the 2019 & 2004 intersections.](#)
- Base Year Forecast - The existing TMC data will be increased to a year 2022 condition using a growth rate of 2% per annum.
- Existing signal timing plans to be obtained. [Attached above.](#)

Analysis Periods

- Weekday AM and PM peak hours.

Horizon Years

- Existing (Base Year)
- 5-years from the date of the study (Year 2027); and
- 10-years from the date of the study (Year 2032).

Analysis

- Synchro 10, HCM 2000 analysis
- TAC left-turn lane warrants, OTM signal warrants ([please ensure to conduct one especially for Mountainview Road at John Street](#)), etc.

Background Traffic

- Growth rate of 2% per annum for all movements along Mountainview Road North. This is the only study area road that may be significantly impacted by future background growth. All other roads are assumed to have zero growth. [Please also include a growth rate of 2% per annum for all movements along River Drive west of Mountainview Road North, as there are developable lands within this area that are expected to be built out within the 2032 study horizon.](#)

Active Development Applications:

- Sites to be identified by Town Staff.
- [167 - 171 Mountainview Rd N \(10 Unit Condominium Bungaloffs\)](#)

Capital Works Improvements

- Improvements (if any) to be identified by Town Staff.

Sensitivity Analysis

- Possible extension of St. Michaels Street to John Street.

Trip Generation

- ITE Trip Generation Data 11th Edition
 - LUC 221 – Multifamily Housing (Mid-Rise) – General Urban / Suburban Locations.
 - LUC 222 – Multifamily Housing (High-Rise) – General Urban / Suburban Locations.
 - The AM trip generation is estimated to be 182 trips. The PM trip generation is estimated to be 209 trips.

Modal Split Reductions:

- None for analysis purposes.

Site Traffic Distribution

- Existing travel patterns/TTS data

Transportation Demand Management

- A comprehensive Transportation Demand Management Plan is to be part of the report. Provide a TDM plan to demonstrate measures to be implemented to reduce single occupancy vehicle (SOV) trips to the site.

Parking Study

We will calculate the parking supply required for the proposed development by the municipal zoning by-law. If the planned parking supply does not meet the by-law requirement, we will forecast peak parking demand based on the rates obtained from the Institute of Transportation Engineers (ITE) Parking Generation (5th Edition), TTS Data, proxy data, and other available information. This forecast will be further refined through consideration of typical auto ownership characteristics for land uses of this nature.

COVID-19 containment measures are expected to impact our ability to collect accurate proxy site data. Published data is considered more reliable.

If the planned parking supply for the proposed development will adequately serve the forecast peak demand, we will provide a justification for the proposed number of spaces, recognizing site constraints, local conditions, and potential spillover impacts. We will identify parking management measures that could be considered to alleviate the projected supply deficit (e.g., transit, active transportation, TDM strategies, shared parking). This may include use of legal on-street and off-site parking nearby.

Access and Circulation Review

The analysis will be completed using AutoTURN and include assessments of vehicle access and egress, clearance and swept path maneuvers within the site based on a suitable design vehicle (e.g., fire, garbage, moving trucks) to identify potential conflicts with the site driveways, circulation aisles, loading areas and/or parking layout.

We will determine sight distance requirements following applicable review agency and industry guidelines and assess compliance based on field measurements. If the sight distance available does not meet the minimum requirement, mitigating measures will be identified.

Review the underground parking plan illustrating the passenger vehicle movements exiting and entering the underground parking area to ensure that the turning movements will be adequately accommodated at the underground parking level.

Report

We will document the study methodologies, findings, and conclusions in a report. The report will include appendices containing the detailed analysis results and any data collected.

Regards,

Stefan Hajgato, P.Eng.

*Transportation Engineer
(He/Him)*



Paradigm Transportation Solutions Limited

150 Pinebush Road, Unit 5A, Cambridge ON N1R 8J8

p: 519.896.3163 x209

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Appendix B

Traffic Data





Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: John Street & Rosetta Valley Court
Site Code: 210781
Start Date: 03/02/2022
Page No: 1

Turning Movement Data

Start Time	John Street Eastbound					John Street Westbound					Rosset Valley Court Northbound					Int. Total
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
7:00 AM	14	0	0	0	14	1	2	0	0	3	1	3	0	0	4	21
7:15 AM	27	0	0	0	27	0	8	0	0	8	1	3	0	0	4	39
7:30 AM	18	1	0	5	19	0	6	0	0	6	0	3	0	0	3	28
7:45 AM	23	0	0	0	23	0	21	0	0	21	2	2	0	1	4	48
Hourly Total	82	1	0	5	83	1	37	0	0	38	4	11	0	1	15	136
8:00 AM	14	0	0	0	14	8	12	0	0	20	0	7	0	3	7	41
8:15 AM	19	0	0	0	19	1	17	0	0	18	1	5	0	3	6	43
8:30 AM	18	0	0	0	18	1	13	0	0	14	1	3	0	2	4	36
8:45 AM	26	0	0	0	26	4	16	1	0	21	1	2	0	0	3	50
Hourly Total	77	0	0	0	77	14	58	1	0	73	3	17	0	8	20	170
9:00 AM	15	1	0	0	16	0	12	0	0	12	0	2	0	0	2	30
9:15 AM	20	1	0	0	21	1	11	0	0	12	1	2	0	0	3	36
9:30 AM	16	1	0	0	17	0	15	0	0	15	1	1	0	0	2	34
9:45 AM	11	0	1	0	12	1	9	0	0	10	0	1	0	1	1	23
Hourly Total	62	3	1	0	66	2	47	0	0	49	2	6	0	1	8	123
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	7	0	0	0	7	1	15	0	0	16	0	0	0	4	0	23
11:15 AM	14	1	0	0	15	1	12	0	0	13	1	1	0	0	2	30
11:30 AM	20	1	0	0	21	2	13	1	0	16	0	2	0	2	2	39
11:45 AM	10	0	0	0	10	1	14	0	0	15	1	2	0	0	3	28
Hourly Total	51	2	0	0	53	5	54	1	0	60	2	5	0	6	7	120
12:00 PM	14	0	0	0	14	4	23	0	0	27	0	3	0	1	3	44
12:15 PM	13	1	0	0	14	2	22	0	0	24	0	2	0	3	2	40
12:30 PM	16	0	0	3	16	3	21	0	0	24	0	3	0	5	3	43
12:45 PM	11	1	1	0	13	3	24	0	0	27	0	2	0	0	2	42
Hourly Total	54	2	1	3	57	12	90	0	0	102	0	10	0	9	10	169
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	20	2	0	0	22	1	31	0	1	32	0	1	0	0	1	55
3:15 PM	18	0	0	0	18	5	28	0	2	33	0	4	0	2	4	55
3:30 PM	30	2	0	1	32	7	26	0	0	33	0	7	0	4	7	72
3:45 PM	20	1	0	0	21	3	32	0	0	35	2	2	0	0	4	60
Hourly Total	88	5	0	1	93	16	117	0	3	133	2	14	0	6	16	242
4:00 PM	18	2	0	0	20	4	26	0	0	30	2	1	0	1	3	53
4:15 PM	20	1	0	1	21	5	25	0	0	30	0	1	0	1	1	52
4:30 PM	14	1	0	0	15	6	28	0	0	34	0	2	0	2	2	51
4:45 PM	15	0	0	0	15	4	31	0	0	35	1	3	0	2	4	54

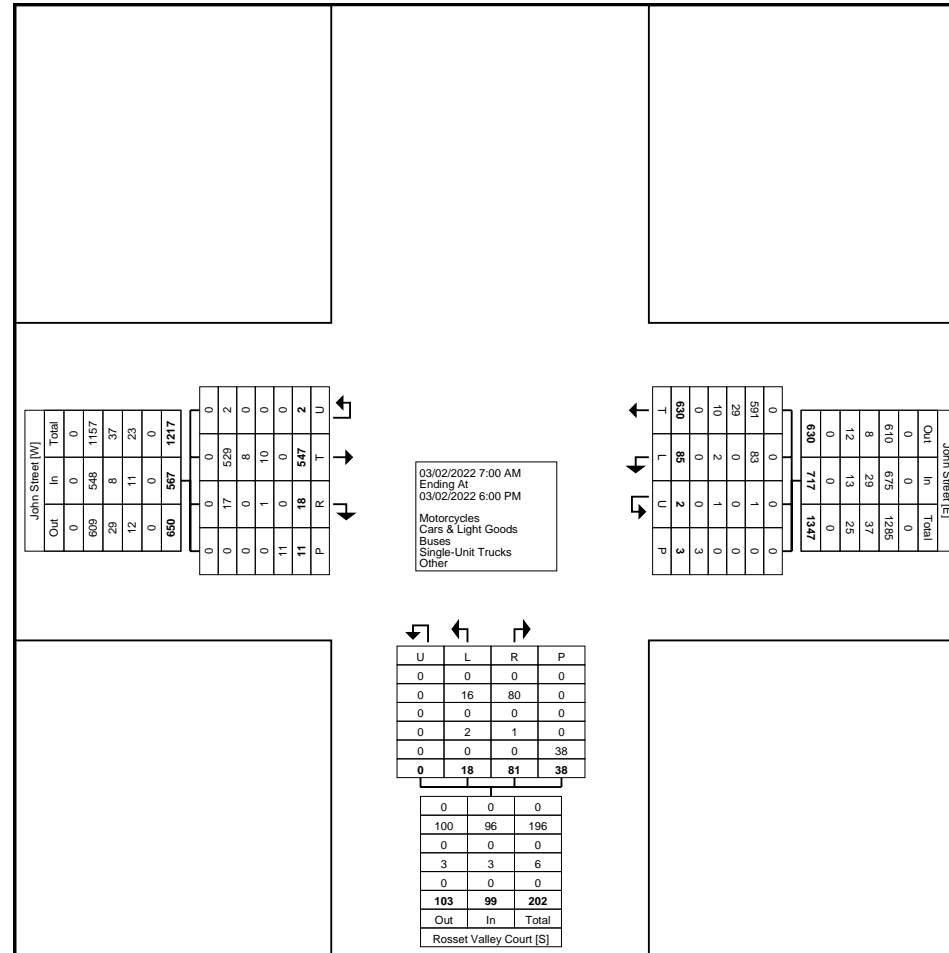
Hourly Total	67	4	0	1	71	19	110	0	0	129	3	7	0	6	10	210
5:00 PM	19	1	0	0	20	1	39	0	0	40	2	2	0	0	4	64
5:15 PM	18	0	0	1	18	6	31	0	0	37	0	4	0	0	4	59
5:30 PM	14	0	0	0	14	5	25	0	0	30	0	4	0	0	4	48
5:45 PM	15	0	0	0	15	4	22	0	0	26	0	1	0	1	1	42
Hourly Total	66	1	0	1	67	16	117	0	0	133	2	11	0	1	13	213
Grand Total	547	18	2	11	567	85	630	2	3	717	18	81	0	38	99	1383
Approach %	96.5	3.2	0.4	-	-	11.9	87.9	0.3	-	-	18.2	81.8	0.0	-	-	-
Total %	39.6	1.3	0.1	-	41.0	6.1	45.6	0.1	-	51.8	1.3	5.9	0.0	-	7.2	-
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	529	17	2	-	548	83	591	1	-	675	16	80	0	-	96	1319
% Cars & Light Goods	96.7	94.4	100.0	-	96.6	97.6	93.8	50.0	-	94.1	88.9	98.8	-	-	97.0	95.4
Buses	8	0	0	-	8	0	29	0	-	29	0	0	0	-	0	37
% Buses	1.5	0.0	0.0	-	1.4	0.0	4.6	0.0	-	4.0	0.0	0.0	-	-	0.0	2.7
Single-Unit Trucks	10	1	0	-	11	2	10	1	-	13	2	1	0	-	3	27
% Single-Unit Trucks	1.8	5.6	0.0	-	1.9	2.4	1.6	50.0	-	1.8	11.1	1.2	-	-	3.0	2.0
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	11	-	-	-	-	3	-	-	-	-	38	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-



Paradigm Transportation Solutions Limited
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Count Name: John Street & Rosetta Valley Court
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Turning Movement Data Plot



Paradigm Transportation Solutions Limited
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Count Name: John Street & Rosetta Valley Court
Site Code: 210781
Start Date: 03/02/2022
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Turning Movement Peak Hour Data (8:00 AM)

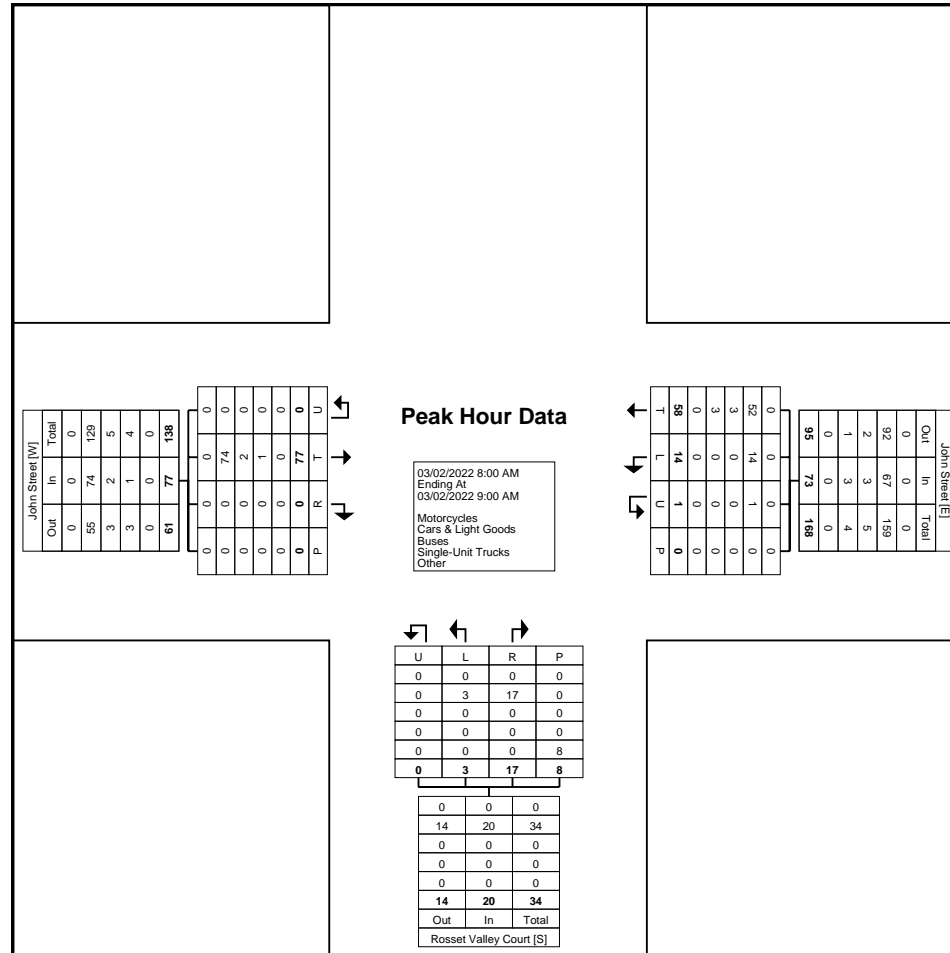
Start Time	John Street Eastbound					John Street Westbound					Rosset Valley Court Northbound					Int. Total
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
8:00 AM	14	0	0	0	14	8	12	0	0	20	0	7	0	3	7	41
8:15 AM	19	0	0	0	19	1	17	0	0	18	1	5	0	3	6	43
8:30 AM	18	0	0	0	18	1	13	0	0	14	1	3	0	2	4	36
8:45 AM	26	0	0	0	26	4	16	1	0	21	1	2	0	0	3	50
Total	77	0	0	0	77	14	58	1	0	73	3	17	0	8	20	170
Approach %	100.0	0.0	0.0	-	-	19.2	79.5	1.4	-	-	15.0	85.0	0.0	-	-	-
Total %	45.3	0.0	0.0	-	45.3	8.2	34.1	0.6	-	42.9	1.8	10.0	0.0	-	11.8	-
PHF	0.740	0.000	0.000	-	0.740	0.438	0.853	0.250	-	0.869	0.750	0.607	0.000	-	0.714	0.850
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	-	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	74	0	0	-	74	14	52	1	-	67	3	17	0	-	20	161
% Cars & Light Goods	96.1	-	-	-	96.1	100.0	89.7	100.0	-	91.8	100.0	100.0	-	-	100.0	94.7
Buses	2	0	0	-	2	0	3	0	-	3	0	0	0	-	0	5
% Buses	2.6	-	-	-	2.6	0.0	5.2	0.0	-	4.1	0.0	0.0	-	-	0.0	2.9
Single-Unit Trucks	1	0	0	-	1	0	3	0	-	3	0	0	0	-	0	4
% Single-Unit Trucks	1.3	-	-	-	1.3	0.0	5.2	0.0	-	4.1	0.0	0.0	-	-	0.0	2.4
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	-	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	-	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	8	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Paradigm Transportation Solutions Limited
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Count Name: John Street & Rosetta Valley Court
Site Code: 210781
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Turning Movement Peak Hour Data Plot (8:00 AM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
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Count Name: John Street & Rosetta Valley Court
Site Code: 210781
Start Date: 03/02/2022
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Turning Movement Peak Hour Data (12:00 PM)

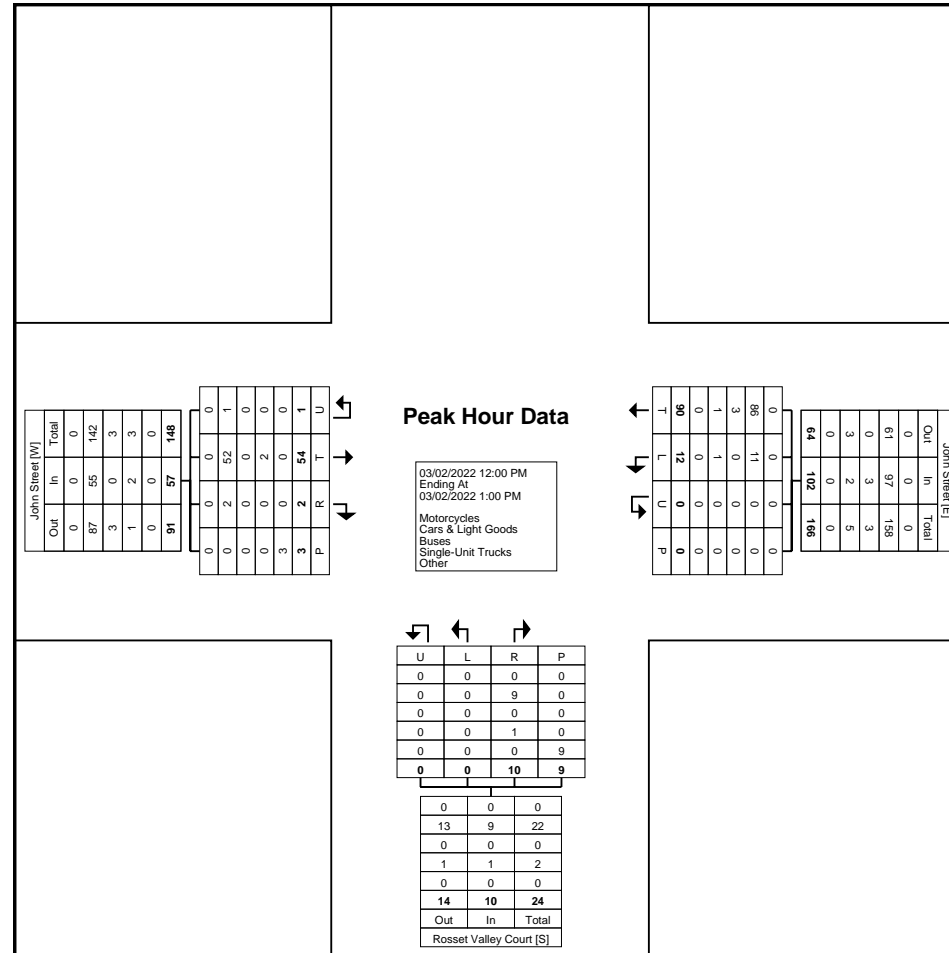
Start Time	John Street Eastbound					John Street Westbound					Rosset Valley Court Northbound					Int. Total
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
12:00 PM	14	0	0	0	14	4	23	0	0	27	0	3	0	1	3	44
12:15 PM	13	1	0	0	14	2	22	0	0	24	0	2	0	3	2	40
12:30 PM	16	0	0	3	16	3	21	0	0	24	0	3	0	5	3	43
12:45 PM	11	1	1	0	13	3	24	0	0	27	0	2	0	0	2	42
Total	54	2	1	3	57	12	90	0	0	102	0	10	0	9	10	169
Approach %	94.7	3.5	1.8	-	-	11.8	88.2	0.0	-	-	0.0	100.0	0.0	-	-	-
Total %	32.0	1.2	0.6	-	33.7	7.1	53.3	0.0	-	60.4	0.0	5.9	0.0	-	5.9	-
PHF	0.844	0.500	0.250	-	0.891	0.750	0.938	0.000	-	0.944	0.000	0.833	0.000	-	0.833	0.960
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	-	0.0	-	-	0.0	0.0
Cars & Light Goods	52	2	1	-	55	11	86	0	-	97	0	9	0	-	9	161
% Cars & Light Goods	96.3	100.0	100.0	-	96.5	91.7	95.6	-	-	95.1	-	90.0	-	-	90.0	95.3
Buses	0	0	0	-	0	0	3	0	-	3	0	0	0	-	0	3
% Buses	0.0	0.0	0.0	-	0.0	0.0	3.3	-	-	2.9	-	0.0	-	-	0.0	1.8
Single-Unit Trucks	2	0	0	-	2	1	1	0	-	2	0	1	0	-	1	5
% Single-Unit Trucks	3.7	0.0	0.0	-	3.5	8.3	1.1	-	-	2.0	-	10.0	-	-	10.0	3.0
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	-	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	-	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	3	-	-	-	-	0	-	-	-	-	9	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	100.0	-	-



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Count Name: John Street & Rosetta Valley Court
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Turning Movement Peak Hour Data Plot (12:00 PM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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Count Name: John Street & Rosetta Valley Court
Site Code: 210781
Start Date: 03/02/2022
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Turning Movement Peak Hour Data (3:00 PM)

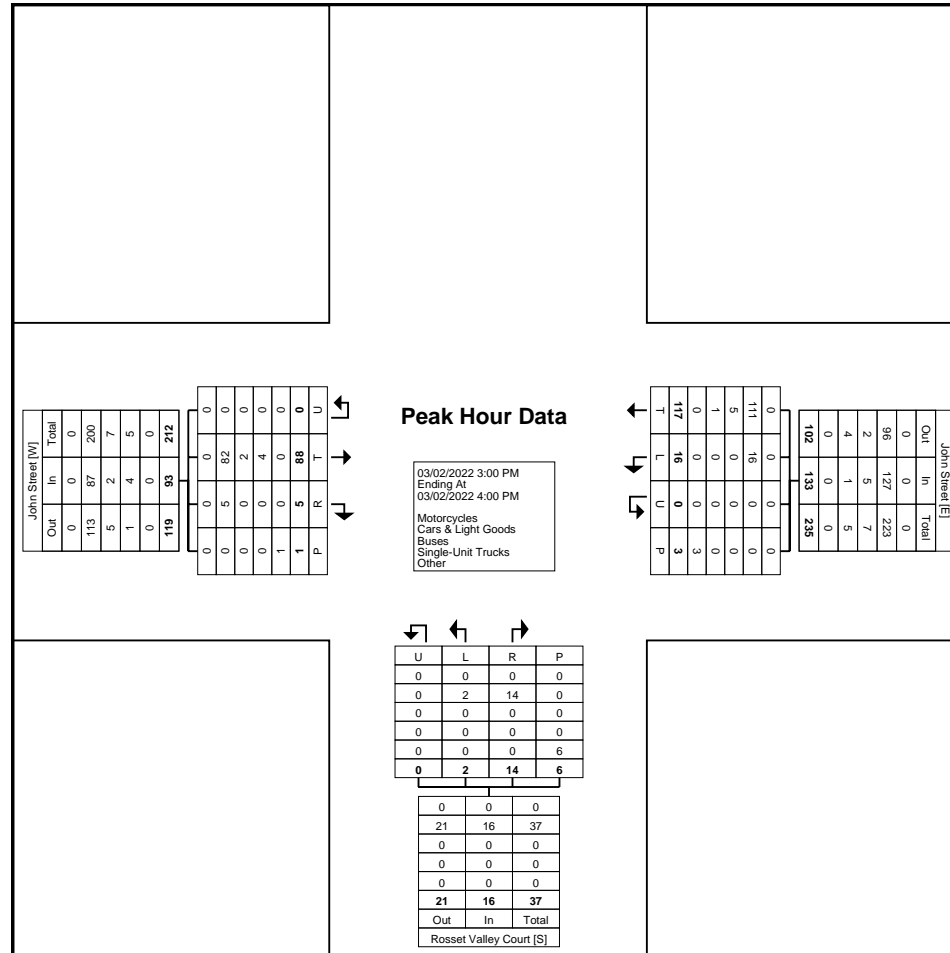
Start Time	John Street Eastbound					John Street Westbound					Rosset Valley Court Northbound					Int. Total
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
3:00 PM	20	2	0	0	22	1	31	0	1	32	0	1	0	0	1	55
3:15 PM	18	0	0	0	18	5	28	0	2	33	0	4	0	2	4	55
3:30 PM	30	2	0	1	32	7	26	0	0	33	0	7	0	4	7	72
3:45 PM	20	1	0	0	21	3	32	0	0	35	2	2	0	0	4	60
Total	88	5	0	1	93	16	117	0	3	133	2	14	0	6	16	242
Approach %	94.6	5.4	0.0	-	-	12.0	88.0	0.0	-	-	12.5	87.5	0.0	-	-	-
Total %	36.4	2.1	0.0	-	38.4	6.6	48.3	0.0	-	55.0	0.8	5.8	0.0	-	6.6	-
PHF	0.733	0.625	0.000	-	0.727	0.571	0.914	0.000	-	0.950	0.250	0.500	0.000	-	0.571	0.840
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	82	5	0	-	87	16	111	0	-	127	2	14	0	-	16	230
% Cars & Light Goods	93.2	100.0	-	-	93.5	100.0	94.9	-	-	95.5	100.0	100.0	-	-	100.0	95.0
Buses	2	0	0	-	2	0	5	0	-	5	0	0	0	-	0	7
% Buses	2.3	0.0	-	-	2.2	0.0	4.3	-	-	3.8	0.0	0.0	-	-	0.0	2.9
Single-Unit Trucks	4	0	0	-	4	0	1	0	-	1	0	0	0	-	0	5
% Single-Unit Trucks	4.5	0.0	-	-	4.3	0.0	0.9	-	-	0.8	0.0	0.0	-	-	0.0	2.1
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	1	-	-	-	-	3	-	-	-	-	6	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-



Paradigm Transportation Solutions Limited
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Count Name: John Street & Rosetta Valley Court
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Turning Movement Peak Hour Data Plot (3:00 PM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsI.com

Count Name: John Street & Victoria Street
Site Code: 210781
Start Date: 03/02/2022
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Turning Movement Data

Start Time	John Street Eastbound						John Street Westbound						Victoria Street Northbound						Victoria Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	1	3	0	0	0	4	1	1	2	0	0	4	0	0	0	0	0	0	8	3	0	0	0	11	19
7:15 AM	0	6	1	0	0	7	2	2	5	0	4	9	1	1	1	0	2	3	19	4	1	0	0	24	43
7:30 AM	1	3	1	0	1	5	0	1	5	0	1	6	1	0	0	0	1	1	17	8	1	0	0	26	38
7:45 AM	0	4	2	0	0	6	2	7	10	0	3	19	0	0	0	0	0	0	19	4	0	0	0	23	48
Hourly Total	2	16	4	0	1	22	5	11	22	0	8	38	2	1	1	0	3	4	63	19	2	0	0	84	148
8:00 AM	0	2	1	0	0	3	1	0	13	0	3	14	0	0	0	0	0	0	11	8	0	0	0	19	36
8:15 AM	0	3	1	0	1	4	2	6	10	0	2	18	1	2	0	0	2	3	11	6	1	0	0	18	43
8:30 AM	0	4	1	0	0	5	1	7	9	0	1	17	1	3	0	0	3	4	16	2	0	0	1	18	44
8:45 AM	0	5	0	0	1	5	0	6	10	0	1	16	2	1	0	0	0	3	19	4	3	0	1	26	50
Hourly Total	0	14	3	0	2	17	4	19	42	0	7	65	4	6	0	0	5	10	57	20	4	0	2	81	173
9:00 AM	0	5	0	0	0	5	1	5	7	0	0	13	1	0	0	0	0	1	10	4	0	0	0	14	33
9:15 AM	3	3	0	0	0	6	0	2	10	0	0	12	0	2	0	0	0	2	17	1	1	0	0	19	39
9:30 AM	1	3	0	0	0	4	0	6	8	0	2	14	0	1	0	0	0	1	13	5	1	0	1	19	38
9:45 AM	1	2	0	0	0	3	0	5	6	1	0	12	1	0	0	0	0	1	9	4	1	0	2	14	30
Hourly Total	5	13	0	0	0	18	1	18	31	1	2	51	2	3	0	0	0	5	49	14	3	0	3	66	140
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	1	0	1	0	0	2	3	3	9	0	0	15	1	1	0	0	0	2	6	2	0	0	0	8	27
11:15 AM	0	2	0	0	0	2	1	4	9	0	4	14	0	0	3	0	0	3	12	3	1	0	0	16	35
11:30 AM	1	10	1	0	3	12	0	5	9	0	3	14	1	3	0	0	2	4	10	4	0	0	2	14	44
11:45 AM	2	3	0	0	0	5	2	4	5	1	0	12	0	1	0	0	1	1	5	3	0	0	1	8	26
Hourly Total	4	15	2	0	3	21	6	16	32	1	7	55	2	5	3	0	3	10	33	12	1	0	3	46	132
12:00 PM	0	2	2	0	0	4	0	9	11	0	1	20	0	3	0	0	0	3	10	4	0	0	0	14	41
12:15 PM	1	3	1	0	0	5	0	4	19	0	0	23	1	2	0	0	1	3	11	3	0	0	0	14	45
12:30 PM	0	0	0	0	2	0	0	4	17	0	0	21	1	5	0	0	1	6	17	4	1	0	0	22	49
12:45 PM	0	6	1	0	1	7	2	8	12	0	0	22	0	0	1	0	1	1	4	6	0	0	0	10	40
Hourly Total	1	11	4	0	3	16	2	25	59	0	1	86	2	10	1	0	3	13	42	17	1	0	0	60	175
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	1	4	0	0	0	5	4	13	14	0	0	31	3	4	1	0	0	8	17	4	1	0	0	22	66
3:15 PM	0	8	0	0	2	8	0	7	21	0	1	28	2	1	0	0	1	3	13	6	1	0	1	20	59
3:30 PM	2	14	0	0	0	16	0	4	20	0	3	24	2	8	0	0	7	10	17	4	0	0	1	21	71
3:45 PM	0	7	1	0	0	8	2	6	21	0	1	29	2	3	0	0	2	5	10	4	1	0	0	15	57
Hourly Total	3	33	1	0	2	37	6	30	76	0	5	112	9	16	1	0	10	26	57	18	3	0	2	78	253
4:00 PM	1	7	1	0	2	9	1	7	17	0	1	25	2	2	0	0	0	4	11	4	0	0	0	15	53
4:15 PM	0	12	1	0	2	13	1	4	21	0	1	26	1	1	0	0	3	2	12	5	1	0	1	18	59
4:30 PM	5	2	1	0	0	8	2	6	14	0	3	22	3	6	0	0	0	9	10	3	0	0	0	13	52

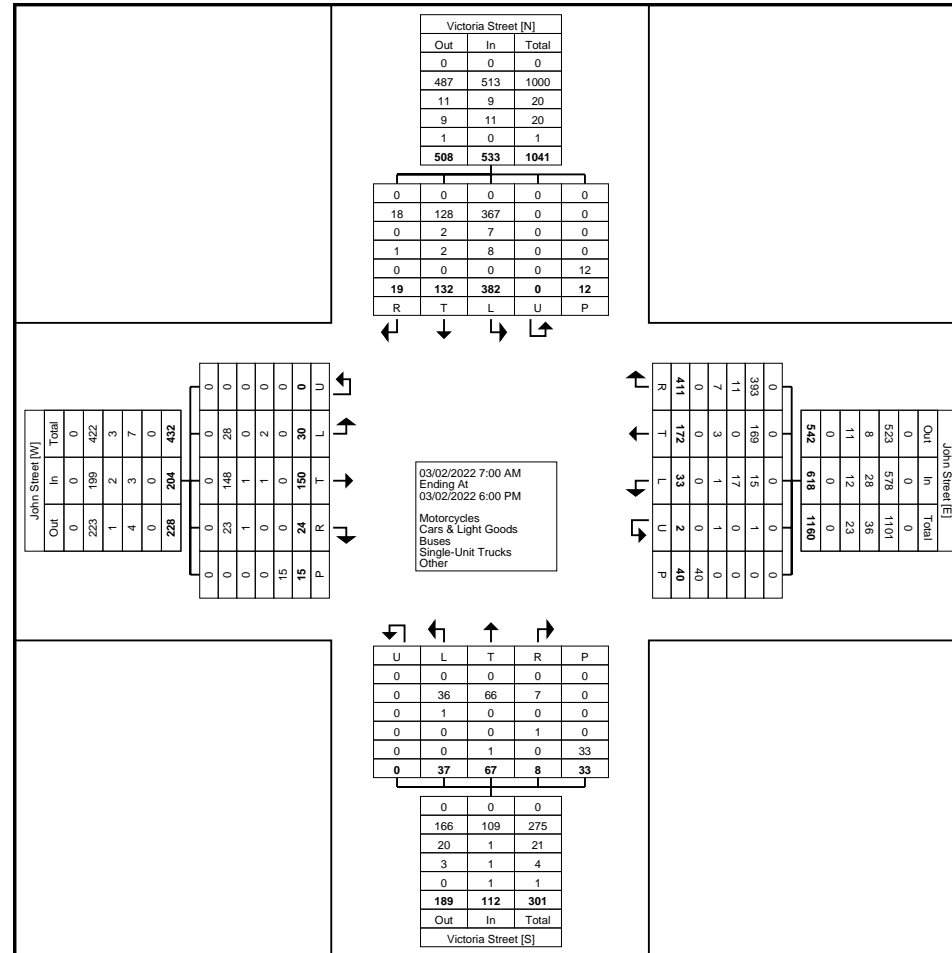
4:45 PM	1	4	2	0	0	7	1	9	19	0	1	29	2	6	2	0	1	10	12	3	0	0	0	15	61
Hourly Total	7	25	5	0	4	37	5	26	71	0	6	102	8	15	2	0	4	25	45	15	1	0	1	61	225
5:00 PM	4	9	2	0	0	15	0	10	24	0	1	34	4	4	0	0	1	8	9	5	2	0	0	16	73
5:15 PM	1	7	1	0	0	9	2	6	24	0	1	32	1	3	0	0	1	4	9	6	1	0	1	16	61
5:30 PM	1	4	1	0	0	6	1	5	16	0	1	22	2	0	0	0	0	2	7	5	0	0	0	12	42
5:45 PM	2	3	1	0	0	6	1	6	14	0	1	21	1	4	0	0	3	5	11	1	1	0	0	13	45
Hourly Total	8	23	5	0	0	36	4	27	78	0	4	109	8	11	0	0	5	19	36	17	4	0	1	57	221
Grand Total	30	150	24	0	15	204	33	172	411	2	40	618	37	67	8	0	33	112	382	132	19	0	12	533	1467
Approach %	14.7	73.5	11.8	0.0	-	-	5.3	27.8	66.5	0.3	-	-	33.0	59.8	7.1	0.0	-	-	71.7	24.8	3.6	0.0	-	-	-
Total %	2.0	10.2	1.6	0.0	-	13.9	2.2	11.7	28.0	0.1	-	42.1	2.5	4.6	0.5	0.0	-	7.6	26.0	9.0	1.3	0.0	-	36.3	-
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	28	148	23	0	-	199	15	169	393	1	-	578	36	66	7	0	-	109	367	128	18	0	-	513	1399
% Cars & Light Goods	93.3	98.7	95.8	-	-	97.5	45.5	98.3	95.6	50.0	-	93.5	97.3	98.5	87.5	-	-	97.3	96.1	97.0	94.7	-	-	96.2	95.4
Buses	0	1	1	0	-	2	17	0	11	0	-	28	1	0	0	0	-	1	7	2	0	0	-	9	40
% Buses	0.0	0.7	4.2	-	-	1.0	51.5	0.0	2.7	0.0	-	4.5	2.7	0.0	0.0	-	-	0.9	1.8	1.5	0.0	-	-	1.7	2.7
Single-Unit Trucks	2	1	0	0	-	3	1	3	7	1	-	12	0	0	1	0	-	1	8	2	1	0	-	11	27
% Single-Unit Trucks	6.7	0.7	0.0	-	-	1.5	3.0	1.7	1.7	50.0	-	1.9	0.0	0.0	12.5	-	-	0.9	2.1	1.5	5.3	-	-	2.1	1.8
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	1.5	0.0	-	-	0.9	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	15	-	-	-	-	40	-	-	-	-	-	-	33	-	-	-	-	-	12	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



Paradigm Transportation Solutions Limited
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Count Name: John Street & Victoria Street
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Turning Movement Data Plot



Paradigm Transportation Solutions Limited
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Count Name: John Street & Victoria Street
Site Code: 210781
Start Date: 03/02/2022
Page No: 4

Turning Movement Peak Hour Data (8:00 AM)

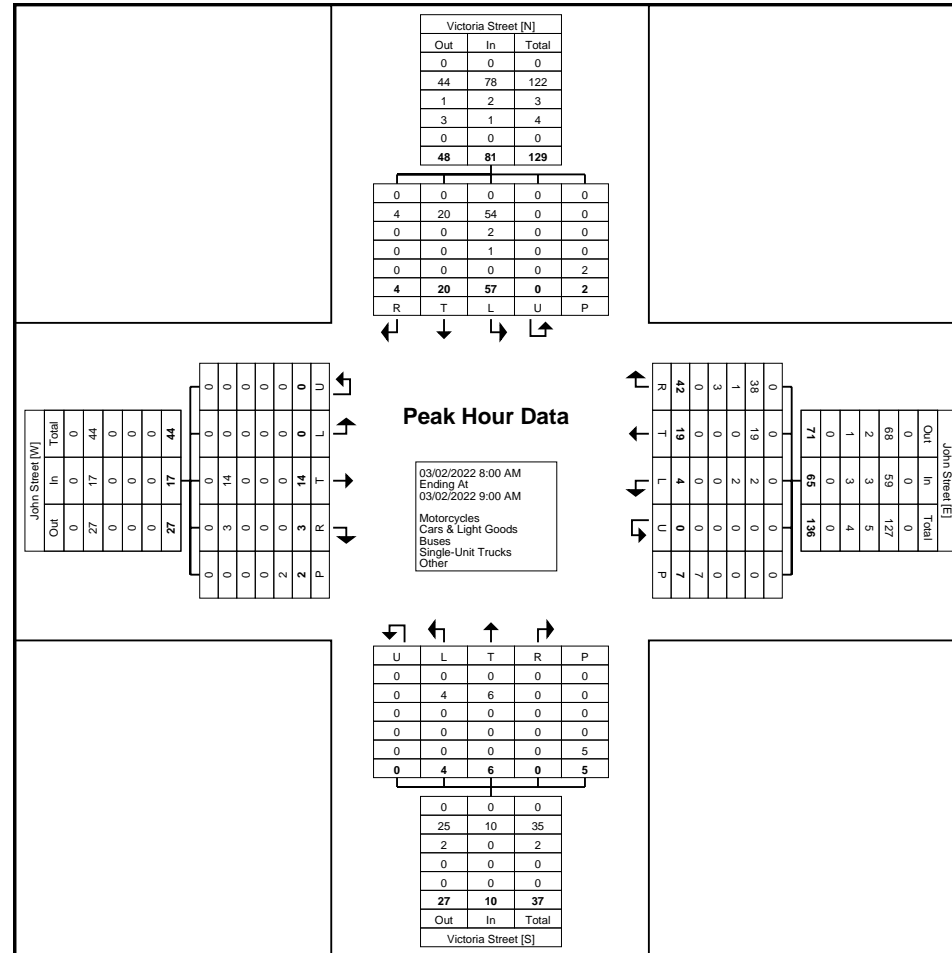
Start Time	John Street Eastbound						John Street Westbound						Victoria Street Northbound						Victoria Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
8:00 AM	0	2	1	0	0	3	1	0	13	0	3	14	0	0	0	0	0	0	11	8	0	0	0	19	36
8:15 AM	0	3	1	0	1	4	2	6	10	0	2	18	1	2	0	0	2	3	11	6	1	0	0	18	43
8:30 AM	0	4	1	0	0	5	1	7	9	0	1	17	1	3	0	0	3	4	16	2	0	0	1	18	44
8:45 AM	0	5	0	0	1	5	0	6	10	0	1	16	2	1	0	0	0	3	19	4	3	0	1	26	50
Total	0	14	3	0	2	17	4	19	42	0	7	65	4	6	0	0	5	10	57	20	4	0	2	81	173
Approach %	0.0	82.4	17.6	0.0	-	-	6.2	29.2	64.6	0.0	-	-	40.0	60.0	0.0	0.0	-	-	70.4	24.7	4.9	0.0	-	-	-
Total %	0.0	8.1	1.7	0.0	-	9.8	2.3	11.0	24.3	0.0	-	37.6	2.3	3.5	0.0	0.0	-	5.8	32.9	11.6	2.3	0.0	-	46.8	-
PHF	0.000	0.700	0.750	0.000	-	0.850	0.500	0.679	0.808	0.000	-	0.903	0.500	0.500	0.000	0.000	-	0.625	0.750	0.625	0.333	0.000	-	0.779	0.865
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	-	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	0	14	3	0	-	17	2	19	38	0	-	59	4	6	0	0	-	10	54	20	4	0	-	78	164
% Cars & Light Goods	-	100.0	100.0	-	-	100.0	50.0	100.0	90.5	-	-	90.8	100.0	100.0	-	-	-	100.0	94.7	100.0	100.0	-	-	96.3	94.8
Buses	0	0	0	0	-	0	2	0	1	0	-	3	0	0	0	0	-	0	2	0	0	0	-	2	5
% Buses	-	0.0	0.0	-	-	0.0	50.0	0.0	2.4	-	-	4.6	0.0	0.0	-	-	-	0.0	3.5	0.0	0.0	-	-	2.5	2.9
Single-Unit Trucks	0	0	0	0	-	0	0	0	3	0	-	3	0	0	0	0	-	0	1	0	0	0	-	1	4
% Single-Unit Trucks	-	0.0	0.0	-	-	0.0	0.0	0.0	7.1	-	-	4.6	0.0	0.0	-	-	-	0.0	1.8	0.0	0.0	-	-	1.2	2.3
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	-	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	7	-	-	-	-	-	5	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



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Count Name: John Street & Victoria Street
Site Code: 210781
Start Date: 03/02/2022
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Turning Movement Peak Hour Data Plot (8:00 AM)



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Count Name: John Street & Victoria Street
Site Code: 210781
Start Date: 03/02/2022
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Turning Movement Peak Hour Data (11:00 AM)

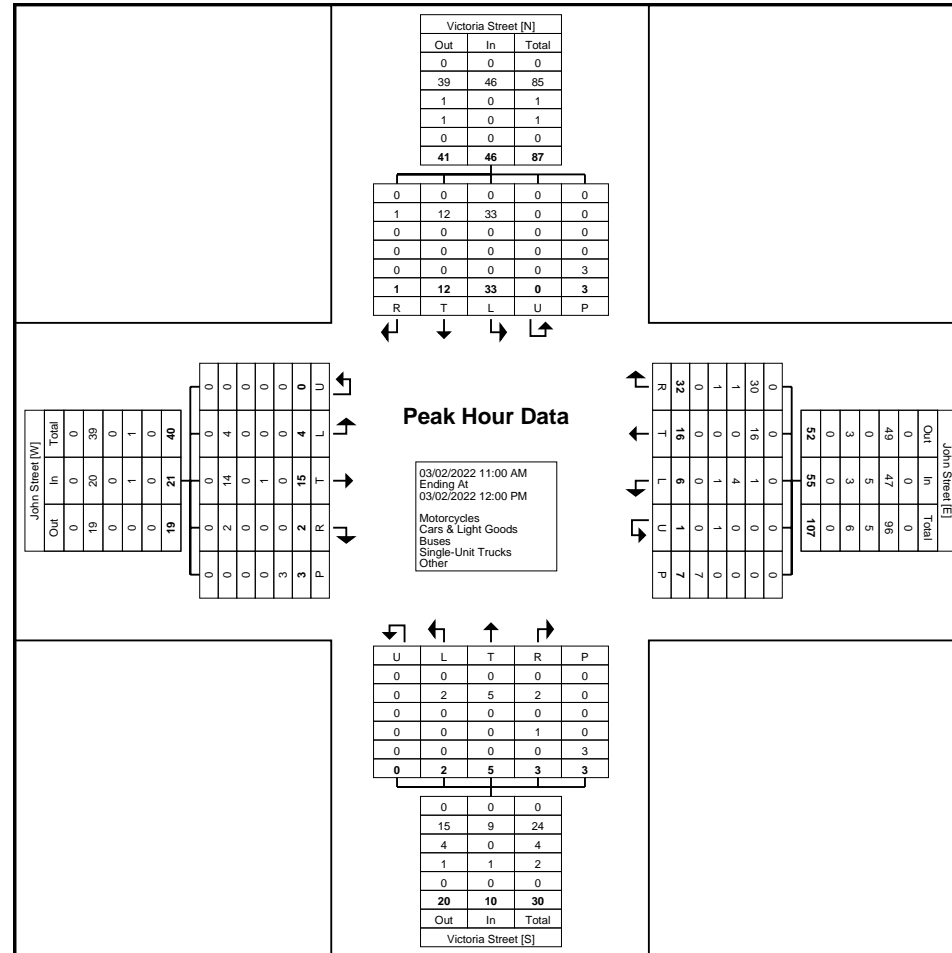
Start Time	John Street Eastbound						John Street Westbound						Victoria Street Northbound						Victoria Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
11:00 AM	1	0	1	0	0	2	3	3	9	0	0	15	1	1	0	0	0	2	6	2	0	0	0	8	27
11:15 AM	0	2	0	0	0	2	1	4	9	0	4	14	0	0	3	0	0	3	12	3	1	0	0	16	35
11:30 AM	1	10	1	0	3	12	0	5	9	0	3	14	1	3	0	0	2	4	10	4	0	0	2	14	44
11:45 AM	2	3	0	0	0	5	2	4	5	1	0	12	0	1	0	0	1	1	5	3	0	0	1	8	26
Total	4	15	2	0	3	21	6	16	32	1	7	55	2	5	3	0	3	10	33	12	1	0	3	46	132
Approach %	19.0	71.4	9.5	0.0	-	-	10.9	29.1	58.2	1.8	-	-	20.0	50.0	30.0	0.0	-	-	71.7	26.1	2.2	0.0	-	-	-
Total %	3.0	11.4	1.5	0.0	-	15.9	4.5	12.1	24.2	0.8	-	41.7	1.5	3.8	2.3	0.0	-	7.6	25.0	9.1	0.8	0.0	-	34.8	-
PHF	0.500	0.375	0.500	0.000	-	0.438	0.500	0.800	0.889	0.250	-	0.917	0.500	0.417	0.250	0.000	-	0.625	0.688	0.750	0.250	0.000	-	0.719	0.750
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	4	14	2	0	-	20	1	16	30	0	-	47	2	5	2	0	-	9	33	12	1	0	-	46	122
% Cars & Light Goods	100.0	93.3	100.0	-	-	95.2	16.7	100.0	93.8	0.0	-	85.5	100.0	100.0	66.7	-	-	90.0	100.0	100.0	100.0	-	-	100.0	92.4
Buses	0	0	0	0	-	0	4	0	1	0	-	5	0	0	0	0	-	0	0	0	0	0	-	0	5
% Buses	0.0	0.0	0.0	-	-	0.0	66.7	0.0	3.1	0.0	-	9.1	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	3.8
Single-Unit Trucks	0	1	0	0	-	1	1	0	1	1	-	3	0	0	1	0	-	1	0	0	0	0	-	0	5
% Single-Unit Trucks	0.0	6.7	0.0	-	-	4.8	16.7	0.0	3.1	100.0	-	5.5	0.0	0.0	33.3	-	-	10.0	0.0	0.0	0.0	-	-	0.0	3.8
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	3	-	-	-	-	-	7	-	-	-	-	-	3	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



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Count Name: John Street & Victoria Street
Site Code: 210781
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Turning Movement Peak Hour Data Plot (11:00 AM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
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Count Name: John Street & Victoria Street
Site Code: 210781
Start Date: 03/02/2022
Page No: 8

Turning Movement Peak Hour Data (12:00 PM)

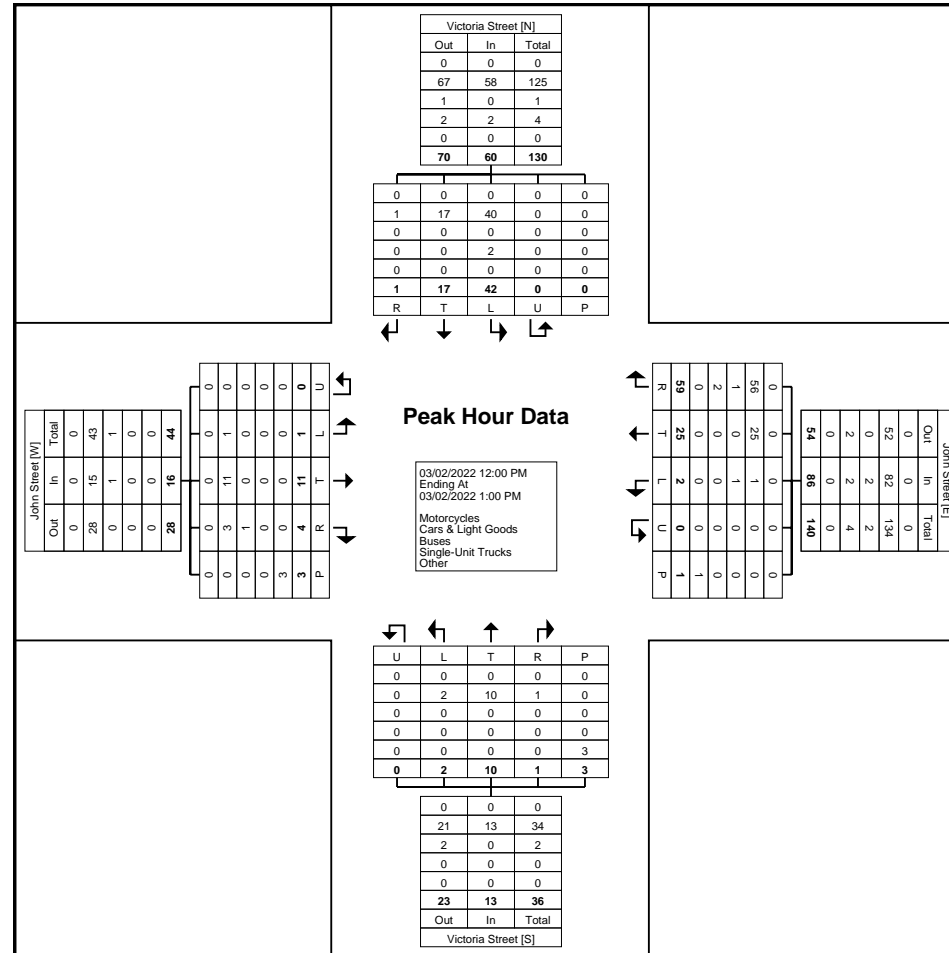
Start Time	John Street Eastbound						John Street Westbound						Victoria Street Northbound						Victoria Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
12:00 PM	0	2	2	0	0	4	0	9	11	0	1	20	0	3	0	0	0	3	10	4	0	0	0	14	41
12:15 PM	1	3	1	0	0	5	0	4	19	0	0	23	1	2	0	0	1	3	11	3	0	0	0	14	45
12:30 PM	0	0	0	0	2	0	0	4	17	0	0	21	1	5	0	0	1	6	17	4	1	0	0	22	49
12:45 PM	0	6	1	0	1	7	2	8	12	0	0	22	0	0	1	0	1	1	4	6	0	0	0	10	40
Total	1	11	4	0	3	16	2	25	59	0	1	86	2	10	1	0	3	13	42	17	1	0	0	60	175
Approach %	6.3	68.8	25.0	0.0	-	-	2.3	29.1	68.6	0.0	-	-	15.4	76.9	7.7	0.0	-	-	70.0	28.3	1.7	0.0	-	-	-
Total %	0.6	6.3	2.3	0.0	-	9.1	1.1	14.3	33.7	0.0	-	49.1	1.1	5.7	0.6	0.0	-	7.4	24.0	9.7	0.6	0.0	-	34.3	-
PHF	0.250	0.458	0.500	0.000	-	0.571	0.250	0.694	0.776	0.000	-	0.935	0.500	0.500	0.250	0.000	-	0.542	0.618	0.708	0.250	0.000	-	0.682	0.893
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	1	11	3	0	-	15	1	25	56	0	-	82	2	10	1	0	-	13	40	17	1	0	-	58	168
% Cars & Light Goods	100.0	100.0	75.0	-	-	93.8	50.0	100.0	94.9	-	-	95.3	100.0	100.0	100.0	-	-	100.0	95.2	100.0	100.0	-	-	96.7	96.0
Buses	0	0	1	0	-	1	1	0	1	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	3
% Buses	0.0	0.0	25.0	-	-	6.3	50.0	0.0	1.7	-	-	2.3	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	1.7
Single-Unit Trucks	0	0	0	0	-	0	0	0	2	0	-	2	0	0	0	0	-	0	2	0	0	0	-	2	4
% Single-Unit Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	3.4	-	-	2.3	0.0	0.0	0.0	-	-	0.0	4.8	0.0	0.0	-	-	3.3	2.3
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	3	-	-	-	-	-	1	-	-	-	-	-	3	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-



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Count Name: John Street & Victoria Street
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Turning Movement Peak Hour Data Plot (12:00 PM)



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Count Name: John Street & Victoria Street
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Turning Movement Peak Hour Data (3:00 PM)

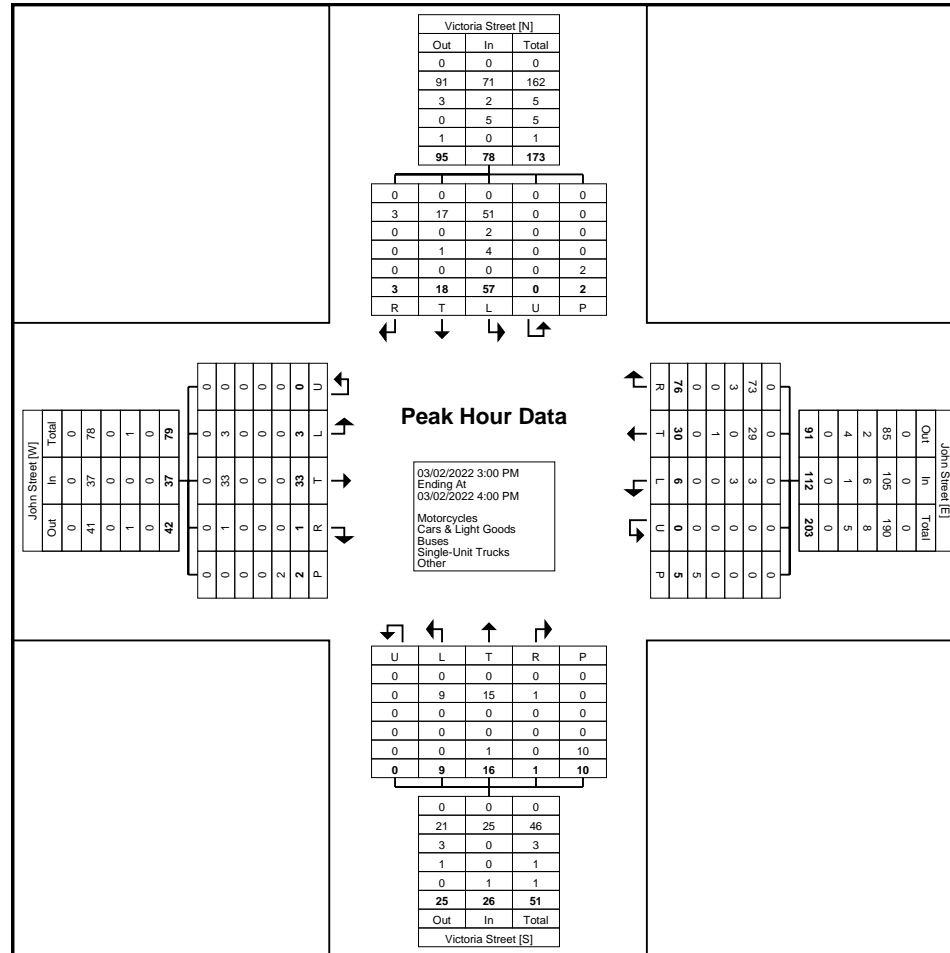
Start Time	John Street Eastbound						John Street Westbound						Victoria Street Northbound						Victoria Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
3:00 PM	1	4	0	0	0	5	4	13	14	0	0	31	3	4	1	0	0	8	17	4	1	0	0	22	66
3:15 PM	0	8	0	0	2	8	0	7	21	0	1	28	2	1	0	0	1	3	13	6	1	0	1	20	59
3:30 PM	2	14	0	0	0	16	0	4	20	0	3	24	2	8	0	0	7	10	17	4	0	0	1	21	71
3:45 PM	0	7	1	0	0	8	2	6	21	0	1	29	2	3	0	0	2	5	10	4	1	0	0	15	57
Total	3	33	1	0	2	37	6	30	76	0	5	112	9	16	1	0	10	26	57	18	3	0	2	78	253
Approach %	8.1	89.2	2.7	0.0	-	-	5.4	26.8	67.9	0.0	-	-	34.6	61.5	3.8	0.0	-	-	73.1	23.1	3.8	0.0	-	-	-
Total %	1.2	13.0	0.4	0.0	-	14.6	2.4	11.9	30.0	0.0	-	44.3	3.6	6.3	0.4	0.0	-	10.3	22.5	7.1	1.2	0.0	-	30.8	-
PHF	0.375	0.589	0.250	0.000	-	0.578	0.375	0.577	0.905	0.000	-	0.903	0.750	0.500	0.250	0.000	-	0.650	0.838	0.750	0.750	0.000	-	0.886	0.891
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	3	33	1	0	-	37	3	29	73	0	-	105	9	15	1	0	-	25	51	17	3	0	-	71	238
% Cars & Light Goods	100.0	100.0	100.0	-	-	100.0	50.0	96.7	96.1	-	-	93.8	100.0	93.8	100.0	-	-	96.2	89.5	94.4	100.0	-	-	91.0	94.1
Buses	0	0	0	0	-	0	3	0	3	0	-	6	0	0	0	0	-	0	2	0	0	0	-	2	8
% Buses	0.0	0.0	0.0	-	-	0.0	50.0	0.0	3.9	-	-	5.4	0.0	0.0	0.0	-	-	0.0	3.5	0.0	0.0	-	-	2.6	3.2
Single-Unit Trucks	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	4	1	0	0	-	5	6
% Single-Unit Trucks	0.0	0.0	0.0	-	-	0.0	0.0	3.3	0.0	-	-	0.9	0.0	0.0	0.0	-	-	0.0	7.0	5.6	0.0	-	-	6.4	2.4
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	6.3	0.0	-	-	3.8	0.0	0.0	0.0	-	-	0.0	0.4
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	5	-	-	-	-	-	10	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsI.com

Count Name: John Street & Victoria Street
Site Code: 210781
Start Date: 03/02/2022
Page No: 11



Turning Movement Peak Hour Data Plot (3:00 PM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Mountainview Road & John Street
Site Code: 210781
Start Date: 03/02/2022
Page No: 1

Turning Movement Data

Start Time	John Street Eastbound						John Street Westbound						Mountainview Road Northbound						Mountainview Road Southbound						Int. Total	
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total		
7:00 AM	5	1	13	0	0	19	4	0	0	0	0	4	3	24	4	0	0	0	31	1	33	1	0	0	35	89
7:15 AM	2	3	26	0	0	31	0	0	2	0	2	2	5	19	2	0	0	0	26	2	51	4	0	0	57	116
7:30 AM	3	1	16	0	1	20	2	1	2	0	1	5	3	23	1	0	0	0	27	2	43	4	0	0	49	101
7:45 AM	6	4	18	0	1	28	7	6	0	0	1	13	11	33	2	0	0	0	46	2	61	4	0	1	67	154
Hourly Total	16	9	73	0	2	98	13	7	4	0	4	24	22	99	9	0	0	0	130	7	188	13	0	1	208	460
8:00 AM	4	1	18	0	4	23	4	3	3	0	0	10	14	45	3	0	3	62	6	87	3	0	0	96	191	
8:15 AM	3	2	19	0	4	24	4	2	1	0	0	7	12	37	2	0	2	51	5	86	5	0	2	96	178	
8:30 AM	2	0	19	0	1	21	5	1	0	0	0	6	10	48	1	0	0	59	4	67	4	0	0	75	161	
8:45 AM	6	4	21	0	0	31	6	4	4	0	0	14	10	45	10	0	0	65	1	71	5	0	0	77	187	
Hourly Total	15	7	77	0	9	99	19	10	8	0	0	37	46	175	16	0	5	237	16	311	17	0	2	344	717	
9:00 AM	5	2	10	0	0	17	1	5	0	0	0	6	3	56	3	0	0	62	3	55	2	0	1	60	145	
9:15 AM	1	3	18	0	2	22	5	1	1	0	0	7	7	41	4	0	1	52	0	42	2	0	0	44	125	
9:30 AM	2	4	10	0	1	16	2	4	0	0	0	6	6	25	4	0	0	35	0	43	3	0	0	46	103	
9:45 AM	2	1	9	0	2	12	4	1	0	0	0	5	5	32	6	1	2	44	1	49	5	0	0	55	116	
Hourly Total	10	10	47	0	5	67	12	11	1	0	0	24	21	154	17	1	3	193	4	189	12	0	1	205	489	
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	0	0	9	0	6	9	3	2	1	0	1	6	11	46	2	0	1	59	0	36	4	0	1	40	114	
11:15 AM	2	3	10	0	1	15	4	1	1	0	0	6	10	42	4	0	1	56	2	37	2	0	0	41	118	
11:30 AM	9	3	11	0	1	23	5	1	2	0	1	8	14	40	3	0	1	57	0	49	5	0	0	54	142	
11:45 AM	3	0	9	0	0	12	4	1	0	0	0	5	9	51	2	0	0	62	2	36	5	0	0	43	122	
Hourly Total	14	6	39	0	8	59	16	5	4	0	2	25	44	179	11	0	3	234	4	158	16	0	1	178	496	
12:00 PM	1	2	13	0	1	16	8	3	2	0	0	13	19	43	5	0	0	67	1	44	5	0	1	50	146	
12:15 PM	2	2	10	0	1	14	3	1	4	0	0	8	17	54	5	0	1	76	1	30	5	0	0	36	134	
12:30 PM	1	3	15	0	3	19	8	1	0	0	0	9	19	34	5	0	1	58	0	57	4	0	0	61	147	
12:45 PM	5	1	7	0	1	13	5	1	4	0	0	10	20	46	5	0	3	71	1	52	6	0	0	59	153	
Hourly Total	9	8	45	0	6	62	24	6	10	0	0	40	75	177	20	0	5	272	3	183	20	0	1	206	580	
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	6	3	12	0	2	21	4	5	4	0	0	13	18	70	4	0	1	92	3	67	10	0	0	80	206	
3:15 PM	5	4	13	0	3	22	9	4	3	0	0	16	22	69	3	1	0	95	2	60	8	0	0	70	203	
3:30 PM	13	3	20	0	4	36	8	4	6	0	1	18	26	84	4	0	0	114	1	64	3	0	1	68	236	
3:45 PM	7	0	14	0	0	21	3	2	2	0	2	7	27	65	3	0	0	95	2	43	5	0	1	50	173	
Hourly Total	31	10	59	0	9	100	24	15	15	0	3	54	93	288	14	1	1	396	8	234	26	0	2	268	818	
4:00 PM	6	3	10	0	2	19	6	3	7	0	0	16	25	83	3	0	0	111	3	56	4	0	1	63	209	
4:15 PM	4	3	13	0	2	20	3	1	1	0	0	5	22	70	5	0	0	97	3	65	7	1	0	76	198	
4:30 PM	3	2	14	0	3	19	2	1	1	0	0	4	29	73	4	2	1	108	4	50	6	0	1	60	191	

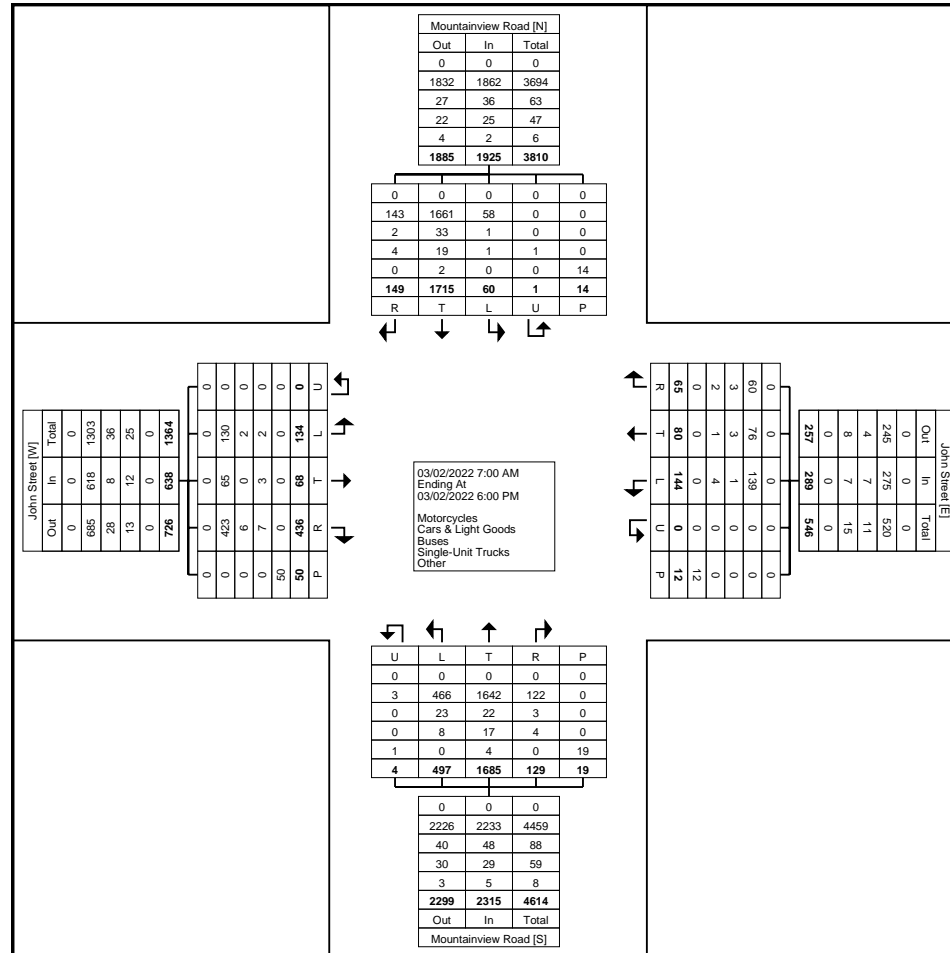
4:45 PM	7	2	8	0	1	17	3	4	2	0	0	9	28	80	5	0	0	113	3	72	2	0	1	77	216
Hourly Total	20	10	45	0	8	75	14	9	11	0	0	34	104	306	17	2	1	429	13	243	19	1	3	276	814
5:00 PM	6	6	10	0	1	22	8	6	5	0	1	19	28	75	8	0	1	111	2	48	7	0	0	57	209
5:15 PM	7	1	14	0	0	22	5	4	4	0	0	13	28	80	6	0	0	114	1	59	5	0	1	65	214
5:30 PM	3	1	14	0	0	18	7	3	2	0	0	12	21	78	7	0	0	106	0	52	7	0	0	59	195
5:45 PM	3	0	13	0	2	16	2	4	1	0	2	7	15	74	4	0	0	93	2	50	7	0	2	59	175
Hourly Total	19	8	51	0	3	78	22	17	12	0	3	51	92	307	25	0	1	424	5	209	26	0	3	240	793
Grand Total	134	68	436	0	50	638	144	80	65	0	12	289	497	1685	129	4	19	2315	60	1715	149	1	14	1925	5167
Approach %	21.0	10.7	68.3	0.0	-	-	49.8	27.7	22.5	0.0	-	-	21.5	72.8	5.6	0.2	-	-	3.1	89.1	7.7	0.1	-	-	-
Total %	2.6	1.3	8.4	0.0	-	12.3	2.8	1.5	1.3	0.0	-	5.6	9.6	32.6	2.5	0.1	-	44.8	1.2	33.2	2.9	0.0	-	37.3	-
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Cars & Light Goods	130	65	423	0	-	618	139	76	60	0	-	275	466	1642	122	3	-	2233	58	1661	143	0	-	1862	4988
% Cars & Light Goods	97.0	95.6	97.0	-	-	96.9	96.5	95.0	92.3	-	-	95.2	93.8	97.4	94.6	75.0	-	96.5	96.7	96.9	96.0	0.0	-	96.7	96.5
Buses	2	0	6	0	-	8	1	3	3	0	-	7	23	22	3	0	-	48	1	33	2	0	-	36	99
% Buses	1.5	0.0	1.4	-	-	1.3	0.7	3.8	4.6	-	-	2.4	4.6	1.3	2.3	0.0	-	2.1	1.7	1.9	1.3	0.0	-	1.9	1.9
Single-Unit Trucks	2	3	7	0	-	12	4	1	2	0	-	7	8	17	4	0	-	29	1	19	4	1	-	25	73
% Single-Unit Trucks	1.5	4.4	1.6	-	-	1.9	2.8	1.3	3.1	-	-	2.4	1.6	1.0	3.1	0.0	-	1.3	1.7	1.1	2.7	100.0	-	1.3	1.4
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	4	0	0	-	4	0	2	0	0	-	2	6
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.2	0.0	0.0	-	0.2	0.0	0.1	0.0	0.0	-	0.1	0.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	1	-	1	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	25.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	2.0	-	-	-	-	-	8.3	-	-	-	-	-	5.3	-	-	-	-	-	7.1	-	-
Pedestrians	-	-	-	-	49	-	-	-	-	-	11	-	-	-	-	-	18	-	-	-	-	-	13	-	-
% Pedestrians	-	-	-	-	98.0	-	-	-	-	-	91.7	-	-	-	-	-	94.7	-	-	-	-	-	92.9	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Mountainview Road & John Street
Site Code: 210781
Start Date: 03/02/2022
Page No: 3



Turning Movement Data Plot



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Mountainview Road & John Street
Site Code: 210781
Start Date: 03/02/2022
Page No: 4

Turning Movement Peak Hour Data (8:00 AM)

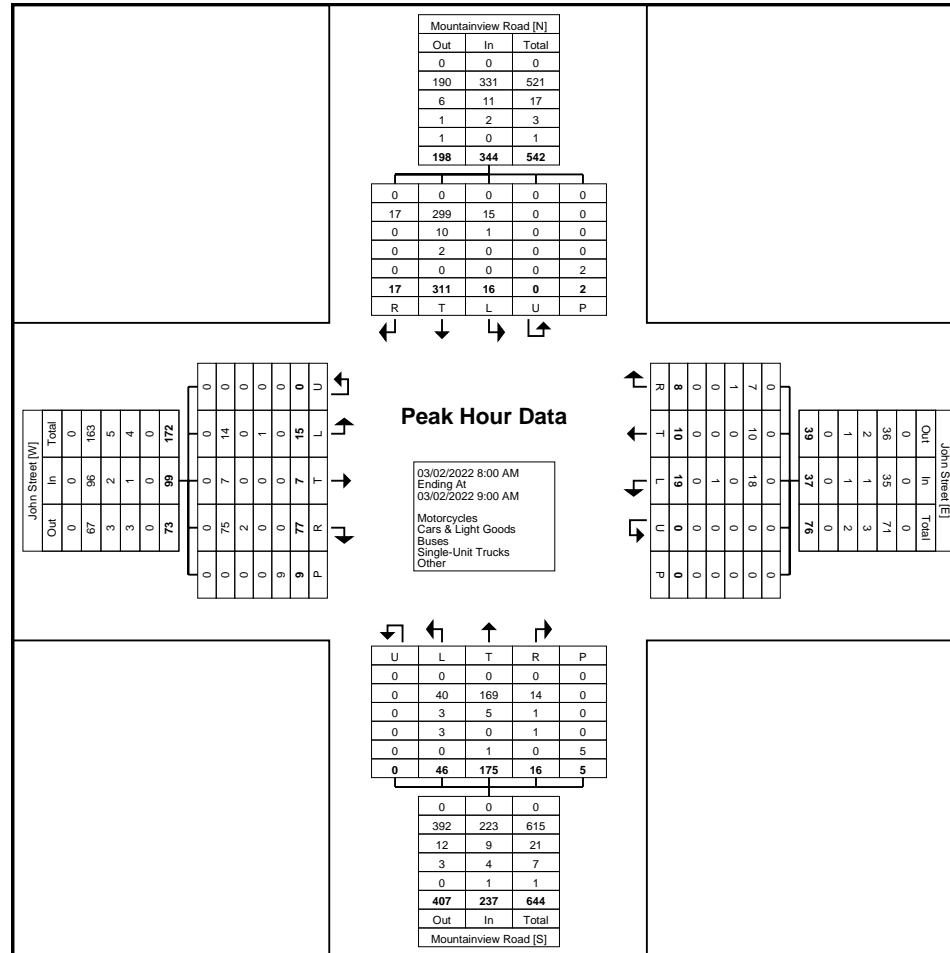
Start Time	John Street Eastbound						John Street Westbound						Mountainview Road Northbound						Mountainview Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
8:00 AM	4	1	18	0	4	23	4	3	3	0	0	10	14	45	3	0	3	62	6	87	3	0	0	96	191
8:15 AM	3	2	19	0	4	24	4	2	1	0	0	7	12	37	2	0	2	51	5	86	5	0	2	96	178
8:30 AM	2	0	19	0	1	21	5	1	0	0	0	6	10	48	1	0	0	59	4	67	4	0	0	75	161
8:45 AM	6	4	21	0	0	31	6	4	4	0	0	14	10	45	10	0	0	65	1	71	5	0	0	77	187
Total	15	7	77	0	9	99	19	10	8	0	0	37	46	175	16	0	5	237	16	311	17	0	2	344	717
Approach %	15.2	7.1	77.8	0.0	-	-	51.4	27.0	21.6	0.0	-	-	19.4	73.8	6.8	0.0	-	-	4.7	90.4	4.9	0.0	-	-	-
Total %	2.1	1.0	10.7	0.0	-	13.8	2.6	1.4	1.1	0.0	-	5.2	6.4	24.4	2.2	0.0	-	33.1	2.2	43.4	2.4	0.0	-	48.0	-
PHF	0.625	0.438	0.917	0.000	-	0.798	0.792	0.625	0.500	0.000	-	0.661	0.821	0.911	0.400	0.000	-	0.912	0.667	0.894	0.850	0.000	-	0.896	0.938
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	14	7	75	0	-	96	18	10	7	0	-	35	40	169	14	0	-	223	15	299	17	0	-	331	685
% Cars & Light Goods	93.3	100.0	97.4	-	-	97.0	94.7	100.0	87.5	-	-	94.6	87.0	96.6	87.5	-	-	94.1	93.8	96.1	100.0	-	-	96.2	95.5
Buses	0	0	2	0	-	2	0	0	1	0	-	1	3	5	1	0	-	9	1	10	0	0	-	11	23
% Buses	0.0	0.0	2.6	-	-	2.0	0.0	0.0	12.5	-	-	2.7	6.5	2.9	6.3	-	-	3.8	6.3	3.2	0.0	-	-	3.2	3.2
Single-Unit Trucks	1	0	0	0	-	1	1	0	0	0	-	1	3	0	1	0	-	4	0	2	0	0	-	2	8
% Single-Unit Trucks	6.7	0.0	0.0	-	-	1.0	5.3	0.0	0.0	-	-	2.7	6.5	0.0	6.3	-	-	1.7	0.0	0.6	0.0	-	-	0.6	1.1
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.6	0.0	-	-	0.4	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	9	-	-	-	-	-	0	-	-	-	-	-	5	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
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Count Name: Mountainview Road & John Street
Site Code: 210781
Start Date: 03/02/2022
Page No: 5



Turning Movement Peak Hour Data Plot (8:00 AM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Mountainview Road & John Street
Site Code: 210781
Start Date: 03/02/2022
Page No: 6

Turning Movement Peak Hour Data (12:00 PM)

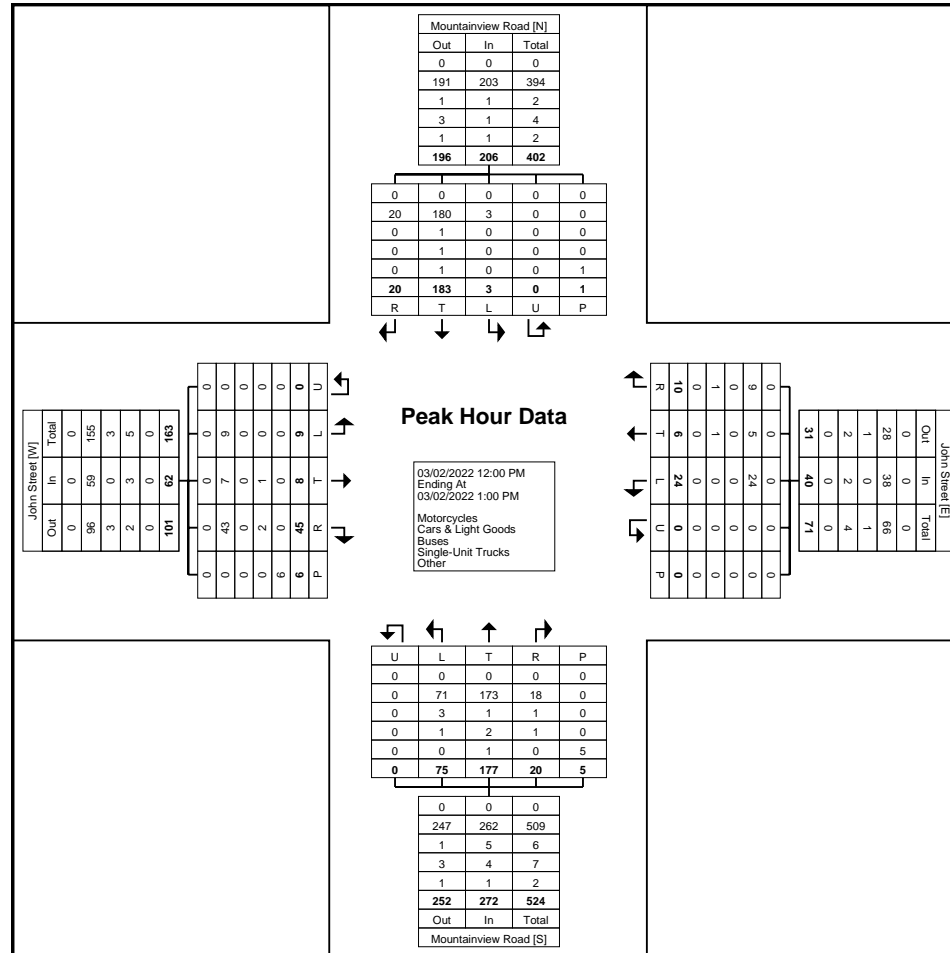
Start Time	John Street Eastbound						John Street Westbound						Mountainview Road Northbound						Mountainview Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
12:00 PM	1	2	13	0	1	16	8	3	2	0	0	13	19	43	5	0	0	67	1	44	5	0	1	50	146
12:15 PM	2	2	10	0	1	14	3	1	4	0	0	8	17	54	5	0	1	76	1	30	5	0	0	36	134
12:30 PM	1	3	15	0	3	19	8	1	0	0	0	9	19	34	5	0	1	58	0	57	4	0	0	61	147
12:45 PM	5	1	7	0	1	13	5	1	4	0	0	10	20	46	5	0	3	71	1	52	6	0	0	59	153
Total	9	8	45	0	6	62	24	6	10	0	0	40	75	177	20	0	5	272	3	183	20	0	1	206	580
Approach %	14.5	12.9	72.6	0.0	-	-	60.0	15.0	25.0	0.0	-	-	27.6	65.1	7.4	0.0	-	-	1.5	88.8	9.7	0.0	-	-	-
Total %	1.6	1.4	7.8	0.0	-	10.7	4.1	1.0	1.7	0.0	-	6.9	12.9	30.5	3.4	0.0	-	46.9	0.5	31.6	3.4	0.0	-	35.5	-
PHF	0.450	0.667	0.750	0.000	-	0.816	0.750	0.500	0.625	0.000	-	0.769	0.938	0.819	1.000	0.000	-	0.895	0.750	0.803	0.833	0.000	-	0.844	0.948
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	9	7	43	0	-	59	24	5	9	0	-	38	71	173	18	0	-	262	3	180	20	0	-	203	562
% Cars & Light Goods	100.0	87.5	95.6	-	-	95.2	100.0	83.3	90.0	-	-	95.0	94.7	97.7	90.0	-	-	96.3	100.0	98.4	100.0	-	-	98.5	96.9
Buses	0	0	0	0	-	0	0	0	0	0	-	0	3	1	1	0	-	5	0	1	0	0	-	1	6
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	4.0	0.6	5.0	-	-	1.8	0.0	0.5	0.0	-	-	0.5	1.0
Single-Unit Trucks	0	1	2	0	-	3	0	1	1	0	-	2	1	2	1	0	-	4	0	1	0	0	-	1	10
% Single-Unit Trucks	0.0	12.5	4.4	-	-	4.8	0.0	16.7	10.0	-	-	5.0	1.3	1.1	5.0	-	-	1.5	0.0	0.5	0.0	-	-	0.5	1.7
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	1	0	0	-	1	2
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.6	0.0	-	-	0.4	0.0	0.5	0.0	-	-	0.5	0.3
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	6	-	-	-	-	-	0	-	-	-	-	-	5	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



Paradigm Transportation Solutions Limited
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Count Name: Mountainview Road & John Street
Site Code: 210781
Start Date: 03/02/2022
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Turning Movement Peak Hour Data Plot (12:00 PM)



Paradigm Transportation Solutions Limited
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Cambridge, Ontario, Canada N1R 8J8
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Count Name: Mountainview Road & John Street
Site Code: 210781
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Turning Movement Peak Hour Data (4:45 PM)

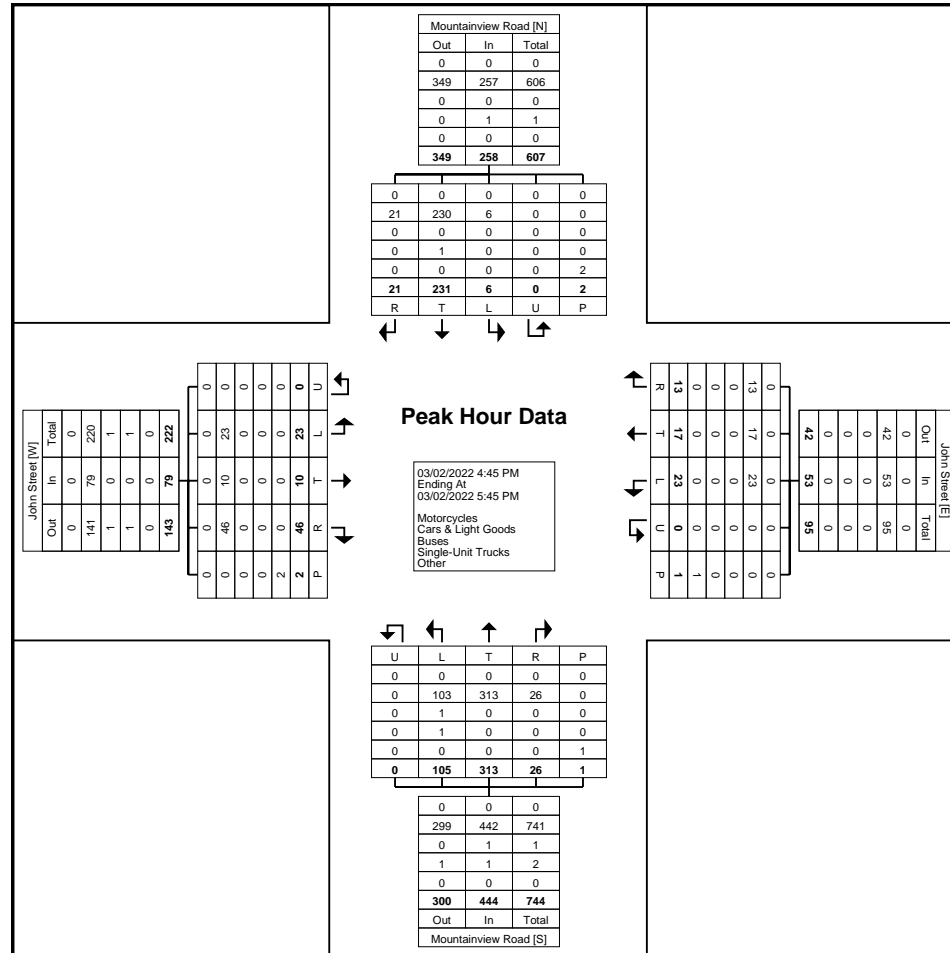
Start Time	John Street Eastbound						John Street Westbound						Mountainview Road Northbound						Mountainview Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:45 PM	7	2	8	0	1	17	3	4	2	0	0	9	28	80	5	0	0	113	3	72	2	0	1	77	216
5:00 PM	6	6	10	0	1	22	8	6	5	0	1	19	28	75	8	0	1	111	2	48	7	0	0	57	209
5:15 PM	7	1	14	0	0	22	5	4	4	0	0	13	28	80	6	0	0	114	1	59	5	0	1	65	214
5:30 PM	3	1	14	0	0	18	7	3	2	0	0	12	21	78	7	0	0	106	0	52	7	0	0	59	195
Total	23	10	46	0	2	79	23	17	13	0	1	53	105	313	26	0	1	444	6	231	21	0	2	258	834
Approach %	29.1	12.7	58.2	0.0	-	-	43.4	32.1	24.5	0.0	-	-	23.6	70.5	5.9	0.0	-	-	2.3	89.5	8.1	0.0	-	-	-
Total %	2.8	1.2	5.5	0.0	-	9.5	2.8	2.0	1.6	0.0	-	6.4	12.6	37.5	3.1	0.0	-	53.2	0.7	27.7	2.5	0.0	-	30.9	-
PHF	0.821	0.417	0.821	0.000	-	0.898	0.719	0.708	0.650	0.000	-	0.697	0.938	0.978	0.813	0.000	-	0.974	0.500	0.802	0.750	0.000	-	0.838	0.965
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	23	10	46	0	-	79	23	17	13	0	-	53	103	313	26	0	-	442	6	230	21	0	-	257	831
% Cars & Light Goods	100.0	100.0	100.0	-	-	100.0	100.0	100.0	100.0	-	-	100.0	98.1	100.0	100.0	-	-	99.5	100.0	99.6	100.0	-	-	99.6	99.6
Buses	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	0	0	0	0	-	0	1
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	1.0	0.0	0.0	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.1
Single-Unit Trucks	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	0	1	0	0	-	1	2
% Single-Unit Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	1.0	0.0	0.0	-	-	0.2	0.0	0.4	0.0	-	-	0.4	0.2
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



Paradigm Transportation Solutions Limited
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Count Name: Mountainview Road & John Street
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Start Date: 03/02/2022
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Turning Movement Peak Hour Data Plot (4:45 PM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
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Count Name: Mountainview Road & River Drive
Site Code: 210781
Start Date: 03/02/2022
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Turning Movement Data

Start Time	River Drive Eastbound						River Drive Westbound						Mountainview Road Northbound						Mountainview Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	0	2	5	0	0	7	29	1	2	0	0	32	3	28	16	0	0	47	6	42	0	0	1	48	134
7:15 AM	1	2	6	0	0	9	20	0	2	0	0	22	2	24	37	0	0	63	26	53	0	0	0	79	173
7:30 AM	0	5	9	0	0	14	21	0	3	0	2	24	3	23	32	0	0	58	13	48	0	0	0	61	157
7:45 AM	2	6	4	0	0	12	27	2	6	0	1	35	4	37	36	0	0	77	16	73	0	0	0	89	213
Hourly Total	3	15	24	0	0	42	97	3	13	0	3	113	12	112	121	0	0	245	61	216	0	0	1	277	677
8:00 AM	1	2	14	0	0	17	21	2	7	0	2	30	0	58	37	0	0	95	7	99	1	0	2	107	249
8:15 AM	0	4	8	0	0	12	20	1	2	0	1	23	3	48	33	0	0	84	12	103	0	0	2	115	234
8:30 AM	0	2	3	0	0	5	32	1	5	0	1	38	1	57	26	0	0	84	8	78	0	0	1	86	213
8:45 AM	0	0	10	0	0	10	36	1	6	0	0	43	5	54	21	0	0	80	7	94	2	0	0	103	236
Hourly Total	1	8	35	0	0	44	109	5	20	0	4	134	9	217	117	0	0	343	34	374	3	0	5	411	932
9:00 AM	1	0	4	0	0	5	19	0	4	0	0	23	2	61	20	0	0	83	3	63	0	0	0	66	177
9:15 AM	0	0	3	0	0	3	17	0	2	0	3	19	8	46	33	0	0	87	5	60	0	0	2	65	174
9:30 AM	1	1	7	0	1	9	21	1	5	0	1	27	3	32	20	0	0	55	4	52	0	0	2	56	147
9:45 AM	1	0	4	0	0	5	18	0	0	0	3	18	7	42	15	0	0	64	2	58	0	0	1	60	147
Hourly Total	3	1	18	0	1	22	75	1	11	0	7	87	20	181	88	0	0	289	14	233	0	0	5	247	645
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	1	1	6	0	0	8	11	2	2	0	0	15	3	58	21	0	0	82	0	46	0	0	3	46	151
11:15 AM	1	0	8	0	0	9	25	0	3	0	1	28	4	52	15	0	0	71	3	44	3	0	1	50	158
11:30 AM	0	2	5	0	0	7	32	2	4	0	3	38	7	56	12	0	0	75	5	61	0	0	2	66	186
11:45 AM	1	0	6	0	0	7	20	1	3	0	1	24	6	61	25	0	0	92	0	45	1	0	3	46	169
Hourly Total	3	3	25	0	0	31	88	5	12	0	5	105	20	227	73	0	0	320	8	196	4	0	9	208	664
12:00 PM	0	2	12	0	0	14	37	0	3	0	2	40	7	58	24	0	0	89	1	63	1	0	1	65	208
12:15 PM	2	1	7	0	0	10	25	2	2	0	0	29	1	72	28	0	0	101	1	48	0	0	0	49	189
12:30 PM	0	2	2	0	0	4	27	3	3	0	0	33	5	57	37	0	0	99	6	71	0	0	1	77	213
12:45 PM	0	3	7	0	0	10	23	1	6	0	4	30	3	63	28	0	0	94	4	63	0	0	4	67	201
Hourly Total	2	8	28	0	0	38	112	6	14	0	6	132	16	250	117	0	0	383	12	245	1	0	6	258	811
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	0	1	7	0	0	8	28	0	9	0	1	37	9	89	20	0	0	118	14	67	1	0	0	82	245
3:15 PM	2	0	9	0	0	11	37	4	13	0	1	54	4	79	29	0	0	112	8	71	1	0	1	80	257
3:30 PM	0	2	18	0	1	20	32	4	12	0	4	48	5	97	39	0	1	141	7	86	2	0	5	95	304
3:45 PM	0	2	7	0	1	9	35	1	10	0	3	46	5	85	32	0	0	122	5	57	1	0	5	63	240
Hourly Total	2	5	41	0	2	48	132	9	44	0	9	185	23	350	120	0	1	493	34	281	5	0	11	320	1046
4:00 PM	2	2	8	0	0	12	41	2	16	0	1	59	7	99	36	0	0	142	5	66	1	0	1	72	285
4:15 PM	0	4	11	0	0	15	27	5	10	0	1	42	8	87	31	0	0	126	6	73	1	0	2	80	263
4:30 PM	1	1	7	0	0	9	34	4	9	0	1	47	9	96	34	0	0	139	5	58	4	0	0	67	262

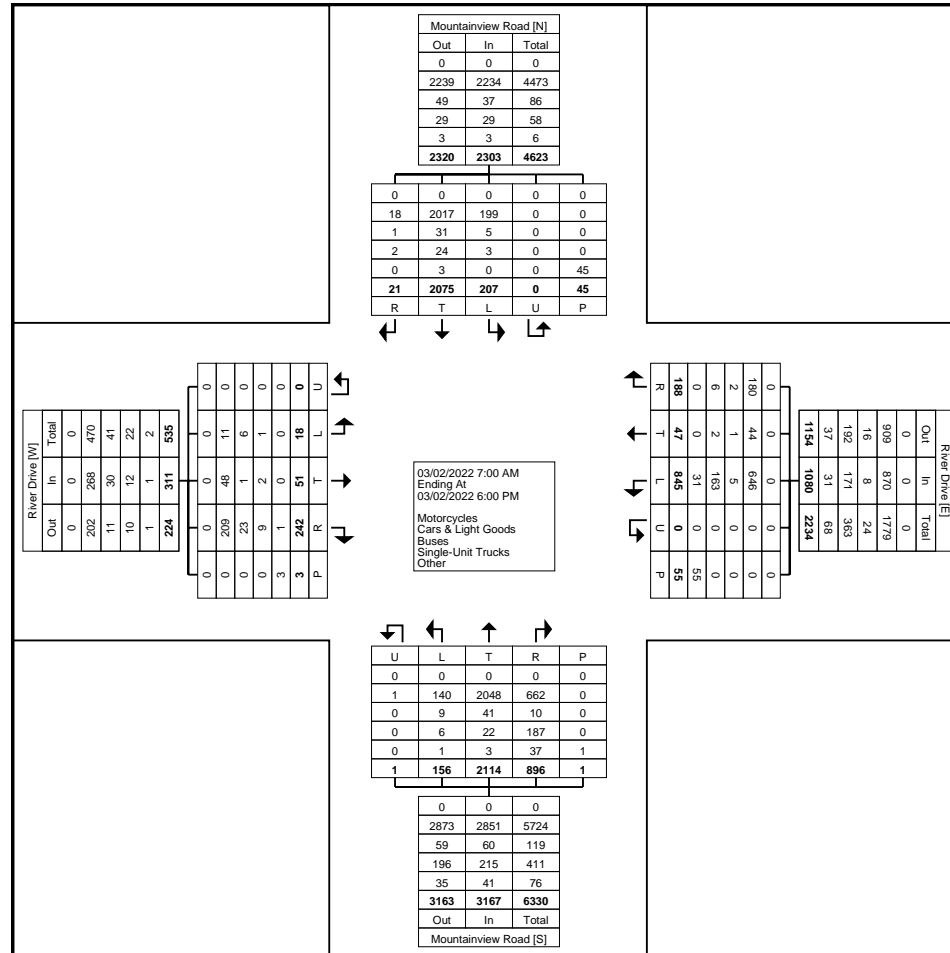
4:45 PM	1	1	11	0	0	13	25	2	13	0	7	40	12	99	33	0	0	144	6	73	0	0	2	79	276
Hourly Total	4	8	37	0	0	49	127	13	48	0	10	188	36	381	134	0	0	551	22	270	6	0	5	298	1086
5:00 PM	0	1	7	0	0	8	31	1	11	0	1	43	5	100	41	0	0	146	3	65	0	0	0	68	265
5:15 PM	0	1	10	0	0	11	26	2	8	0	6	36	2	106	31	0	0	139	8	70	1	0	3	79	265
5:30 PM	0	1	12	0	0	13	23	1	2	0	3	26	7	102	29	0	0	138	6	65	0	0	0	71	248
5:45 PM	0	0	5	0	0	5	25	1	5	0	1	31	6	88	25	1	0	120	5	60	1	0	0	66	222
Hourly Total	0	3	34	0	0	37	105	5	26	0	11	136	20	396	126	1	0	543	22	260	2	0	3	284	1000
Grand Total	18	51	242	0	3	311	845	47	188	0	55	1080	156	2114	896	1	1	3167	207	2075	21	0	45	2303	6861
Approach %	5.8	16.4	77.8	0.0	-	-	78.2	4.4	17.4	0.0	-	-	4.9	66.8	28.3	0.0	-	-	9.0	90.1	0.9	0.0	-	-	-
Total %	0.3	0.7	3.5	0.0	-	4.5	12.3	0.7	2.7	0.0	-	15.7	2.3	30.8	13.1	0.0	-	46.2	3.0	30.2	0.3	0.0	-	33.6	-
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	11	48	209	0	-	268	646	44	180	0	-	870	140	2048	662	1	-	2851	199	2017	18	0	-	2234	6223
% Cars & Light Goods	61.1	94.1	86.4	-	-	86.2	76.4	93.6	95.7	-	-	80.6	89.7	96.9	73.9	100.0	-	90.0	96.1	97.2	85.7	-	-	97.0	90.7
Buses	6	1	23	0	-	30	5	1	2	0	-	8	9	41	10	0	-	60	5	31	1	0	-	37	135
% Buses	33.3	2.0	9.5	-	-	9.6	0.6	2.1	1.1	-	-	0.7	5.8	1.9	1.1	0.0	-	1.9	2.4	1.5	4.8	-	-	1.6	2.0
Single-Unit Trucks	1	2	9	0	-	12	163	2	6	0	-	171	6	22	187	0	-	215	3	24	2	0	-	29	427
% Single-Unit Trucks	5.6	3.9	3.7	-	-	3.9	19.3	4.3	3.2	-	-	15.8	3.8	1.0	20.9	0.0	-	6.8	1.4	1.2	9.5	-	-	1.3	6.2
Articulated Trucks	0	0	1	0	-	1	31	0	0	0	-	31	1	3	34	0	-	38	0	3	0	0	-	3	73
% Articulated Trucks	0.0	0.0	0.4	-	-	0.3	3.7	0.0	0.0	-	-	2.9	0.6	0.1	3.8	0.0	-	1.2	0.0	0.1	0.0	-	-	0.1	1.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	3	0	-	3	0	0	0	0	-	0	3
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.3	0.0	-	0.1	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	5.5	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	3	-	-	-	-	-	52	-	-	-	-	-	1	-	-	-	-	-	45	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	94.5	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



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Turning Movement Data Plot



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsI.com

Count Name: Mountainview Road & River Drive
Site Code: 210781
Start Date: 03/02/2022
Page No: 4

Turning Movement Peak Hour Data (8:00 AM)

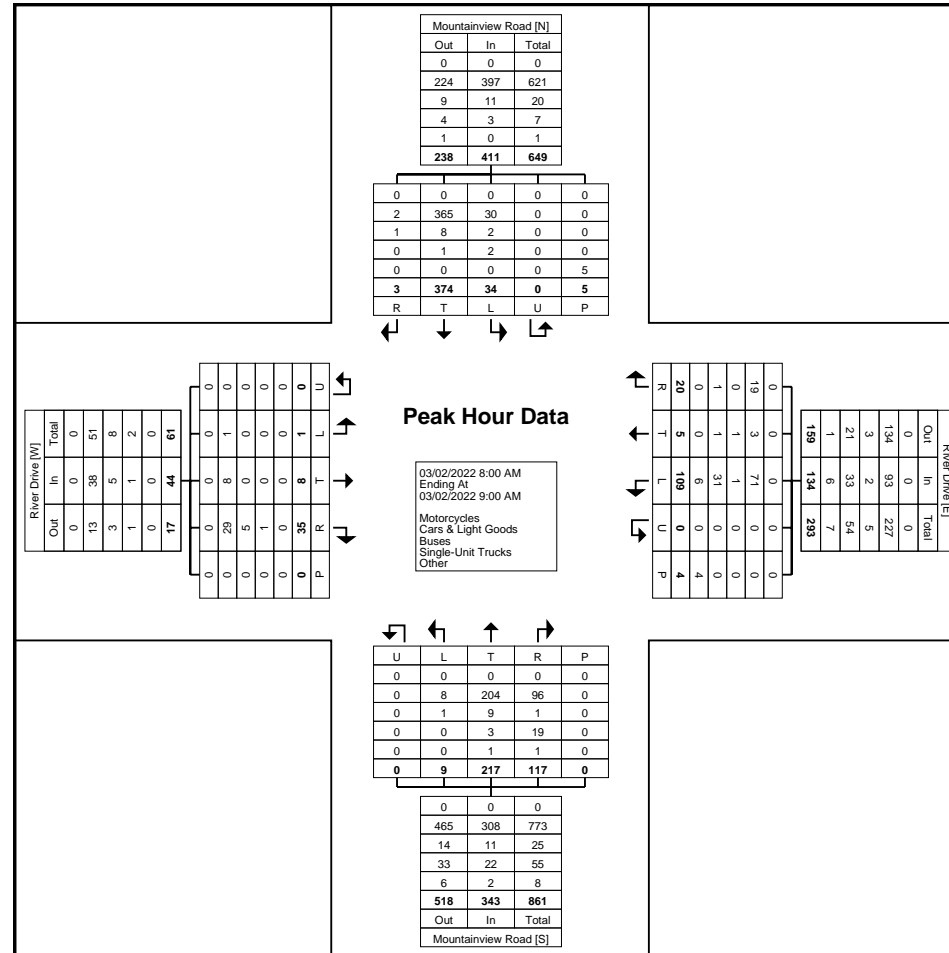
Start Time	River Drive Eastbound						River Drive Westbound						Mountainview Road Northbound						Mountainview Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
8:00 AM	1	2	14	0	0	17	21	2	7	0	2	30	0	58	37	0	0	95	7	99	1	0	2	107	249
8:15 AM	0	4	8	0	0	12	20	1	2	0	1	23	3	48	33	0	0	84	12	103	0	0	2	115	234
8:30 AM	0	2	3	0	0	5	32	1	5	0	1	38	1	57	26	0	0	84	8	78	0	0	1	86	213
8:45 AM	0	0	10	0	0	10	36	1	6	0	0	43	5	54	21	0	0	80	7	94	2	0	0	103	236
Total	1	8	35	0	0	44	109	5	20	0	4	134	9	217	117	0	0	343	34	374	3	0	5	411	932
Approach %	2.3	18.2	79.5	0.0	-	-	81.3	3.7	14.9	0.0	-	-	2.6	63.3	34.1	0.0	-	-	8.3	91.0	0.7	0.0	-	-	-
Total %	0.1	0.9	3.8	0.0	-	4.7	11.7	0.5	2.1	0.0	-	14.4	1.0	23.3	12.6	0.0	-	36.8	3.6	40.1	0.3	0.0	-	44.1	-
PHF	0.250	0.500	0.625	0.000	-	0.647	0.757	0.625	0.714	0.000	-	0.779	0.450	0.935	0.791	0.000	-	0.903	0.708	0.908	0.375	0.000	-	0.893	0.936
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	1	8	29	0	-	38	71	3	19	0	-	93	8	204	96	0	-	308	30	365	2	0	-	397	836
% Cars & Light Goods	100.0	100.0	82.9	-	-	86.4	65.1	60.0	95.0	-	-	69.4	88.9	94.0	82.1	-	-	89.8	88.2	97.6	66.7	-	-	96.6	89.7
Buses	0	0	5	0	-	5	1	1	0	0	-	2	1	9	1	0	-	11	2	8	1	0	-	11	29
% Buses	0.0	0.0	14.3	-	-	11.4	0.9	20.0	0.0	-	-	1.5	11.1	4.1	0.9	-	-	3.2	5.9	2.1	33.3	-	-	2.7	3.1
Single-Unit Trucks	0	0	1	0	-	1	31	1	1	0	-	33	0	3	19	0	-	22	2	1	0	0	-	3	59
% Single-Unit Trucks	0.0	0.0	2.9	-	-	2.3	28.4	20.0	5.0	-	-	24.6	0.0	1.4	16.2	-	-	6.4	5.9	0.3	0.0	-	-	0.7	6.3
Articulated Trucks	0	0	0	0	-	0	6	0	0	0	-	6	0	1	0	0	-	1	0	0	0	0	-	0	7
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	5.5	0.0	0.0	-	-	4.5	0.0	0.5	0.0	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.8
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.9	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	5	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



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Count Name: Mountainview Road & River Drive
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Start Date: 03/02/2022
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Turning Movement Peak Hour Data Plot (8:00 AM)



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Count Name: Mountainview Road & River Drive
Site Code: 210781
Start Date: 03/02/2022
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Turning Movement Peak Hour Data (12:00 PM)

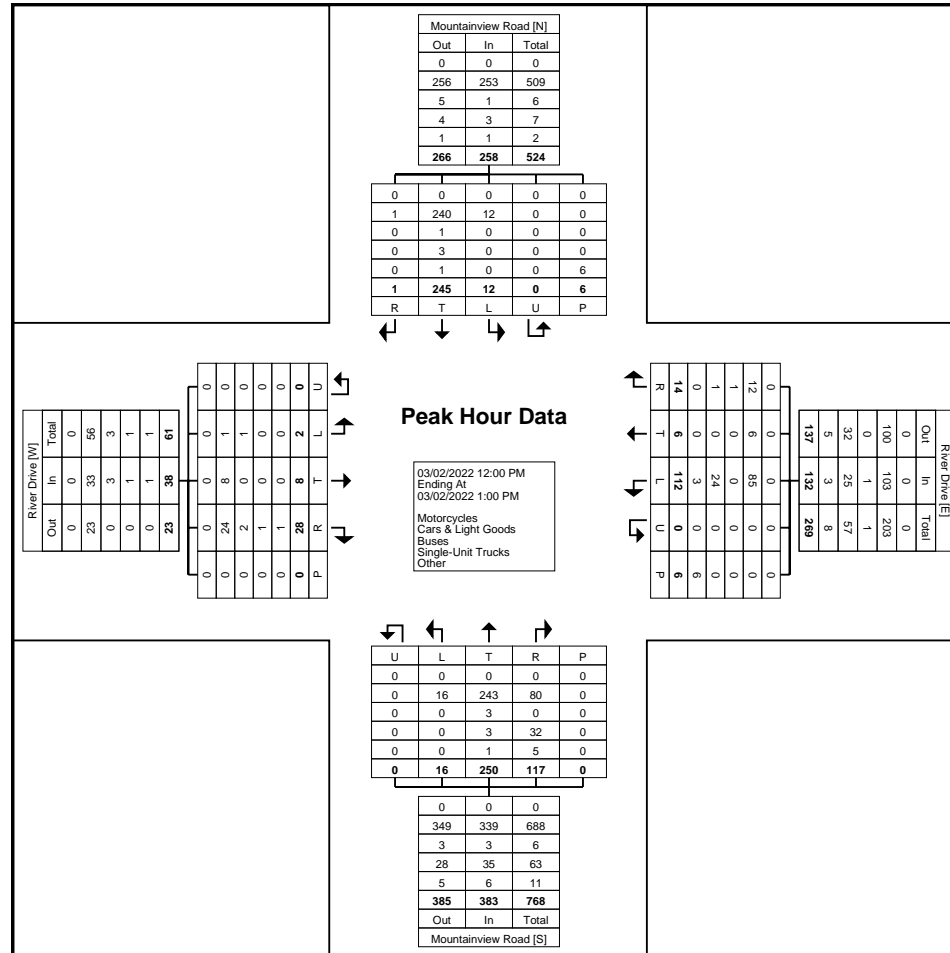
Start Time	River Drive Eastbound						River Drive Westbound						Mountainview Road Northbound						Mountainview Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
12:00 PM	0	2	12	0	0	14	37	0	3	0	2	40	7	58	24	0	0	89	1	63	1	0	1	65	208
12:15 PM	2	1	7	0	0	10	25	2	2	0	0	29	1	72	28	0	0	101	1	48	0	0	0	49	189
12:30 PM	0	2	2	0	0	4	27	3	3	0	0	33	5	57	37	0	0	99	6	71	0	0	1	77	213
12:45 PM	0	3	7	0	0	10	23	1	6	0	4	30	3	63	28	0	0	94	4	63	0	0	4	67	201
Total	2	8	28	0	0	38	112	6	14	0	6	132	16	250	117	0	0	383	12	245	1	0	6	258	811
Approach %	5.3	21.1	73.7	0.0	-	-	84.8	4.5	10.6	0.0	-	-	4.2	65.3	30.5	0.0	-	-	4.7	95.0	0.4	0.0	-	-	-
Total %	0.2	1.0	3.5	0.0	-	4.7	13.8	0.7	1.7	0.0	-	16.3	2.0	30.8	14.4	0.0	-	47.2	1.5	30.2	0.1	0.0	-	31.8	-
PHF	0.250	0.667	0.583	0.000	-	0.679	0.757	0.500	0.583	0.000	-	0.825	0.571	0.868	0.791	0.000	-	0.948	0.500	0.863	0.250	0.000	-	0.838	0.952
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	1	8	24	0	-	33	85	6	12	0	-	103	16	243	80	0	-	339	12	240	1	0	-	253	728
% Cars & Light Goods	50.0	100.0	85.7	-	-	86.8	75.9	100.0	85.7	-	-	78.0	100.0	97.2	68.4	-	-	88.5	100.0	98.0	100.0	-	-	98.1	89.8
Buses	1	0	2	0	-	3	0	0	1	0	-	1	0	3	0	0	-	3	0	1	0	0	-	1	8
% Buses	50.0	0.0	7.1	-	-	7.9	0.0	0.0	7.1	-	-	0.8	0.0	1.2	0.0	-	-	0.8	0.0	0.4	0.0	-	-	0.4	1.0
Single-Unit Trucks	0	0	1	0	-	1	24	0	1	0	-	25	0	3	32	0	-	35	0	3	0	0	-	3	64
% Single-Unit Trucks	0.0	0.0	3.6	-	-	2.6	21.4	0.0	7.1	-	-	18.9	0.0	1.2	27.4	-	-	9.1	0.0	1.2	0.0	-	-	1.2	7.9
Articulated Trucks	0	0	1	0	-	1	3	0	0	0	-	3	0	1	5	0	-	6	0	1	0	0	-	1	11
% Articulated Trucks	0.0	0.0	3.6	-	-	2.6	2.7	0.0	0.0	-	-	2.3	0.0	0.4	4.3	-	-	1.6	0.0	0.4	0.0	-	-	0.4	1.4
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	6	-	-	-	-	-	0	-	-	-	-	-	6	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



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Start Date: 03/02/2022
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Turning Movement Peak Hour Data Plot (12:00 PM)



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Count Name: Mountainview Road & River Drive
Site Code: 210781
Start Date: 03/02/2022
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Turning Movement Peak Hour Data (3:30 PM)

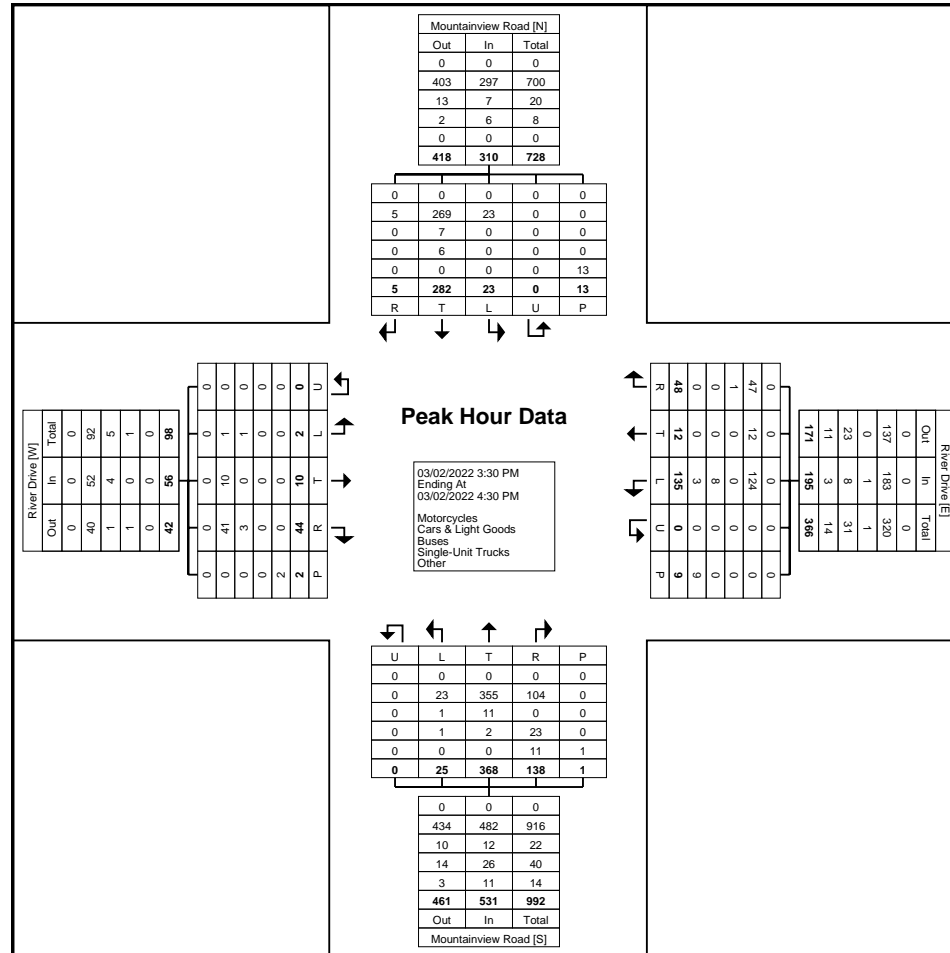
Start Time	River Drive Eastbound						River Drive Westbound						Mountainview Road Northbound						Mountainview Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
3:30 PM	0	2	18	0	1	20	32	4	12	0	4	48	5	97	39	0	1	141	7	86	2	0	5	95	304
3:45 PM	0	2	7	0	1	9	35	1	10	0	3	46	5	85	32	0	0	122	5	57	1	0	5	63	240
4:00 PM	2	2	8	0	0	12	41	2	16	0	1	59	7	99	36	0	0	142	5	66	1	0	1	72	285
4:15 PM	0	4	11	0	0	15	27	5	10	0	1	42	8	87	31	0	0	126	6	73	1	0	2	80	263
Total	2	10	44	0	2	56	135	12	48	0	9	195	25	368	138	0	1	531	23	282	5	0	13	310	1092
Approach %	3.6	17.9	78.6	0.0	-	-	69.2	6.2	24.6	0.0	-	-	4.7	69.3	26.0	0.0	-	-	7.4	91.0	1.6	0.0	-	-	-
Total %	0.2	0.9	4.0	0.0	-	5.1	12.4	1.1	4.4	0.0	-	17.9	2.3	33.7	12.6	0.0	-	48.6	2.1	25.8	0.5	0.0	-	28.4	-
PHF	0.250	0.625	0.611	0.000	-	0.700	0.823	0.600	0.750	0.000	-	0.826	0.781	0.929	0.885	0.000	-	0.935	0.821	0.820	0.625	0.000	-	0.816	0.898
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	1	10	41	0	-	52	124	12	47	0	-	183	23	355	104	0	-	482	23	269	5	0	-	297	1014
% Cars & Light Goods	50.0	100.0	93.2	-	-	92.9	91.9	100.0	97.9	-	-	93.8	92.0	96.5	75.4	-	-	90.8	100.0	95.4	100.0	-	-	95.8	92.9
Buses	1	0	3	0	-	4	0	0	1	0	-	1	1	11	0	0	-	12	0	7	0	0	-	7	24
% Buses	50.0	0.0	6.8	-	-	7.1	0.0	0.0	2.1	-	-	0.5	4.0	3.0	0.0	-	-	2.3	0.0	2.5	0.0	-	-	2.3	2.2
Single-Unit Trucks	0	0	0	0	-	0	8	0	0	0	-	8	1	2	23	0	-	26	0	6	0	0	-	6	40
% Single-Unit Trucks	0.0	0.0	0.0	-	-	0.0	5.9	0.0	0.0	-	-	4.1	4.0	0.5	16.7	-	-	4.9	0.0	2.1	0.0	-	-	1.9	3.7
Articulated Trucks	0	0	0	0	-	0	3	0	0	0	-	3	0	0	10	0	-	10	0	0	0	0	-	0	13
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	2.2	0.0	0.0	-	-	1.5	0.0	0.0	7.2	-	-	1.9	0.0	0.0	0.0	-	-	0.0	1.2
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.7	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	11.1	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	8	-	-	-	-	-	1	-	-	-	-	-	13	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	88.9	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



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Turning Movement Peak Hour Data Plot (3:30 PM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: River Drive & Daniela Street
Site Code: 210781
Start Date: 03/02/2022
Page No: 1

Turning Movement Data

Start Time	River Drive Eastbound					River Drive Westbound					Daniela Court Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
7:00 AM	0	6	0	0	6	3	1	0	0	4	1	0	0	0	1	11
7:15 AM	1	8	0	0	9	2	0	0	0	2	1	3	0	0	4	15
7:30 AM	0	12	0	0	12	3	0	0	0	3	2	0	0	0	2	17
7:45 AM	1	12	0	0	13	4	2	0	0	6	2	0	0	3	2	21
Hourly Total	2	38	0	0	40	12	3	0	0	15	6	3	0	3	9	64
8:00 AM	0	14	0	0	14	3	0	0	0	3	2	0	0	0	2	19
8:15 AM	0	9	0	0	9	3	1	0	0	4	2	0	0	2	2	15
8:30 AM	0	3	0	0	3	2	0	0	0	2	2	1	0	2	3	8
8:45 AM	0	9	0	0	9	6	2	0	0	8	1	1	0	0	2	19
Hourly Total	0	35	0	0	35	14	3	0	0	17	7	2	0	4	9	61
9:00 AM	1	5	0	0	6	1	1	0	0	2	0	0	0	1	0	8
9:15 AM	0	3	0	0	3	8	0	0	0	8	0	0	0	1	0	11
9:30 AM	1	7	0	0	8	3	1	0	0	4	2	0	0	3	2	14
9:45 AM	0	3	0	0	3	6	1	0	0	7	2	1	0	1	3	13
Hourly Total	2	18	0	0	20	18	3	0	0	21	4	1	0	6	5	46
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	0	8	0	0	8	5	0	0	0	5	0	0	0	2	0	13
11:15 AM	0	7	0	0	7	4	3	0	0	7	2	0	1	0	3	17
11:30 AM	0	6	0	0	6	7	1	0	0	8	1	1	0	1	2	16
11:45 AM	0	5	0	0	5	7	1	0	0	8	1	0	0	3	1	14
Hourly Total	0	26	0	0	26	23	5	0	0	28	4	1	1	6	6	60
12:00 PM	0	13	0	0	13	6	1	0	0	7	2	0	0	1	2	22
12:15 PM	0	9	0	0	9	3	0	0	0	3	0	0	0	0	0	12
12:30 PM	0	5	0	0	5	7	1	0	0	8	0	0	0	1	0	13
12:45 PM	0	10	0	0	10	2	2	0	0	4	1	1	0	1	2	16
Hourly Total	0	37	0	0	37	18	4	0	0	22	3	1	0	3	4	63
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	0	8	0	0	8	7	1	0	0	8	1	1	0	1	2	18
3:15 PM	0	10	0	0	10	8	3	0	0	11	0	0	0	3	0	21
3:30 PM	0	19	0	0	19	10	1	0	0	11	1	0	0	11	1	31
3:45 PM	0	6	0	0	6	6	1	0	0	7	3	0	0	2	3	16
Hourly Total	0	43	0	0	43	31	6	0	0	37	5	1	0	17	6	86
4:00 PM	1	11	0	0	12	9	1	0	0	10	1	0	0	1	1	23
4:15 PM	1	14	0	0	15	11	3	0	0	14	2	0	0	2	2	31
4:30 PM	2	6	0	0	8	12	3	1	0	16	1	1	0	0	2	26
4:45 PM	0	11	0	0	11	9	5	0	0	14	2	1	0	1	3	28

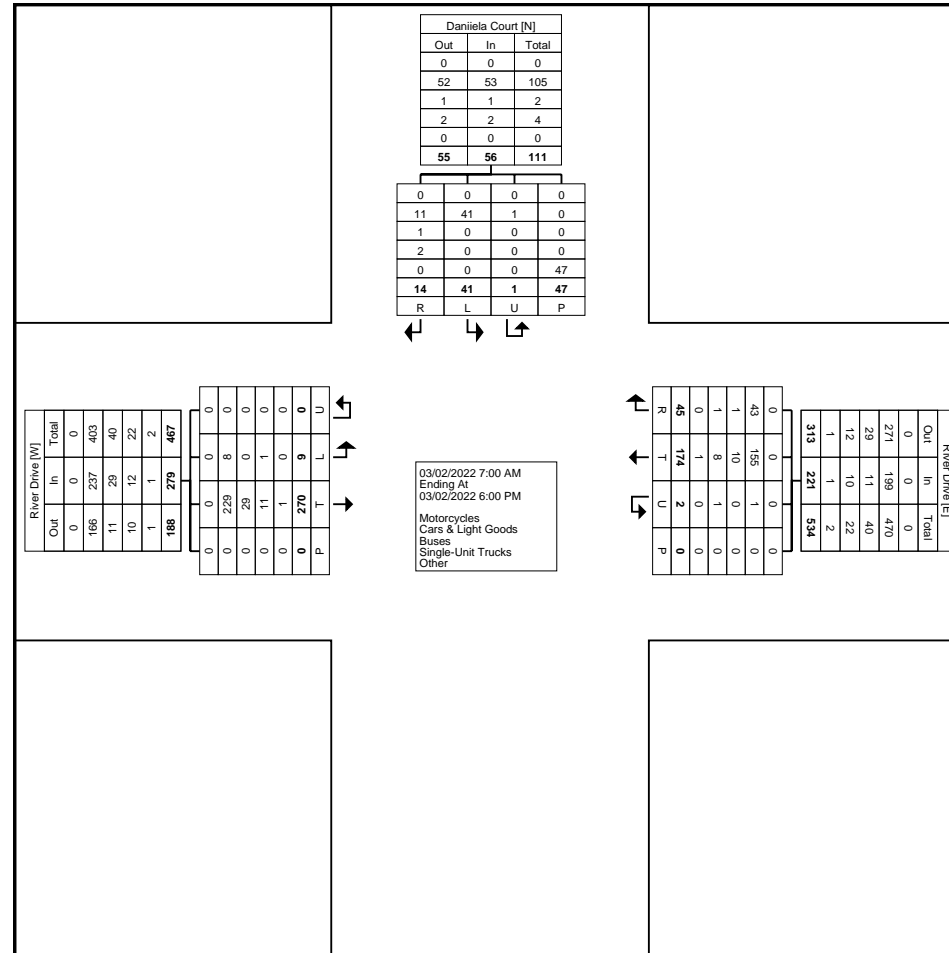
Hourly Total	4	42	0	0	46	41	12	1	0	54	6	2	0	4	8	108
5:00 PM	0	8	0	0	8	3	3	0	0	6	0	3	0	1	3	17
5:15 PM	1	9	0	0	10	5	0	0	0	5	2	0	0	2	2	17
5:30 PM	0	12	0	0	12	4	3	1	0	8	0	0	0	1	0	20
5:45 PM	0	2	0	0	2	5	3	0	0	8	4	0	0	0	4	14
Hourly Total	1	31	0	0	32	17	9	1	0	27	6	3	0	4	9	68
Grand Total	9	270	0	0	279	174	45	2	0	221	41	14	1	47	56	556
Approach %	3.2	96.8	0.0	-	-	78.7	20.4	0.9	-	-	73.2	25.0	1.8	-	-	-
Total %	1.6	48.6	0.0	-	50.2	31.3	8.1	0.4	-	39.7	7.4	2.5	0.2	-	10.1	-
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Cars & Light Goods	8	229	0	-	237	155	43	1	-	199	41	11	1	-	53	489
% Cars & Light Goods	88.9	84.8	-	-	84.9	89.1	95.6	50.0	-	90.0	100.0	78.6	100.0	-	94.6	87.9
Buses	0	29	0	-	29	10	1	0	-	11	0	1	0	-	1	41
% Buses	0.0	10.7	-	-	10.4	5.7	2.2	0.0	-	5.0	0.0	7.1	0.0	-	1.8	7.4
Single-Unit Trucks	1	11	0	-	12	8	1	1	-	10	0	2	0	-	2	24
% Single-Unit Trucks	11.1	4.1	-	-	4.3	4.6	2.2	50.0	-	4.5	0.0	14.3	0.0	-	3.6	4.3
Articulated Trucks	0	1	0	-	1	1	0	0	-	1	0	0	0	-	0	2
% Articulated Trucks	0.0	0.4	-	-	0.4	0.6	0.0	0.0	-	0.5	0.0	0.0	0.0	-	0.0	0.4
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	47	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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Count Name: River Drive & Daniela Street
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Turning Movement Data Plot



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
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Count Name: River Drive & Daniela Street
Site Code: 210781
Start Date: 03/02/2022
Page No: 4

Turning Movement Peak Hour Data (7:15 AM)

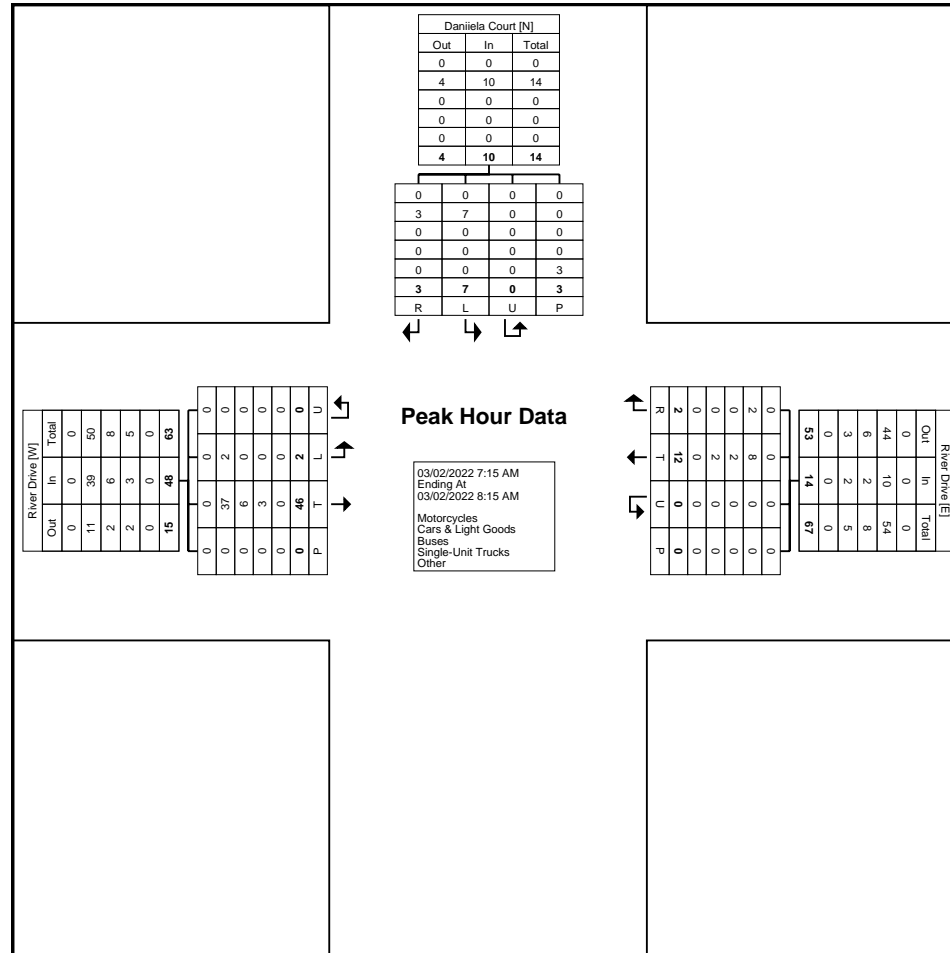
Start Time	River Drive Eastbound					River Drive Westbound					Daniela Court Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
7:15 AM	1	8	0	0	9	2	0	0	0	2	1	3	0	0	4	15
7:30 AM	0	12	0	0	12	3	0	0	0	3	2	0	0	0	2	17
7:45 AM	1	12	0	0	13	4	2	0	0	6	2	0	0	3	2	21
8:00 AM	0	14	0	0	14	3	0	0	0	3	2	0	0	0	2	19
Total	2	46	0	0	48	12	2	0	0	14	7	3	0	3	10	72
Approach %	4.2	95.8	0.0	-	-	85.7	14.3	0.0	-	-	70.0	30.0	0.0	-	-	-
Total %	2.8	63.9	0.0	-	66.7	16.7	2.8	0.0	-	19.4	9.7	4.2	0.0	-	13.9	-
PHF	0.500	0.821	0.000	-	0.857	0.750	0.250	0.000	-	0.583	0.875	0.250	0.000	-	0.625	0.857
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	2	37	0	-	39	8	2	0	-	10	7	3	0	-	10	59
% Cars & Light Goods	100.0	80.4	-	-	81.3	66.7	100.0	-	-	71.4	100.0	100.0	-	-	100.0	81.9
Buses	0	6	0	-	6	2	0	0	-	2	0	0	0	-	0	8
% Buses	0.0	13.0	-	-	12.5	16.7	0.0	-	-	14.3	0.0	0.0	-	-	0.0	11.1
Single-Unit Trucks	0	3	0	-	3	2	0	0	-	2	0	0	0	-	0	5
% Single-Unit Trucks	0.0	6.5	-	-	6.3	16.7	0.0	-	-	14.3	0.0	0.0	-	-	0.0	6.9
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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Count Name: River Drive & Daniela Street
Site Code: 210781
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Turning Movement Peak Hour Data Plot (7:15 AM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
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Count Name: River Drive & Daniela Street
Site Code: 210781
Start Date: 03/02/2022
Page No: 6

Turning Movement Peak Hour Data (11:15 AM)

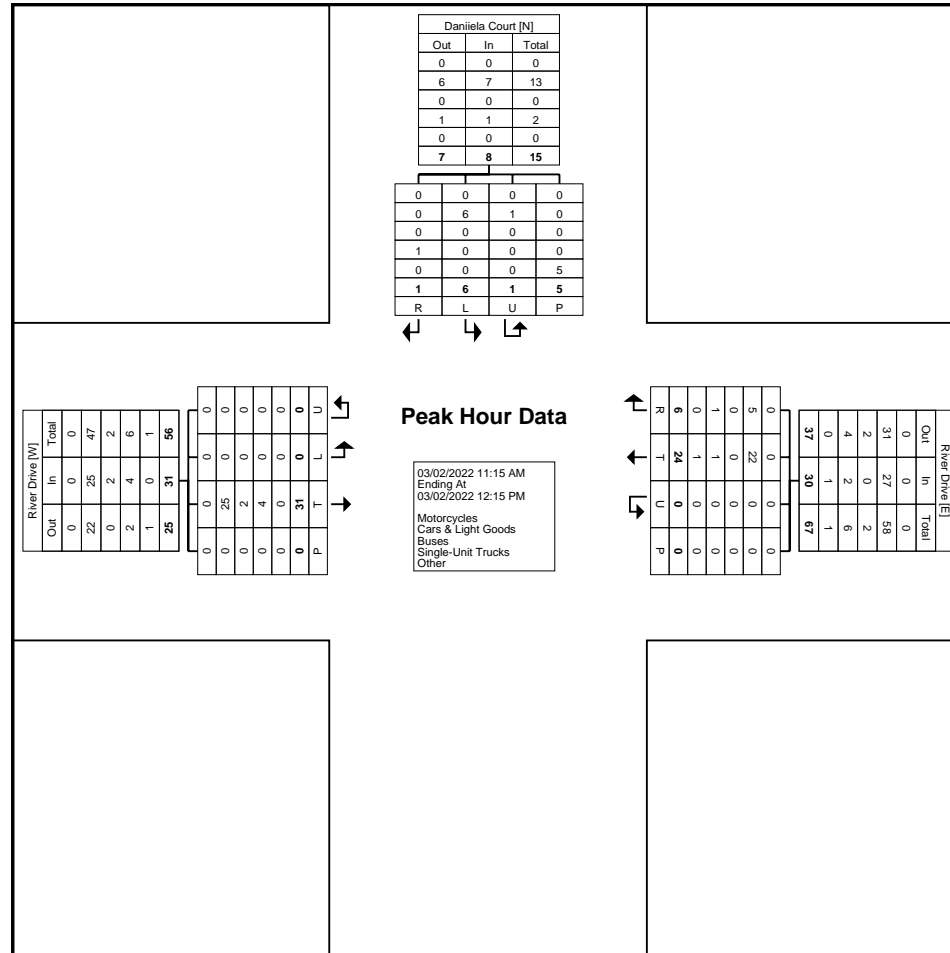
Start Time	River Drive Eastbound					River Drive Westbound					Daniela Court Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
11:15 AM	0	7	0	0	7	4	3	0	0	7	2	0	1	0	3	17
11:30 AM	0	6	0	0	6	7	1	0	0	8	1	1	0	1	2	16
11:45 AM	0	5	0	0	5	7	1	0	0	8	1	0	0	3	1	14
12:00 PM	0	13	0	0	13	6	1	0	0	7	2	0	0	1	2	22
Total	0	31	0	0	31	24	6	0	0	30	6	1	1	5	8	69
Approach %	0.0	100.0	0.0	-	-	80.0	20.0	0.0	-	-	75.0	12.5	12.5	-	-	-
Total %	0.0	44.9	0.0	-	44.9	34.8	8.7	0.0	-	43.5	8.7	1.4	1.4	-	11.6	-
PHF	0.000	0.596	0.000	-	0.596	0.857	0.500	0.000	-	0.938	0.750	0.250	0.250	-	0.667	0.784
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	-	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Cars & Light Goods	0	25	0	-	25	22	5	0	-	27	6	0	1	-	7	59
% Cars & Light Goods	-	80.6	-	-	80.6	91.7	83.3	-	-	90.0	100.0	0.0	100.0	-	87.5	85.5
Buses	0	2	0	-	2	0	0	0	-	0	0	0	0	-	0	2
% Buses	-	6.5	-	-	6.5	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	2.9
Single-Unit Trucks	0	4	0	-	4	1	1	0	-	2	0	1	0	-	1	7
% Single-Unit Trucks	-	12.9	-	-	12.9	4.2	16.7	-	-	6.7	0.0	100.0	0.0	-	12.5	10.1
Articulated Trucks	0	0	0	-	0	1	0	0	-	1	0	0	0	-	0	1
% Articulated Trucks	-	0.0	-	-	0.0	4.2	0.0	-	-	3.3	0.0	0.0	0.0	-	0.0	1.4
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	5	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



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Count Name: River Drive & Daniela Street
Site Code: 210781
Start Date: 03/02/2022
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Turning Movement Peak Hour Data Plot (11:15 AM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
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Count Name: River Drive & Daniela Street
Site Code: 210781
Start Date: 03/02/2022
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Turning Movement Peak Hour Data (4:00 PM)

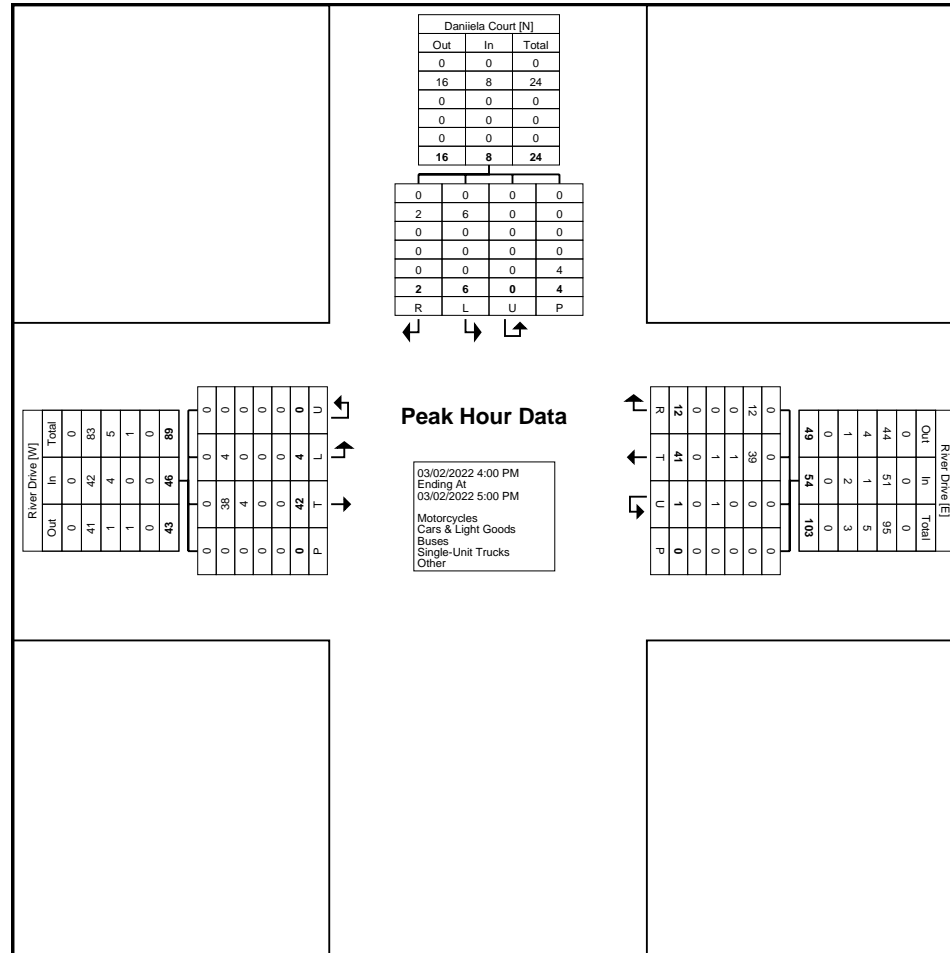
Start Time	River Drive Eastbound					River Drive Westbound					Daniela Court Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
4:00 PM	1	11	0	0	12	9	1	0	0	10	1	0	0	1	1	23
4:15 PM	1	14	0	0	15	11	3	0	0	14	2	0	0	2	2	31
4:30 PM	2	6	0	0	8	12	3	1	0	16	1	1	0	0	2	26
4:45 PM	0	11	0	0	11	9	5	0	0	14	2	1	0	1	3	28
Total	4	42	0	0	46	41	12	1	0	54	6	2	0	4	8	108
Approach %	8.7	91.3	0.0	-	-	75.9	22.2	1.9	-	-	75.0	25.0	0.0	-	-	-
Total %	3.7	38.9	0.0	-	42.6	38.0	11.1	0.9	-	50.0	5.6	1.9	0.0	-	7.4	-
PHF	0.500	0.750	0.000	-	0.767	0.854	0.600	0.250	-	0.844	0.750	0.500	0.000	-	0.667	0.871
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	4	38	0	-	42	39	12	0	-	51	6	2	0	-	8	101
% Cars & Light Goods	100.0	90.5	-	-	91.3	95.1	100.0	0.0	-	94.4	100.0	100.0	-	-	100.0	93.5
Buses	0	4	0	-	4	1	0	0	-	1	0	0	0	-	0	5
% Buses	0.0	9.5	-	-	8.7	2.4	0.0	0.0	-	1.9	0.0	0.0	-	-	0.0	4.6
Single-Unit Trucks	0	0	0	-	0	1	0	1	-	2	0	0	0	-	0	2
% Single-Unit Trucks	0.0	0.0	-	-	0.0	2.4	0.0	100.0	-	3.7	0.0	0.0	-	-	0.0	1.9
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	4	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Paradigm Transportation Solutions Limited
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Count Name: River Drive & Daniela Street
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Turning Movement Peak Hour Data Plot (4:00 PM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: River Drive & Rosetta Street
Site Code: 210781
Start Date: 03/02/2022
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Turning Movement Data

Start Time	Victoria Street Eastbound					River Drive Westbound					Rosetta Street Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
7:00 AM	0	6	0	0	6	0	3	0	0	3	0	0	0	0	0	9
7:15 AM	0	5	0	0	5	3	0	0	0	3	0	0	0	0	0	8
7:30 AM	0	11	0	0	11	2	0	0	0	2	0	0	0	0	0	13
7:45 AM	0	9	0	0	9	2	0	0	0	2	3	0	0	0	3	14
Hourly Total	0	31	0	0	31	7	3	0	0	10	3	0	0	0	3	44
8:00 AM	0	11	0	0	11	1	2	0	1	3	1	0	0	0	1	15
8:15 AM	0	9	0	0	9	3	0	0	1	3	0	0	0	0	0	12
8:30 AM	0	2	0	1	2	1	1	0	0	2	1	0	0	2	1	5
8:45 AM	0	7	0	0	7	6	1	0	0	7	1	0	0	0	1	15
Hourly Total	0	29	0	1	29	11	4	0	2	15	3	0	0	2	3	47
9:00 AM	0	6	0	0	6	1	0	0	0	1	0	0	0	0	0	7
9:15 AM	0	3	0	0	3	6	1	0	0	7	0	0	0	0	0	10
9:30 AM	0	4	0	0	4	1	2	0	0	3	3	0	0	0	3	10
9:45 AM	0	3	0	0	3	3	3	0	0	6	1	0	0	0	1	10
Hourly Total	0	16	0	0	16	11	6	0	0	17	4	0	0	0	4	37
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	1	6	0	0	7	4	1	0	2	5	0	0	0	0	0	12
11:15 AM	0	7	0	0	7	2	2	0	0	4	0	0	0	0	0	11
11:30 AM	1	4	0	0	5	5	2	0	0	7	2	0	0	0	2	14
11:45 AM	0	3	0	0	3	1	3	0	3	4	2	0	0	0	2	9
Hourly Total	2	20	0	0	22	12	8	0	5	20	4	0	0	0	4	46
12:00 PM	1	8	0	0	9	5	1	0	0	6	0	0	0	1	0	15
12:15 PM	0	5	0	1	5	3	0	0	0	3	2	0	0	0	2	10
12:30 PM	0	5	0	0	5	6	0	0	0	6	0	1	0	1	1	12
12:45 PM	0	8	0	0	8	1	2	0	0	3	1	0	0	0	1	12
Hourly Total	1	26	0	1	27	15	3	0	0	18	3	1	0	2	4	49
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	1	7	0	0	8	6	1	0	0	7	1	1	0	0	2	17
3:15 PM	0	5	0	0	5	5	2	0	0	7	3	0	0	1	3	15
3:30 PM	1	8	0	0	9	9	1	0	0	10	2	0	0	5	2	21
3:45 PM	0	5	0	0	5	4	2	0	0	6	1	0	0	2	1	12
Hourly Total	2	25	0	0	27	24	6	0	0	30	7	1	0	8	8	65
4:00 PM	0	13	0	0	13	5	4	0	0	9	1	1	0	0	2	24
4:15 PM	0	10	0	0	10	5	2	0	0	7	2	0	0	2	2	19
4:30 PM	0	4	0	0	4	10	0	0	0	10	2	0	0	1	2	16
4:45 PM	0	10	0	0	10	9	1	0	0	10	1	1	0	0	2	22

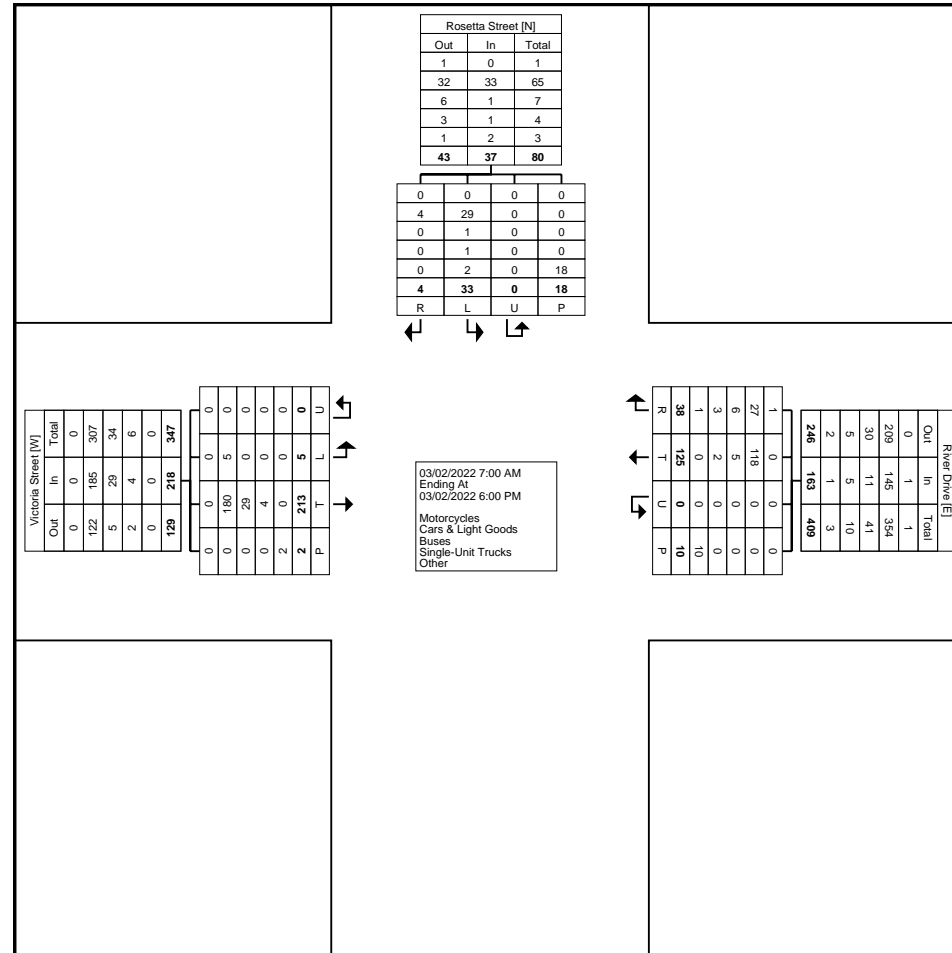
Hourly Total	0	37	0	0	37	29	7	0	0	36	6	2	0	3	8	81
5:00 PM	0	7	0	0	7	5	0	0	1	5	1	0	0	1	1	13
5:15 PM	0	8	0	0	8	6	0	0	1	6	2	0	0	1	2	16
5:30 PM	0	12	0	0	12	0	1	0	1	1	0	0	0	0	0	13
5:45 PM	0	2	0	0	2	5	0	0	0	5	0	0	0	1	0	7
Hourly Total	0	29	0	0	29	16	1	0	3	17	3	0	0	3	3	49
Grand Total	5	213	0	2	218	125	38	0	10	163	33	4	0	18	37	418
Approach %	2.3	97.7	0.0	-	-	76.7	23.3	0.0	-	-	89.2	10.8	0.0	-	-	-
Total %	1.2	51.0	0.0	-	52.2	29.9	9.1	0.0	-	39.0	7.9	1.0	0.0	-	8.9	-
Motorcycles	0	0	0	-	0	0	1	0	-	1	0	0	0	-	0	1
% Motorcycles	0.0	0.0	-	-	0.0	0.0	2.6	-	-	0.6	0.0	0.0	-	-	0.0	0.2
Cars & Light Goods	5	180	0	-	185	118	27	0	-	145	29	4	0	-	33	363
% Cars & Light Goods	100.0	84.5	-	-	84.9	94.4	71.1	-	-	89.0	87.9	100.0	-	-	89.2	86.8
Buses	0	29	0	-	29	5	6	0	-	11	1	0	0	-	1	41
% Buses	0.0	13.6	-	-	13.3	4.0	15.8	-	-	6.7	3.0	0.0	-	-	2.7	9.8
Single-Unit Trucks	0	4	0	-	4	2	3	0	-	5	1	0	0	-	1	10
% Single-Unit Trucks	0.0	1.9	-	-	1.8	1.6	7.9	-	-	3.1	3.0	0.0	-	-	2.7	2.4
Articulated Trucks	0	0	0	-	0	0	1	0	-	1	2	0	0	-	2	3
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	2.6	-	-	0.6	6.1	0.0	-	-	5.4	0.7
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	2	-	-	-	-	10	-	-	-	-	18	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: River Drive & Rosetta Street
Site Code: 210781
Start Date: 03/02/2022
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Turning Movement Data Plot



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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Count Name: River Drive & Rosetta Street
Site Code: 210781
Start Date: 03/02/2022
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Turning Movement Peak Hour Data (7:30 AM)

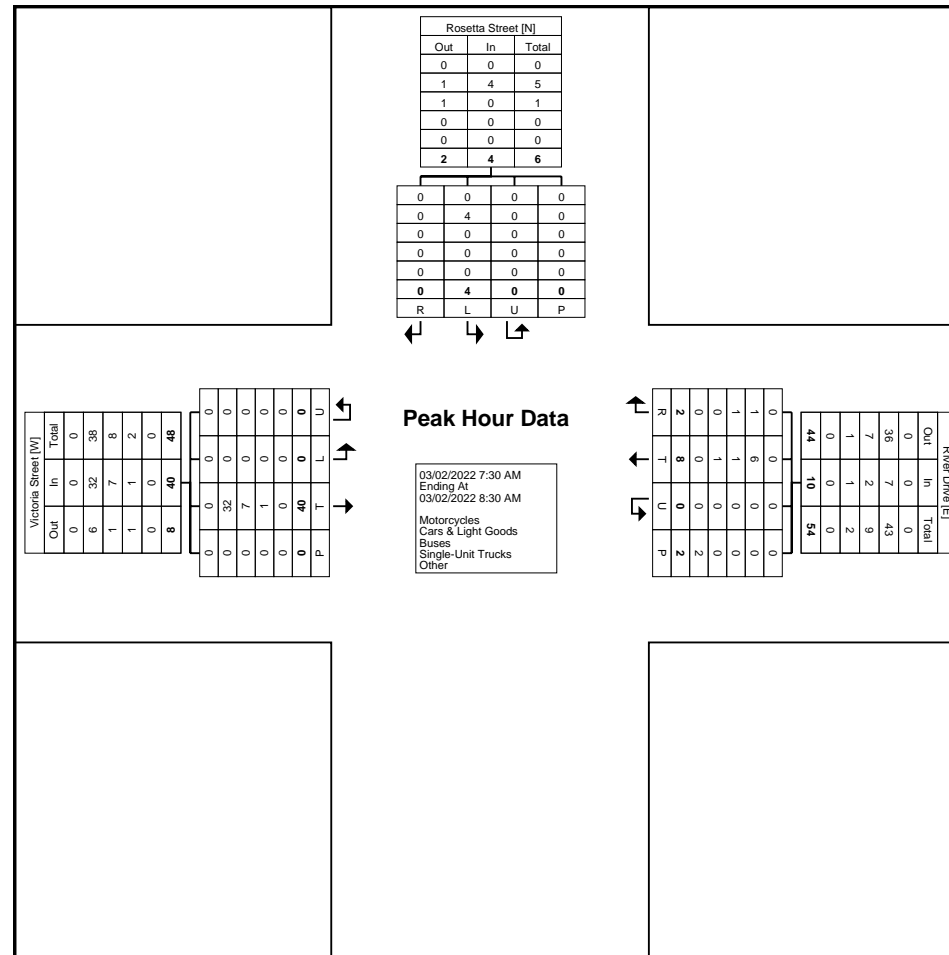
Start Time	Victoria Street Eastbound					River Drive Westbound					Rosetta Street Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
7:30 AM	0	11	0	0	11	2	0	0	0	2	0	0	0	0	0	13
7:45 AM	0	9	0	0	9	2	0	0	0	2	3	0	0	0	3	14
8:00 AM	0	11	0	0	11	1	2	0	1	3	1	0	0	0	1	15
8:15 AM	0	9	0	0	9	3	0	0	1	3	0	0	0	0	0	12
Total	0	40	0	0	40	8	2	0	2	10	4	0	0	0	4	54
Approach %	0.0	100.0	0.0	-	-	80.0	20.0	0.0	-	-	100.0	0.0	0.0	-	-	-
Total %	0.0	74.1	0.0	-	74.1	14.8	3.7	0.0	-	18.5	7.4	0.0	0.0	-	7.4	-
PHF	0.000	0.909	0.000	-	0.909	0.667	0.250	0.000	-	0.833	0.333	0.000	0.000	-	0.333	0.900
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	-	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	-	-	-	0.0	0.0
Cars & Light Goods	0	32	0	-	32	6	1	0	-	7	4	0	0	-	4	43
% Cars & Light Goods	-	80.0	-	-	80.0	75.0	50.0	-	-	70.0	100.0	-	-	-	100.0	79.6
Buses	0	7	0	-	7	1	1	0	-	2	0	0	0	-	0	9
% Buses	-	17.5	-	-	17.5	12.5	50.0	-	-	20.0	0.0	-	-	-	0.0	16.7
Single-Unit Trucks	0	1	0	-	1	1	0	0	-	1	0	0	0	-	0	2
% Single-Unit Trucks	-	2.5	-	-	2.5	12.5	0.0	-	-	10.0	0.0	-	-	-	0.0	3.7
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	-	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	-	-	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	-	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	2	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-



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Count Name: River Drive & Rosetta Street
Site Code: 210781
Start Date: 03/02/2022
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Turning Movement Peak Hour Data Plot (7:30 AM)



Paradigm Transportation Solutions Limited
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Count Name: River Drive & Rosetta Street
Site Code: 210781
Start Date: 03/02/2022
Page No: 6

Turning Movement Peak Hour Data (11:15 AM)

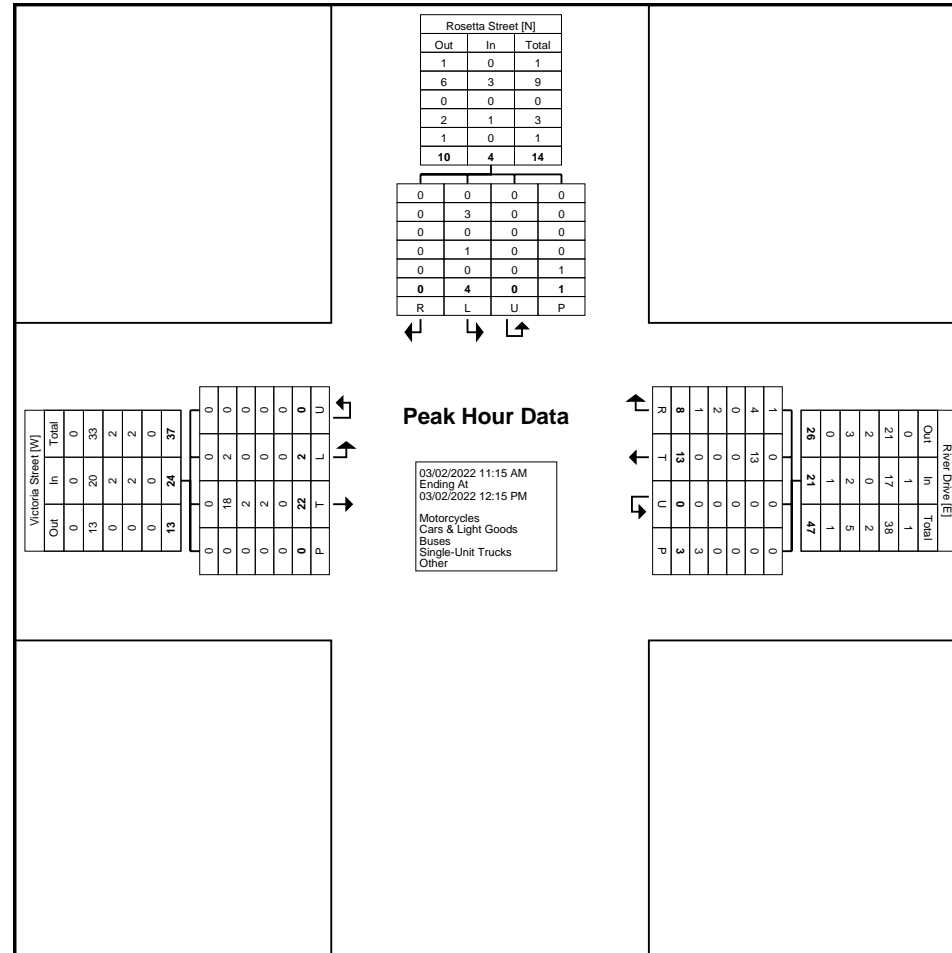
Start Time	Victoria Street Eastbound					River Drive Westbound					Rosetta Street Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
11:15 AM	0	7	0	0	7	2	2	0	0	4	0	0	0	0	0	11
11:30 AM	1	4	0	0	5	5	2	0	0	7	2	0	0	0	2	14
11:45 AM	0	3	0	0	3	1	3	0	3	4	2	0	0	0	2	9
12:00 PM	1	8	0	0	9	5	1	0	0	6	0	0	0	1	0	15
Total	2	22	0	0	24	13	8	0	3	21	4	0	0	1	4	49
Approach %	8.3	91.7	0.0	-	-	61.9	38.1	0.0	-	-	100.0	0.0	0.0	-	-	-
Total %	4.1	44.9	0.0	-	49.0	26.5	16.3	0.0	-	42.9	8.2	0.0	0.0	-	8.2	-
PHF	0.500	0.688	0.000	-	0.667	0.650	0.667	0.000	-	0.750	0.500	0.000	0.000	-	0.500	0.817
Motorcycles	0	0	0	-	0	0	1	0	-	1	0	0	0	-	0	1
% Motorcycles	0.0	0.0	-	-	0.0	0.0	12.5	-	-	4.8	0.0	-	-	-	0.0	2.0
Cars & Light Goods	2	18	0	-	20	13	4	0	-	17	3	0	0	-	3	40
% Cars & Light Goods	100.0	81.8	-	-	83.3	100.0	50.0	-	-	81.0	75.0	-	-	-	75.0	81.6
Buses	0	2	0	-	2	0	0	0	-	0	0	0	0	-	0	2
% Buses	0.0	9.1	-	-	8.3	0.0	0.0	-	-	0.0	0.0	-	-	-	0.0	4.1
Single-Unit Trucks	0	2	0	-	2	0	2	0	-	2	1	0	0	-	1	5
% Single-Unit Trucks	0.0	9.1	-	-	8.3	0.0	25.0	-	-	9.5	25.0	-	-	-	25.0	10.2
Articulated Trucks	0	0	0	-	0	0	1	0	-	1	0	0	0	-	0	1
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	12.5	-	-	4.8	0.0	-	-	-	0.0	2.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	-	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	3	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	100.0	-	-



Paradigm Transportation Solutions Limited
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Count Name: River Drive & Rosetta Street
Site Code: 210781
Start Date: 03/02/2022
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Turning Movement Peak Hour Data Plot (11:15 AM)



Paradigm Transportation Solutions Limited
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Count Name: River Drive & Rosetta Street
Site Code: 210781
Start Date: 03/02/2022
Page No: 8

Turning Movement Peak Hour Data (4:00 PM)

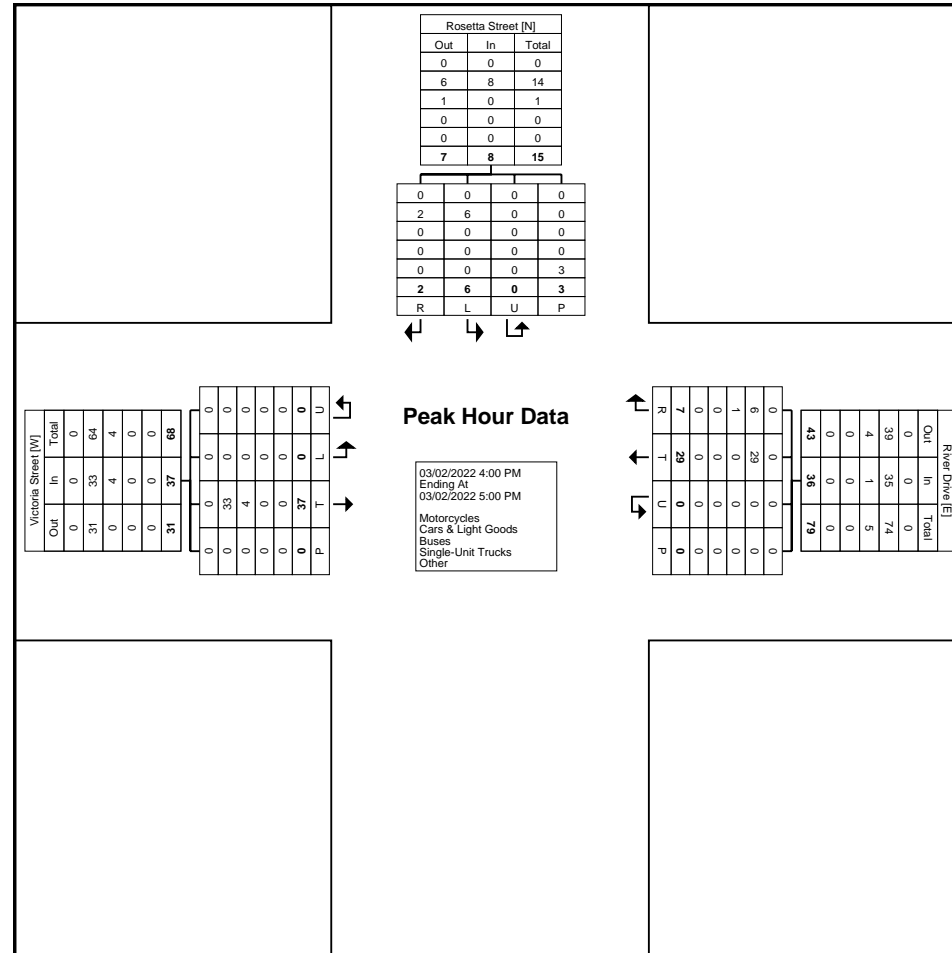
Start Time	Victoria Street Eastbound					River Drive Westbound					Rosetta Street Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
4:00 PM	0	13	0	0	13	5	4	0	0	9	1	1	0	0	2	24
4:15 PM	0	10	0	0	10	5	2	0	0	7	2	0	0	2	2	19
4:30 PM	0	4	0	0	4	10	0	0	0	10	2	0	0	1	2	16
4:45 PM	0	10	0	0	10	9	1	0	0	10	1	1	0	0	2	22
Total	0	37	0	0	37	29	7	0	0	36	6	2	0	3	8	81
Approach %	0.0	100.0	0.0	-	-	80.6	19.4	0.0	-	-	75.0	25.0	0.0	-	-	-
Total %	0.0	45.7	0.0	-	45.7	35.8	8.6	0.0	-	44.4	7.4	2.5	0.0	-	9.9	-
PHF	0.000	0.712	0.000	-	0.712	0.725	0.438	0.000	-	0.900	0.750	0.500	0.000	-	1.000	0.844
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	-	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	0	33	0	-	33	29	6	0	-	35	6	2	0	-	8	76
% Cars & Light Goods	-	89.2	-	-	89.2	100.0	85.7	-	-	97.2	100.0	100.0	-	-	100.0	93.8
Buses	0	4	0	-	4	0	1	0	-	1	0	0	0	-	0	5
% Buses	-	10.8	-	-	10.8	0.0	14.3	-	-	2.8	0.0	0.0	-	-	0.0	6.2
Single-Unit Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Single-Unit Trucks	-	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	-	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
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Count Name: River Drive & Rosetta Street
Site Code: 210781
Start Date: 03/02/2022
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Turning Movement Peak Hour Data Plot (4:00 PM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: River Drive & St. Michaels Street
Site Code: 210781
Start Date: 03/02/2022
Page No: 1

Turning Movement Data

Start Time	Go Parking Lot Eastbound					Victoria Street Westbound					St. Michaels Street Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
7:00 AM	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	5
7:15 AM	0	6	1	0	7	3	0	0	0	3	0	0	0	0	0	10
7:30 AM	0	10	0	1	10	1	0	0	0	1	0	0	0	1	0	11
7:45 AM	0	7	0	0	7	0	1	0	0	1	0	0	0	0	0	8
Hourly Total	0	28	1	1	29	4	1	0	0	5	0	0	0	1	0	34
8:00 AM	0	12	0	0	12	0	0	0	1	0	1	0	0	2	1	13
8:15 AM	1	8	0	0	9	3	0	0	0	3	0	0	0	0	0	12
8:30 AM	1	2	0	0	3	1	0	0	0	1	0	1	0	0	1	5
8:45 AM	0	5	0	0	5	3	0	1	1	4	1	0	0	0	1	10
Hourly Total	2	27	0	0	29	7	0	1	2	8	2	1	0	2	3	40
9:00 AM	0	5	0	0	5	2	0	0	0	2	1	0	0	0	1	8
9:15 AM	0	3	0	0	3	6	0	0	0	6	0	0	0	0	0	9
9:30 AM	1	4	0	0	5	0	0	0	0	0	0	0	0	0	0	5
9:45 AM	4	2	0	0	6	3	0	0	0	3	1	3	0	0	4	13
Hourly Total	5	14	0	0	19	11	0	0	0	11	2	3	0	0	5	35
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	0	5	0	0	5	3	0	0	0	3	1	3	0	0	4	12
11:15 AM	0	5	0	0	5	1	2	0	0	3	2	0	0	0	2	10
11:30 AM	0	5	0	0	5	3	0	0	0	3	1	2	0	0	3	11
11:45 AM	0	3	0	0	3	1	0	0	2	1	0	0	0	0	0	4
Hourly Total	0	18	0	0	18	8	2	0	2	10	4	5	0	0	9	37
12:00 PM	1	8	0	0	9	3	1	0	0	4	1	0	0	0	1	14
12:15 PM	0	4	0	1	4	3	0	0	0	3	0	0	0	0	0	7
12:30 PM	0	5	0	0	5	5	0	0	0	5	0	1	0	0	1	11
12:45 PM	0	7	0	0	7	1	0	0	0	1	0	0	0	0	0	8
Hourly Total	1	24	0	1	25	12	1	0	0	13	1	1	0	0	2	40
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	2	6	0	0	8	6	1	0	0	7	1	2	0	0	3	18
3:15 PM	0	6	0	0	6	4	2	0	0	6	0	0	0	0	0	12
3:30 PM	0	5	0	0	5	10	0	0	0	10	0	1	0	1	1	16
3:45 PM	0	6	0	0	6	4	0	0	1	4	0	0	0	0	0	10
Hourly Total	2	23	0	0	25	24	3	0	1	27	1	3	0	1	4	56
4:00 PM	0	7	0	0	7	5	0	1	0	6	4	0	0	1	4	17
4:15 PM	0	8	0	0	8	4	2	0	0	6	1	0	0	1	1	15
4:30 PM	0	4	0	0	4	9	0	0	0	9	0	0	0	0	0	13
4:45 PM	0	9	0	0	9	10	0	0	0	10	0	0	0	0	0	19

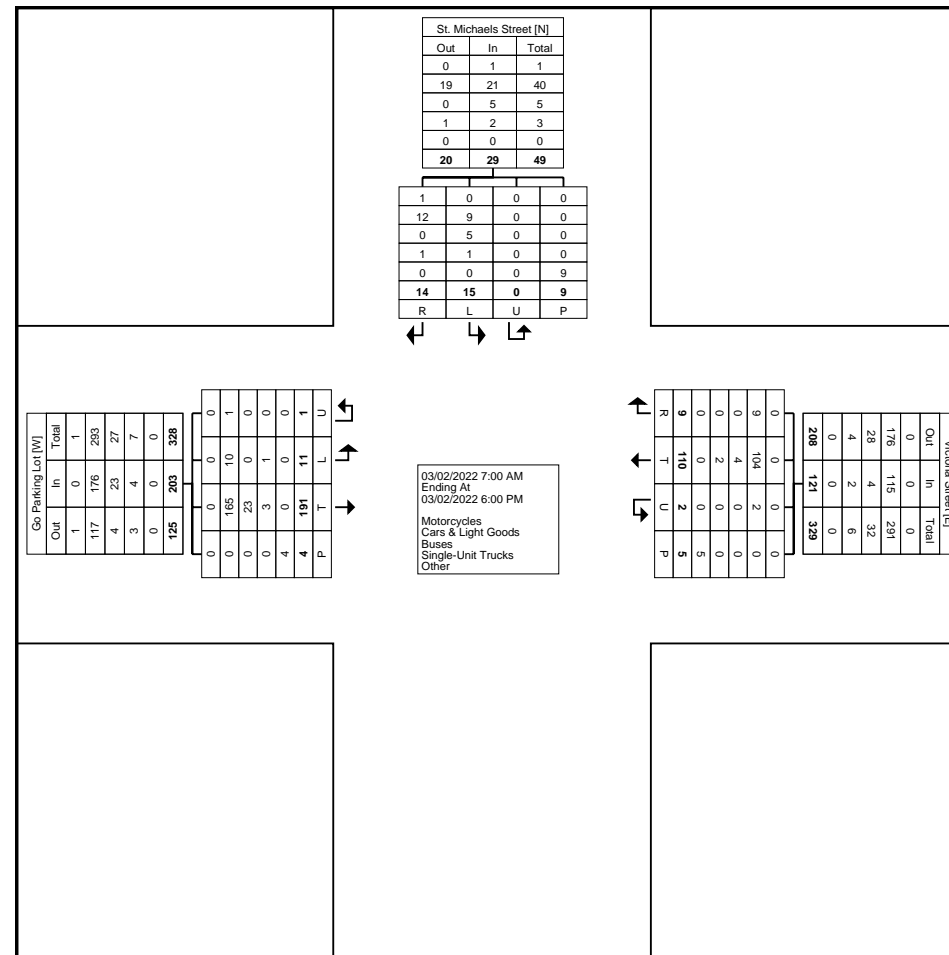
Hourly Total	0	28	0	0	28	28	2	1	0	31	5	0	0	2	5	64
5:00 PM	1	7	0	0	8	5	0	0	0	5	0	0	0	1	0	13
5:15 PM	0	8	0	0	8	6	0	0	0	6	0	1	0	0	1	15
5:30 PM	0	11	0	2	11	0	0	0	0	0	0	0	0	0	0	11
5:45 PM	0	3	0	0	3	5	0	0	0	5	0	0	0	2	0	8
Hourly Total	1	29	0	2	30	16	0	0	0	16	0	1	0	3	1	47
Grand Total	11	191	1	4	203	110	9	2	5	121	15	14	0	9	29	353
Approach %	5.4	94.1	0.5	-	-	90.9	7.4	1.7	-	-	51.7	48.3	0.0	-	-	-
Total %	3.1	54.1	0.3	-	57.5	31.2	2.5	0.6	-	34.3	4.2	4.0	0.0	-	8.2	-
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	1	0	-	1	1
% Motorcycles	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	7.1	-	-	3.4	0.3
Cars & Light Goods	10	165	1	-	176	104	9	2	-	115	9	12	0	-	21	312
% Cars & Light Goods	90.9	86.4	100.0	-	86.7	94.5	100.0	100.0	-	95.0	60.0	85.7	-	-	72.4	88.4
Buses	0	23	0	-	23	4	0	0	-	4	5	0	0	-	5	32
% Buses	0.0	12.0	0.0	-	11.3	3.6	0.0	0.0	-	3.3	33.3	0.0	-	-	17.2	9.1
Single-Unit Trucks	1	3	0	-	4	2	0	0	-	2	1	1	0	-	2	8
% Single-Unit Trucks	9.1	1.6	0.0	-	2.0	1.8	0.0	0.0	-	1.7	6.7	7.1	-	-	6.9	2.3
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	4	-	-	-	-	5	-	-	-	-	9	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-



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Count Name: River Drive & St. Michaels Street
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Turning Movement Data Plot



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Count Name: River Drive & St. Michaels Street
Site Code: 210781
Start Date: 03/02/2022
Page No: 4

Turning Movement Peak Hour Data (7:30 AM)

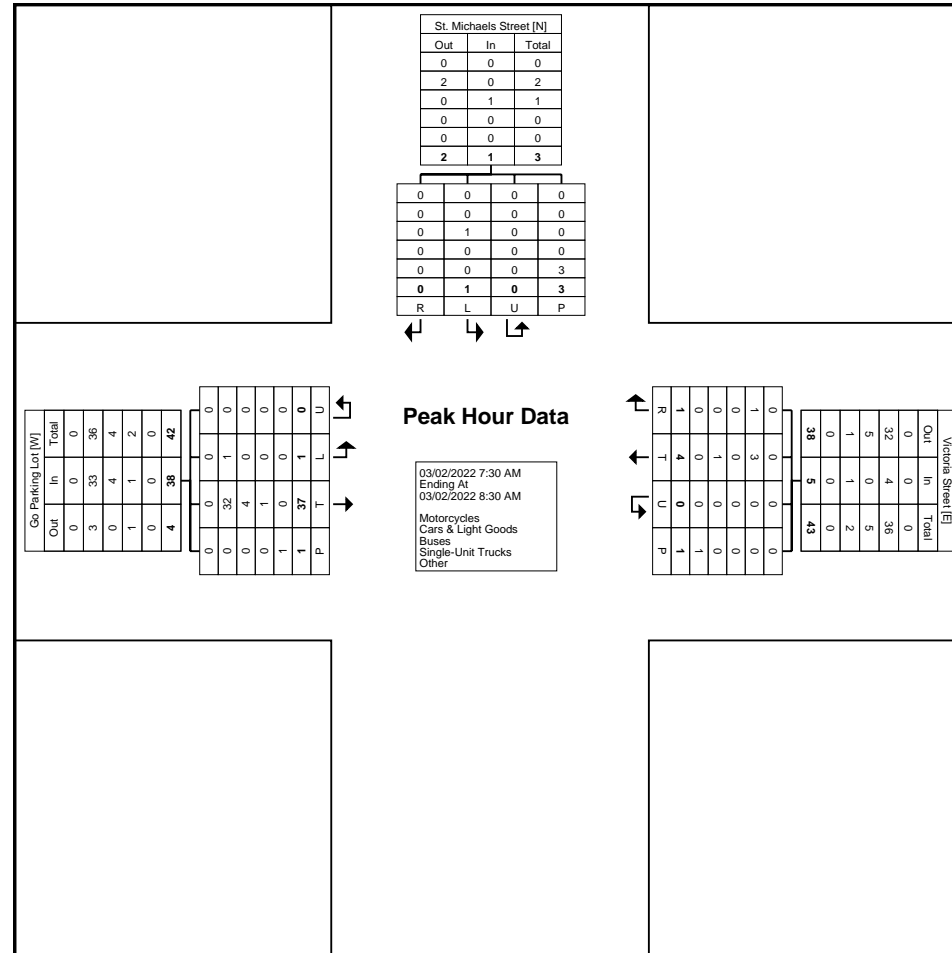
Start Time	Go Parking Lot Eastbound					Victoria Street Westbound					St. Michaels Street Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
7:30 AM	0	10	0	1	10	1	0	0	0	1	0	0	0	1	0	11
7:45 AM	0	7	0	0	7	0	1	0	0	1	0	0	0	0	0	8
8:00 AM	0	12	0	0	12	0	0	0	1	0	1	0	0	2	1	13
8:15 AM	1	8	0	0	9	3	0	0	0	3	0	0	0	0	0	12
Total	1	37	0	1	38	4	1	0	1	5	1	0	0	3	1	44
Approach %	2.6	97.4	0.0	-	-	80.0	20.0	0.0	-	-	100.0	0.0	0.0	-	-	-
Total %	2.3	84.1	0.0	-	86.4	9.1	2.3	0.0	-	11.4	2.3	0.0	0.0	-	2.3	-
PHF	0.250	0.771	0.000	-	0.792	0.333	0.250	0.000	-	0.417	0.250	0.000	0.000	-	0.250	0.846
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	-	-	-	0.0	0.0
Cars & Light Goods	1	32	0	-	33	3	1	0	-	4	0	0	0	-	0	37
% Cars & Light Goods	100.0	86.5	-	-	86.8	75.0	100.0	-	-	80.0	0.0	-	-	-	0.0	84.1
Buses	0	4	0	-	4	0	0	0	-	0	1	0	0	-	1	5
% Buses	0.0	10.8	-	-	10.5	0.0	0.0	-	-	0.0	100.0	-	-	-	100.0	11.4
Single-Unit Trucks	0	1	0	-	1	1	0	0	-	1	0	0	0	-	0	2
% Single-Unit Trucks	0.0	2.7	-	-	2.6	25.0	0.0	-	-	20.0	0.0	-	-	-	0.0	4.5
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	-	-	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	-	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	1	-	-	-	-	1	-	-	-	-	3	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: River Drive & St. Michaels Street
Site Code: 210781
Start Date: 03/02/2022
Page No: 5



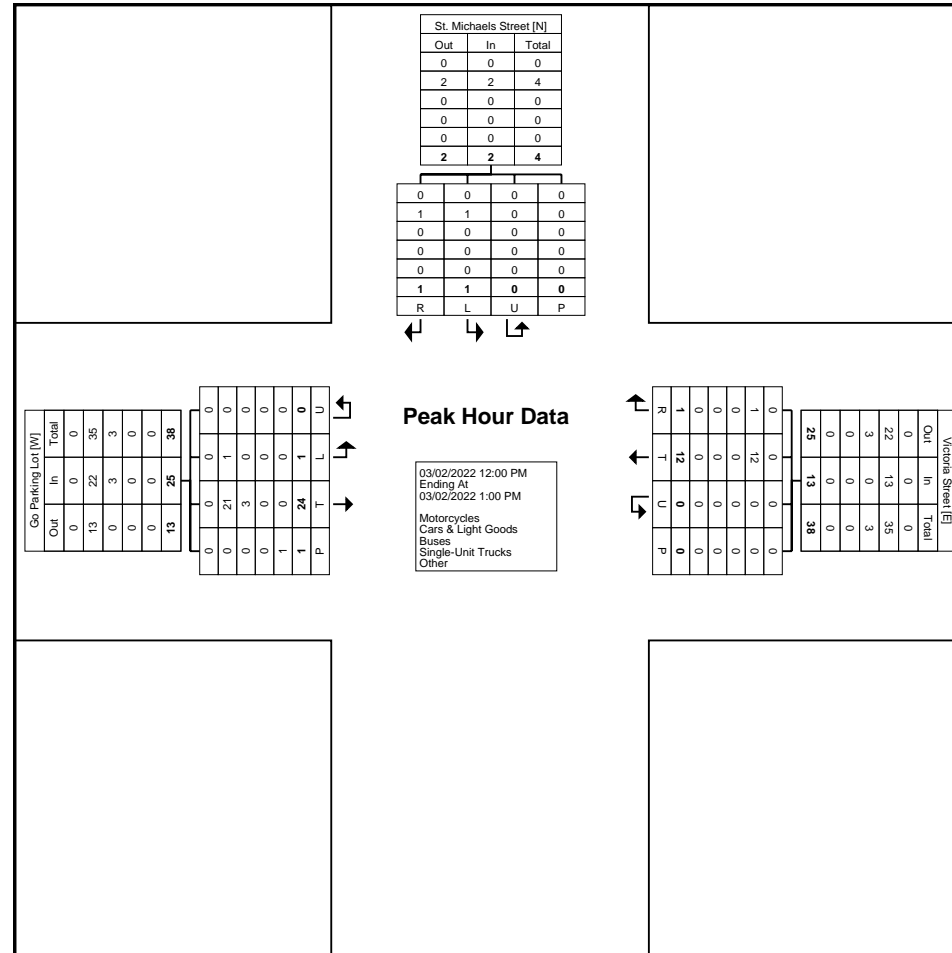
Turning Movement Peak Hour Data Plot (7:30 AM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
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Count Name: River Drive & St. Michaels Street
Site Code: 210781
Start Date: 03/02/2022
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Turning Movement Peak Hour Data Plot (12:00 PM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: River Drive & St. Michaels Street
Site Code: 210781
Start Date: 03/02/2022
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Turning Movement Peak Hour Data (4:00 PM)

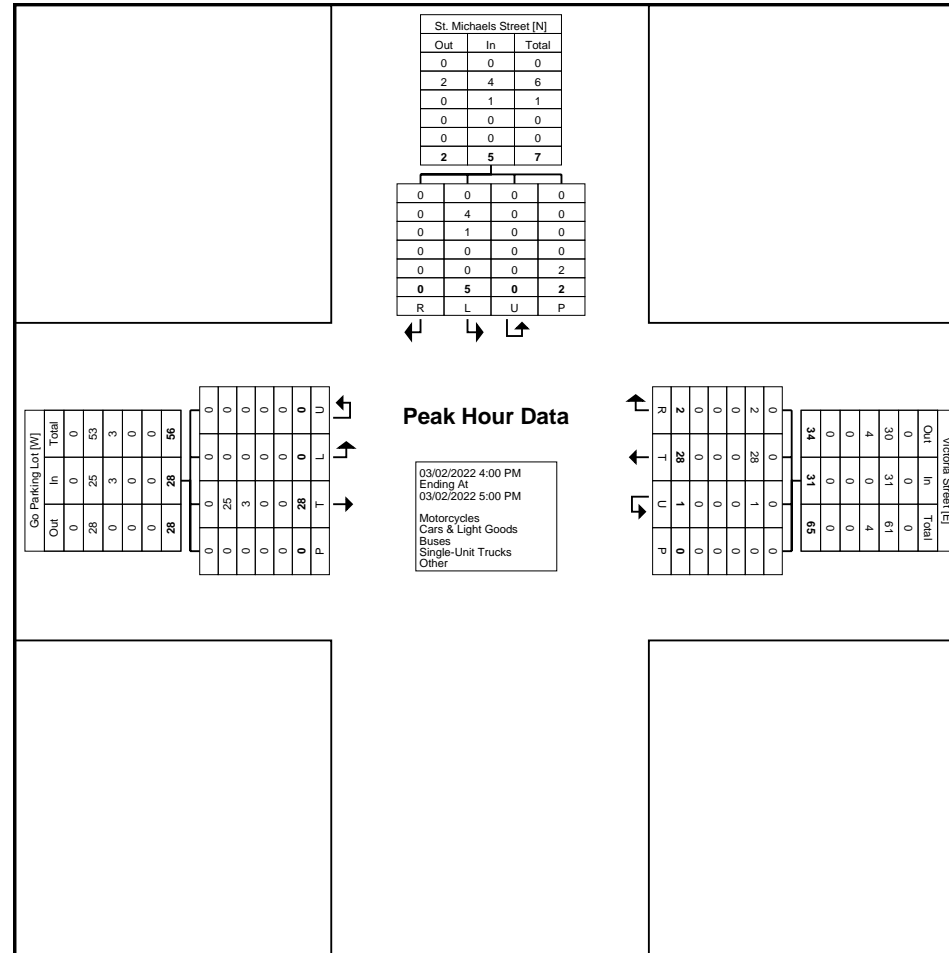
Start Time	Go Parking Lot Eastbound					Victoria Street Westbound					St. Michaels Street Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
4:00 PM	0	7	0	0	7	5	0	1	0	6	4	0	0	1	4	17
4:15 PM	0	8	0	0	8	4	2	0	0	6	1	0	0	1	1	15
4:30 PM	0	4	0	0	4	9	0	0	0	9	0	0	0	0	0	13
4:45 PM	0	9	0	0	9	10	0	0	0	10	0	0	0	0	0	19
Total	0	28	0	0	28	28	2	1	0	31	5	0	0	2	5	64
Approach %	0.0	100.0	0.0	-	-	90.3	6.5	3.2	-	-	100.0	0.0	0.0	-	-	-
Total %	0.0	43.8	0.0	-	43.8	43.8	3.1	1.6	-	48.4	7.8	0.0	0.0	-	7.8	-
PHF	0.000	0.778	0.000	-	0.778	0.700	0.250	0.250	-	0.775	0.313	0.000	0.000	-	0.313	0.842
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	-	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	-	-	-	0.0	0.0
Cars & Light Goods	0	25	0	-	25	28	2	1	-	31	4	0	0	-	4	60
% Cars & Light Goods	-	89.3	-	-	89.3	100.0	100.0	100.0	-	100.0	80.0	-	-	-	80.0	93.8
Buses	0	3	0	-	3	0	0	0	-	0	1	0	0	-	1	4
% Buses	-	10.7	-	-	10.7	0.0	0.0	0.0	-	0.0	20.0	-	-	-	20.0	6.3
Single-Unit Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Single-Unit Trucks	-	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	-	-	-	0.0	0.0
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	-	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	-	-	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	-	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



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Turning Movement Peak Hour Data Plot (4:00 PM)

Appendix C

Base Year Traffic Operations



Lanes, Volumes, Timings
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Base Year AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	
Traffic Volume (vph)	1	8	36	113	5	21	9	226	122	35	389	3
Future Volume (vph)	1	8	36	113	5	21	9	226	122	35	389	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		1.00			1.00				0.97		1.00	
Frt		0.893			0.980				0.850		0.999	
Fit Protected		0.999			0.961			0.998			0.996	
Satd. Flow (prot)	0	1494	0	0	1366	0	0	1785	1380	0	3487	0
Fit Permitted		0.992			0.732			0.979			0.911	
Satd. Flow (perm)	0	1483	0	0	1041	0	0	1752	1346	0	3188	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		38			12				130			1
Link Speed (k/h)		50			50				50			50
Link Distance (m)		127.8			212.6				412.3			41.4
Travel Time (s)		9.2			15.3				29.7			3.0
Confl. Peds. (#/hr)	5					5			4		4	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	17%	35%	40%	5%	11%	6%	17%	12%	2%	33%
Adj. Flow (vph)	1	9	38	120	5	22	10	240	130	37	414	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	48	0	0	147	0	0	250	130	0	454	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			4			2		2		2
Permitted Phases	4			4			2		2	2		
Detector Phase	4	4		4	4		2	2	2	2		2
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		30.0	30.0	30.0	30.0		30.0
Minimum Split (s)	36.1	36.1		36.1	36.1		36.5	36.5	36.5	36.5		36.5
Total Split (s)	35.0	35.0		35.0	35.0		45.0	45.0	45.0	45.0		45.0
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.3%	56.3%	56.3%	56.3%		56.3%
Maximum Green (s)	28.9	28.9		28.9	28.9		38.5	38.5	38.5	38.5		38.5
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	2.1	2.1		2.1	2.1		2.0	2.0	2.0	2.0		2.0
Lost Time Adjust (s)		3.0			3.0			3.0	3.0	3.0		3.0
Total Lost Time (s)		9.1			9.1			9.5	9.5	9.5		9.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.5	4.5	4.5	4.5		4.5
Recall Mode	None	None		None	None		Max	Max	Max	Max		Max
Walk Time (s)	10.0	10.0		10.0	10.0		14.0	14.0	14.0	14.0		14.0
Flash Dont Walk (s)	20.0	20.0		20.0	20.0		16.0	16.0	16.0	16.0		16.0
Pedestrian Calls (#/hr)	5	5		5	5		4	4	4	4		4
Act Effct Green (s)		12.6			12.6			41.4	41.4			41.4
Actuated g/C Ratio		0.19			0.19			0.62	0.62			0.62
v/c Ratio		0.16			0.72			0.23	0.15			0.23
Control Delay		10.5			42.4			10.5	3.0			9.6
Queue Delay		0.0			0.0			0.0	0.0			0.0

Lanes, Volumes, Timings
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Base Year AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		10.5			42.4			10.5	3.0		9.6	
LOS		B			D			B	A		A	
Approach Delay		10.5			42.4			8.0			9.6	
Approach LOS		B			D			A			A	
Queue Length 50th (m)		1.0			15.8			14.2	0.0		13.5	
Queue Length 95th (m)		7.9			32.0			40.8	9.0		33.7	
Internal Link Dist (m)		103.8			188.6			388.3			17.4	
Turn Bay Length (m)												
Base Capacity (vph)		606			416			1081	880		1967	
Starvation Cap Reductn		0			0			0	0		0	
Spillback Cap Reductn		0			0			0	0		0	
Storage Cap Reductn		0			0			0	0		0	
Reduced v/c Ratio		0.08			0.35			0.23	0.15		0.23	
Intersection Summary												
Area Type:	Other											
Cycle Length:	80											
Actuated Cycle Length:	67.1											
Natural Cycle:	75											
Control Type:	Semi Act-Uncoord											
Maximum v/c Ratio:	0.72											
Intersection Signal Delay:	13.7											
Intersection LOS:	B											
Intersection Capacity Utilization:	81.8%											
ICU Level of Service:	D											
Analysis Period (min):	15											
Splits and Phases: 1: Mountainview Road N & River Drive												

HCM Signalized Intersection Capacity Analysis
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Base Year AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	
Traffic Volume (vph)	1	8	36	113	5	21	9	226	122	35	389	3
Future Volume (vph)	1	8	36	113	5	21	9	226	122	35	389	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Total Lost time (s)		9.1			9.1			9.5	9.5		9.5	
Lane Util. Factor		1.00			1.00			1.00	1.00		0.95	
Frbp, ped/bikes		1.00			1.00			1.00	0.98		1.00	
Flpb, ped/bikes		1.00			1.00			1.00	1.00		1.00	
Frt		0.89			0.98			1.00	0.85		1.00	
Flt Protected		1.00			0.96			1.00	1.00		1.00	
Satd. Flow (prot)		1494			1366			1786	1347		3486	
Flt Permitted		0.99			0.73			0.98	1.00		0.91	
Satd. Flow (perm)		1483			1041			1751	1347		3188	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	1	9	38	120	5	22	10	240	130	37	414	3
RTOR Reduction (vph)	0	32	0	0	10	0	0	0	55	0	0	0
Lane Group Flow (vph)	0	16	0	0	137	0	0	250	75	0	454	0
Confl. Peds. (#/hr)	5					5			4	4		
Heavy Vehicles (%)	0%	0%	17%	35%	40%	5%	11%	6%	17%	12%	2%	33%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2		2	2		
Actuated Green, G (s)		13.4			13.4			42.3	42.3		42.3	
Effective Green, g (s)		10.4			10.4			39.3	39.3		39.3	
Actuated g/C Ratio		0.15			0.15			0.58	0.58		0.58	
Clearance Time (s)		6.1			6.1			6.5	6.5		6.5	
Vehicle Extension (s)		3.0			3.0			4.5	4.5		4.5	
Lane Grp Cap (vph)		225			158			1007	775		1834	
v/s Ratio Prot												
v/s Ratio Perm		0.01			c0.13			c0.14	0.06		0.14	
v/c Ratio		0.07			0.87			0.25	0.10		0.25	
Uniform Delay, d1		24.8			28.3			7.2	6.5		7.2	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.1			35.8			0.6	0.2		0.3	
Delay (s)		24.9			64.1			7.8	6.8		7.5	
Level of Service		C			E			A	A		A	
Approach Delay (s)		24.9			64.1			7.4			7.5	
Approach LOS		C			E			A			A	
Intersection Summary												
HCM 2000 Control Delay			16.4									B
HCM 2000 Volume to Capacity ratio												0.38
Actuated Cycle Length (s)			68.3									Sum of lost time (s) 18.6
Intersection Capacity Utilization			81.8%									ICU Level of Service D
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
2: Mountainview Road N & John Street

1 Rosetta St TIS Update
Base Year AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	
Traffic Volume (vph)	16	7	80	20	10	8	48	182	17	17	324	18
Future Volume (vph)	16	7	80	20	10	8	48	182	17	17	324	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	0.0	0.0	0.0	0.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0	0.0
Storage Lanes	0	0	0	0	0	1	0	1	0	1	0	0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.895			0.970			0.987			0.992	
Flt Protected		0.992			0.975			0.950			0.950	
Satd. Flow (prot)	0	1631	0	0	1705	0	1544	1790	0	1646	1816	0
Flt Permitted		0.992			0.975			0.950			0.950	
Satd. Flow (perm)	0	1631	0	0	1705	0	1544	1790	0	1646	1816	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		95.5			171.9			203.3			171.8	
Travel Time (s)		6.9			12.4			14.6			12.4	
Confl. Peds. (#/hr)	2		5	5		2	9					9
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	7%	0%	3%	5%	0%	13%	13%	4%	13%	6%	4%	0%
Adj. Flow (vph)	17	7	85	21	11	9	51	194	18	18	345	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	109	0	0	41	0	51	212	0	18	364	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	46.7%											
ICU Level of Service	A											
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
2: Mountainview Road N & John Street

1 Rosetta St TIS Update
Base Year AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔	↔		↔	↔	↔
Sign Control	Stop			Stop			Stop	Stop		Stop	Stop	Stop
Traffic Volume (vph)	16	7	80	20	10	8	48	182	17	17	324	18
Future Volume (vph)	16	7	80	20	10	8	48	182	17	17	324	18
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	17	7	85	21	11	9	51	194	18	18	345	19
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total (vph)	109	41	51	212	18	364						
Volume Left (vph)	17	21	51	0	18	0						
Volume Right (vph)	85	9	0	18	0	19						
Hadj (s)	-0.38	0.06	0.72	0.02	0.60	0.03						
Departure Headway (s)	5.1	5.7	6.0	5.3	5.8	5.2						
Degree Utilization, x	0.16	0.07	0.09	0.31	0.03	0.53						
Capacity (veh/h)	625	550	575	652	597	672						
Control Delay (s)	9.1	9.1	8.4	9.5	7.8	12.7						
Approach Delay (s)	9.1	9.1	9.3	12.5								
Approach LOS	A	A	A	B								
Intersection Summary												
Delay			10.8									
Level of Service			B									
Intersection Capacity Utilization			46.7%		ICU Level of Service		A					
Analysis Period (min)			15									

Lanes, Volumes, Timings
3: River Drive & Daniella Street

1 Rosetta St TIS Update
Base Year AM

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Volume (vph)	2	48	12	2	7	3
Future Volume (vph)	2	48	12	2	7	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.983			0.963
Fit Protected			0.998			0.965
Satd. Flow (prot)	0	1589	1449	0	1766	0
Fit Permitted			0.998			0.965
Satd. Flow (perm)	0	1589	1449	0	1766	0
Link Speed (k/h)			50			50
Link Distance (m)			172.1			126.0
Travel Time (s)			12.4			9.1
Confl. Peds. (#/hr)	3				3	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	20%	33%	0%	0%	0%
Adj. Flow (vph)	2	56	14	2	8	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	58	16	0	11	0
Sign Control	Free		Free	Stop		
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	19.3%		ICU Level of Service A			
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
3: River Drive & Daniella Street

1 Rosetta St TIS Update
Base Year AM

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	48	12	2	7	3
Future Volume (Veh/h)	2	48	12	2	7	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	2	56	14	2	8	3
Pedestrians					3	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			128			
pX, platoon unblocked					78	18
vC, conflicting volume	19					
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	19				78	18
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1606				926	1063
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	58	16	11			
Volume Left	2	0	8			
Volume Right	0	2	3			
cSH	1606	1700	960			
Volume to Capacity	0.00	0.01	0.01			
Queue Length 95th (m)	0.0	0.0	0.3			
Control Delay (s)	0.3	0.0	8.8			
Lane LOS	A		A			
Approach Delay (s)	0.3	0.0	8.8			
Approach LOS			A			
Intersection Summary						
Average Delay			1.3			
Intersection Capacity Utilization		19.3%		ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
4: River Drive & Rosetta Street

1 Rosetta St TIS Update
Base Year AM

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	42	8	2	4	0
Future Volume (vph)	0	42	8	2	4	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.975			
Fit Protected					0.950	
Satd. Flow (prot)	0	1583	1430	0	1805	0
Fit Permitted					0.950	
Satd. Flow (perm)	0	1583	1430	0	1805	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		46.1	172.1		38.0	
Travel Time (s)		3.3	12.4		2.7	
Confl. Peds. (#/hr)					2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	20%	25%	50%	0%	0%
Adj. Flow (vph)	0	47	9	2	4	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	47	11	0	4	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	18.3%		ICU Level of Service A			
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
4: River Drive & Rosetta Street

1 Rosetta St TIS Update
Base Year AM

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	0	42	8	2	4	0
Future Volume (Veh/h)	0	42	8	2	4	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	47	9	2	4	0
Pedestrians			2			
Lane Width (m)			3.6			
Walking Speed (m/s)			1.1			
Percent Blockage			0			
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			300			
pX, platoon unblocked						
vC, conflicting volume	11				59	10
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	11				59	10
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1621				951	1077
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	47	11	4			
Volume Left	0	0	4			
Volume Right	0	2	0			
cSH	1621	1700	951			
Volume to Capacity	0.00	0.01	0.00			
Queue Length 95th (m)	0.0	0.0	0.1			
Control Delay (s)	0.0	0.0	8.8			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	8.8			
Approach LOS			A			
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization		18.3%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
5: Victoria Street/River Drive & St Michaels Street

1 Rosetta St TIS Update
Base Year AM

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	1	38	4	1	1	0
Future Volume (vph)	1	38	4	1	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.977			
Fit Protected		0.999			0.950	
Satd. Flow (prot)	0	1669	1536	0	1805	0
Fit Permitted		0.999			0.950	
Satd. Flow (perm)	0	1669	1536	0	1805	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		118.5	126.7		89.7	
Travel Time (s)		8.5	9.1		6.5	
Confl. Peds. (#/hr)	3			3	1	1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	14%	25%	0%	0%	0%
Adj. Flow (vph)	1	45	5	1	1	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	46	6	0	1	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	19.6%				ICU Level of Service A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
5: Victoria Street/River Drive & St Michaels Street

1 Rosetta St TIS Update
Base Year AM

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	1	38	4	1	1	0
Future Volume (Veh/h)	1	38	4	1	1	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	1	45	5	1	1	0
Pedestrians		1	1		3	
Lane Width (m)		3.6	3.6		3.6	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	9				56	10
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	9				56	10
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
pD queue free %	100				100	100
cM capacity (veh/h)	1620				952	1074
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	46	6	1			
Volume Left	1	0	1			
Volume Right	0	1	0			
cSH	1620	1700	952			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.2	0.0	8.8			
Lane LOS	A		A			
Approach Delay (s)	0.2	0.0	8.8			
Approach LOS			A			
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization		19.6%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
6: Rosset Valley Court & John Street

1 Rosetta St TIS Update
Base Year AM

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕			↕	↕	
Traffic Volume (vph)	80	0	15	60	3	18
Future Volume (vph)	80	0	15	60	3	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.887	
Fit Protected				0.990	0.992	
Satd. Flow (prot)	1827	0	0	1568	1672	0
Fit Permitted				0.990	0.992	
Satd. Flow (perm)	1827	0	0	1568	1672	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	368.0			95.5	146.5	
Travel Time (s)	26.5			6.9	10.5	
Confl. Peds. (#/hr)		8	8			
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	4%	0%	0%	10%	0%	0%
Parking (#/hr)				0	0	
Adj. Flow (vph)	94	0	18	71	4	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	94	0	0	89	25	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 25.7%				ICU Level of Service A		
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
6: Rosset Valley Court & John Street

1 Rosetta St TIS Update
Base Year AM

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	80	0	15	60	3	18
Future Volume (Veh/h)	80	0	15	60	3	18
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	94	0	18	71	4	21
Pedestrians					8	
Lane Width (m)				3.6		
Walking Speed (m/s)				1.1		
Percent Blockage				1		
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			102		209	102
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			102		209	102
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
pD queue free %			99		99	98
cM capacity (veh/h)			1492		769	952
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	94	89	25			
Volume Left	0	18	4			
Volume Right	0	0	21			
sSH	1700	1492	917			
Volume to Capacity	0.06	0.01	0.03			
Queue Length 95th (m)	0.0	0.3	0.6			
Control Delay (s)	0.0	1.6	9.0			
Lane LOS		A	A			
Approach Delay (s)	0.0	1.6	9.0			
Approach LOS			A			
Intersection Summary						
Average Delay			1.8			
Intersection Capacity Utilization		25.7%		ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
7: Victoria Street & John Street

1 Rosetta St TIS Update
Base Year AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	15	3	4	20	44	4	6	0	59	21	4
Future Volume (vph)	0	15	3	4	20	44	4	6	0	59	21	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.980			0.913							0.993
Fit Protected					0.997			0.980				0.966
Satd. Flow (prot)	0	1862	0	0	1420	0	0	1862	0	0	1761	0
Fit Permitted					0.997			0.980				0.966
Satd. Flow (perm)	0	1862	0	0	1420	0	0	1862	0	0	1761	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		145.1			102.7			117.7			102.2	
Travel Time (s)		10.4			7.4			8.5			7.4	
Confl. Peds. (#/hr)	2		5	5		2	2		7	7		2
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	0%	50%	0%	10%	0%	0%	0%	5%	0%	0%
Parking (#/hr)				0	0	0						
Adj. Flow (vph)	0	17	3	5	23	51	5	7	0	68	24	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	20	0	0	79	0	0	12	0	0	97	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	27.8%						ICU Level of Service A					
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
7: Victoria Street & John Street

1 Rosetta St TIS Update
Base Year AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕				↕		↕				↕	
Sign Control	Stop				Stop		Stop				Stop	
Traffic Volume (vph)	0	15	3	4	20	44	4	6	0	59	21	4
Future Volume (vph)	0	15	3	4	20	44	4	6	0	59	21	4
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	0	17	3	5	23	51	5	7	0	68	24	5
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	20	79	12	97								
Volume Left (vph)	0	5	5	68								
Volume Right (vph)	3	51	0	5								
Hadj (s)	-0.09	-0.21	0.08	0.17								
Departure Headway (s)	4.1	4.0	4.3	4.3								
Degree Utilization, x	0.02	0.09	0.01	0.12								
Capacity (veh/h)	839	882	806	818								
Control Delay (s)	7.2	7.3	7.4	7.8								
Approach Delay (s)	7.2	7.3	7.4	7.8								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				7.6								
Level of Service				A								
Intersection Capacity Utilization			27.8%	ICU Level of Service			A					
Analysis Period (min)				15								

Queuing and Blocking Report

1 Rosetta St TIS Update
Base Year AM

Intersection: 1: Mountainview Road N & River Drive

Movement	EB	WB	NB	NB	SB	SB	B25
Directions Served	LTR	LTR	LT	R	LT	TR	T
Maximum Queue (m)	20.3	71.8	40.5	19.4	35.6	31.3	4.3
Average Queue (m)	6.6	26.0	15.3	6.6	14.5	11.9	0.1
95th Queue (m)	16.3	51.8	31.8	15.7	25.8	25.2	3.0
Link Distance (m)	110.0	202.7	404.4	404.4	29.5	29.5	191.2
Upstream Blk Time (%)					0	0	
Queuing Penalty (veh)					1	0	
Storage Bay Dist (m)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: Mountainview Road N & John Street

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (m)	19.8	18.4	24.4	26.6	13.6	35.5
Average Queue (m)	9.6	7.0	8.5	14.0	3.5	17.6
95th Queue (m)	16.4	15.2	18.0	23.1	11.0	27.8
Link Distance (m)	84.2	165.0		191.2		166.6
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)			30.0	30.0		
Storage Blk Time (%)			0	0	0	
Queuing Penalty (veh)			0	0	0	

Intersection: 3: River Drive & Daniella Street

Movement	SB
Directions Served	LR
Maximum Queue (m)	9.2
Average Queue (m)	2.9
95th Queue (m)	9.6
Link Distance (m)	120.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: River Drive & Rosetta Street

Movement	SB
Directions Served	LR
Maximum Queue (m)	9.2
Average Queue (m)	1.3
95th Queue (m)	6.5
Link Distance (m)	29.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Victoria Street/River Drive & St Michaels Street

Movement	SB
Directions Served	LR
Maximum Queue (m)	2.9
Average Queue (m)	0.1
95th Queue (m)	1.5
Link Distance (m)	71.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Rosset Valley Court & John Street

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	3.6	8.2
Average Queue (m)	0.2	4.2
95th Queue (m)	2.3	10.6
Link Distance (m)	84.2	140.0
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: Victoria Street & John Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	10.4	19.6	9.1	18.9
Average Queue (m)	4.4	8.8	2.0	9.3
95th Queue (m)	11.7	15.7	8.0	16.1
Link Distance (m)	139.7	90.2	108.9	96.8
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 1

Lanes, Volumes, Timings
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Base Year PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	
Traffic Volume (vph)	2	10	46	140	12	50	26	383	144	24	293	5
Future Volume (vph)	2	10	46	140	12	50	26	383	144	24	293	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99			0.99			1.00	0.97		1.00	
Frt		0.892			0.966			0.850	0.997		0.997	
Flt Protected		0.998			0.966			0.997	0.996		0.996	
Satd. Flow (prot)	0	1563	0	0	1663	0	0	1817	1302	0	3428	0
Flt Permitted		0.987			0.753			0.959	0.900		0.900	
Satd. Flow (perm)	0	1545	0	0	1295	0	0	1748	1261	0	3096	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		51			22				160			3
Link Speed (k/h)		50			50			50				50
Link Distance (m)		127.8			212.6			412.3				41.4
Travel Time (s)		9.2			15.3			29.7				3.0
Confl. Peds. (#/hr)	13		1	1		13	2		9	9		2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	50%	0%	7%	8%	0%	2%	8%	4%	24%	0%	5%	0%
Adj. Flow (vph)	2	11	51	156	13	56	29	426	160	27	326	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	64	0	0	225	0	0	455	160	0	359	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			4			2		2		2
Permitted Phases	4			4			2		2	2		
Detector Phase	4	4		4	4		2	2	2	2		2
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		30.0	30.0	30.0	30.0		30.0
Minimum Split (s)	36.1	36.1		36.1	36.1		36.5	36.5	36.5	36.5		36.5
Total Split (s)	35.0	35.0		35.0	35.0		45.0	45.0	45.0	45.0		45.0
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.3%	56.3%	56.3%	56.3%		56.3%
Maximum Green (s)	28.9	28.9		28.9	28.9		38.5	38.5	38.5	38.5		38.5
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	2.1	2.1		2.1	2.1		2.0	2.0	2.0	2.0		2.0
Lost Time Adjust (s)		3.0			3.0			3.0	3.0	3.0		3.0
Total Lost Time (s)		9.1			9.1			9.5	9.5	9.5		9.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.5	4.5	4.5	4.5		4.5
Recall Mode	None	None		None	None		Max	Max	Max	Max		Max
Walk Time (s)	10.0	10.0		10.0	10.0		14.0	14.0	14.0	14.0		14.0
Flash Dont Walk (s)	20.0	20.0		20.0	20.0		16.0	16.0	16.0	16.0		16.0
Pedestrian Calls (#/hr)	14	14		14	14		11	11	11	11		11
Act Effct Green (s)		14.0			14.0			36.8	36.8			36.8
Actuated g/C Ratio		0.20			0.20			0.53	0.53			0.53
v/c Ratio		0.18			0.81			0.49	0.22			0.22
Control Delay		9.7			45.2			14.4	3.2			10.4
Queue Delay		0.0			0.0			0.0	0.0			0.0

Lanes, Volumes, Timings
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Base Year PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		9.7			45.2			14.4	3.2			10.4
LOS		A			D			B	A			B
Approach Delay		9.7			45.2			11.5				10.4
Approach LOS		A			D			B				B
Queue Length 50th (m)		1.3			24.7			32.7	0.0			11.2
Queue Length 95th (m)		9.3			45.3			80.3	10.0			26.6
Internal Link Dist (m)		103.8			188.6			388.3				17.4
Turn Bay Length (m)												
Base Capacity (vph)		615			503			925	742			1640
Starvation Cap Reductn		0			0			0	0			0
Spillback Cap Reductn		0			0			0	0			0
Storage Cap Reductn		0			0			0	0			0
Reduced v/c Ratio		0.10			0.45			0.49	0.22			0.22

Intersection Summary	
Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	69.5
Natural Cycle:	75
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.81
Intersection Signal Delay:	17.1
Intersection LOS:	B
Intersection Capacity Utilization:	82.3%
ICU Level of Service:	E
Analysis Period (min):	15

Splits and Phases: 1: Mountainview Road N & River Drive



HCM Signalized Intersection Capacity Analysis
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Base Year PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔				↔	↔		↔	
Traffic Volume (vph)	2	10	46	140	12	50	26	383	144	24	293	5
Future Volume (vph)	2	10	46	140	12	50	26	383	144	24	293	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Total Lost time (s)		9.1			9.1			9.5	9.5		9.5	
Lane Util. Factor		1.00			1.00			1.00	1.00		0.95	
Frbp, ped/bikes		0.99			0.99			1.00	0.97		1.00	
Flpb, ped/bikes		1.00			1.00			1.00	1.00		1.00	
Frt		0.89			0.97			1.00	0.85		1.00	
Flt Protected		1.00			0.97			1.00	1.00		1.00	
Satd. Flow (prot)		1564			1664			1817	1263		3429	
Flt Permitted		0.99			0.75			0.96	1.00		0.90	
Satd. Flow (perm)		1546			1297			1748	1263		3099	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2	11	51	156	13	56	29	426	160	27	326	6
RTOR Reduction (vph)	0	41	0	0	18	0	0	0	75	0	1	0
Lane Group Flow (vph)	0	23	0	0	207	0	0	455	85	0	358	0
Confl. Peds. (#/hr)	13		1	1		13	2		9	9		2
Heavy Vehicles (%)	50%	0%	7%	8%	0%	2%	8%	4%	24%	0%	5%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2		2	2		
Actuated Green, G (s)		17.0			17.0			39.8	39.8		39.8	
Effective Green, g (s)		14.0			14.0			36.8	36.8		36.8	
Actuated g/C Ratio		0.20			0.20			0.53	0.53		0.53	
Clearance Time (s)		6.1			6.1			6.5	6.5		6.5	
Vehicle Extension (s)		3.0			3.0			4.5	4.5		4.5	
Lane Grp Cap (vph)		311			261			926	669		1643	
v/s Ratio Prot												
v/s Ratio Perm		0.02			c0.16			c0.26	0.07		0.12	
v/c Ratio		0.07			0.79			0.49	0.13		0.22	
Uniform Delay, d1		22.5			26.3			10.4	8.2		8.7	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.1			15.3			1.9	0.4		0.3	
Delay (s)		22.6			41.6			12.2	8.6		9.0	
Level of Service		C			D			B	A		A	
Approach Delay (s)		22.6			41.6			11.3			9.0	
Approach LOS		C			D			B			A	
Intersection Summary												
HCM 2000 Control Delay			16.6									B
HCM 2000 Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			69.4								18.6	
Intersection Capacity Utilization			82.3%									E
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
2: Mountainview Road N & John Street

1 Rosetta St TIS Update
Base Year PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	↔
Traffic Volume (vph)	24	10	48	24	18	14	109	326	27	6	240	22
Future Volume (vph)	24	10	48	24	18	14	109	326	27	6	240	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.3	3.6
Storage Length (m)	0.0	0.0	0.0	0.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0	0.0
Storage Lanes	0	0	0	0	0	1	0	1	0	1	0	0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.921			0.967			0.988			0.987	
Flt Protected		0.985			0.979			0.950			0.950	
Satd. Flow (prot)	0	1724	0	0	1799	0	1711	1877	0	1745	1858	0
Flt Permitted		0.985			0.979			0.950			0.950	
Satd. Flow (perm)	0	1724	0	0	1799	0	1711	1877	0	1745	1858	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		95.5			171.9			203.3			171.8	
Travel Time (s)		6.9			12.4			14.6			12.4	
Confl. Peds. (#/hr)	2		1	1		2	2		1	1		2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	1%	0%
Adj. Flow (vph)	25	10	49	25	19	14	112	336	28	6	247	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	84	0	0	58	0	112	364	0	6	270	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	45.5%						ICU Level of Service A					
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
 2: Mountainview Road N & John Street

1 Rosetta St TIS Update
 Base Year PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	24	10	48	24	18	14	109	326	27	6	240	22
Future Volume (vph)	24	10	48	24	18	14	109	326	27	6	240	22
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	25	10	49	25	19	14	112	336	28	6	247	23
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total (vph)	84	58	112	364	6	270						
Volume Left (vph)	25	25	112	0	6	0						
Volume Right (vph)	49	14	0	28	0	23						
Hadj (s)	-0.29	-0.06	0.53	-0.05	0.50	-0.04						
Departure Headway (s)	5.4	5.7	5.7	5.1	5.9	5.4						
Degree Utilization, x	0.13	0.09	0.18	0.52	0.01	0.40						
Capacity (veh/h)	586	552	610	684	581	649						
Control Delay (s)	9.2	9.3	8.8	12.3	7.8	10.7						
Approach Delay (s)	9.2	9.3	11.5	10.6								
Approach LOS	A	A	B	B								
Intersection Summary												
Delay			10.9									
Level of Service			B									
Intersection Capacity Utilization			45.5%		ICU Level of Service		A					
Analysis Period (min)			15									

Lanes, Volumes, Timings
 3: River Drive & Daniella Street

1 Rosetta St TIS Update
 Base Year PM

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Volume (vph)	4	44	43	12	6	2
Future Volume (vph)	4	44	43	12	6	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.970			0.970
Fit Protected	0.996				0.963	
Satd. Flow (prot)	0	1734	1748	0	1775	0
Fit Permitted	0.996				0.963	
Satd. Flow (perm)	0	1734	1748	0	1775	0
Link Speed (k/h)	50		50		50	
Link Distance (m)	172.1		127.8		126.0	
Travel Time (s)	12.4		9.2		9.1	
Confl. Peds. (#/hr)	4		4			
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	10%	7%	0%	0%	0%
Adj. Flow (vph)	5	51	49	14	7	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	56	63	0	9	0
Sign Control	Free		Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	20.6%		ICU Level of Service A			
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
3: River Drive & Daniella Street

1 Rosetta St TIS Update
Base Year PM

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Volume (veh/h)	4	44	43	12	6	2
Future Volume (Veh/h)	4	44	43	12	6	2
Sign Control		Free	Free		Stop	Stop
Grade		0%	0%		0%	0%
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	5	51	49	14	7	2
Pedestrians					4	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			128			
pX, platoon unblocked					121	60
vC, conflicting volume	67					
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	67				121	60
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1542				873	1007
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	56	63	9			
Volume Left	5	0	7			
Volume Right	0	14	2			
eSH	1542	1700	900			
Volume to Capacity	0.00	0.04	0.01			
Queue Length 95th (m)	0.1	0.0	0.2			
Control Delay (s)	0.7	0.0	9.0			
Lane LOS	A		A			
Approach Delay (s)	0.7	0.0	9.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization		20.6%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings
4: River Drive & Rosetta Street

1 Rosetta St TIS Update
Base Year PM

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Volume (vph)	0	38	30	7	6	2
Future Volume (vph)	0	38	30	7	6	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.975		0.970	
Fit Protected					0.963	
Satd. Flow (prot)	0	1712	1807	0	1775	0
Fit Permitted					0.963	
Satd. Flow (perm)	0	1712	1807	0	1775	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		46.1	172.1		38.0	
Travel Time (s)		3.3	12.4		2.7	
Confl. Peds. (#/hr)	3			3		
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	11%	0%	14%	0%	0%
Adj. Flow (vph)	0	45	36	8	7	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	45	44	0	9	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	19.3%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
4: River Drive & Rosetta Street

1 Rosetta St TIS Update
Base Year PM

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	0	38	30	7	6	2
Future Volume (Veh/h)	0	38	30	7	6	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	45	36	8	7	2
Pedestrians					3	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			300			
pX, platoon unblocked						
vC, conflicting volume	47				88	43
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	47				88	43
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1569				915	1030
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	45	44	9			
Volume Left	0	0	7			
Volume Right	0	8	2			
cSH	1569	1700	939			
Volume to Capacity	0.00	0.03	0.01			
Queue Length 95th (m)	0.0	0.0	0.2			
Control Delay (s)	0.0	0.0	8.9			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	8.9			
Approach LOS			A			
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization		19.3%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
5: Victoria Street/River Drive & St Michaels Street

1 Rosetta St TIS Update
Base Year PM

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	0	29	29	2	5	0
Future Volume (vph)	0	29	29	2	5	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.993			
Fit Protected					0.950	
Satd. Flow (prot)	0	1712	1887	0	1504	0
Fit Permitted					0.950	
Satd. Flow (perm)	0	1712	1887	0	1504	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		118.5	126.7		89.7	
Travel Time (s)		8.5	9.1		6.5	
Confl. Peds. (#/hr)	2			2		
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	11%	0%	0%	20%	0%
Adj. Flow (vph)	0	35	35	2	6	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	35	37	0	6	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	19.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
 5: Victoria Street/River Drive & St Michaels Street

1 Rosetta St TIS Update
 Base Year PM

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	0	29	29	2	5	0
Future Volume (Veh/h)	0	29	29	2	5	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	35	35	2	6	0
Pedestrians					2	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	39				73	38
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	39				73	38
tC, single (s)	4.1				6.6	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.7	3.3
pD queue free %	100				99	100
cM capacity (veh/h)	1581				886	1038
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	35	37	6			
Volume Left	0	0	6			
Volume Right	0	2	0			
cSH	1581	1700	886			
Volume to Capacity	0.00	0.02	0.01			
Queue Length 95th (m)	0.0	0.0	0.2			
Control Delay (s)	0.0	0.0	9.1			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.1			
Approach LOS			A			
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization		19.0%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
 6: Rosset Valley Court & John Street

1 Rosetta St TIS Update
 Base Year PM

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕			↕	↕	
Traffic Volume (vph)	92	5	17	122	2	15
Future Volume (vph)	92	5	17	122	2	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.993				0.878	
Fit Protected				0.994	0.995	
Satd. Flow (prot)	1769	0	0	1628	1660	0
Fit Permitted				0.994	0.995	
Satd. Flow (perm)	1769	0	0	1628	1660	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	368.0			95.5	146.5	
Travel Time (s)	26.5			6.9	10.5	
Confl. Peds. (#/hr)		6	6		1	3
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	7%	0%	0%	5%	0%	0%
Parking (#/hr)				0	0	
Adj. Flow (vph)	110	6	20	145	2	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	116	0	0	165	20	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	30.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
6: Rosset Valley Court & John Street

1 Rosetta St TIS Update
Base Year PM

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	92	5	17	122	2	15
Future Volume (Veh/h)	92	5	17	122	2	15
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	110	6	20	145	2	18
Pedestrians	1			3	6	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	0			0	1	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			122		305	122
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			122		305	122
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	98
cM capacity (veh/h)			1470		677	927
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	116	165	20			
Volume Left	0	20	2			
Volume Right	6	0	18			
sSH	1700	1470	894			
Volume to Capacity	0.07	0.01	0.02			
Queue Length 95th (m)	0.0	0.3	0.5			
Control Delay (s)	0.0	1.0	9.1			
Lane LOS		A	A			
Approach Delay (s)	0.0	1.0	9.1			
Approach LOS			A			
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization			30.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
7: Victoria Street & John Street

1 Rosetta St TIS Update
Base Year PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	3	34	1	6	31	79	9	17	1	59	19	3
Future Volume (vph)	3	34	1	6	31	79	9	17	1	59	19	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997			0.908			0.995			0.995	
Fit Protected		0.996			0.997			0.984			0.965	
Satd. Flow (prot)	0	1887	0	0	1458	0	0	1860	0	0	1667	0
Fit Permitted		0.996			0.997			0.984			0.965	
Satd. Flow (perm)	0	1887	0	0	1458	0	0	1860	0	0	1667	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		145.1			102.7			117.7			102.2	
Travel Time (s)		10.4			7.4			8.5			7.4	
Confl. Peds. (#/hr)	2		10	10		2	2		5	5		2
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	50%	3%	4%	0%	0%	0%	11%	6%	0%
Parking (#/hr)				0	0	0						
Adj. Flow (vph)	3	38	1	7	35	89	10	19	1	66	21	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	42	0	0	131	0	0	30	0	0	90	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	29.4%						ICU Level of Service A					
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
7: Victoria Street & John Street

1 Rosetta St TIS Update
Base Year PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	3	34	1	6	31	79	9	17	1	59	19	3
Future Volume (vph)	3	34	1	6	31	79	9	17	1	59	19	3
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	3	38	1	7	35	89	10	19	1	66	21	3
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	42	131	30	90								
Volume Left (vph)	3	7	10	66								
Volume Right (vph)	1	89	1	3								
Hadj (s)	0.00	-0.29	0.05	0.29								
Departure Headway (s)	4.3	3.9	4.4	4.6								
Degree Utilization, x	0.05	0.14	0.04	0.11								
Capacity (veh/h)	801	883	771	745								
Control Delay (s)	7.5	7.6	7.6	8.2								
Approach Delay (s)	7.5	7.6	7.6	8.2								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				7.8								
Level of Service				A								
Intersection Capacity Utilization				29.4%	ICU Level of Service	A						
Analysis Period (min)				15								

Queuing and Blocking Report

1 Rosetta St TIS Update
Base Year PM

Intersection: 1: Mountainview Road N & River Drive

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	LT	R	LT	TR
Maximum Queue (m)	21.4	55.0	65.6	34.5	28.8	27.0
Average Queue (m)	7.6	26.1	27.6	10.4	12.7	10.6
95th Queue (m)	17.3	45.6	51.5	24.1	23.8	23.2
Link Distance (m)	110.0	202.7	404.4	404.4	29.5	29.5
Upstream Blk Time (%)					0	0
Queuing Penalty (veh)					0	0
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 2: Mountainview Road N & John Street

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (m)	15.8	14.6	28.9	35.4	8.8	27.0
Average Queue (m)	8.6	7.9	10.9	17.2	1.0	14.4
95th Queue (m)	13.3	13.7	20.3	28.3	5.7	22.5
Link Distance (m)	84.2	165.0		191.2		166.6
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)				30.0	30.0	
Storage Blk Time (%)			0	0	0	
Queuing Penalty (veh)			0	0	0	

Intersection: 3: River Drive & Daniella Street

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (m)	1.9	9.2
Average Queue (m)	0.1	2.0
95th Queue (m)	1.3	8.0
Link Distance (m)	162.0	120.8
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report

1 Rosetta St TIS Update
Base Year PM

Intersection: 4: River Drive & Rosetta Street

Movement	SB
Directions Served	LR
Maximum Queue (m)	10.4
Average Queue (m)	1.8
95th Queue (m)	7.9
Link Distance (m)	29.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Victoria Street/River Drive & St Michaels Street

Movement	SB
Directions Served	LR
Maximum Queue (m)	12.1
Average Queue (m)	1.1
95th Queue (m)	6.5
Link Distance (m)	71.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Rosset Valley Court & John Street

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	3.5	8.2
Average Queue (m)	0.2	2.9
95th Queue (m)	2.2	9.1
Link Distance (m)	84.2	140.0
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report

1 Rosetta St TIS Update
Base Year PM

Intersection: 7: Victoria Street & John Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	11.7	19.6	11.8	26.0
Average Queue (m)	6.5	10.8	5.2	10.5
95th Queue (m)	13.3	17.1	12.7	19.1
Link Distance (m)	139.7	90.2	108.9	96.8
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 1

Appendix D

TTS Origin-Destination Data



Mon Mar 28 2022 17:13:09 GMT-0300 (Atlantic Daylight Time) - Run Time: 3532ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: 2006 GTA zone of destination - gta06_dest
Table: No. of trips made by person - n_pers_trip

RowG:
ColG:(4164)
TblG:(1-99)

Filters:
Start time of trip - start_time In 700-900

Trip 2016
Table: 1

	1
67	8
3012	23
3102	18
3196	32
3362	6
3369	13
3379	15
3386	12
3417	9
3434	58
3436	20
3620	13
3646	20
3677	9
3716	22
4034	53
4036	4
4105	17
4158	22
4159	8
4160	12
4162	63
4163	70
4164	301
4166	5
4193	8
4194	4
8021	17
8365	18

Mon Mar 28 2022 17:08:11 GMT-0300 (Atlantic Daylight Time) - Run Time: 3609ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of destination - gta06_dest

Column: 2006 GTA zone of origin - gta06_orig

Table: No. of trips made by person - n_pers_trip

RowG:

ColG:(4164)

TblG:(1-99)

Filters:

Start time of trip - start_time In 700-900

Trip 2016

Table: 1

	1
37	6
55	5
57	15
68	53
157	25
357	30
399	11
3006	90
3014	56
3343	6
3346	4
3434	70
3436	59
3480	4
3605	4
3612	87
3704	28
3721	46
3825	11
4014	45
4016	4
4029	16
4060	99
4063	13
4144	45
4145	81
4157	8
4158	12

4160	14
4161	88
4162	348
4163	256
4164	301
4168	6
4194	58
4197	38
7132	8
8415	12

Mon Mar 28 2022 17:45:42 GMT-0300 (Atlantic Daylight Time) - Run Time: 3316ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: 2006 GTA zone of destination - gta06_dest
Table: No. of trips made by person - n_pers_trip

RowG:
ColG:(4164)
TblG:(1-99)

Filters:
Start time of trip - start_time In 1500-1800

Trip 2016
Table: 1

	1
37	6
60	6
68	53
90	71
356	99
357	30
358	5
399	11
3014	56
3325	17
3328	18
3343	6
3346	4
3375	8
3429	80
3434	109
3436	59
3461	110
3480	4
3605	4
3612	33
3621	17
3633	29
3653	35
3704	56
3707	22
3721	46
3722	46

4014	45
4016	4
4060	99
4063	13
4105	5
4110	45
4127	15
4144	45
4155	20
4157	8
4161	4
4162	170
4163	207
4164	250
4168	6
4174	90
4176	41
4177	39
4183	8
4193	5
4194	142
4197	38
5153	13
6044	33
7132	8
8024	21
8144	8
8415	12
8619	71
9998	15

Mon Mar 28 2022 17:09:19 GMT-0300 (Atlantic Daylight Time) - Run Time: 3247ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of destination - gta06_dest

Column: 2006 GTA zone of origin - gta06_orig

Table: No. of trips made by person - n_pers_trip

RowG:

ColG:(4164)

TblG:(1-99)

Filters:

Start time of trip - start_time In 1500-1800

Trip 2016

Table: 1

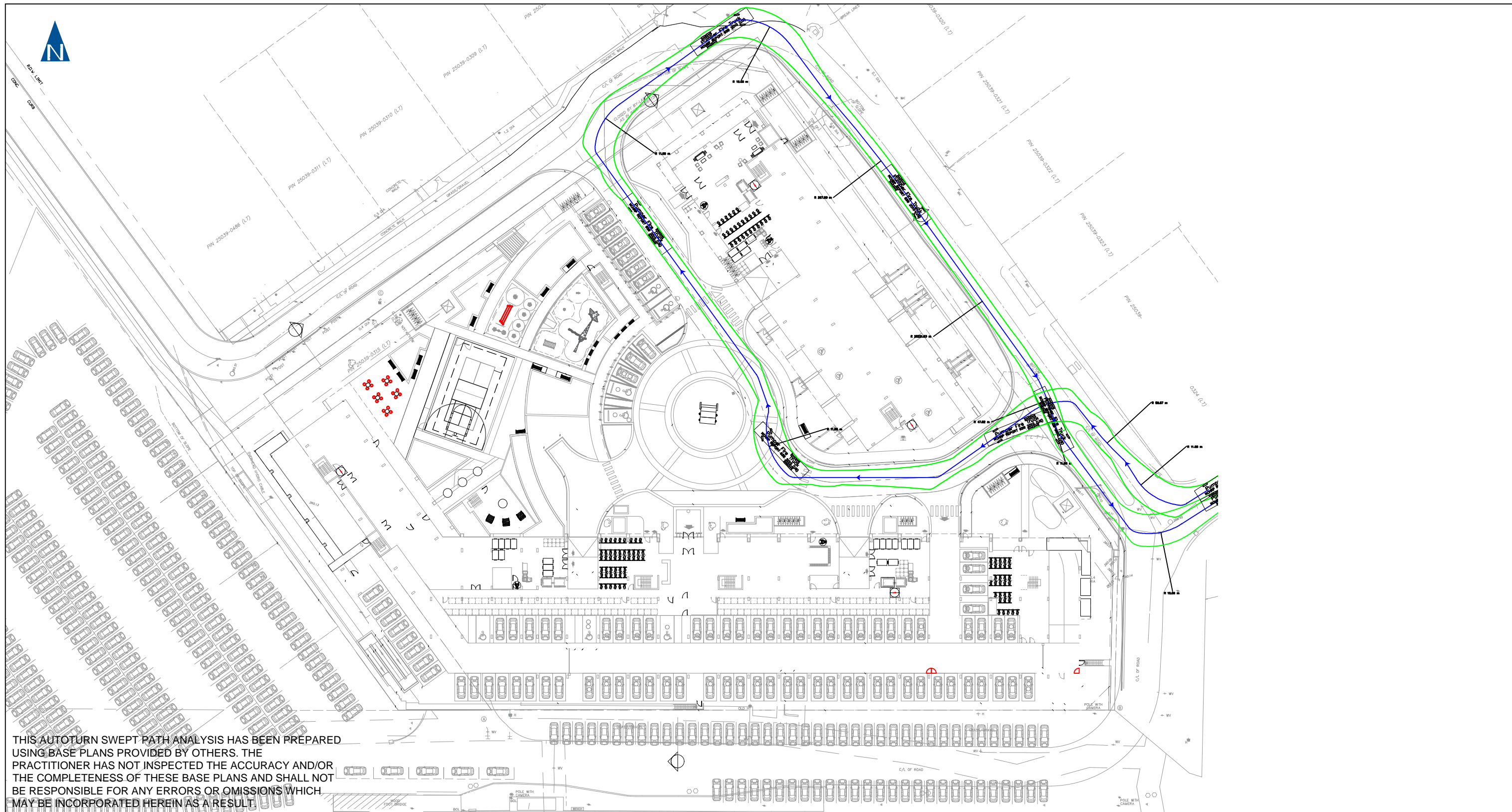
	1
67	8
3102	18
3196	32
3350	45
3362	6
3369	19
3375	13
3378	23
3379	31
3386	12
3417	19
3432	20
3436	58
3604	34
3615	28
3620	13
3621	7
3637	7
3646	20
3653	35
3707	9
4024	9
4034	56
4105	17
4119	27
4127	15
4158	22
4159	8

4160	12
4161	4
4162	126
4163	15
4164	250
4172	9
4176	91
4177	39
4193	12
4194	186
4197	12
8021	17
8365	18
8375	5
8597	20

Appendix E

AutoTURN Analysis and Signage Plan





THIS AUTOTURN SWEEP PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

NO.	DATE	INITIAL	REVISION DETAIL
4	SEPT 2024	LC	UPDATED SITE PLAN - STUDY UPDATE
3	JULY 2024	SC	UPDATED SITE PLAN - THIRD SUBMISSION
2	MAY 2023	SC	UPDATED SITE PLAN - SECOND SUBMISSION
1	MAR 2022	SC	UPDATED SITE PLAN

DESIGN VEHICLE:

Pumper Fire Truck

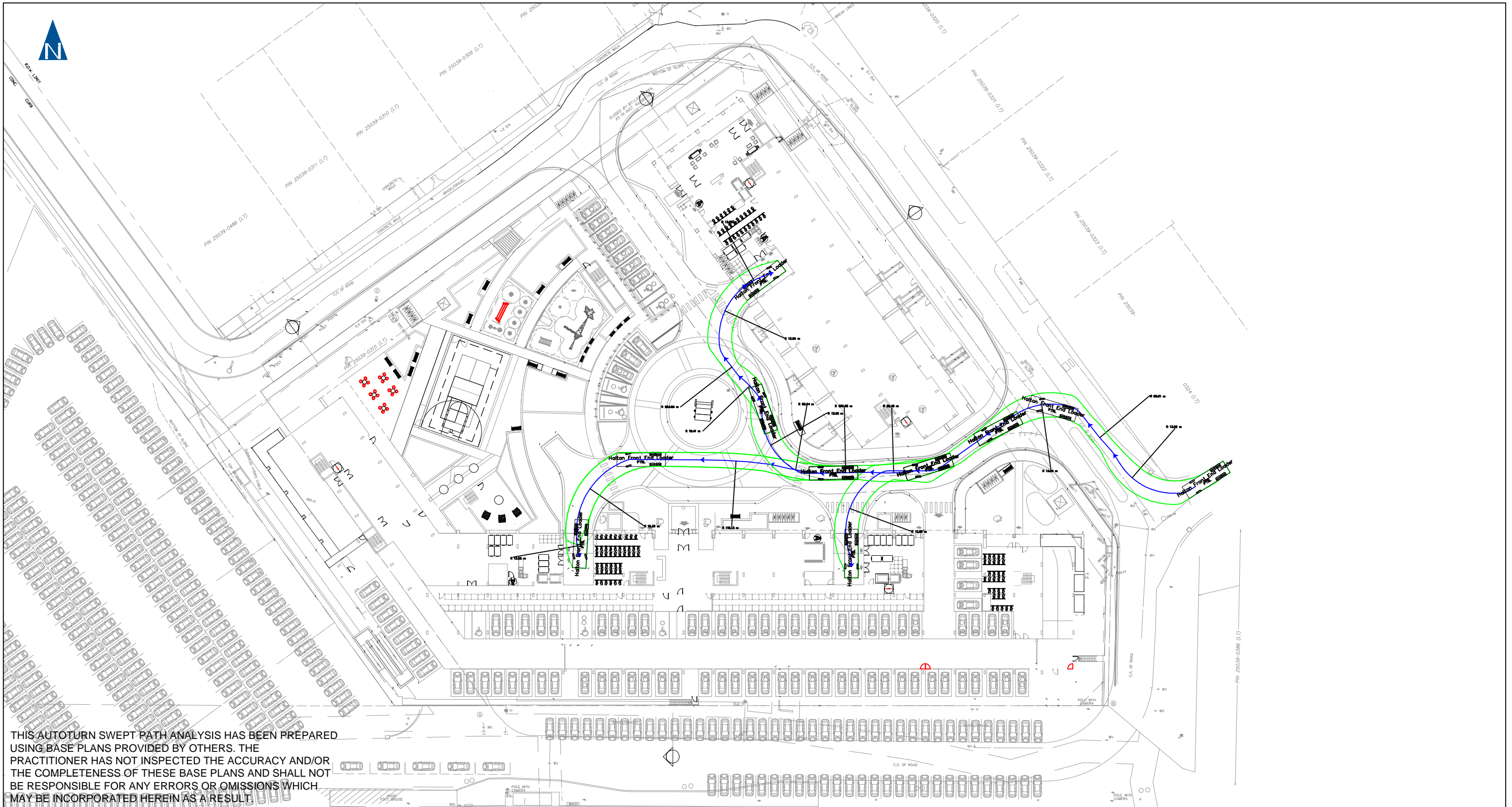
meters

- Width : 2.59
- Track : 2.59
- Lock to Lock Time : 6.0
- Steering Angle : 37.8

AUTOTURN ASSESSMENT 1 ROSETTA STREET TOWN OF HALTON HILLS (GEORGETOWN)

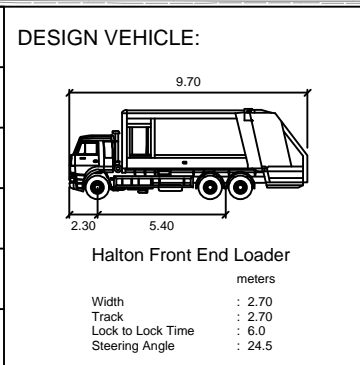


PROJECT NO.: 210781	DATE: JANUARY 2022	SCALE: 1:750	DRAWING NO.: AT1
DRAWN: SC	DESIGN: SC	CHECK: ASo	



THIS AUTOTURN SWEEP PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.


NO.	DATE	INITIAL	REVISION DETAIL
4	SEPT 2024	LC	UPDATED SITE PLAN - STUDY UPDATE
3	JULY 2024	SC	UPDATED SITE PLAN - THIRD SUBMISSION
2	MAY 2023	SC	UPDATED SITE PLAN - SECOND SUBMISSION
1	MAR 2022	SC	UPDATED SITE PLAN



AUTOTURN ASSESSMENT

1 ROSETTA STREET

TOWN OF HALTON HILLS (GEORGETOWN)

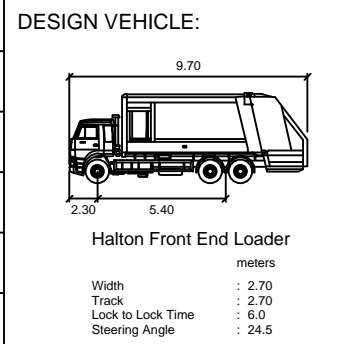


PROJECT NO.: 210781	DATE: JANUARY 2022	SCALE: 1:750	DRAWING NO.: AT2
DRAWN: SC	DESIGN: SC	CHECK: ASo	



THIS AUTOTURN SWEEP PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

NO.	DATE	INITIAL	REVISION DETAIL
4	SEPT 2024	LC	UPDATED SITE PLAN - STUDY UPDATE
3	JULY 2024	SC	UPDATED SITE PLAN - THIRD SUBMISSION
2	MAY 2023	SC	UPDATED SITE PLAN - SECOND SUBMISSION
1	MAR 2022	SC	UPDATED SITE PLAN



AUTOTURN ASSESSMENT 1 ROSETTA STREET TOWN OF HALTON HILLS (GEORGETOWN)

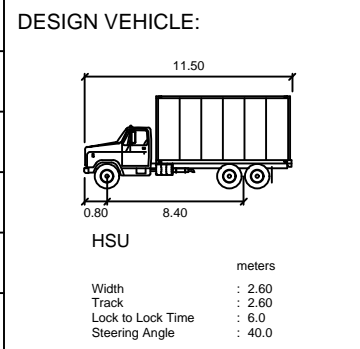


PROJECT NO.: 210781	DATE: JANUARY 2022	SCALE: 1:750	DRAWING NO.: AT3
DRAWN: SC	DESIGN: SC	CHECK: ASo	



THIS AUTOTURN SWEEP PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

NO.	DATE	INITIAL	REVISION DETAIL
4	SEPT 2024	LC	UPDATED SITE PLAN - STUDY UPDATE
3	JULY 2024	SC	UPDATED SITE PLAN - THIRD SUBMISSION
2	MAY 2023	SC	UPDATED SITE PLAN - SECOND SUBMISSION
1	MAR 2022	SC	UPDATED SITE PLAN



AUTOTURN ASSESSMENT 1 ROSETTA STREET TOWN OF HALTON HILLS (GEORGETOWN)

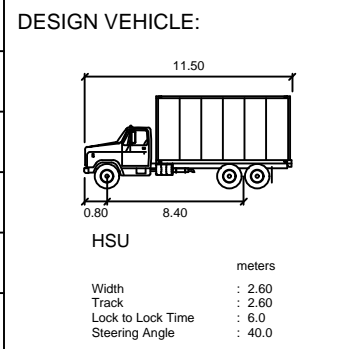


PROJECT NO.: 210781	DATE: JANUARY 2022	SCALE: 1:750	DRAWING NO.: AT4
DRAWN: SC	DESIGN: SC	CHECK: ASo	



THIS AUTOTURN SWEEP PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

NO.	DATE	INITIAL	REVISION DETAIL
4	SEPT 2024	LC	UPDATED SITE PLAN - STUDY UPDATE
3	JULY 2024	SC	UPDATED SITE PLAN - THIRD SUBMISSION
2	MAY 2023	SC	UPDATED SITE PLAN - SECOND SUBMISSION
1	MAR 2022	SC	UPDATED SITE PLAN



AUTOTURN ASSESSMENT 1 ROSETTA STREET TOWN OF HALTON HILLS (GEORGETOWN)

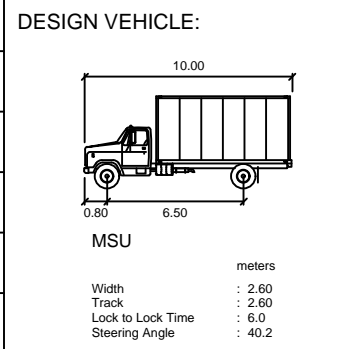


PROJECT NO.: 210781	DATE: JANUARY 2022	SCALE: 1:750	DRAWING NO.: AT5
DRAWN: SC	DESIGN: SC	CHECK: ASo	



THIS AUTOTURN SWEEP PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

NO.	DATE	INITIAL	REVISION DETAIL
4	SEPT 2024	LC	UPDATED SITE PLAN - STUDY UPDATE
3	JULY 2024	SC	UPDATED SITE PLAN - THIRD SUBMISSION
2	MAY 2023	SC	UPDATED SITE PLAN - SECOND SUBMISSION
1	MAR 2022	SC	UPDATED SITE PLAN



AUTOTURN ASSESSMENT 1 ROSETTA STREET TOWN OF HALTON HILLS (GEORGETOWN)

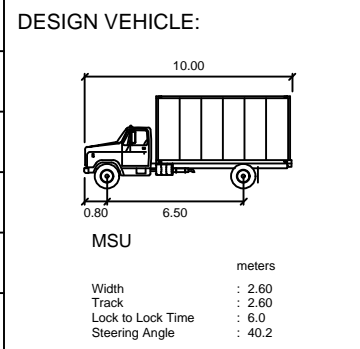


PROJECT NO.: 210781	DATE: JANUARY 2022	SCALE: 1:750	DRAWING NO.: AT7
DRAWN: SC	DESIGN: SC	CHECK: ASo	



THIS AUTOTURN SWEEP PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

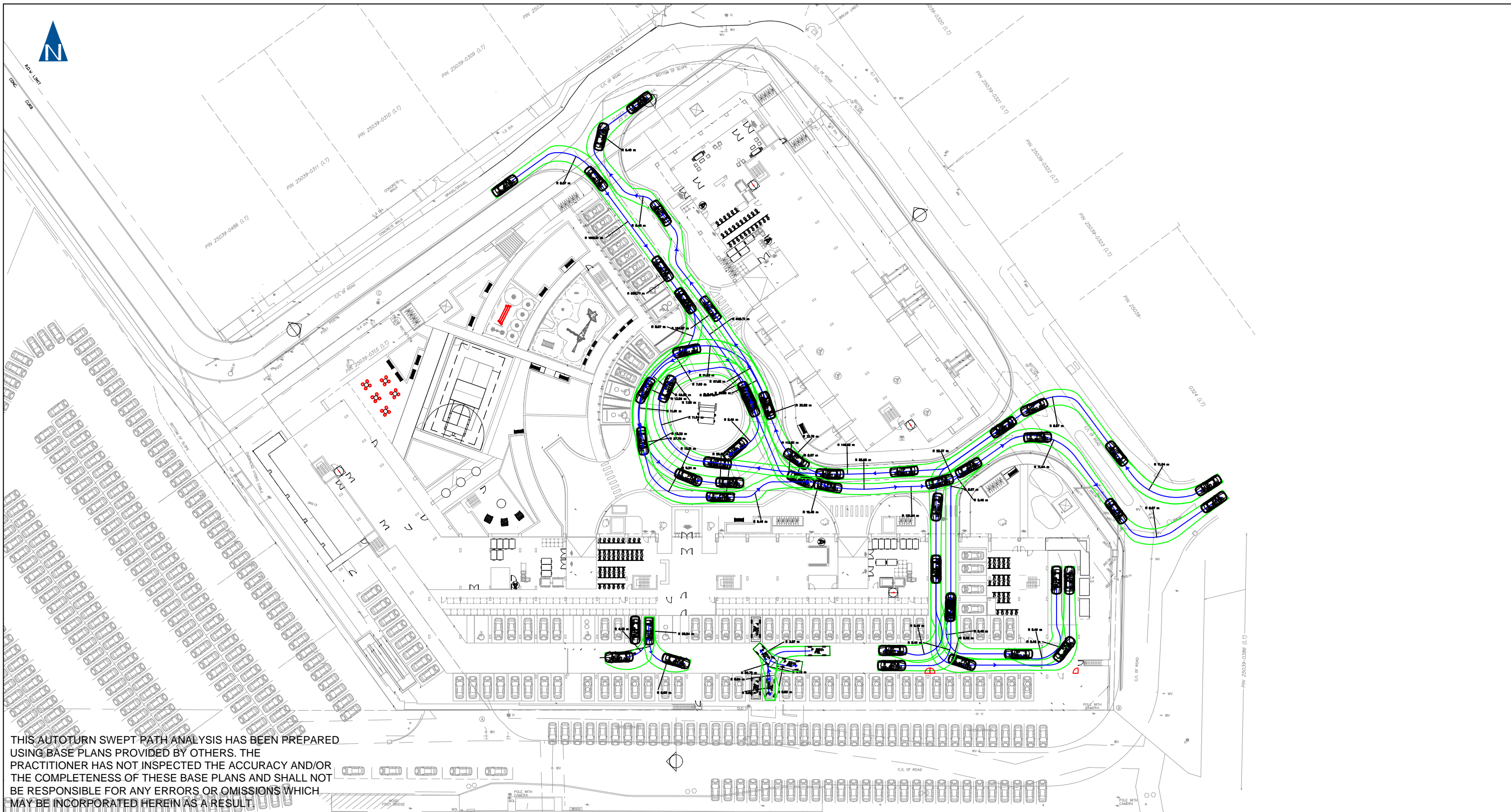
NO.	DATE	INITIAL	REVISION DETAIL
4	SEPT 2024	LC	UPDATED SITE PLAN - STUDY UPDATE
3	JULY 2024	SC	UPDATED SITE PLAN - THIRD SUBMISSION
2	MAY 2023	SC	UPDATED SITE PLAN - SECOND SUBMISSION
1	MAR 2022	SC	UPDATED SITE PLAN



AUTOTURN ASSESSMENT 1 ROSETTA STREET TOWN OF HALTON HILLS (GEORGETOWN)



PROJECT NO.: 210781	DATE: JANUARY 2022	SCALE: 1:750	DRAWING NO.: AT8
DRAWN: SC	DESIGN: SC	CHECK: ASo	



THIS AUTOTURN SWEEP PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

NO.	DATE	INITIAL	REVISION DETAIL
4	SEPT 2024	LC	UPDATED SITE PLAN - STUDY UPDATE
3	JULY 2024	SC	UPDATED SITE PLAN - THIRD SUBMISSION
2	MAY 2023	SC	UPDATED SITE PLAN - SECOND SUBMISSION
1	MAR 2022	SC	UPDATED SITE PLAN

DESIGN VEHICLE:

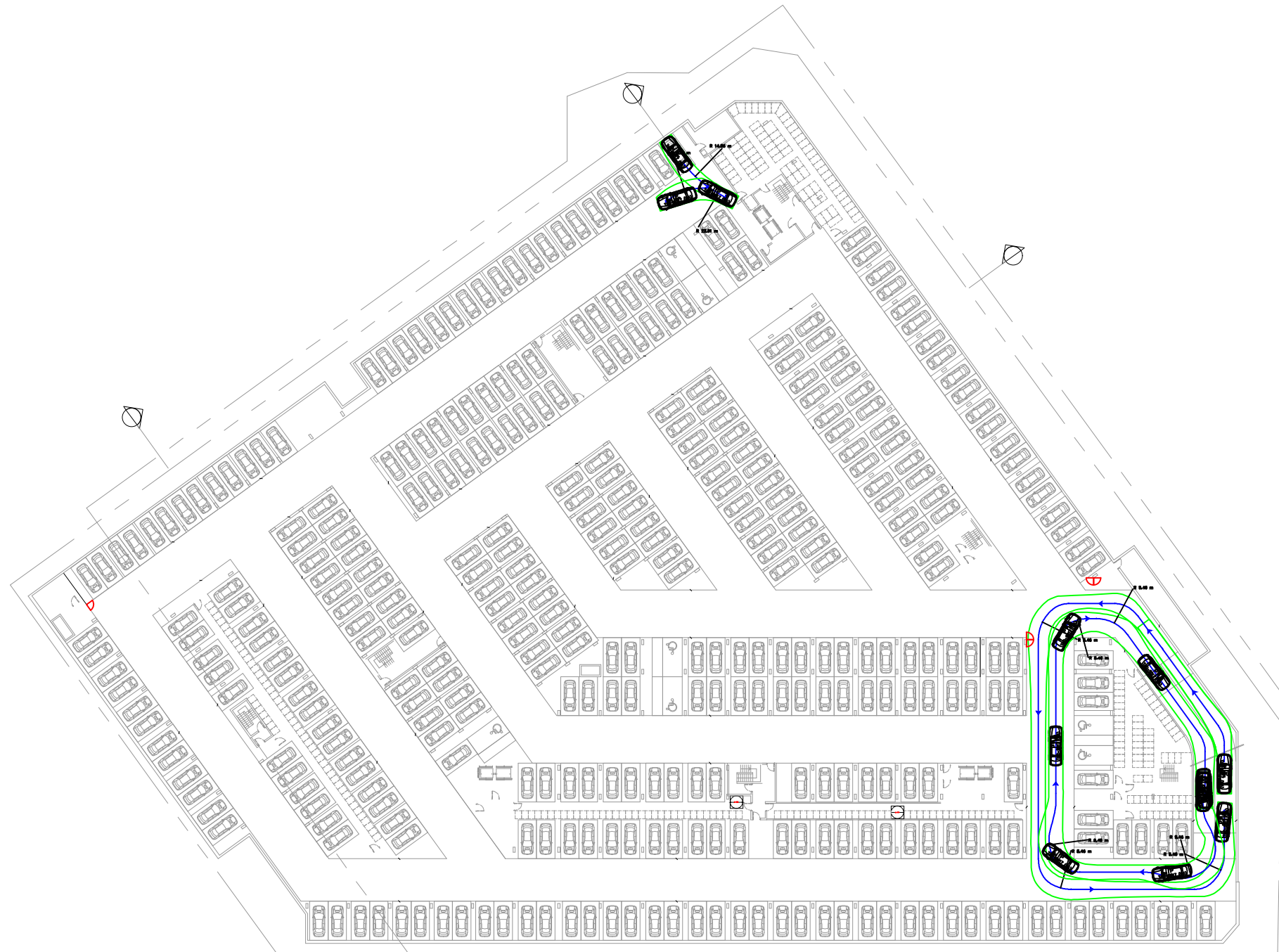
P

Width : 2.00 meters
 Track : 2.00
 Lock to Lock Time : 6.0
 Steering Angle : 35.9

AUTOTURN ASSESSMENT 1 ROSETTA STREET TOWN OF HALTON HILLS (GEORGETOWN)



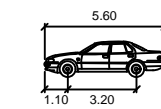
PROJECT NO.: 210781	DATE: JANUARY 2022	SCALE: 1:750	DRAWING NO.: AT9
DRAWN: SC	DESIGN: SC	CHECK: ASo	



THIS AUTOTURN SWEEP PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

4	SEPT 2024	LC	UPDATED SITE PLAN - STUDY UPDATE
3	JULY 2024	SC	UPDATED SITE PLAN - THIRD SUBMISSION
2	MAY 2023	SC	UPDATED SITE PLAN - SECOND SUBMISSION
1	MAR 2022	SC	UPDATED SITE PLAN
NO.	DATE	INITIAL	REVISION DETAIL

DESIGN VEHICLE:



P
 Width : 2.00
 Track : 2.00
 Lock to Lock Time : 6.0
 Steering Angle : 35.9

AUTOTURN ASSESSMENT
 1 ROSETTA STREET
 TOWN OF HALTON HILLS (GEORGETOWN)



PROJECT NO.: 210781

DATE: JANUARY 2022

SCALE: 1:750

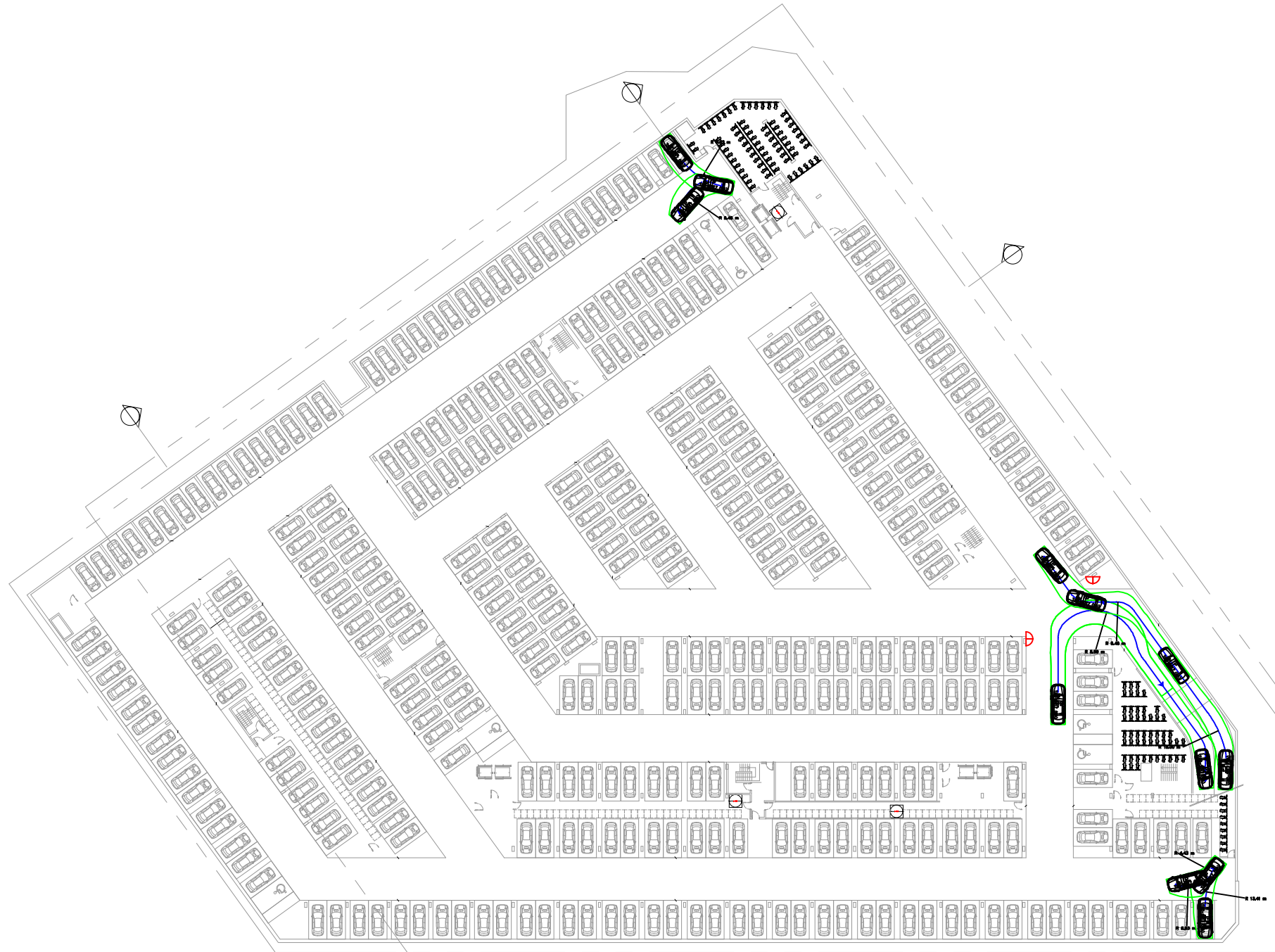
DRAWING NO.:

DRAWN: SC

DESIGN: SC

CHECK: ASo

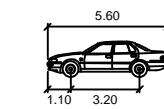
AT10



THIS AUTOTURN SWEEP PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

NO.	DATE	INITIAL	REVISION DETAIL
4	SEPT 2024	LC	UPDATED SITE PLAN - STUDY UPDATE
3	JULY 2024	SC	UPDATED SITE PLAN - THIRD SUBMISSION
2	MAY 2023	SC	UPDATED SITE PLAN - SECOND SUBMISSION
1	MAR 2022	SC	UPDATED SITE PLAN

DESIGN VEHICLE:



P
 Width : 2.00 meters
 Track : 2.00
 Lock to Lock Time : 6.0
 Steering Angle : 35.9

AUTOTURN ASSESSMENT 1 ROSETTA STREET TOWN OF HALTON HILLS (GEORGETOWN)



PROJECT NO.: 210781

DATE: JANUARY 2022

SCALE: 1:750

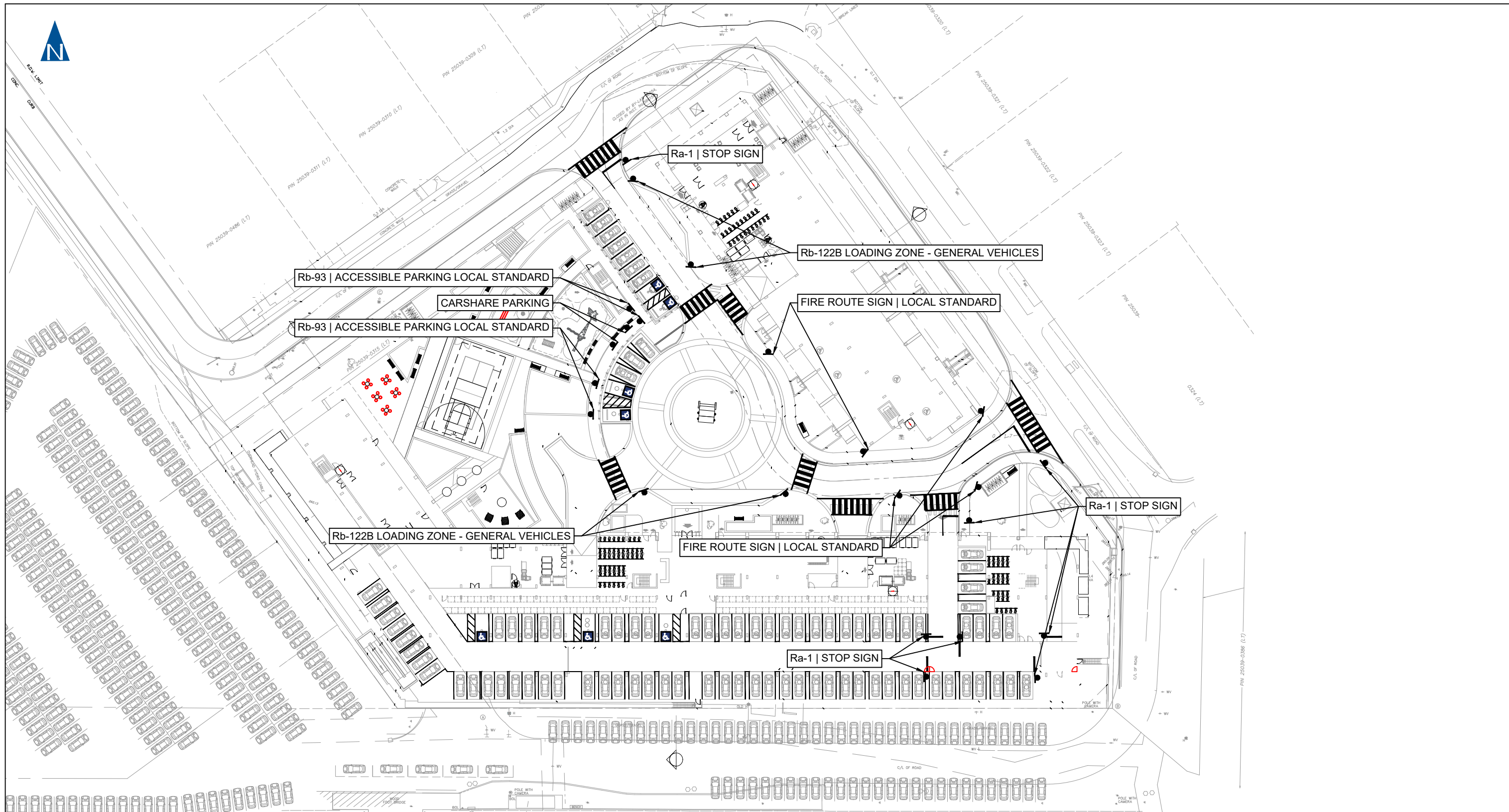
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AT11

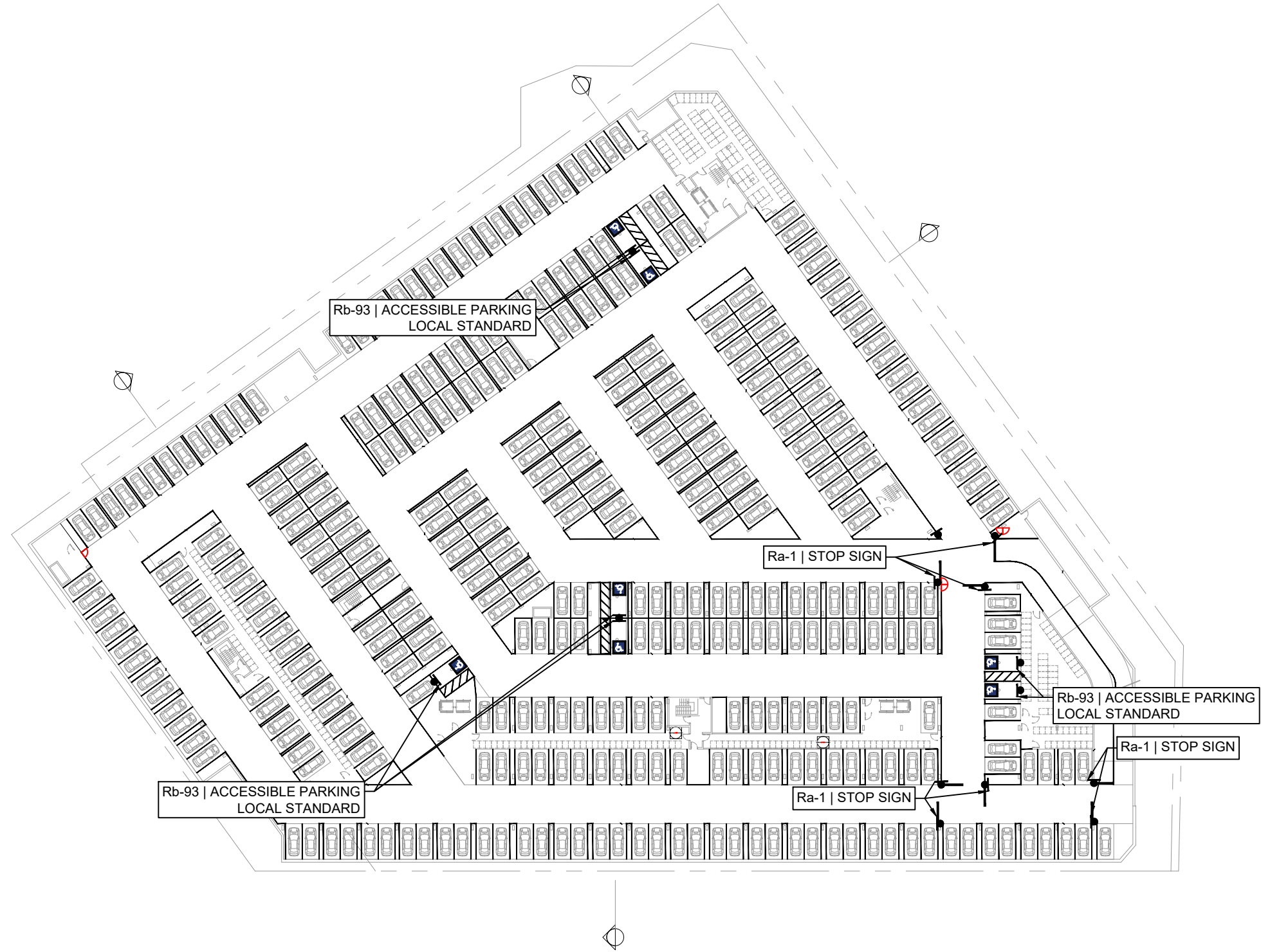


NO.	DATE	INITIAL	REVISION DETAIL
3	SEPT 2024	LC	UPDATED SITE PLAN - STUDY UPDATE
2	MAY 2023	SC	UPDATED SITE PLAN - SECOND SUBMISSION
1	MAR 2022	SC	UPDATED SITE PLAN

**SIGNAGE PLAN AT GRADE
1 ROSETTA STREET
TOWN OF HALTON HILLS (GEORGETOWN)**



PROJECT NO.: 210781	DATE: JANUARY 2022	SCALE: 1:750	DRAWING NO.: SP1
DRAWN: SC	DESIGN: SC	CHECK: ASo	



NO.	DATE	INITIAL	REVISION DETAIL
3	SEPT 2024	LC	UPDATED SITE PLAN - STUDY UPDATE
2	MAY 2023	SC	UPDATED SITE PLAN - SECOND SUBMISSION
1	MAR 2022	SC	UPDATED SITE PLAN

SIGNAGE PLAN UG1
1 ROSETTA STREET
TOWN OF HALTON HILLS (GEORGETOWN)



PROJECT NO.: 210781

DATE: JANUARY 2022

SCALE: 1:750

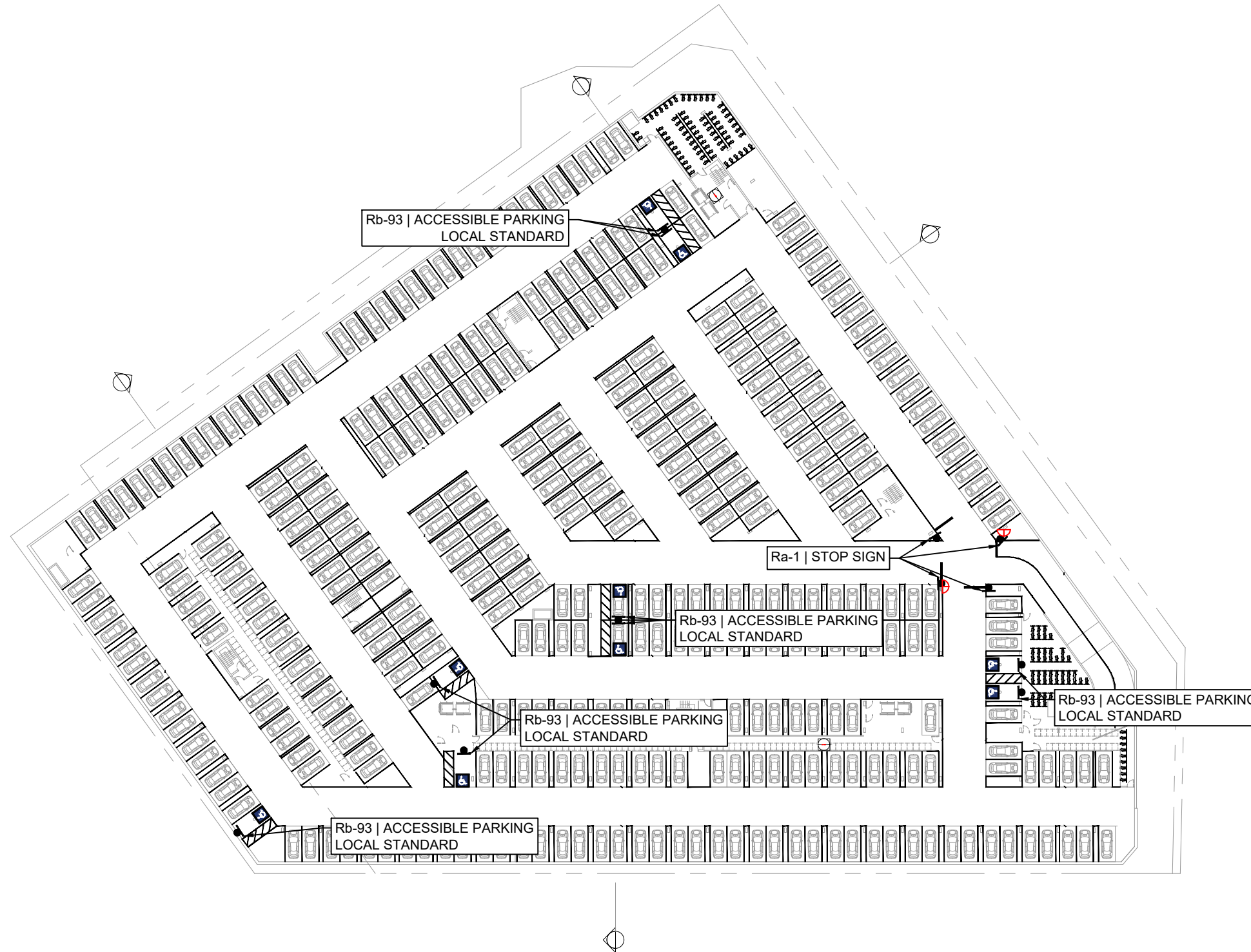
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DRAWN: SC

DESIGN: SC

CHECK: ASo

SP2

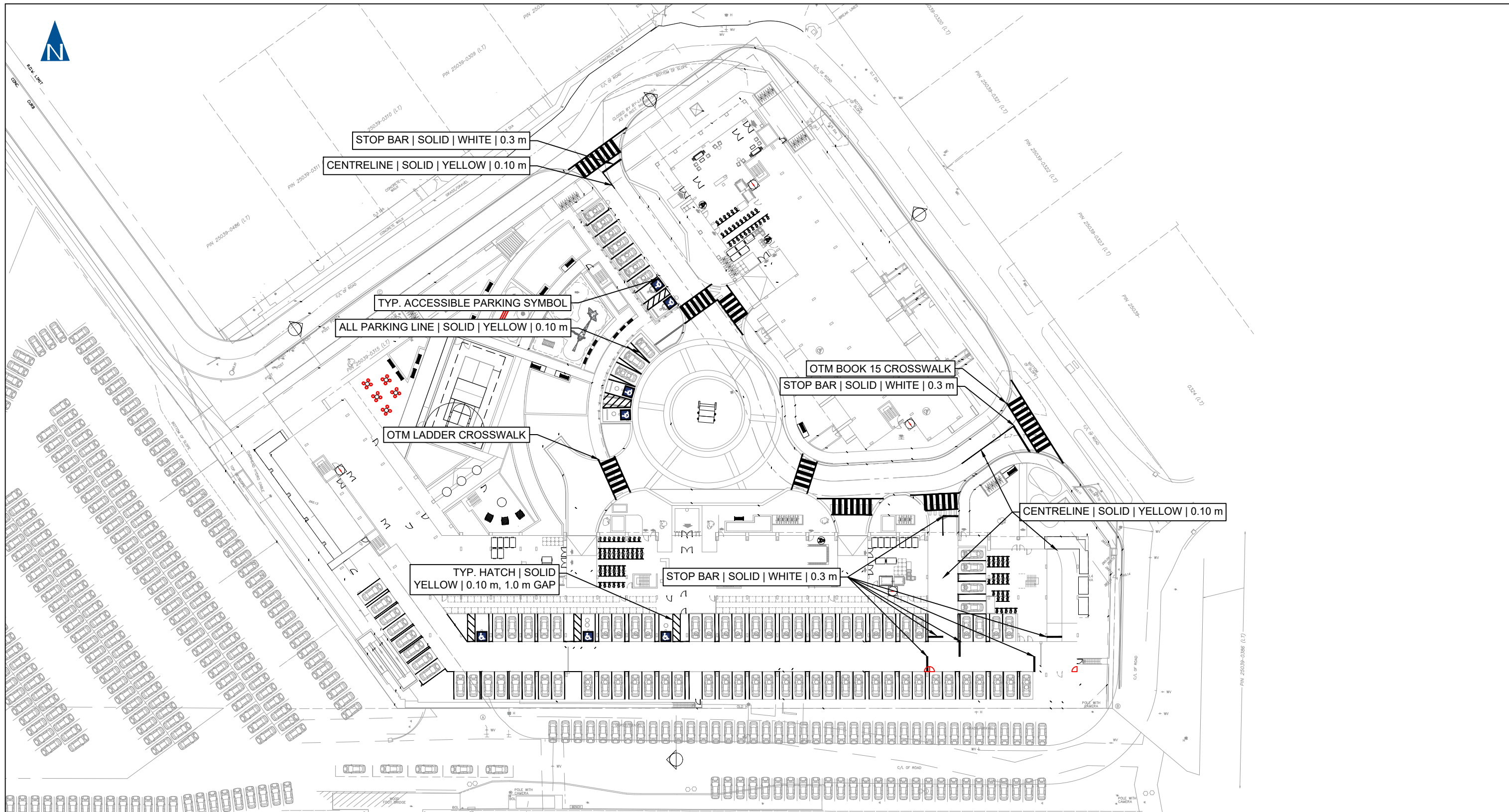


NO.	DATE	INITIAL	REVISION DETAIL
3	SEPT 2024	LC	UPDATED SITE PLAN - STUDY UPDATE
2	MAY 2023	SC	UPDATED SITE PLAN - SECOND SUBMISSION
1	MAR 2022	SC	UPDATED SITE PLAN

SIGNAGE PLAN UG2
1 ROSETTA STREET
TOWN OF HALTON HILLS (GEORGETOWN)



PROJECT NO.: 210781	DATE: JANUARY 2022	SCALE: 1:750	DRAWING NO.: SP3
DRAWN: SC	DESIGN: SC	CHECK: ASo	

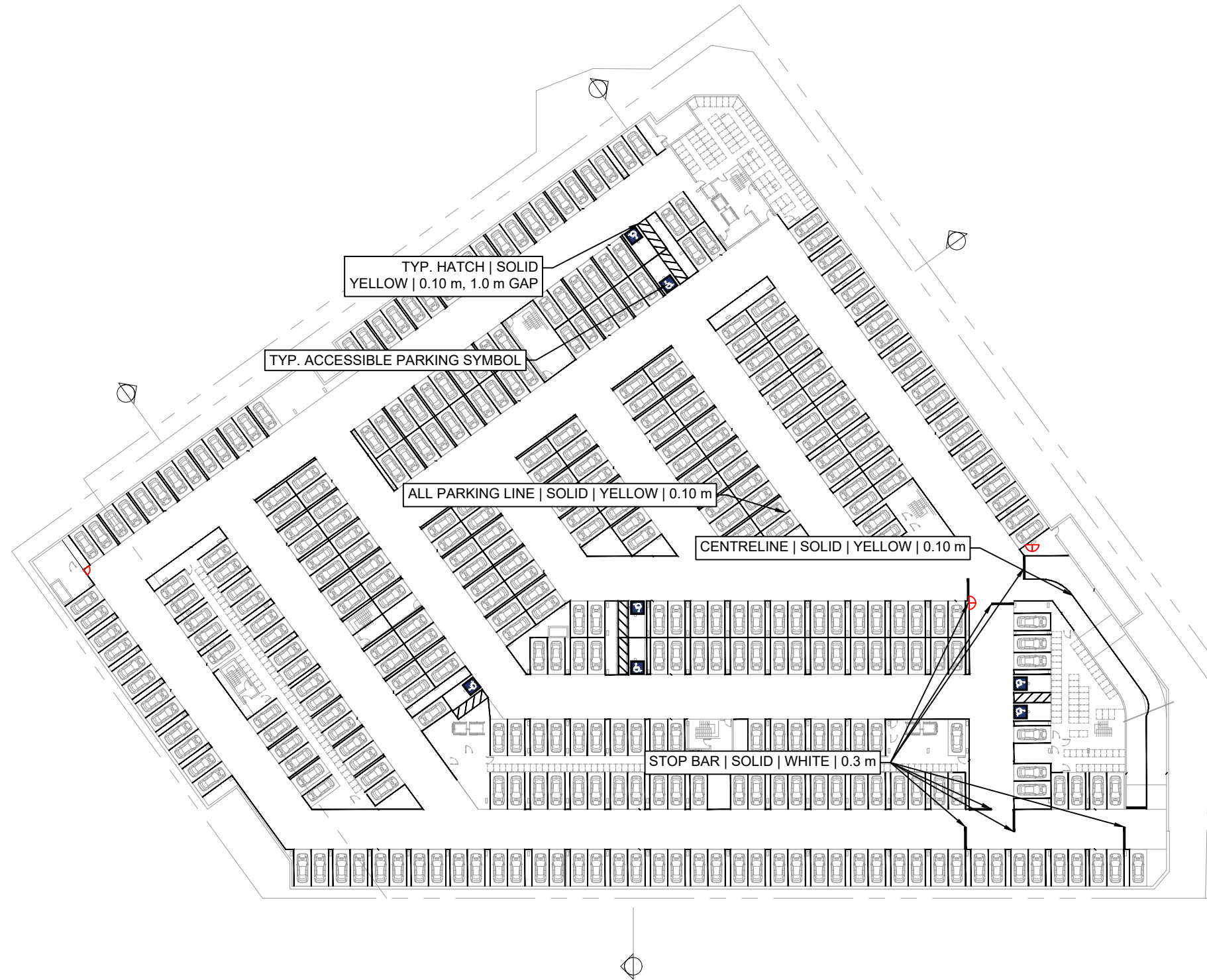


NO.	DATE	INITIAL	REVISION DETAIL
3	SEPT 2024	LC	UPDATED SITE PLAN - STUDY UPDATE
2	MAY 2023	SC	UPDATED SITE PLAN - SECOND SUBMISSION
1	MAR 2022	SC	UPDATED SITE PLAN

**PAVEMENT MARKING PLAN AT GRADE
1 ROSETTA STREET
TOWN OF HALTON HILLS (GEORGETOWN)**



PROJECT NO.: 210781	DATE: JANUARY 2022	SCALE: 1:750	DRAWING NO.: SP4
DRAWN: SC	DESIGN: SC	CHECK: ASo	



NO.	DATE	INITIAL	REVISION DETAIL
3	SEPT 2024	LC	UPDATED SITE PLAN - STUDY UPDATE
2	MAY 2023	SC	UPDATED SITE PLAN - SECOND SUBMISSION
1	MAR 2022	SC	UPDATED SITE PLAN

PAVEMENT MARKING PLAN UG1
1 ROSETTA STREET
TOWN OF HALTON HILLS (GEORGETOWN)



PROJECT NO.: 210781

DATE: JANUARY 2022

SCALE: 1:750

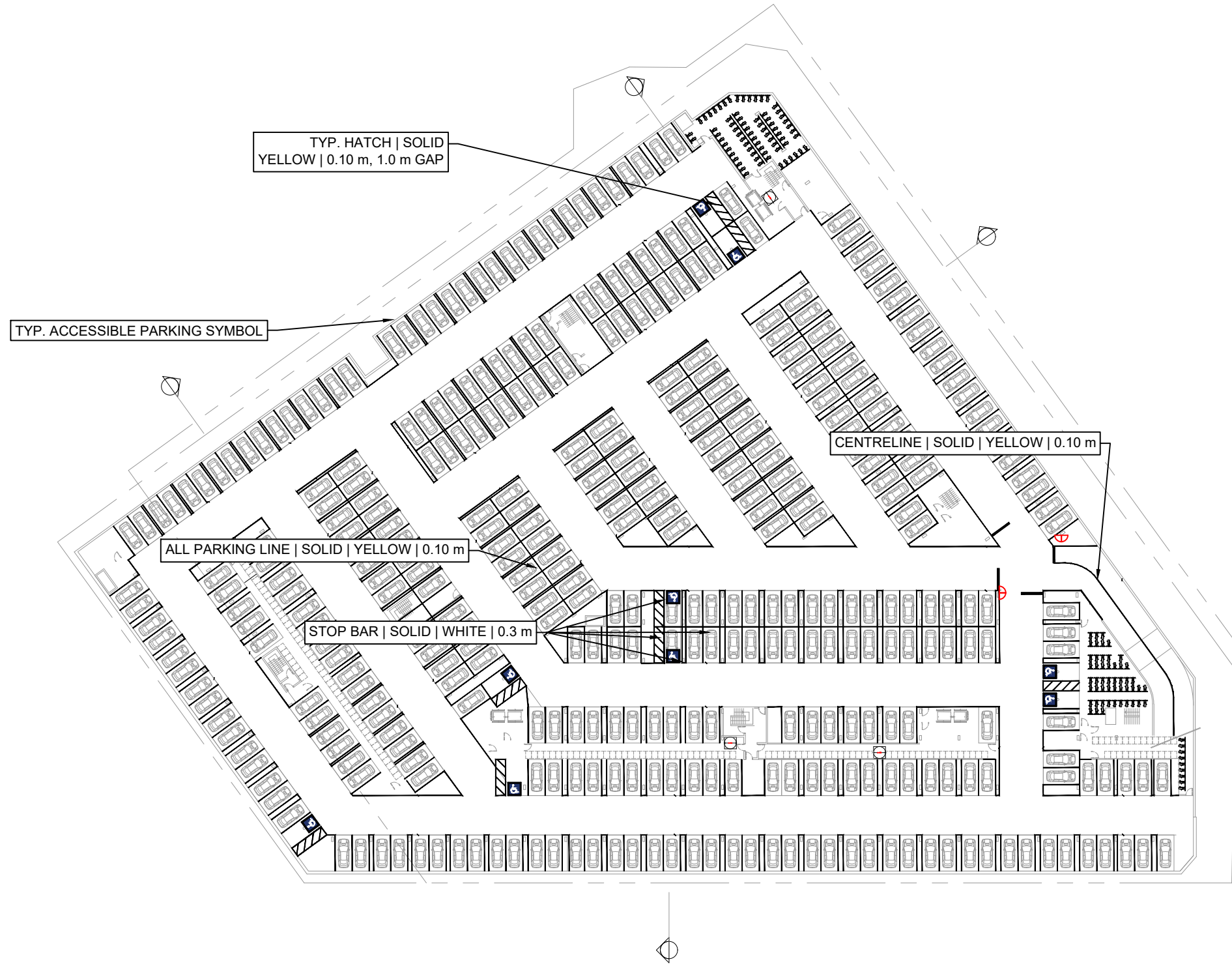
DRAWING NO.:

DRAWN: SC

DESIGN: SC

CHECK: ASo

SP5



NO.	DATE	INITIAL	REVISION DETAIL
3	SEPT 2024	LC	UPDATED SITE PLAN - STUDY UPDATE
2	MAY 2023	SC	UPDATED SITE PLAN - SECOND SUBMISSION
1	MAR 2022	SC	UPDATED SITE PLAN

PAVEMENT MARKING PLAN UG2
1 ROSETTA STREET
TOWN OF HALTON HILLS (GEORGETOWN)



PROJECT NO.: 210781

DATE: JANUARY 2022

SCALE: 1:750

DRAWING NO.:

DRAWN: SC

DESIGN: SC

CHECK: ASo

SP6

NOTES

EXISTING SIGN LOCATIONS TO BE CONFIRMED IN FIELD.

ONLY FIGURED DIMENSIONS ARE TO BE REFERENCED. ALL DIMENSIONS TO BE CONFIRMED IN FIELD.

ALL TRAFFIC SIGNS AND PAVEMENT MARKINGS MUST COMPLY WITH OTM.

SIGNAGE NOTES

REGULATORY SIGNS SHALL NORMALLY BE LOCATED IN ACCORDANCE WITH SECTION 12 (SIGN POSITION) OF BOOK 1B. HOWEVER, SPECIFIC OR ADDITIONAL REQUIREMENTS FOR CERTAIN REGULATORY SIGNS MAY PRE-EMPT OR REVISE DIRECTIONS OR SPECIFICATIONS PRESCRIBED UNDER THE GENERAL STANDARDS IN BOOK 1B. SUCH DEVIATIONS OR EXCEPTIONS FROM THE BOOK 1B LOCATION PRINCIPLES ARE NOTED IN THIS BOOK UNDER THE HEADING "LOCATION CRITERIA" FOR THE RESPECTIVE SIGNS TO WHICH THEY APPLY. IF FOR A GIVEN SIGN, EXCEPTIONS ARE NOT NOTED UNDER THIS HEADING, THE BOOK 1B LOCATION PRINCIPLES APPLY.

SIGNAGE POSITION NOTES

SIGNAGE SHOULD CONFORM TO ONTARIO TRAFFIC MANUAL STANDARDS WHERE POSSIBLE.

HORIZONTAL MOUNTING OFFSET

THE BASIC GUIDELINES FOR HORIZONTAL MOUNTING OFFSETS ARE AS FOLLOWS:

- URBAN OR RESIDENTIAL AREAS WITH RAISED CURBS: 30 CM TO 2 M FROM THE CURB LINE.

WHERE RESTRICTED BY PHYSICAL FEATURES SUCH AS CLIFFS, OR STRUCTURE FEATURES SUCH AS BRIDGE SUPPORTS, THE HORIZONTAL OFFSET SHOULD BE AS CLOSE AS POSSIBLE TO THE ABOVE GUIDELINES.

VERTICAL MOUNTING OFFSET

THE BASIC GUIDELINES FOR VERTICAL MOUNTING OFFSETS OF GROUND-MOUNTED SIGNS INCLUDE THE FOLLOWING:

- AREAS WITH NO PEDESTRIANS AND WITHOUT RAISED CURBS: 1.5 M TO 2.5 M FROM OUTER EDGE OF OUTER LANE TO BOTTOM OF PRINCIPAL SIGN, REGARDLESS OF WHETHER

THERE IS A TAB SIGN MOUNTED BENEATH PRINCIPAL SIGN.

- AREAS WITH NO PEDESTRIANS AND WITH RAISED CURBS: 1.5 M TO 2.5 M FROM CURB LINE TO BOTTOM OF PRINCIPAL SIGN, REGARDLESS OF WHETHER THERE IS A TAB SIGN MOUNTED BENEATH PRINCIPAL SIGN.
- AREAS WITH PEDESTRIANS: 2 M TO 3 M FROM GROUND ELEVATION AT THE BASE OF THE SIGN POST TO THE BOTTOM OF THE OVERALL SIGN, INCLUDING TAB IF PRESENT.

HORIZONTAL & VERTICAL ANGLING OF SIGN FACE

GENERALLY, SIGNS MUST BE MOUNTED AT APPROXIMATELY RIGHT ANGLES TO THE DIRECTION OF TRAFFIC, FACING THE TRAFFIC THAT THEY ARE INTENDED TO ADDRESS. EXCEPTIONS TO THIS RULE INCLUDE REGULATORY PARKING CONTROL SIGNS. THESE SIGNS SHOULD BE PLACED AT AN ANGLE OF 30 TO 45 DEGREES TO THE FLOW OF TRAFFIC, AND SHOULD ALWAYS BE VISIBLE TO APPROACHING TRAFFIC.

SIGN MOUNTING

MOUNTING TO BE DETERMINED IN FIELD.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL EXISTING SERVICES AND UTILITIES IN WORKING AREA PRIOR TO CONSTRUCTION AND SHALL PROTECT THESE UTILITIES AND SERVICES TO THE SATISFACTION OF THE CONCERNED UTILITY COMPANIES AND OWNER. DAMAGES BY THE CONTRACTOR SHALL BE RESTORED TO THE SATISFACTION OF THE CONCERNED UTILITY COMPANY AT NO EXPENSE TO THE OWNER

PAVEMENT MARKING NOTES

PROVINCIAL LEGISLATION PROVIDES THAT MARKINGS MAY BE PLACED BY THE ROAD AUTHORITY HAVING JURISDICTION FOR THE PURPOSE OF REGULATING, WARNING OR GUIDING TRAFFIC (SECTION 182 OF THE HIGHWAY TRAFFIC ACT (R.S.O. 1990)).

PAVEMENT AND CURB MARKINGS, BEING EXCLUSIVELY WITHIN THE BOUNDARIES OF PUBLIC HIGHWAYS, SHOULD ONLY BE PLACED BY THE ROAD AUTHORITY. DELINEATORS AND OBJECT MARKERS THAT ARE WITHIN THE HIGHWAY RIGHT-OF-WAY ARE SUBJECT TO THE SAME JURISDICTIONAL REGULATIONS.

MARKINGS AND DELINEATION SERVE AN ADVISORY OR WARNING FUNCTION, AND DO NOT HAVE LEGAL FORCE OF THEIR OWN. THEY MAY BE USED TO COMPLEMENT OTHER TRAFFIC CONTROL DEVICES

ENFORCEABLE UNDER THE HTA, ITS REGULATIONS, OR A MUNICIPAL BY-LAW, BUT THEIR ENFORCEABILITY DERIVES FROM THE MAIN REGULATORY TRAFFIC CONTROL DEVICE, NOT FROM THE MARKINGS OR DELINEATION. TO AVOID POSSIBLE CONFLICT OR CONFUSION, THE MEANING OF MARKINGS AND DELINEATION SHOULD BE CHECKED AGAINST THE PREVAILING TRAFFIC LAWS AND REGULATIONS BEFORE THEY ARE INSTALLED OR REMOVED

SIGNAGE LEGEND

SIGN DETAIL	NAME
	Ra-1 STOP SIGN
	Rb-122B LOADING ZONE - GENERAL VEHICLES
	Rb-93 ACCESSIBLE PARKING PERMIT SIGN
	CUSTOM SIGN CARSHARE
	FIRE ROUTE (LOCAL STANDARD)

NO.	DATE	INITIAL	REVISION DETAIL
3	SEPT 2024	LC	UPDATED SITE PLAN - STUDY UPDATE
2	MAY 2023	SC	UPDATED SITE PLAN - SECOND SUBMISSION
1	MAR 2022	SC	UPDATED SITE PLAN

**SIGNAGE AND PAVEMENT MARKING PLAN NOTES
1 ROSETTA STREET
TOWN OF HALTON HILLS (GEORGETOWN)**

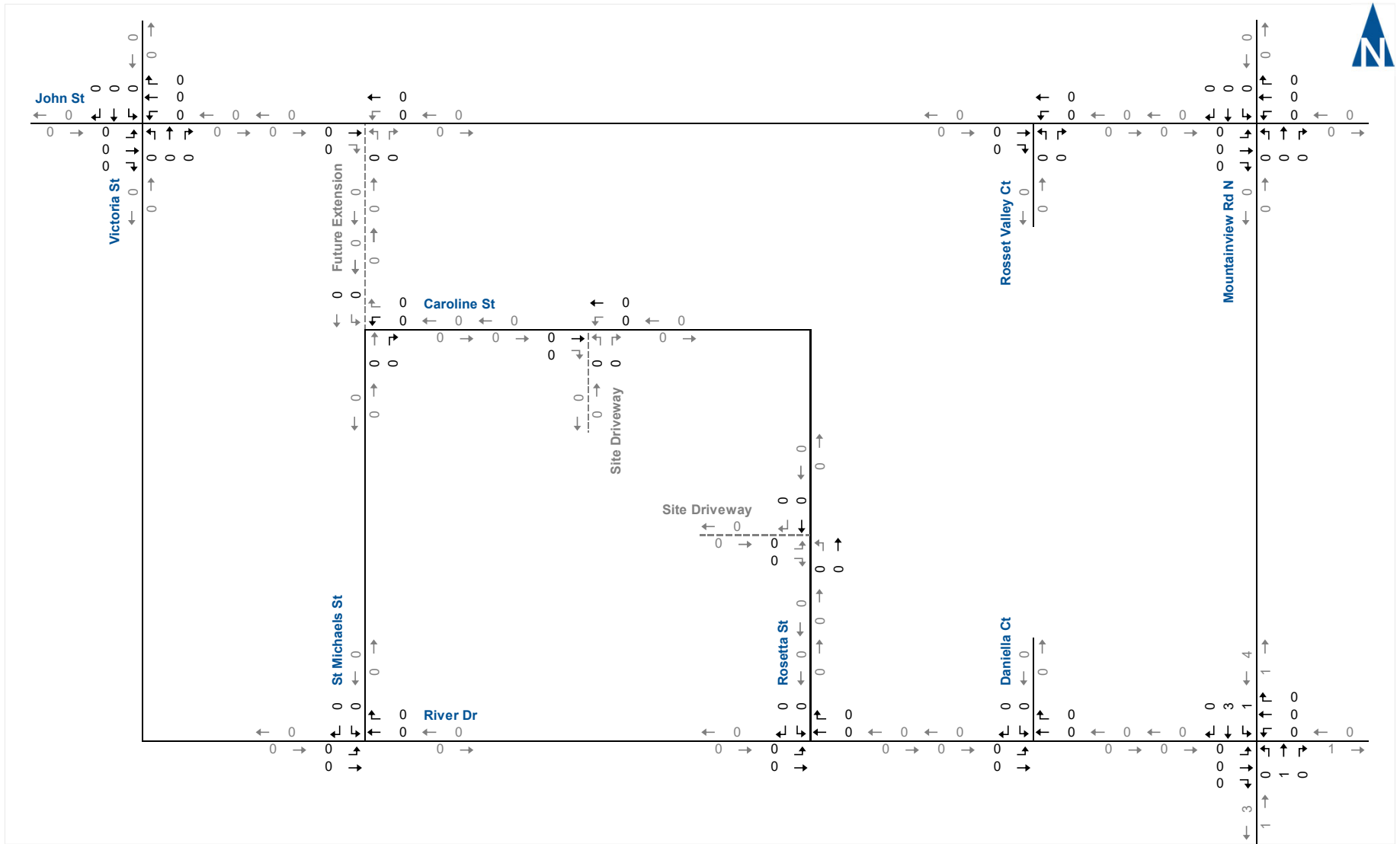


PROJECT NO.: 210781	DATE: JANUARY 2022	SCALE: 1:750	DRAWING NO.: SP7
DRAWN: SC	DESIGN: SC	CHECK: ASo	

Appendix F

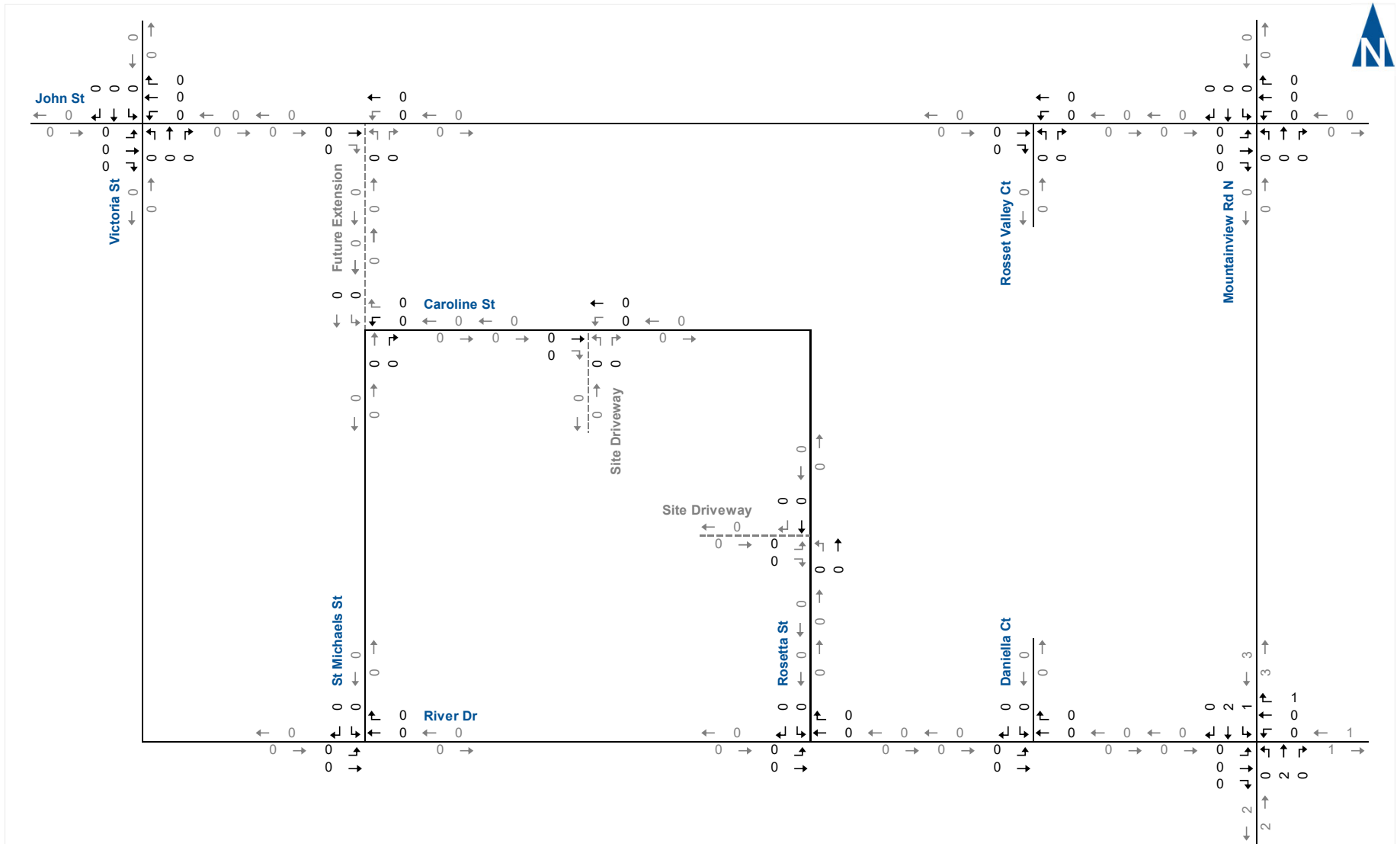
Background Development Traffic Volumes





167-171 Mountainview Road North

AM Peak Hour



167-171 Mountainview Road North

Appendix G

Five-Year Background Traffic Operations



Lanes, Volumes, Timings
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Background AM (Five-Year)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	
Traffic Volume (vph)	1	11	48	150	7	27	12	299	161	48	516	5
Future Volume (vph)	1	11	48	150	7	27	12	299	161	48	516	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		1.00			1.00				0.97		1.00	
Frt		0.892			0.980				0.850		0.999	
Flt Protected		0.999			0.961			0.998			0.996	
Satd. Flow (prot)	0	1491	0	0	1365	0	0	1786	1380	0	3484	0
Flt Permitted		0.995			0.722			0.970			0.891	
Satd. Flow (perm)	0	1485	0	0	1026	0	0	1735	1346	0	3116	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		51			12				171			1
Link Speed (k/h)		50			50				50			50
Link Distance (m)		127.8			212.6				412.3			41.4
Travel Time (s)		9.2			15.3				29.7			3.0
Confl. Peds. (#/hr)	5					5			4	4		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	17%	35%	40%	5%	11%	6%	17%	12%	2%	33%
Adj. Flow (vph)	1	12	51	160	7	29	13	318	171	51	549	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	64	0	0	196	0	0	331	171	0	605	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			4			2		2		2
Permitted Phases	4			4			2		2	2		
Detector Phase	4	4		4	4		2	2	2	2		2
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		30.0	30.0	30.0	30.0		30.0
Minimum Split (s)	36.1	36.1		36.1	36.1		36.5	36.5	36.5	36.5		36.5
Total Split (s)	35.0	35.0		35.0	35.0		45.0	45.0	45.0	45.0		45.0
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.3%	56.3%	56.3%	56.3%		56.3%
Maximum Green (s)	28.9	28.9		28.9	28.9		38.5	38.5	38.5	38.5		38.5
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	2.1	2.1		2.1	2.1		2.0	2.0	2.0	2.0		2.0
Lost Time Adjust (s)		3.0			3.0			3.0	3.0	3.0		3.0
Total Lost Time (s)		9.1			9.1			9.5	9.5	9.5		9.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.5	4.5	4.5	4.5		4.5
Recall Mode	None	None		None	None		Max	Max	Max	Max		Max
Walk Time (s)	10.0	10.0		10.0	10.0		14.0	14.0	14.0	14.0		14.0
Flash Dont Walk (s)	20.0	20.0		20.0	20.0		16.0	16.0	16.0	16.0		16.0
Pedestrian Calls (#/hr)	5	5		5	5		4	4	4	4		4
Act Effct Green (s)		15.2			15.2			38.0	38.0			38.0
Actuated g/C Ratio		0.21			0.21			0.53	0.53			0.53
v/c Ratio		0.18			0.87			0.36	0.22			0.37
Control Delay		9.6			58.2			13.0	3.1			12.1
Queue Delay		0.0			0.0			0.0	0.0			0.0

Lanes, Volumes, Timings
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Background AM (Five-Year)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		9.6			58.2			13.0	3.1			12.1
LOS		A			E			B	A			B
Approach Delay		9.6			58.2			9.6				12.1
Approach LOS		A			E			A				B
Queue Length 50th (m)		1.3			22.9			23.2	0.0			22.4
Queue Length 95th (m)		9.3			44.0			55.0	10.2			46.4
Internal Link Dist (m)		103.8			188.6			388.3				17.4
Turn Bay Length (m)												
Base Capacity (vph)		574			381			917	792			1647
Starvation Cap Reductn		0			0			0	0			0
Spillback Cap Reductn		0			0			0	0			0
Storage Cap Reductn		0			0			0	0			0
Reduced v/c Ratio		0.11			0.51			0.36	0.22			0.37
Intersection Summary												
Area Type:	Other											
Cycle Length:	80											
Actuated Cycle Length:	71.9											
Natural Cycle:	75											
Control Type:	Semi Act-Uncoord											
Maximum v/c Ratio:	0.87											
Intersection Signal Delay:	17.7						Intersection LOS: B					
Intersection Capacity Utilization:	85.3%						ICU Level of Service E					
Analysis Period (min):	15											
Splits and Phases: 1: Mountainview Road N & River Drive												

HCM Signalized Intersection Capacity Analysis
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Background AM (Five-Year)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	
Traffic Volume (vph)	1	11	48	150	7	27	12	299	161	48	516	5
Future Volume (vph)	1	11	48	150	7	27	12	299	161	48	516	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Total Lost time (s)	9.1			9.1			9.5			9.5		
Lane Util. Factor	1.00			1.00			1.00			0.95		
Frbp, ped/bikes	1.00			1.00			1.00			0.98		
Flpb, ped/bikes	1.00			1.00			1.00			1.00		
Frt	0.89			0.98			1.00			0.85		
Flt Protected	1.00			0.96			1.00			1.00		
Satd. Flow (prot)	1492			1365			1786			1346		
Flt Permitted	0.99			0.72			0.97			1.00		
Satd. Flow (perm)	1485			1025			1735			1346		
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	1	12	51	160	7	29	13	318	171	51	549	5
RTOR Reduction (vph)	0	40	0	0	9	0	0	0	80	0	0	0
Lane Group Flow (vph)	0	24	0	0	187	0	0	331	91	0	605	0
Confl. Peds. (#/hr)	5			5			4			4		
Heavy Vehicles (%)	0%	0%	17%	35%	40%	5%	11%	6%	17%	12%	2%	33%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	4			4			2			2		
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	18.2			18.2			41.0			41.0		
Effective Green, g (s)	15.2			15.2			38.0			38.0		
Actuated g/C Ratio	0.21			0.21			0.53			0.53		
Clearance Time (s)	6.1			6.1			6.5			6.5		
Vehicle Extension (s)	3.0			3.0			4.5			4.5		
Lane Grp Cap (vph)	314			216			918			712		
v/s Ratio Prot												
v/s Ratio Perm	0.02			c0.18			0.19			0.07		
v/c Ratio	0.08			0.86			0.36			0.13		
Uniform Delay, d1	22.7			27.3			9.8			8.5		
Progression Factor	1.00			1.00			1.00			1.00		
Incremental Delay, d2	0.1			28.1			1.1			0.4		
Delay (s)	22.8			55.4			10.9			8.9		
Level of Service	C			E			B			A		
Approach Delay (s)	22.8			55.4			10.2			10.5		
Approach LOS	C			E			B			B		

Intersection Summary			
HCM 2000 Control Delay	17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	71.8	Sum of lost time (s)	18.6
Intersection Capacity Utilization	85.3%	ICU Level of Service	E
Analysis Period (min)	15		

Lanes, Volumes, Timings
2: Mountainview Road N & John Street

1 Rosetta St TIS Update
Background AM (Five-Year)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	
Traffic Volume (vph)	21	10	106	26	14	11	63	240	22	22	427	23
Future Volume (vph)	21	10	106	26	14	11	63	240	22	22	427	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	0.0	0.0	0.0	0.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0	0.0
Storage Lanes	0	0	0	0	0	1	0	1	0	1	0	0
Taper Length (m)	2.5		2.5		2.5		2.5		2.5		2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt	0.896			0.971			0.988			0.992		
Flt Protected	0.993			0.975			0.950			0.950		
Satd. Flow (prot)	0	1635	0	0	1707	0	1544	1792	0	1646	1816	0
Flt Permitted	0.993			0.975			0.950			0.950		
Satd. Flow (perm)	0	1635	0	0	1707	0	1544	1792	0	1646	1816	0
Link Speed (k/h)	50			50			50			50		
Link Distance (m)	95.5			171.9			203.3			171.8		
Travel Time (s)	6.9			12.4			14.6			12.4		
Confl. Peds. (#/hr)	2			5			9			9		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	7%	0%	3%	5%	0%	13%	13%	4%	13%	6%	4%	0%
Adj. Flow (vph)	22	11	113	28	15	12	67	255	23	23	454	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	146	0	0	55	0	67	278	0	23	478	0
Sign Control	Stop			Stop			Stop			Stop		

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	54.4%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
2: Mountainview Road N & John Street

1 Rosetta St TIS Update
Background AM (Five-Year)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↖	↗		↖	↗	
Sign Control	Stop			Stop			Stop	Stop		Stop	Stop	
Traffic Volume (vph)	21	10	106	26	14	11	63	240	22	22	427	23
Future Volume (vph)	21	10	106	26	14	11	63	240	22	22	427	23
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	22	11	113	28	15	12	67	255	23	23	454	24
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total (vph)	146	55	67	278	23	478						
Volume Left (vph)	22	28	67	0	23	0						
Volume Right (vph)	113	12	0	23	0	24						
Hadj (s)	-0.38	0.06	0.72	0.02	0.60	0.03						
Departure Headway (s)	5.8	6.4	6.5	5.7	6.2	5.6						
Degree Utilization, x	0.23	0.10	0.12	0.44	0.04	0.74						
Capacity (veh/h)	557	485	534	603	562	626						
Control Delay (s)	10.5	10.1	9.1	12.1	8.2	21.8						
Approach Delay (s)	10.5	10.1	11.5	21.1								
Approach LOS	B	B	B	C								
Intersection Summary												
Delay			15.9									
Level of Service			C									
Intersection Capacity Utilization			54.4%		ICU Level of Service		A					
Analysis Period (min)			15									

Lanes, Volumes, Timings
3: River Drive & Daniella Street

1 Rosetta St TIS Update
Background AM (Five-Year)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Volume (vph)	3	63	16	3	10	4
Future Volume (vph)	3	63	16	3	10	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.982			0.960
Fit Protected			0.998			0.966
Satd. Flow (prot)	0	1591	1452	0	1762	0
Fit Permitted			0.998			0.966
Satd. Flow (perm)	0	1591	1452	0	1762	0
Link Speed (k/h)			50			50
Link Distance (m)			172.1			127.8
Travel Time (s)			12.4			9.2
Confl. Peds. (#/hr)	3				3	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	20%	33%	0%	0%	0%
Adj. Flow (vph)	3	73	19	3	12	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	76	22	0	17	0
Sign Control	Free		Free			Stop
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	20.8%		ICU Level of Service A			
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
3: River Drive & Daniella Street

1 Rosetta St TIS Update
Background AM (Five-Year)

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	3	63	16	3	10	4
Future Volume (Veh/h)	3	63	16	3	10	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	3	73	19	3	12	5
Pedestrians					3	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			128			
pX, platoon unblocked						
vC, conflicting volume	25				102	24
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	25				102	24
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1598				897	1056
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	76	22	17			
Volume Left	3	0	12			
Volume Right	0	3	5			
cSH	1598	1700	938			
Volume to Capacity	0.00	0.01	0.02			
Queue Length 95th (m)	0.0	0.0	0.4			
Control Delay (s)	0.3	0.0	8.9			
Lane LOS	A		A			
Approach Delay (s)	0.3	0.0	8.9			
Approach LOS			A			
Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utilization		20.8%		ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
4: River Drive & Rosetta Street

1 Rosetta St TIS Update
Background AM (Five-Year)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	0	55	11	3	5	0
Future Volume (vph)	0	55	11	3	5	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Fr _t			0.973			
Fit Protected					0.950	
Satd. Flow (prot)	0	1583	1422	0	1805	0
Fit Permitted					0.950	
Satd. Flow (perm)	0	1583	1422	0	1805	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		46.1	172.1		38.0	
Travel Time (s)		3.3	12.4		2.7	
Confl. Peds. (#/hr)					2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	20%	25%	50%	0%	0%
Adj. Flow (vph)	0	61	12	3	6	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	61	15	0	6	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	18.3%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
4: River Drive & Rosetta Street

1 Rosetta St TIS Update
Background AM (Five-Year)

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	0	55	11	3	5	0
Future Volume (Veh/h)	0	55	11	3	5	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	61	12	3	6	0
Pedestrians			2			
Lane Width (m)			3.6			
Walking Speed (m/s)			1.1			
Percent Blockage			0			
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			300			
pX, platoon unblocked					76	14
vC, conflicting volume	15					
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	15				76	14
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1616				930	1072
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	61	15	6			
Volume Left	0	0	6			
Volume Right	0	3	0			
eSH	1616	1700	930			
Volume to Capacity	0.00	0.01	0.01			
Queue Length 95th (m)	0.0	0.0	0.1			
Control Delay (s)	0.0	0.0	8.9			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	8.9			
Approach LOS			A			
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization		18.3%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
5: Victoria Street/River Drive & St Michaels Street

1 Rosetta St TIS Update
Background AM (Five-Year)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	1	51	5	1	1	0
Future Volume (vph)	1	51	5	1	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.981			
Fit Protected		0.999			0.950	
Satd. Flow (prot)	0	1668	1535	0	1805	0
Fit Permitted		0.999			0.950	
Satd. Flow (perm)	0	1668	1535	0	1805	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		118.5	126.7		89.7	
Travel Time (s)		8.5	9.1		6.5	
Confl. Peds. (#/hr)	3			3	1	1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	14%	25%	0%	0%	0%
Adj. Flow (vph)	1	60	6	1	1	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	61	7	0	1	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	19.6%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
 5: Victoria Street/River Drive & St Michaels Street

1 Rosetta St TIS Update
 Background AM (Five-Year)

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	1	51	5	1	1	0
Future Volume (Veh/h)	1	51	5	1	1	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	1	60	6	1	1	0
Pedestrians		1	1		3	
Lane Width (m)		3.6	3.6		3.6	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	10				72	10
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	10				72	10
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1618				932	1073
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	61	7	1			
Volume Left	1	0	1			
Volume Right	0	1	0			
cSH	1618	1700	932			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.1	0.0	8.9			
Lane LOS	A		A			
Approach Delay (s)	0.1	0.0	8.9			
Approach LOS			A			
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization		19.6%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
 6: Rosset Valley Court & John Street

1 Rosetta St TIS Update
 Background AM (Five-Year)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕			↕	↕	
Traffic Volume (vph)	106	0	19	80	4	23
Future Volume (vph)	106	0	19	80	4	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.886	
Fit Protected				0.991	0.992	
Satd. Flow (prot)	1827	0	0	1568	1670	0
Fit Permitted				0.991	0.992	
Satd. Flow (perm)	1827	0	0	1568	1670	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	368.0			95.5	146.5	
Travel Time (s)	26.5			6.9	10.5	
Confl. Peds. (#/hr)		8	8			
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	4%	0%	0%	10%	0%	0%
Parking (#/hr)				0	0	
Adj. Flow (vph)	125	0	22	94	5	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	125	0	0	116	32	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	26.9%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
6: Rosset Valley Court & John Street

1 Rosetta St TIS Update
Background AM (Five-Year)

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	106	0	19	80	4	23
Future Volume (Veh/h)	106	0	19	80	4	23
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	125	0	22	94	5	27
Pedestrians					8	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.1	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			133		271	133
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			133		271	133
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
pD queue free %			98		99	97
cM capacity (veh/h)			1454		707	915
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	125	116	32			
Volume Left	0	22	5			
Volume Right	0	0	27			
sSH	1700	1454	875			
Volume to Capacity	0.07	0.02	0.04			
Queue Length 95th (m)	0.0	0.4	0.9			
Control Delay (s)	0.0	1.5	9.3			
Lane LOS		A	A			
Approach Delay (s)	0.0	1.5	9.3			
Approach LOS			A			
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization		26.9%		ICU Level of Service		A
Analysis Period (min)			15			


Lanes, Volumes, Timings
7: Victoria Street & John Street

1 Rosetta St TIS Update
Background AM (Five-Year)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	19	4	5	26	58	5	8	0	78	27	5
Future Volume (vph)	0	19	4	5	26	58	5	8	0	78	27	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.975			0.912							0.994
Fit Protected					0.997			0.980				0.966
Satd. Flow (prot)	0	1852	0	0	1421	0	0	1862	0	0	1762	0
Fit Permitted					0.997			0.980				0.966
Satd. Flow (perm)	0	1852	0	0	1421	0	0	1862	0	0	1762	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		145.1			102.7			117.7			102.2	
Travel Time (s)		10.4			7.4			8.5			7.4	
Confl. Peds. (#/hr)	2		5	5		2	2		7	7		2
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	0%	50%	0%	10%	0%	0%	0%	5%	0%	0%
Parking (#/hr)				0	0	0						
Adj. Flow (vph)	0	22	5	6	30	67	6	9	0	90	31	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	27	0	0	103	0	0	15	0	0	127	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	32.3%			ICU Level of Service A								
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
7: Victoria Street & John Street

1 Rosetta St TIS Update
Background AM (Five-Year)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	0	19	4	5	26	58	5	8	0	78	27	5
Future Volume (vph)	0	19	4	5	26	58	5	8	0	78	27	5
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	0	22	5	6	30	67	6	9	0	90	31	6
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	27	103	15	127								
Volume Left (vph)	0	6	6	90								
Volume Right (vph)	5	67	0	6								
Hadj (s)	-0.11	-0.22	0.08	0.17								
Departure Headway (s)	4.2	4.0	4.4	4.4								
Degree Utilization, x	0.03	0.12	0.02	0.15								
Capacity (veh/h)	815	858	780	799								
Control Delay (s)	7.4	7.6	7.5	8.2								
Approach Delay (s)	7.4	7.6	7.5	8.2								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				7.8								
Level of Service				A								
Intersection Capacity Utilization				32.3%	ICU Level of Service	A						
Analysis Period (min)				15								

Queuing and Blocking Report

1 Rosetta St TIS Update
Background AM (Five-Year)

Intersection: 1: Mountainview Road N & River Drive

Movement	EB	WB	NB	NB	SB	SB	B25
Directions Served	LTR	LTR	LT	R	LT	TR	T
Maximum Queue (m)	24.3	61.6	57.0	26.4	39.2	35.5	11.5
Average Queue (m)	7.9	32.7	21.1	8.9	19.7	18.6	0.4
95th Queue (m)	18.3	55.6	41.6	19.5	34.8	32.1	5.0
Link Distance (m)	110.0	202.7	404.4	404.4	29.5	29.5	191.2
Upstream Blk Time (%)					1	1	
Queuing Penalty (veh)					3	2	
Storage Bay Dist (m)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: Mountainview Road N & John Street

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (m)	21.4	17.6	29.6	37.7	10.1	52.3
Average Queue (m)	11.3	8.4	10.2	18.3	4.8	23.6
95th Queue (m)	17.8	15.9	20.7	28.6	12.1	40.4
Link Distance (m)	84.2	165.0		191.2		166.6
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)				30.0	30.0	
Storage Blk Time (%)			0	0	3	
Queuing Penalty (veh)			0	0	1	

Intersection: 3: River Drive & Daniella Street

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (m)	1.8	10.3
Average Queue (m)	0.1	3.4
95th Queue (m)	1.2	10.6
Link Distance (m)	162.0	120.8
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report

1 Rosetta St TIS Update
Background AM (Five-Year)

Intersection: 4: River Drive & Rosetta Street

Movement	SB
Directions Served	LR
Maximum Queue (m)	9.2
Average Queue (m)	1.2
95th Queue (m)	6.3
Link Distance (m)	29.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Victoria Street/River Drive & St Michaels Street

Movement	SB
Directions Served	LR
Maximum Queue (m)	2.8
Average Queue (m)	0.2
95th Queue (m)	2.1
Link Distance (m)	71.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Rosset Valley Court & John Street

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	7.3	8.2
Average Queue (m)	0.7	4.7
95th Queue (m)	4.8	10.9
Link Distance (m)	84.2	140.0
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report

1 Rosetta St TIS Update
Background AM (Five-Year)

Intersection: 7: Victoria Street & John Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	10.5	26.8	9.0	17.6
Average Queue (m)	4.6	11.2	3.1	10.5
95th Queue (m)	12.0	20.3	9.9	16.1
Link Distance (m)	139.7	90.2	108.9	96.8
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 6

Lanes, Volumes, Timings
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Background PM (Five-Year)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	
Traffic Volume (vph)	3	14	60	185	16	67	34	507	189	33	389	7
Future Volume (vph)	3	14	60	185	16	67	34	507	189	33	389	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99			0.99			1.00	0.97		1.00	
Frt		0.895			0.966			0.850	0.997		0.997	
Flt Protected		0.998			0.967			0.997	0.996		0.996	
Satd. Flow (prot)	0	1567	0	0	1665	0	0	1817	1302	0	3428	0
Flt Permitted		0.985			0.740			0.944	0.871		0.871	
Satd. Flow (perm)	0	1547	0	0	1273	0	0	1720	1261	0	2997	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		67			22			210	3			
Link Speed (k/h)		50			50			50				
Link Distance (m)		127.8			212.6			412.3			41.4	
Travel Time (s)		9.2			15.3			29.7			3.0	
Confl. Peds. (#/hr)	13		1	1		13	2		9	9		2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	50%	0%	7%	8%	0%	2%	8%	4%	24%	0%	5%	0%
Adj. Flow (vph)	3	16	67	206	18	74	38	563	210	37	432	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	86	0	0	298	0	0	601	210	0	477	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			4			2		2		2
Permitted Phases	4			4			2		2	2		
Detector Phase	4	4		4	4		2	2	2	2		2
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		30.0	30.0	30.0	30.0		30.0
Minimum Split (s)	36.1	36.1		36.1	36.1		36.5	36.5	36.5	36.5		36.5
Total Split (s)	35.0	35.0		35.0	35.0		45.0	45.0	45.0	45.0		45.0
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.3%	56.3%	56.3%	56.3%		56.3%
Maximum Green (s)	28.9	28.9		28.9	28.9		38.5	38.5	38.5	38.5		38.5
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	2.1	2.1		2.1	2.1		2.0	2.0	2.0	2.0		2.0
Lost Time Adjust (s)		3.0			3.0			3.0	3.0			3.0
Total Lost Time (s)		9.1			9.1			9.5	9.5			9.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.5	4.5	4.5	4.5		4.5
Recall Mode	None	None		None	None		Max	Max	Max	Max		Max
Walk Time (s)	10.0	10.0		10.0	10.0		14.0	14.0	14.0	14.0		14.0
Flash Dont Walk (s)	20.0	20.0		20.0	20.0		16.0	16.0	16.0	16.0		16.0
Pedestrian Calls (#/hr)	14	14		14	14		11	11	11	11		11
Act Effct Green (s)		17.7			17.7			35.8	35.8			35.8
Actuated g/C Ratio		0.25			0.25			0.50	0.50			0.50
v/c Ratio		0.20			0.91			0.71	0.29			0.32
Control Delay		8.9			55.8			21.8	3.3			12.8
Queue Delay		0.0			0.0			0.0	0.0			0.0

Lanes, Volumes, Timings
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Background PM (Five-Year)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		8.9			55.8			21.8	3.3			12.8
LOS		A			E			C	A			B
Approach Delay		8.9			55.8			17.0				12.8
Approach LOS		A			E			B				B
Queue Length 50th (m)		2.0			36.3			59.7	0.0			19.1
Queue Length 95th (m)		11.1			64.0			#132.4	11.3			35.9
Internal Link Dist (m)		103.8			188.6			388.3				17.4
Turn Bay Length (m)												
Base Capacity (vph)		606			477			852	731			1487
Starvation Cap Reductn		0			0			0	0			0
Spillback Cap Reductn		0			0			0	0			0
Storage Cap Reductn		0			0			0	0			0
Reduced v/c Ratio		0.14			0.62			0.71	0.29			0.32

Intersection Summary	
Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	72.2
Natural Cycle:	75
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.91
Intersection Signal Delay:	22.3
Intersection LOS:	C
Intersection Capacity Utilization:	93.3%
ICU Level of Service:	F
Analysis Period (min):	15
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Spits and Phases: 1: Mountainview Road N & River Drive



HCM Signalized Intersection Capacity Analysis
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Background PM (Five-Year)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔				↔	↔		↔	
Traffic Volume (vph)	3	14	60	185	16	67	34	507	189	33	389	7
Future Volume (vph)	3	14	60	185	16	67	34	507	189	33	389	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Total Lost time (s)	9.1			9.1			9.5			9.5		
Lane Util. Factor	1.00			1.00			1.00			0.95		
Frbp, ped/bikes	0.99			0.99			1.00			0.97		
Flpb, ped/bikes	1.00			1.00			1.00			1.00		
Frt	0.89			0.97			1.00			0.85		
Flt Protected	1.00			0.97			1.00			1.00		
Satd. Flow (prot)	1567			1665			1817			3429		
Flt Permitted	0.99			0.74			0.94			1.00		
Satd. Flow (perm)	1546			1275			1720			1263		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	3	16	67	206	18	74	38	563	210	37	432	8
RTOR Reduction (vph)	0	51	0	0	17	0	0	0	106	0	2	0
Lane Group Flow (vph)	0	35	0	0	281	0	0	601	104	0	475	0
Confl. Peds. (#/hr)	13		1	1		13	2		9	9		2
Heavy Vehicles (%)	50%	0%	7%	8%	0%	2%	8%	4%	24%	0%	5%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	4		4		4		2		2		2	
Permitted Phases	4		4		2		2		2		2	
Actuated Green, G (s)	20.7		20.7		38.8		38.8		38.8		38.8	
Effective Green, g (s)	17.7		17.7		35.8		35.8		35.8		35.8	
Actuated g/C Ratio	0.25		0.25		0.50		0.50		0.50		0.50	
Clearance Time (s)	6.1		6.1		6.5		6.5		6.5		6.5	
Vehicle Extension (s)	3.0		3.0		4.5		4.5		4.5		4.5	
Lane Grp Cap (vph)	379		313		854		627		1489			
v/s Ratio Prot												
v/s Ratio Perm	0.02		c0.22		c0.35		0.08		0.16			
v/c Ratio	0.09		0.90		0.70		0.17		0.32			
Uniform Delay, d1	21.0		26.3		14.0		10.0		10.9			
Progression Factor	1.00		1.00		1.00		1.00		1.00			
Incremental Delay, d2	0.1		26.6		4.8		0.6		0.6			
Delay (s)	21.1		52.9		18.9		10.5		11.4			
Level of Service	C		D		B		B		B			
Approach Delay (s)	21.1		52.9		16.7		11.4		11.4			
Approach LOS	C		D		B		B		B			

Intersection Summary			
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	72.1	Sum of lost time (s)	18.6
Intersection Capacity Utilization	93.3%	ICU Level of Service	F
Analysis Period (min)	15		

Lanes, Volumes, Timings
2: Mountainview Road N & John Street

1 Rosetta St TIS Update
Background PM (Five-Year)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔				↔	↔		↔	
Traffic Volume (vph)	32	14	63	32	23	18	144	430	36	8	317	29
Future Volume (vph)	32	14	63	32	23	18	144	430	36	8	317	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6
Storage Length (m)	0.0	0.0	0.0	0.0	0.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0
Storage Lanes	0	0	0	0	0	0	1	0	1	0	1	0
Taper Length (m)	2.5		2.5		2.5		2.5		2.5		2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt	0.922			0.966			0.988			0.987		
Flt Protected	0.985			0.979			0.950			0.950		
Satd. Flow (prot)	0	1726	0	0	1797	0	1711	1877	0	1745	1858	0
Flt Permitted	0.985			0.979			0.950			0.950		
Satd. Flow (perm)	0	1726	0	0	1797	0	1711	1877	0	1745	1858	0
Link Speed (k/h)	50			50			50			50		
Link Distance (m)	95.5			171.9			203.3			171.8		
Travel Time (s)	6.9			12.4			14.6			12.4		
Confl. Peds. (#/hr)	2		1	1		2	2		1	1		2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	1%	0%
Adj. Flow (vph)	33	14	65	33	24	19	148	443	37	8	327	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	112	0	0	76	0	148	480	0	8	357	0
Sign Control	Stop		Stop		Stop		Stop		Stop		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	53.2%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
 2: Mountainview Road N & John Street

1 Rosetta St TIS Update
 Background PM (Five-Year)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↔			↔			↖	↗		↖	↗		
Sign Control	Stop			Stop			Stop	Stop		Stop	Stop		
Traffic Volume (vph)	32	14	63	32	23	18	144	430	36	8	317	29	
Future Volume (vph)	32	14	63	32	23	18	144	430	36	8	317	29	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	
Hourly flow rate (vph)	33	14	65	33	24	19	148	443	37	8	327	30	
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2							
Volume Total (vph)	112	76	148	480	8	357							
Volume Left (vph)	33	33	148	0	8	0							
Volume Right (vph)	65	19	0	37	0	30							
Hadj (s)	-0.29	-0.06	0.53	-0.05	0.50	-0.04							
Departure Headway (s)	6.1	6.4	6.1	5.5	6.4	5.8							
Degree Utilization, x	0.19	0.14	0.25	0.73	0.01	0.58							
Capacity (veh/h)	525	491	574	636	538	589							
Control Delay (s)	10.5	10.4	9.9	21.0	8.3	15.3							
Approach Delay (s)	10.5	10.4	18.4	15.2									
Approach LOS	B	B	C	C									
Intersection Summary													
Delay			16.1										
Level of Service			C										
Intersection Capacity Utilization			53.2%		ICU Level of Service		A						
Analysis Period (min)			15										

Lanes, Volumes, Timings
 3: River Drive & Daniella Street

1 Rosetta St TIS Update
 Background PM (Five-Year)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Volume (vph)	5	58	56	16	8	3
Future Volume (vph)	5	58	56	16	8	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.970			0.966
Fit Protected			0.996			0.964
Satd. Flow (prot)	0	1733	1748	0	1769	0
Fit Permitted			0.996			0.964
Satd. Flow (perm)	0	1733	1748	0	1769	0
Link Speed (k/h)			50			50
Link Distance (m)			172.1			126.0
Travel Time (s)			12.4			9.1
Confl. Peds. (#/hr)	4				4	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	10%	7%	0%	0%	0%
Adj. Flow (vph)	6	67	64	18	9	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	73	82	0	12	0
Sign Control	Free		Free	Stop		
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	22.2%		ICU Level of Service		A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
3: River Drive & Daniella Street

1 Rosetta St TIS Update
Background PM (Five-Year)

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	5	58	56	16	8	3
Future Volume (Veh/h)	5	58	56	16	8	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	6	67	64	18	9	3
Pedestrians					4	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			128			
pX, platoon unblocked						
vC, conflicting volume	86				156	77
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	86				156	77
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1517				834	986
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	73	82	12			
Volume Left	6	0	9			
Volume Right	0	18	3			
eSH	1517	1700	867			
Volume to Capacity	0.00	0.05	0.01			
Queue Length 95th (m)	0.1	0.0	0.3			
Control Delay (s)	0.6	0.0	9.2			
Lane LOS	A		A			
Approach Delay (s)	0.6	0.0	9.2			
Approach LOS			A			
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization		22.2%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
4: River Drive & Rosetta Street

1 Rosetta St TIS Update
Background PM (Five-Year)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	0	51	40	10	8	3
Future Volume (vph)	0	51	40	10	8	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.973		0.961	
Fit Protected					0.966	
Satd. Flow (prot)	0	1712	1798	0	1764	0
Fit Permitted					0.966	
Satd. Flow (perm)	0	1712	1798	0	1764	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		46.1	172.1		38.0	
Travel Time (s)		3.3	12.4		2.7	
Confl. Peds. (#/hr)	3			3		
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	11%	0%	14%	0%	0%
Adj. Flow (vph)	0	61	48	12	10	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	61	60	0	14	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	19.3%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
4: River Drive & Rosetta Street

1 Rosetta St TIS Update
Background PM (Five-Year)

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	0	51	40	10	8	3
Future Volume (Veh/h)	0	51	40	10	8	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	61	48	12	10	4
Pedestrians					3	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			300			
pX, platoon unblocked						
vC, conflicting volume	63				118	57
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	63				118	57
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1548				880	1012
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	61	60	14			
Volume Left	0	0	10			
Volume Right	0	12	4			
cSH	1548	1700	914			
Volume to Capacity	0.00	0.04	0.02			
Queue Length 95th (m)	0.0	0.0	0.4			
Control Delay (s)	0.0	0.0	9.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization		19.3%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
5: Victoria Street/River Drive & St Michaels Street

1 Rosetta St TIS Update
Background PM (Five-Year)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	0	38	38	3	7	0
Future Volume (vph)	0	38	38	3	7	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.989			
Fit Protected					0.950	
Satd. Flow (prot)	0	1712	1879	0	1504	0
Fit Permitted					0.950	
Satd. Flow (perm)	0	1712	1879	0	1504	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		118.5	126.7		89.7	
Travel Time (s)		8.5	9.1		6.5	
Confl. Peds. (#/hr)	2			2		
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	11%	0%	0%	20%	0%
Adj. Flow (vph)	0	45	45	4	8	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	45	49	0	8	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	19.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
5: Victoria Street/River Drive & St Michaels Street

1 Rosetta St TIS Update
Background PM (Five-Year)

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	0	38	38	3	7	0
Future Volume (Veh/h)	0	38	38	3	7	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	45	45	4	8	0
Pedestrians					2	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	51				94	49
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	51				94	49
tC, single (s)	4.1				6.6	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.7	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1565				862	1023
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	45	49	8			
Volume Left	0	0	8			
Volume Right	0	4	0			
cSH	1565	1700	862			
Volume to Capacity	0.00	0.03	0.01			
Queue Length 95th (m)	0.0	0.0	0.2			
Control Delay (s)	0.0	0.0	9.2			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.2			
Approach LOS			A			
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization		19.0%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
6: Rosset Valley Court & John Street

1 Rosetta St TIS Update
Background PM (Five-Year)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕			↕	↕	
Traffic Volume (vph)	121	7	22	161	3	19
Future Volume (vph)	121	7	22	161	3	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.993				0.885	
Fit Protected				0.994	0.993	
Satd. Flow (prot)	1769	0	0	1628	1670	0
Fit Permitted				0.994	0.993	
Satd. Flow (perm)	1769	0	0	1628	1670	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	368.0			95.5	146.5	
Travel Time (s)	26.5			6.9	10.5	
Confl. Peds. (#/hr)		6	6		1	3
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	7%	0%	0%	5%	0%	0%
Parking (#/hr)				0	0	
Adj. Flow (vph)	144	8	26	192	4	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	152	0	0	218	27	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	39.5%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
6: Rosset Valley Court & John Street

1 Rosetta St TIS Update
Background PM (Five-Year)

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	121	7	22	161	3	19
Future Volume (Veh/h)	121	7	22	161	3	19
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	144	8	26	192	4	23
Pedestrians	1			3	6	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	0			0	1	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			158		399	157
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			158		399	157
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		99	97
cM capacity (veh/h)			1426		596	886
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	152	218	27			
Volume Left	0	26	4			
Volume Right	8	0	23			
sSH	1700	1426	827			
Volume to Capacity	0.09	0.02	0.03			
Queue Length 95th (m)	0.0	0.4	0.8			
Control Delay (s)	0.0	1.0	9.5			
Lane LOS		A	A			
Approach Delay (s)	0.0	1.0	9.5			
Approach LOS			A			
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization		39.5%		ICU Level of Service		A
Analysis Period (min)			15			


Lanes, Volumes, Timings
7: Victoria Street & John Street

1 Rosetta St TIS Update
Background PM (Five-Year)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	4	45	1	8	41	104	12	22	1	78	25	4
Future Volume (vph)	4	45	1	8	41	104	12	22	1	78	25	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.908			0.997			0.995	
Fit Protected		0.996			0.997			0.984			0.965	
Satd. Flow (prot)	0	1889	0	0	1458	0	0	1864	0	0	1667	0
Fit Permitted		0.996			0.997			0.984			0.965	
Satd. Flow (perm)	0	1889	0	0	1458	0	0	1864	0	0	1667	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		145.1			102.7			117.7			102.2	
Travel Time (s)		10.4			7.4			8.5			7.4	
Confl. Peds. (#/hr)	2		10	10		2	2		5	5		2
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	50%	3%	4%	0%	0%	0%	11%	6%	0%
Parking (#/hr)				0	0	0						
Adj. Flow (vph)	4	51	1	9	46	117	13	25	1	88	28	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	56	0	0	172	0	0	39	0	0	120	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	34.3%						ICU Level of Service A					
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
7: Victoria Street & John Street

1 Rosetta St TIS Update
Background PM (Five-Year)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	4	45	1	8	41	104	12	22	1	78	25	4
Future Volume (vph)	4	45	1	8	41	104	12	22	1	78	25	4
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	4	51	1	9	46	117	13	25	1	88	28	4
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	56	172	39	120								
Volume Left (vph)	4	9	13	88								
Volume Right (vph)	1	117	1	4								
Hadj (s)	0.00	-0.29	0.05	0.29								
Departure Headway (s)	4.5	4.1	4.6	4.7								
Degree Utilization, x	0.07	0.19	0.05	0.16								
Capacity (veh/h)	765	851	733	717								
Control Delay (s)	7.8	8.0	7.8	8.6								
Approach Delay (s)	7.8	8.0	7.8	8.6								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				8.2								
Level of Service				A								
Intersection Capacity Utilization			34.3%	ICU Level of Service			A					
Analysis Period (min)				15								

Queuing and Blocking Report

1 Rosetta St TIS Update
Background PM (Five-Year)

Intersection: 1: Mountainview Road N & River Drive

Movement	EB	WB	NB	NB	SB	SB	B25
Directions Served	LTR	LTR	LT	R	LT	TR	T
Maximum Queue (m)	24.4	62.4	106.0	60.7	37.7	32.8	4.7
Average Queue (m)	9.5	33.7	50.1	14.6	18.6	17.0	0.2
95th Queue (m)	19.6	53.7	88.3	37.5	32.6	30.1	2.7
Link Distance (m)	110.0	202.7	404.4	404.4	29.5	29.5	191.2
Upstream Blk Time (%)					1	1	
Queuing Penalty (veh)					3	1	
Storage Bay Dist (m)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: Mountainview Road N & John Street

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (m)	19.9	17.9	32.3	64.7	14.2	34.9
Average Queue (m)	9.9	9.3	18.6	27.8	2.8	17.2
95th Queue (m)	15.8	15.4	33.9	49.5	10.2	27.5
Link Distance (m)	84.2	165.0		191.2		166.6
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)			30.0			30.0
Storage Blk Time (%)			0	4		
Queuing Penalty (veh)			0	5		

Intersection: 3: River Drive & Daniella Street

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (m)	3.7	9.2
Average Queue (m)	0.1	2.6
95th Queue (m)	1.9	9.2
Link Distance (m)	162.0	120.8
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report

1 Rosetta St TIS Update
Background PM (Five-Year)

Intersection: 4: River Drive & Rosetta Street

Movement	SB
Directions Served	LR
Maximum Queue (m)	9.2
Average Queue (m)	3.2
95th Queue (m)	10.3
Link Distance (m)	29.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Victoria Street/River Drive & St Michaels Street

Movement	SB
Directions Served	LR
Maximum Queue (m)	9.6
Average Queue (m)	1.6
95th Queue (m)	7.1
Link Distance (m)	71.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Rosset Valley Court & John Street

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	9.1	9.6
Average Queue (m)	0.8	3.5
95th Queue (m)	4.9	10.1
Link Distance (m)	84.2	140.0
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report

1 Rosetta St TIS Update
Background PM (Five-Year)

Intersection: 7: Victoria Street & John Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	11.9	25.2	12.0	26.9
Average Queue (m)	7.5	13.2	6.0	12.5
95th Queue (m)	13.5	21.6	13.3	21.3
Link Distance (m)	139.7	90.2	108.9	96.8
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 9

Appendix H

Ten-Year Background Traffic Operations



Lanes, Volumes, Timings
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Background AM (Ten-Year)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	
Traffic Volume (vph)	2	12	53	165	8	30	14	330	177	53	570	5
Future Volume (vph)	2	12	53	165	8	30	14	330	177	53	570	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		1.00			1.00				0.97		1.00	
Frt		0.894			0.980				0.850		0.999	
Flt Protected		0.999			0.961			0.998			0.996	
Satd. Flow (prot)	0	1496	0	0	1365	0	0	1785	1380	0	3485	0
Flt Permitted		0.990			0.718			0.963			0.883	
Satd. Flow (perm)	0	1483	0	0	1020	0	0	1723	1346	0	3089	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		56			12				188			1
Link Speed (k/h)		50			50				50			50
Link Distance (m)		127.8			212.6				412.3			41.4
Travel Time (s)		9.2			15.3				29.7			3.0
Confl. Peds. (#/hr)	5					5			4		4	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	17%	35%	40%	5%	11%	6%	17%	12%	2%	33%
Adj. Flow (vph)	2	13	56	176	9	32	15	351	188	56	606	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	71	0	0	217	0	0	366	188	0	667	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			4			2		2		2
Permitted Phases	4			4			2		2	2		
Detector Phase	4	4		4	4		2	2	2	2		2
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		30.0	30.0	30.0	30.0		30.0
Minimum Split (s)	36.1	36.1		36.1	36.1		36.5	36.5	36.5	36.5		36.5
Total Split (s)	35.0	35.0		35.0	35.0		45.0	45.0	45.0	45.0		45.0
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.3%	56.3%	56.3%	56.3%		56.3%
Maximum Green (s)	28.9	28.9		28.9	28.9		38.5	38.5	38.5	38.5		38.5
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	2.1	2.1		2.1	2.1		2.0	2.0	2.0	2.0		2.0
Lost Time Adjust (s)		3.0			3.0			3.0	3.0			3.0
Total Lost Time (s)		9.1			9.1			9.5	9.5			9.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.5	4.5	4.5	4.5		4.5
Recall Mode	None	None		None	None		Max	Max	Max	Max		Max
Walk Time (s)	10.0	10.0		10.0	10.0		14.0	14.0	14.0	14.0		14.0
Flash Dont Walk (s)	20.0	20.0		20.0	20.0		16.0	16.0	16.0	16.0		16.0
Pedestrian Calls (#/hr)	5	5		5	5		4	4	4	4		4
Act Effct Green (s)		16.5			16.5			37.1	37.1			37.1
Actuated g/C Ratio		0.23			0.23			0.51	0.51			0.51
v/c Ratio		0.19			0.90			0.41	0.24			0.42
Control Delay		9.3			62.0			14.4	3.1			13.3
Queue Delay		0.0			0.0			0.0	0.0			0.0

Lanes, Volumes, Timings
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Background AM (Ten-Year)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		9.3			62.0				14.4	3.1		13.3
LOS		A			E				B	A		B
Approach Delay		9.3			62.0				10.6			13.3
Approach LOS		A			E				B			B
Queue Length 50th (m)		1.6			26.3				28.4	0.0		27.2
Queue Length 95th (m)		9.9			49.8				62.0	10.6		51.9
Internal Link Dist (m)		103.8			188.6				388.3			17.4
Turn Bay Length (m)												
Base Capacity (vph)		573			377				884	782		1586
Starvation Cap Reductn		0			0				0	0		0
Spillback Cap Reductn		0			0				0	0		0
Storage Cap Reductn		0			0				0	0		0
Reduced v/c Ratio		0.12			0.58				0.41	0.24		0.42
Intersection Summary												
Area Type:	Other											
Cycle Length:	80											
Actuated Cycle Length:	72.3											
Natural Cycle:	75											
Control Type:	Semi Act-Uncoord											
Maximum v/c Ratio:	0.90											
Intersection Signal Delay:	19.1						Intersection LOS: B					
Intersection Capacity Utilization:	91.5%						ICU Level of Service F					
Analysis Period (min):	15											
Splits and Phases: 1: Mountainview Road N & River Drive												

HCM Signalized Intersection Capacity Analysis
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Background AM (Ten-Year)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔				↔	↔		↔	
Traffic Volume (vph)	2	12	53	165	8	30	14	330	177	53	570	5
Future Volume (vph)	2	12	53	165	8	30	14	330	177	53	570	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Total Lost time (s)	9.1			9.1			9.5			9.5		
Lane Util. Factor	1.00			1.00			1.00			0.95		
Frbp, ped/bikes	1.00			1.00			1.00			0.98		
Flpb, ped/bikes	1.00			1.00			1.00			1.00		
Frt	0.89			0.98			1.00			0.85		
Flt Protected	1.00			0.96			1.00			1.00		
Satd. Flow (prot)	1495			1365			1785			1346		
Flt Permitted	0.99			0.72			0.96			1.00		
Satd. Flow (perm)	1482			1020			1723			1346		
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	2	13	56	176	9	32	15	351	188	56	606	5
RTOR Reduction (vph)	0	43	0	0	9	0	0	0	91	0	0	0
Lane Group Flow (vph)	0	28	0	0	208	0	0	366	97	0	667	0
Confl. Peds. (#/hr)	5			5			4			4		
Heavy Vehicles (%)	0%	0%	17%	35%	40%	5%	11%	6%	17%	12%	2%	33%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	4		4		4		2		2		2	
Permitted Phases	4		4		2		2		2		2	
Actuated Green, G (s)	19.5		19.5		40.1		40.1		40.1		40.1	
Effective Green, g (s)	16.5		16.5		37.1		37.1		37.1		37.1	
Actuated g/C Ratio	0.23		0.23		0.51		0.51		0.51		0.51	
Clearance Time (s)	6.1		6.1		6.5		6.5		6.5		6.5	
Vehicle Extension (s)	3.0		3.0		4.5		4.5		4.5		4.5	
Lane Grp Cap (vph)	338		233		885		691		1586			
v/s Ratio Prot	0.02		c0.20		0.21		0.07		c0.22			
v/c Ratio	0.08		0.89		0.41		0.14		0.42			
Uniform Delay, d1	21.9		27.0		10.8		9.2		10.9			
Progression Factor	1.00		1.00		1.00		1.00		1.00			
Incremental Delay, d2	0.1		31.7		1.4		0.4		0.8			
Delay (s)	22.0		58.7		12.3		9.6		11.7			
Level of Service	C		E		B		A		B			
Approach Delay (s)	22.0		58.7		11.4		11.7		11.7			
Approach LOS	C		E		B		B		B			

Intersection Summary			
HCM 2000 Control Delay	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	72.2	Sum of lost time (s)	18.6
Intersection Capacity Utilization	91.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
2: Mountainview Road N & John Street

1 Rosetta St TIS Update
Background AM (Ten-Year)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔				↔	↔		↔	
Traffic Volume (vph)	23	11	117	29	15	12	70	265	24	24	471	26
Future Volume (vph)	23	11	117	29	15	12	70	265	24	24	471	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.3	3.6	3.6
Storage Length (m)	0.0	0.0	0.0	0.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0	0.0
Storage Lanes	0	0	0	0	0	1	0	1	0	1	0	0
Taper Length (m)	2.5		2.5		2.5		2.5		2.5		2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt	0.895			0.971			0.987			0.992		
Flt Protected	0.993			0.975			0.950			0.950		
Satd. Flow (prot)	0	1633	0	0	1707	0	1544	1790	0	1646	1816	0
Flt Permitted	0.993			0.975			0.950			0.950		
Satd. Flow (perm)	0	1633	0	0	1707	0	1544	1790	0	1646	1816	0
Link Speed (k/h)	50			50			50			50		
Link Distance (m)	95.5			171.9			203.3			171.8		
Travel Time (s)	6.9			12.4			14.6			12.4		
Confl. Peds. (#/hr)	2		5		5		2		9		9	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	7%	0%	3%	5%	0%	13%	13%	4%	13%	6%	4%	0%
Adj. Flow (vph)	24	12	124	31	16	13	74	282	26	26	501	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	160	0	0	60	0	74	308	0	26	529	0
Sign Control	Stop		Stop		Stop		Stop		Stop		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	58.0%
ICU Level of Service	B
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
2: Mountainview Road N & John Street

1 Rosetta St TIS Update
Background AM (Ten-Year)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕	↕		↕	↕	↕
Sign Control	Stop			Stop			Stop	Stop		Stop	Stop	Stop
Traffic Volume (vph)	23	11	117	29	15	12	70	265	24	24	471	26
Future Volume (vph)	23	11	117	29	15	12	70	265	24	24	471	26
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	24	12	124	31	16	13	74	282	26	26	501	28
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total (vph)	160	60	74	308	26	529						
Volume Left (vph)	24	31	74	0	26	0						
Volume Right (vph)	124	13	0	26	0	28						
Hadj (s)	-0.38	0.07	0.72	0.02	0.60	0.03						
Departure Headway (s)	6.0	6.8	6.7	5.9	6.3	5.8						
Degree Utilization, x	0.27	0.11	0.14	0.51	0.05	0.85						
Capacity (veh/h)	548	473	516	583	548	614						
Control Delay (s)	11.2	10.6	9.5	13.8	8.4	31.3						
Approach Delay (s)	11.2	10.6	12.9	30.2								
Approach LOS	B	B	B	D								
Intersection Summary												
Delay			20.9									
Level of Service			C									
Intersection Capacity Utilization			58.0%		ICU Level of Service		B					
Analysis Period (min)			15									

Lanes, Volumes, Timings
3: River Drive & Daniella Street

1 Rosetta St TIS Update
Background AM (Ten-Year)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↕		↕	↕	↕	
Traffic Volume (vph)	3	70	18	3	11	5
Future Volume (vph)	3	70	18	3	11	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.983			0.957
Fit Protected	0.998				0.967	
Satd. Flow (prot)	0	1590	1449	0	1758	0
Fit Permitted	0.998				0.967	
Satd. Flow (perm)	0	1590	1449	0	1758	0
Link Speed (k/h)	50		50		50	
Link Distance (m)	172.1		127.8		126.0	
Travel Time (s)	12.4		9.2		9.1	
Confl. Peds. (#/hr)	3		3			
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	20%	33%	0%	0%	0%
Adj. Flow (vph)	3	81	21	3	13	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	84	24	0	19	0
Sign Control	Free		Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	21.1%		ICU Level of Service A			
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
3: River Drive & Daniella Street

1 Rosetta St TIS Update
Background AM (Ten-Year)

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	3	70	18	3	11	5
Future Volume (Veh/h)	3	70	18	3	11	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	3	81	21	3	13	6
Pedestrians					3	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			128			
pX, platoon unblocked						
vC, conflicting volume	27				112	26
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	27				112	26
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	99
cM capacity (veh/h)	1596				885	1053
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	84	24	19			
Volume Left	3	0	13			
Volume Right	0	3	6			
eSH	1596	1700	932			
Volume to Capacity	0.00	0.01	0.02			
Queue Length 95th (m)	0.0	0.0	0.5			
Control Delay (s)	0.3	0.0	8.9			
Lane LOS	A		A			
Approach Delay (s)	0.3	0.0	8.9			
Approach LOS			A			
Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utilization		21.1%		ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
4: River Drive & Rosetta Street

1 Rosetta St TIS Update
Background AM (Ten-Year)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	0	61	12	3	6	0
Future Volume (vph)	0	61	12	3	6	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.975			
Fit Protected					0.950	
Satd. Flow (prot)	0	1583	1428	0	1805	0
Fit Permitted					0.950	
Satd. Flow (perm)	0	1583	1428	0	1805	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		46.1	172.1		38.0	
Travel Time (s)		3.3	12.4		2.7	
Confl. Peds. (#/hr)					2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	20%	25%	50%	0%	0%
Adj. Flow (vph)	0	68	13	3	7	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	68	16	0	7	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	18.3%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
4: River Drive & Rosetta Street

1 Rosetta St TIS Update
Background AM (Ten-Year)

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	0	61	12	3	6	0
Future Volume (Veh/h)	0	61	12	3	6	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	68	13	3	7	0
Pedestrians			2			
Lane Width (m)			3.6			
Walking Speed (m/s)			1.1			
Percent Blockage			0			
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			300			
pX, platoon unblocked					84	14
vC, conflicting volume	16					
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	16				84	14
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1615				920	1071
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	68	16	7			
Volume Left	0	0	7			
Volume Right	0	3	0			
cSH	1615	1700	920			
Volume to Capacity	0.00	0.01	0.01			
Queue Length 95th (m)	0.0	0.0	0.2			
Control Delay (s)	0.0	0.0	8.9			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	8.9			
Approach LOS			A			
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization		18.3%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
5: Victoria Street/River Drive & St Michaels Street

1 Rosetta St TIS Update
Background AM (Ten-Year)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	2	56	6	2	2	0
Future Volume (vph)	2	56	6	2	2	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.970			
Fit Protected		0.999			0.950	
Satd. Flow (prot)	0	1671	1543	0	1805	0
Fit Permitted		0.999			0.950	
Satd. Flow (perm)	0	1671	1543	0	1805	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		118.5	126.7		89.7	
Travel Time (s)		8.5	9.1		6.5	
Confl. Peds. (#/hr)	3			3	1	1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	14%	25%	0%	0%	0%
Adj. Flow (vph)	2	66	7	2	2	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	68	9	0	2	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	19.9%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
5: Victoria Street/River Drive & St Michaels Street

1 Rosetta St TIS Update
Background AM (Ten-Year)

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	2	56	6	2	2	0
Future Volume (Veh/h)	2	56	6	2	2	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	2	66	7	2	2	0
Pedestrians		1	1		3	
Lane Width (m)		3.6	3.6		3.6	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	12				82	12
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	12				82	12
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1616				920	1071
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	68	9	2			
Volume Left	2	0	2			
Volume Right	0	2	0			
cSH	1616	1700	920			
Volume to Capacity	0.00	0.01	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.2	0.0	8.9			
Lane LOS	A		A			
Approach Delay (s)	0.2	0.0	8.9			
Approach LOS			A			
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization		19.9%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
6: Rosset Valley Court & John Street

1 Rosetta St TIS Update
Background AM (Ten-Year)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕			↕	↕	
Traffic Volume (vph)	117	0	21	88	5	26
Future Volume (vph)	117	0	21	88	5	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.887	
Fit Protected				0.990	0.992	
Satd. Flow (prot)	1827	0	0	1567	1672	0
Fit Permitted				0.990	0.992	
Satd. Flow (perm)	1827	0	0	1567	1672	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	368.0			95.5	146.5	
Travel Time (s)	26.5			6.9	10.5	
Confl. Peds. (#/hr)		8	8			
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	4%	0%	0%	10%	0%	0%
Parking (#/hr)				0	0	
Adj. Flow (vph)	138	0	25	104	6	31
Shared Lane Traffic (%)						
Lane Group Flow (vph)	138	0	0	129	37	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	27.5%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
6: Rosset Valley Court & John Street

1 Rosetta St TIS Update
Background AM (Ten-Year)

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	117	0	21	88	5	26
Future Volume (Veh/h)	117	0	21	88	5	26
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	138	0	25	104	6	31
Pedestrians					8	
Lane Width (m)				3.6		
Walking Speed (m/s)				1.1		
Percent Blockage				1		
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			146		300	146
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			146		300	146
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
pD queue free %			98		99	97
cM capacity (veh/h)			1438		679	900
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	138	129	37			
Volume Left	0	25	6			
Volume Right	0	0	31			
sSH	1700	1438	855			
Volume to Capacity	0.08	0.02	0.04			
Queue Length 95th (m)	0.0	0.4	1.0			
Control Delay (s)	0.0	1.6	9.4			
Lane LOS		A	A			
Approach Delay (s)	0.0	1.6	9.4			
Approach LOS			A			
Intersection Summary						
Average Delay			1.8			
Intersection Capacity Utilization		27.5%		ICU Level of Service		A
Analysis Period (min)			15			


Lanes, Volumes, Timings
7: Victoria Street & John Street

1 Rosetta St TIS Update
Background AM (Ten-Year)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	21	5	6	29	64	6	9	0	86	30	6
Future Volume (vph)	0	21	5	6	29	64	6	9	0	86	30	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.973			0.912							0.993
Fit Protected					0.997			0.980				0.966
Satd. Flow (prot)	0	1849	0	0	1419	0	0	1862	0	0	1760	0
Fit Permitted					0.997			0.980				0.966
Satd. Flow (perm)	0	1849	0	0	1419	0	0	1862	0	0	1760	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		145.1			102.7			117.7			102.2	
Travel Time (s)		10.4			7.4			8.5			7.4	
Confl. Peds. (#/hr)	2		5	5		2	2		7	7		2
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	0%	50%	0%	10%	0%	0%	0%	5%	0%	0%
Parking (#/hr)				0	0	0						
Adj. Flow (vph)	0	24	6	7	33	74	7	10	0	99	34	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	30	0	0	114	0	0	17	0	0	140	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	34.4%						ICU Level of Service A					
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
7: Victoria Street & John Street

1 Rosetta St TIS Update
Background AM (Ten-Year)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	0	21	5	6	29	64	6	9	0	86	30	6
Future Volume (vph)	0	21	5	6	29	64	6	9	0	86	30	6
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	0	24	6	7	33	74	7	10	0	99	34	7
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	30	114	17	140								
Volume Left (vph)	0	7	7	99								
Volume Right (vph)	6	74	0	7								
Hadj (s)	-0.12	-0.21	0.08	0.17								
Departure Headway (s)	4.3	4.1	4.5	4.4								
Degree Utilization, x	0.04	0.13	0.02	0.17								
Capacity (veh/h)	804	847	768	792								
Control Delay (s)	7.4	7.7	7.5	8.3								
Approach Delay (s)	7.4	7.7	7.5	8.3								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				7.9								
Level of Service				A								
Intersection Capacity Utilization			34.4%	ICU Level of Service			A					
Analysis Period (min)				15								

Queuing and Blocking Report

1 Rosetta St TIS Update
Background AM (Ten-Year)

Intersection: 1: Mountainview Road N & River Drive

Movement	EB	WB	NB	NB	SB	SB	B25
Directions Served	LTR	LTR	LT	R	LT	TR	T
Maximum Queue (m)	24.5	72.5	62.0	26.8	40.5	35.1	2.6
Average Queue (m)	9.5	33.9	24.5	9.9	21.7	20.3	0.2
95th Queue (m)	19.4	59.7	47.2	20.3	35.8	33.9	1.7
Link Distance (m)	110.0	202.7	404.4	404.4	29.5	29.5	191.2
Upstream Blk Time (%)					1	1	
Queuing Penalty (veh)					4	2	
Storage Bay Dist (m)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: Mountainview Road N & John Street

Movement	EB	WB	NB	NB	B25	SB	SB
Directions Served	LTR	LTR	L	TR	T	L	TR
Maximum Queue (m)	24.2	18.0	31.7	45.5	2.6	15.5	49.1
Average Queue (m)	12.2	8.3	11.2	19.4	0.1	5.3	24.6
95th Queue (m)	20.4	16.1	23.1	33.4	1.9	14.0	39.1
Link Distance (m)	84.2	165.0		191.2	29.5		166.6
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)			30.0			30.0	
Storage Blk Time (%)			0	1			3
Queuing Penalty (veh)			0	0			1

Intersection: 3: River Drive & Daniella Street

Movement	SB
Directions Served	LR
Maximum Queue (m)	9.2
Average Queue (m)	3.6
95th Queue (m)	10.8
Link Distance (m)	120.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report

1 Rosetta St TIS Update
Background AM (Ten-Year)

Intersection: 4: River Drive & Rosetta Street

Movement	SB
Directions Served	LR
Maximum Queue (m)	9.2
Average Queue (m)	1.5
95th Queue (m)	6.9
Link Distance (m)	29.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Victoria Street/River Drive & St Michaels Street

Movement	SB
Directions Served	LR
Maximum Queue (m)	4.3
Average Queue (m)	0.2
95th Queue (m)	2.1
Link Distance (m)	71.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Rosset Valley Court & John Street

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	9.2	8.2
Average Queue (m)	0.9	4.7
95th Queue (m)	5.5	10.9
Link Distance (m)	84.2	140.0
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report

1 Rosetta St TIS Update
Background AM (Ten-Year)

Intersection: 7: Victoria Street & John Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	11.8	20.1	11.8	20.6
Average Queue (m)	5.0	11.3	3.2	10.7
95th Queue (m)	12.5	18.2	10.4	17.0
Link Distance (m)	139.7	90.2	108.9	96.8
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 7

Lanes, Volumes, Timings
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Background PM (Ten-Year)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	
Traffic Volume (vph)	3	15	67	205	18	74	38	560	209	36	429	8
Future Volume (vph)	3	15	67	205	18	74	38	560	209	36	429	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99			0.99			1.00	0.97		1.00	
Frt		0.894			0.966			0.850	0.997		0.997	
Flt Protected		0.998			0.967			0.997	0.996		0.996	
Satd. Flow (prot)	0	1567	0	0	1665	0	0	1817	1302	0	3428	0
Flt Permitted		0.987			0.736			0.936	0.808		0.808	
Satd. Flow (perm)	0	1549	0	0	1266	0	0	1706	1261	0	2780	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		74			22			232	3			
Link Speed (k/h)		50			50			50				
Link Distance (m)		127.8			212.6			412.3			41.4	
Travel Time (s)		9.2			15.3			29.7			3.0	
Confl. Peds. (#/hr)	13		1	1		13	2		9	9		2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	50%	0%	7%	8%	0%	2%	8%	4%	24%	0%	5%	0%
Adj. Flow (vph)	3	17	74	228	20	82	42	622	232	40	477	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	94	0	0	330	0	0	664	232	0	526	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			4			2		2		2
Permitted Phases	4			4			2		2	2		
Detector Phase	4	4		4	4		2	2	2	2		2
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		30.0	30.0	30.0	30.0		30.0
Minimum Split (s)	36.1	36.1		36.1	36.1		36.5	36.5	36.5	36.5		36.5
Total Split (s)	35.0	35.0		35.0	35.0		45.0	45.0	45.0	45.0		45.0
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.3%	56.3%	56.3%	56.3%		56.3%
Maximum Green (s)	28.9	28.9		28.9	28.9		38.5	38.5	38.5	38.5		38.5
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	2.1	2.1		2.1	2.1		2.0	2.0	2.0	2.0		2.0
Lost Time Adjust (s)		3.0			3.0			3.0	3.0			3.0
Total Lost Time (s)		9.1			9.1			9.5	9.5			9.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.5	4.5	4.5	4.5		4.5
Recall Mode	None	None		None	None		Max	Max	Max	Max		Max
Walk Time (s)	10.0	10.0		10.0	10.0		14.0	14.0	14.0	14.0		14.0
Flash Dont Walk (s)	20.0	20.0		20.0	20.0		16.0	16.0	16.0	16.0		16.0
Pedestrian Calls (#/hr)	14	14		14	14		11	11	11	11		11
Act Effct Green (s)		20.1			20.1			35.7	35.7			35.7
Actuated g/C Ratio		0.27			0.27			0.48	0.48			0.48
v/c Ratio		0.20			0.93			0.81	0.32			0.39
Control Delay		8.4			57.5			28.3	3.4			14.6
Queue Delay		0.0			0.0			0.0	0.0			0.0

Lanes, Volumes, Timings
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Background PM (Ten-Year)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		8.4			57.5			28.3	3.4			14.6
LOS		A			E			C	A			B
Approach Delay		8.4			57.5			21.9				14.6
Approach LOS		A			E			C				B
Queue Length 50th (m)		2.1			42.0			78.0	0.0			24.3
Queue Length 95th (m)		11.6			#81.8			#155.6	11.8			40.8
Internal Link Dist (m)		103.8			188.6			388.3				17.4
Turn Bay Length (m)												
Base Capacity (vph)		593			460			818	725			1334
Starvation Cap Reductn		0			0			0	0			0
Spillback Cap Reductn		0			0			0	0			0
Storage Cap Reductn		0			0			0	0			0
Reduced v/c Ratio		0.16			0.72			0.81	0.32			0.39

Intersection Summary

Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	74.5
Natural Cycle:	80
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.93
Intersection Signal Delay:	25.5
Intersection LOS:	C
Intersection Capacity Utilization:	100.4%
ICU Level of Service:	G
Analysis Period (min):	15
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Spits and Phases: 1: Mountainview Road N & River Drive



HCM Signalized Intersection Capacity Analysis
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Background PM (Ten-Year)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔				↔	↔		↔	
Traffic Volume (vph)	3	15	67	205	18	74	38	560	209	36	429	8
Future Volume (vph)	3	15	67	205	18	74	38	560	209	36	429	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Total Lost time (s)		9.1			9.1			9.5	9.5		9.5	
Lane Util. Factor		1.00			1.00			1.00	1.00		0.95	
Frbp, ped/bikes		0.99			0.99			1.00	0.97		1.00	
Flpb, ped/bikes		1.00			1.00			1.00	1.00		1.00	
Frt		0.89			0.97			1.00	0.85		1.00	
Flt Protected		1.00			0.97			1.00	1.00		1.00	
Satd. Flow (prot)		1567			1664			1817	1262		3429	
Flt Permitted		0.99			0.74			0.94	1.00		0.81	
Satd. Flow (perm)		1548			1267			1706	1262		2781	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	3	17	74	228	20	82	42	622	232	40	477	9
RTOR Reduction (vph)	0	54	0	0	16	0	0	0	121	0	2	0
Lane Group Flow (vph)	0	40	0	0	314	0	0	664	111	0	524	0
Confl. Peds. (#/hr)	13		1	1		13	2		9	9		2
Heavy Vehicles (%)	50%	0%	7%	8%	0%	2%	8%	4%	24%	0%	5%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2		2		2	
Actuated Green, G (s)		23.1			23.1			38.8	38.8		38.8	
Effective Green, g (s)		20.1			20.1			35.8	35.8		35.8	
Actuated g/C Ratio		0.27			0.27			0.48	0.48		0.48	
Clearance Time (s)		6.1			6.1			6.5	6.5		6.5	
Vehicle Extension (s)		3.0			3.0			4.5	4.5		4.5	
Lane Grp Cap (vph)		417			341			819	606		1336	
v/s Ratio Prot												
v/s Ratio Perm		0.03			c0.25			c0.39	0.09		0.19	
v/c Ratio		0.10			0.92			0.81	0.18		0.39	
Uniform Delay, d1		20.4			26.4			16.5	11.0		12.4	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.1			29.3			8.6	0.7		0.9	
Delay (s)		20.5			55.7			25.0	11.7		13.3	
Level of Service		C			E			C	B		B	
Approach Delay (s)		20.5			55.7			21.6			13.3	
Approach LOS		C			E			C			B	
Intersection Summary												
HCM 2000 Control Delay		25.3									C	
HCM 2000 Volume to Capacity ratio		0.85										
Actuated Cycle Length (s)		74.5							18.6			
Intersection Capacity Utilization		100.4%									G	
Analysis Period (min)		15										
c Critical Lane Group												

Lanes, Volumes, Timings
2: Mountainview Road N & John Street

1 Rosetta St TIS Update
Background PM (Ten-Year)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔				↔	↔		↔	
Traffic Volume (vph)	35	15	70	35	26	20	159	474	39	9	350	32
Future Volume (vph)	35	15	70	35	26	20	159	474	39	9	350	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6
Storage Length (m)	0.0	0.0	0.0	0.0	0.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0
Storage Lanes	0	0	0	0	0	0	1	0	1	0	1	0
Taper Length (m)	2.5			2.5			2.5		2.5		2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.921			0.966			0.989			0.987	
Flt Protected		0.986			0.979		0.950		0.950		0.950	
Satd. Flow (prot)	0	1725	0	0	1797	0	1711	1879	0	1745	1858	0
Flt Permitted		0.986			0.979		0.950		0.950		0.950	
Satd. Flow (perm)	0	1725	0	0	1797	0	1711	1879	0	1745	1858	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		95.5			171.9			203.3			171.8	
Travel Time (s)		6.9			12.4			14.6			12.4	
Confl. Peds. (#/hr)	2		1	1		2	2		1	1		2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	1%	0%
Adj. Flow (vph)	36	15	72	36	27	21	164	489	40	9	361	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	123	0	0	84	0	164	529	0	9	394	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	56.4%						ICU Level of Service B					
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
 2: Mountainview Road N & John Street

1 Rosetta St TIS Update
 Background PM (Ten-Year)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↖	↗		↖	↗	
Sign Control	Stop			Stop			Stop	Stop		Stop	Stop	
Traffic Volume (vph)	35	15	70	35	26	20	159	474	39	9	350	32
Future Volume (vph)	35	15	70	35	26	20	159	474	39	9	350	32
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	36	15	72	36	27	21	164	489	40	9	361	33
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total (vph)	123	84	164	529	9	394						
Volume Left (vph)	36	36	164	0	9	0						
Volume Right (vph)	72	21	0	40	0	33						
Hadj (s)	-0.29	-0.06	0.53	-0.05	0.50	-0.04						
Departure Headway (s)	6.4	6.8	6.3	5.7	6.6	6.1						
Degree Utilization, x	0.22	0.16	0.29	0.84	0.02	0.66						
Capacity (veh/h)	513	479	559	622	520	569						
Control Delay (s)	11.2	11.0	10.6	29.7	8.5	19.0						
Approach Delay (s)	11.2	11.0	25.2	18.7								
Approach LOS	B	B	D	C								
Intersection Summary												
Delay			21.0									
Level of Service			C									
Intersection Capacity Utilization			56.4%		ICU Level of Service		B					
Analysis Period (min)			15									

Lanes, Volumes, Timings
 3: River Drive & Daniella Street

1 Rosetta St TIS Update
 Background PM (Ten-Year)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Volume (vph)	6	64	62	18	9	3
Future Volume (vph)	6	64	62	18	9	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.969			0.969
Fit Protected			0.996			0.963
Satd. Flow (prot)	0	1734	1747	0	1773	0
Fit Permitted			0.996			0.963
Satd. Flow (perm)	0	1734	1747	0	1773	0
Link Speed (k/h)			50			50
Link Distance (m)			172.1			126.0
Travel Time (s)			12.4			9.1
Confl. Peds. (#/hr)	4				4	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	10%	7%	0%	0%	0%
Adj. Flow (vph)	7	74	71	21	10	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	81	92	0	13	0
Sign Control	Free		Free	Stop		
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	23.3%		ICU Level of Service A			
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
3: River Drive & Daniella Street

1 Rosetta St TIS Update
Background PM (Ten-Year)

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	6	64	62	18	9	3
Future Volume (Veh/h)	6	64	62	18	9	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	7	74	71	21	10	3
Pedestrians					4	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			128			
pX, platoon unblocked						
vC, conflicting volume	96				174	86
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	96				174	86
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1505				814	975
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	81	92	13			
Volume Left	7	0	10			
Volume Right	0	21	3			
sSH	1505	1700	847			
Volume to Capacity	0.00	0.05	0.02			
Queue Length 95th (m)	0.1	0.0	0.4			
Control Delay (s)	0.7	0.0	9.3			
Lane LOS	A		A			
Approach Delay (s)	0.7	0.0	9.3			
Approach LOS			A			
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization		23.3%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
4: River Drive & Rosetta Street

1 Rosetta St TIS Update
Background PM (Ten-Year)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	0	56	44	11	9	3
Future Volume (vph)	0	56	44	11	9	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.973		0.964	
Fit Protected					0.965	
Satd. Flow (prot)	0	1712	1798	0	1767	0
Fit Permitted					0.965	
Satd. Flow (perm)	0	1712	1798	0	1767	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		46.1	172.1		38.0	
Travel Time (s)		3.3	12.4		2.7	
Confl. Peds. (#/hr)	3			3		
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	11%	0%	14%	0%	0%
Adj. Flow (vph)	0	67	52	13	11	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	67	65	0	15	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	19.3%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
4: River Drive & Rosetta Street

1 Rosetta St TIS Update
Background PM (Ten-Year)

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	0	56	44	11	9	3
Future Volume (Veh/h)	0	56	44	11	9	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	67	52	13	11	4
Pedestrians					3	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			300			
pX, platoon unblocked						
vC, conflicting volume	68				128	62
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	68				128	62
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1542				868	1006
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	67	65	15			
Volume Left	0	0	11			
Volume Right	0	13	4			
cSH	1542	1700	901			
Volume to Capacity	0.00	0.04	0.02			
Queue Length 95th (m)	0.0	0.0	0.4			
Control Delay (s)	0.0	0.0	9.1			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.1			
Approach LOS			A			
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization		19.3%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
5: Victoria Street/River Drive & St Michaels Street

1 Rosetta St TIS Update
Background PM (Ten-Year)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	0	42	42	3	8	0
Future Volume (vph)	0	42	42	3	8	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.990			
Fit Protected					0.950	
Satd. Flow (prot)	0	1712	1881	0	1504	0
Fit Permitted					0.950	
Satd. Flow (perm)	0	1712	1881	0	1504	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		118.5	126.7		89.7	
Travel Time (s)		8.5	9.1		6.5	
Confl. Peds. (#/hr)	2			2		
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	11%	0%	0%	20%	0%
Adj. Flow (vph)	0	50	50	4	10	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	50	54	0	10	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	19.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
5: Victoria Street/River Drive & St Michaels Street

1 Rosetta St TIS Update
Background PM (Ten-Year)

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	0	42	42	3	8	0
Future Volume (Veh/h)	0	42	42	3	8	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	50	50	4	10	0
Pedestrians					2	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	56				104	54
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	56				104	54
tC, single (s)	4.1				6.6	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.7	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1559				851	1017
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	50	54	10			
Volume Left	0	0	10			
Volume Right	0	4	0			
cSH	1559	1700	851			
Volume to Capacity	0.00	0.03	0.01			
Queue Length 95th (m)	0.0	0.0	0.3			
Control Delay (s)	0.0	0.0	9.3			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.3			
Approach LOS			A			
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization		19.0%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
6: Rosset Valley Court & John Street

1 Rosetta St TIS Update
Background PM (Ten-Year)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕			↕	↕	
Traffic Volume (vph)	133	8	24	177	3	21
Future Volume (vph)	133	8	24	177	3	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.992				0.884	
Fit Protected				0.994	0.993	
Satd. Flow (prot)	1768	0	0	1628	1668	0
Fit Permitted				0.994	0.993	
Satd. Flow (perm)	1768	0	0	1628	1668	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	368.0			95.5	146.5	
Travel Time (s)	26.5			6.9	10.5	
Confl. Peds. (#/hr)		6	6		1	3
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	7%	0%	0%	5%	0%	0%
Parking (#/hr)				0	0	
Adj. Flow (vph)	158	10	29	211	4	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	168	0	0	240	29	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	41.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
6: Rosset Valley Court & John Street

1 Rosetta St TIS Update
Background PM (Ten-Year)

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	133	8	24	177	3	21
Future Volume (Veh/h)	133	8	24	177	3	21
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	158	10	29	211	4	25
Pedestrians	1			3	6	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	0			0	1	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			174		439	172
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			174		439	172
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		99	97
cM capacity (veh/h)			1407		563	870
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	168	240	29			
Volume Left	0	29	4			
Volume Right	10	0	25			
sSH	1700	1407	809			
Volume to Capacity	0.10	0.02	0.04			
Queue Length 95th (m)	0.0	0.5	0.8			
Control Delay (s)	0.0	1.1	9.6			
Lane LOS		A	A			
Approach Delay (s)	0.0	1.1	9.6			
Approach LOS			A			
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization		41.0%		ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
7: Victoria Street & John Street

1 Rosetta St TIS Update
Background PM (Ten-Year)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	5	50	2	9	45	115	14	24	2	86	27	5
Future Volume (vph)	5	50	2	9	45	115	14	24	2	86	27	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.996			0.908			0.994			0.994	
Fit Protected		0.995			0.997			0.983			0.965	
Satd. Flow (prot)	0	1883	0	0	1458	0	0	1856	0	0	1666	0
Fit Permitted		0.995			0.997			0.983			0.965	
Satd. Flow (perm)	0	1883	0	0	1458	0	0	1856	0	0	1666	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		145.1			102.7			117.7			102.2	
Travel Time (s)		10.4			7.4			8.5			7.4	
Confl. Peds. (#/hr)	2		10	10		2	2		5	5		2
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	50%	3%	4%	0%	0%	0%	11%	6%	0%
Parking (#/hr)				0	0	0						
Adj. Flow (vph)	6	56	2	10	51	129	16	27	2	97	30	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	64	0	0	190	0	0	45	0	0	133	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	36.2%						ICU Level of Service A					
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
7: Victoria Street & John Street

1 Rosetta St TIS Update
Background PM (Ten-Year)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕				↕				↕		↕	
Sign Control	Stop				Stop				Stop		Stop	
Traffic Volume (vph)	5	50	2	9	45	115	14	24	2	86	27	5
Future Volume (vph)	5	50	2	9	45	115	14	24	2	86	27	5
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	6	56	2	10	51	129	16	27	2	97	30	6
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	64	190	45	133								
Volume Left (vph)	6	10	16	97								
Volume Right (vph)	2	129	2	6								
Hadj (s)	0.00	-0.29	0.04	0.28								
Departure Headway (s)	4.6	4.1	4.7	4.8								
Degree Utilization, x	0.08	0.22	0.06	0.18								
Capacity (veh/h)	750	826	717	705								
Control Delay (s)	8.0	8.3	8.0	8.8								
Approach Delay (s)	8.0	8.3	8.0	8.8								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay	8.4											
Level of Service	A											
Intersection Capacity Utilization	36.2%		ICU Level of Service		A							
Analysis Period (min)	15											

Queuing and Blocking Report

1 Rosetta St TIS Update
Background PM (Ten-Year)

Intersection: 1: Mountainview Road N & River Drive

Movement	EB	WB	NB	NB	SB	SB	B25
Directions Served	LTR	LTR	LT	R	LT	TR	T
Maximum Queue (m)	26.0	68.3	107.0	64.8	37.6	35.9	4.1
Average Queue (m)	10.1	37.3	51.3	14.8	19.9	18.0	0.3
95th Queue (m)	20.4	62.6	89.5	39.8	34.7	31.7	3.9
Link Distance (m)	110.0	202.7	404.4	404.4	29.5	29.5	191.2
Upstream Blk Time (%)					1	1	
Queuing Penalty (veh)					3	2	
Storage Bay Dist (m)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: Mountainview Road N & John Street

Movement	EB	WB	NB	NB	B25	B25	SB	SB
Directions Served	LTR	LTR	L	TR	T		L	TR
Maximum Queue (m)	19.6	16.5	32.3	69.8	6.5	3.3	8.8	36.8
Average Queue (m)	10.7	9.2	19.4	29.9	0.2	0.1	2.0	19.1
95th Queue (m)	17.2	14.6	36.1	55.3	3.3	2.3	7.9	31.0
Link Distance (m)	84.2	165.0		191.2	29.5	29.5		166.6
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)			30.0				30.0	
Storage Blk Time (%)			0		5		1	
Queuing Penalty (veh)			1		7		0	

Intersection: 3: River Drive & Daniella Street

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (m)	1.7	9.2
Average Queue (m)	0.1	3.3
95th Queue (m)	1.2	10.4
Link Distance (m)	162.0	120.8
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report

1 Rosetta St TIS Update
Background PM (Ten-Year)

Intersection: 4: River Drive & Rosetta Street

Movement	SB
Directions Served	LR
Maximum Queue (m)	9.2
Average Queue (m)	3.3
95th Queue (m)	10.4
Link Distance (m)	29.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Victoria Street/River Drive & St Michaels Street

Movement	SB
Directions Served	LR
Maximum Queue (m)	15.1
Average Queue (m)	1.8
95th Queue (m)	8.8
Link Distance (m)	71.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Rosset Valley Court & John Street

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (m)	1.8	7.3	9.4
Average Queue (m)	0.1	0.6	3.6
95th Queue (m)	1.3	4.3	10.0
Link Distance (m)	356.5	84.2	140.0
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Queuing and Blocking Report

1 Rosetta St TIS Update
Background PM (Ten-Year)

Intersection: 7: Victoria Street & John Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	14.6	26.8	12.1	21.7
Average Queue (m)	7.7	13.5	6.2	12.6
95th Queue (m)	14.1	22.2	13.5	20.0
Link Distance (m)	139.7	90.2	108.9	96.8
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 13

Appendix I

Five-Year Total Traffic Operations



Lanes, Volumes, Timings
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Total AM (Five-Year)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	
Traffic Volume (vph)	1	41	154	150	18	27	51	299	161	48	516	5
Future Volume (vph)	1	41	154	150	18	27	51	299	161	48	516	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		1.00			1.00				0.97		1.00	
Frt		0.894			0.981				0.850		0.999	
Flt Protected					0.963			0.993			0.996	
Satd. Flow (prot)	0	1499	0	0	1364	0	0	1768	1380	0	3484	0
Flt Permitted		0.998			0.691			0.843			0.884	
Satd. Flow (perm)	0	1496	0	0	979	0	0	1501	1346	0	3091	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		164			11				171			1
Link Speed (k/h)		50			50			50				50
Link Distance (m)		127.8			212.6			412.3				41.4
Travel Time (s)		9.2			15.3			29.7				3.0
Confl. Peds. (#/hr)	5					5			4	4		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	17%	35%	40%	5%	11%	6%	17%	12%	2%	33%
Adj. Flow (vph)	1	44	164	160	19	29	54	318	171	51	549	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	209	0	0	208	0	0	372	171	0	605	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			4			2		2		2
Permitted Phases	4			4			2		2	2		
Detector Phase	4	4		4	4		2	2	2	2		2
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		30.0	30.0	30.0	30.0		30.0
Minimum Split (s)	36.1	36.1		36.1	36.1		36.5	36.5	36.5	36.5		36.5
Total Split (s)	35.0	35.0		35.0	35.0		45.0	45.0	45.0	45.0		45.0
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.3%	56.3%	56.3%	56.3%		56.3%
Maximum Green (s)	28.9	28.9		28.9	28.9		38.5	38.5	38.5	38.5		38.5
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	2.1	2.1		2.1	2.1		2.0	2.0	2.0	2.0		2.0
Lost Time Adjust (s)		3.0			3.0			3.0		3.0		3.0
Total Lost Time (s)		9.1			9.1			9.5		9.5		9.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.5	4.5	4.5	4.5		4.5
Recall Mode	None	None		None	None		Max	Max	Max	Max		Max
Walk Time (s)	10.0	10.0		10.0	10.0		14.0	14.0	14.0	14.0		14.0
Flash Dont Walk (s)	20.0	20.0		20.0	20.0		16.0	16.0	16.0	16.0		16.0
Pedestrian Calls (#/hr)	5	5		5	5		4	4	4	4		4
Act Effct Green (s)		16.5			16.5			35.8		35.8		35.8
Actuated g/C Ratio		0.23			0.23			0.50		0.50		0.50
v/c Ratio		0.44			0.89			0.49		0.22		0.39
Control Delay		9.3			59.9			16.2		3.2		13.1
Queue Delay		0.0			0.0			0.0		0.0		0.0

Lanes, Volumes, Timings
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Total AM (Five-Year)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		9.3			59.9			16.2	3.2		13.1	
LOS		A			E			B	A		B	
Approach Delay		9.3			59.9			12.1			13.1	
Approach LOS		A			E			B			B	
Queue Length 50th (m)		4.7			25.2			30.6	0.0		24.4	
Queue Length 95th (m)		19.0			48.4			67.6	10.2		46.4	
Internal Link Dist (m)		103.8			188.6			388.3			17.4	
Turn Bay Length (m)												
Base Capacity (vph)					369			756	763		1558	
Starvation Cap Reductn		0			0			0	0		0	
Spillback Cap Reductn		0			0			0	0		0	
Storage Cap Reductn		0			0			0	0		0	
Reduced v/c Ratio		0.32			0.56			0.49	0.22		0.39	
Intersection Summary												
Area Type:	Other											
Cycle Length:	80											
Actuated Cycle Length:	71.1											
Natural Cycle:	75											
Control Type:	Semi Act-Uncoord											
Maximum v/c Ratio:	0.89											
Intersection Signal Delay:	18.5						Intersection LOS: B					
Intersection Capacity Utilization:	105.8%						ICU Level of Service G					
Analysis Period (min):	15											
Splits and Phases: 1: Mountainview Road N & River Drive												

HCM Signalized Intersection Capacity Analysis
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Total AM (Five-Year)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	
Traffic Volume (vph)	1	41	154	150	18	27	51	299	161	48	516	5
Future Volume (vph)	1	41	154	150	18	27	51	299	161	48	516	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Total Lost time (s)	9.1			9.1			9.5			9.5		
Lane Util. Factor	1.00			1.00			1.00			0.95		
Frbp, ped/bikes	1.00			1.00			1.00			0.98		
Flpb, ped/bikes	1.00			1.00			1.00			1.00		
Frt	0.89			0.98			1.00			0.85		
Flt Protected	1.00			0.96			0.99			1.00		
Satd. Flow (prot)	1498			1365			1767			1346		
Flt Permitted	1.00			0.69			0.84			1.00		
Satd. Flow (perm)	1496			979			1500			1346		
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	1	44	164	160	19	29	54	318	171	51	549	5
RTOR Reduction (vph)	0	126	0	0	8	0	0	0	85	0	0	0
Lane Group Flow (vph)	0	83	0	0	200	0	0	372	86	0	605	0
Confl. Peds. (#/hr)	5			5			4			4		
Heavy Vehicles (%)	0%	0%	17%	35%	40%	5%	11%	6%	17%	12%	2%	33%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	4		4		4		2		2		2	
Permitted Phases	4		4		2		2		2		2	
Actuated Green, G (s)	19.5		19.5		38.9		38.9		38.9		38.9	
Effective Green, g (s)	16.5		16.5		35.9		35.9		35.9		35.9	
Actuated g/C Ratio	0.23		0.23		0.51		0.51		0.51		0.51	
Clearance Time (s)	6.1		6.1		6.5		6.5		6.5		6.5	
Vehicle Extension (s)	3.0		3.0		4.5		4.5		4.5		4.5	
Lane Grp Cap (vph)	347		227		758		680		1563			
v/s Ratio Prot	0.06		c0.20		c0.25		0.06		0.20			
v/c Ratio	0.24		0.88		0.49		0.13		0.39			
Uniform Delay, d1	22.2		26.3		11.5		9.3		10.8			
Progression Factor	1.00		1.00		1.00		1.00		1.00			
Incremental Delay, d2	0.4		29.6		2.3		0.4		0.7			
Delay (s)	22.5		55.9		13.8		9.7		11.5			
Level of Service	C		E		B		A		B			
Approach Delay (s)	22.5		55.9		12.5				11.5			
Approach LOS	C		E		B				B			
Intersection Summary												
HCM 2000 Control Delay	19.2		HCM 2000 Level of Service				B					
HCM 2000 Volume to Capacity ratio	0.61											
Actuated Cycle Length (s)	71.0		Sum of lost time (s)				18.6					
Intersection Capacity Utilization	105.8%		ICU Level of Service				G					
Analysis Period (min)	15											
c Critical Lane Group												

Lanes, Volumes, Timings
2: Mountainview Road N & John Street

1 Rosetta St TIS Update
Total AM (Five-Year)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	
Traffic Volume (vph)	27	10	106	26	14	11	63	240	22	22	427	26
Future Volume (vph)	27	10	106	26	14	11	63	240	22	22	427	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	0.0	0.0	0.0	0.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0	0.0
Storage Lanes	0	0	0	0	0	1	0	1	0	1	0	0
Taper Length (m)	2.5		2.5		2.5		2.5		2.5		2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.900											
Frt	0.991			0.971			0.988			0.991		
Flt Protected	0.991		0.975		0.950		0.950		0.950		0.950	
Satd. Flow (prot)	0	1637	0	0	1707	0	1544	1792	0	1646	1815	0
Flt Permitted	0.991		0.975		0.950		0.950		0.950		0.950	
Satd. Flow (perm)	0	1637	0	0	1707	0	1544	1792	0	1646	1815	0
Link Speed (k/h)	50			50			50			50		
Link Distance (m)	95.5			171.9			203.3			171.8		
Travel Time (s)	6.9			12.4			14.6			12.4		
Confl. Peds. (#/hr)	2		5		5		2		9		9	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	7%	0%	3%	5%	0%	13%	13%	4%	13%	6%	4%	0%
Adj. Flow (vph)	29	11	113	28	15	12	67	255	23	23	454	28
Shared Lane Traffic (%)	0											
Lane Group Flow (vph)	0	153	0	0	55	0	67	278	0	23	482	0
Sign Control	Stop		Stop		Stop		Stop		Stop		Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	54.9%			ICU Level of Service A								
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
2: Mountainview Road N & John Street

1 Rosetta St TIS Update
Total AM (Five-Year)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↖	↗		↖	↗	
Sign Control	Stop			Stop			Stop	Stop		Stop	Stop	
Traffic Volume (vph)	27	10	106	26	14	11	63	240	22	22	427	26
Future Volume (vph)	27	10	106	26	14	11	63	240	22	22	427	26
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	29	11	113	28	15	12	67	255	23	23	454	28
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total (vph)	153	55	67	278	23	482						
Volume Left (vph)	29	28	67	0	23	0						
Volume Right (vph)	113	12	0	23	0	28						
Hadj (s)	-0.35	0.06	0.72	0.02	0.60	0.02						
Departure Headway (s)	5.8	6.5	6.5	5.8	6.2	5.6						
Degree Utilization, x	0.25	0.10	0.12	0.45	0.04	0.75						
Capacity (veh/h)	554	482	530	598	559	623						
Control Delay (s)	10.7	10.2	9.2	12.2	8.3	22.5						
Approach Delay (s)	10.7	10.2	11.6	21.8								
Approach LOS	B	B	B	C								
Intersection Summary												
Delay			16.3									
Level of Service			C									
Intersection Capacity Utilization			54.9%		ICU Level of Service		A					
Analysis Period (min)			15									

Lanes, Volumes, Timings
3: River Drive & Daniella Street

1 Rosetta St TIS Update
Total AM (Five-Year)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Volume (vph)	3	199	66	3	10	4
Future Volume (vph)	3	199	66	3	10	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.995			0.960
Fit Protected			0.999			0.966
Satd. Flow (prot)	0	1585	1435	0	1762	0
Fit Permitted			0.999			0.966
Satd. Flow (perm)	0	1585	1435	0	1762	0
Link Speed (k/h)			50			50
Link Distance (m)			172.1			127.8
Travel Time (s)			12.4			9.2
Confl. Peds. (#/hr)	3				3	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	20%	33%	0%	0%	0%
Adj. Flow (vph)	3	231	77	3	12	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	234	80	0	17	0
Sign Control	Free		Free			Stop
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	27.9%		ICU Level of Service		A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
3: River Drive & Daniella Street

1 Rosetta St TIS Update
Total AM (Five-Year)

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	3	199	66	3	10	4
Future Volume (Veh/h)	3	199	66	3	10	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	3	231	77	3	12	5
Pedestrians					3	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			128			
pX, platoon unblocked						
vC, conflicting volume	83				318	82
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	83				318	82
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				98	99
cM capacity (veh/h)	1523				676	981
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	234	80	17			
Volume Left	3	0	12			
Volume Right	0	3	5			
eSH	1523	1700	744			
Volume to Capacity	0.00	0.05	0.02			
Queue Length 95th (m)	0.0	0.0	0.5			
Control Delay (s)	0.1	0.0	10.0			
Lane LOS	A		A			
Approach Delay (s)	0.1	0.0	10.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization		27.9%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
4: River Drive & Rosetta Street

1 Rosetta St TIS Update
Total AM (Five-Year)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	0	55	11	53	141	0
Future Volume (vph)	0	55	11	53	141	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.888			
Fit Protected					0.950	
Satd. Flow (prot)	0	1583	1157	0	1805	0
Fit Permitted					0.950	
Satd. Flow (perm)	0	1583	1157	0	1805	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		46.1	172.1		38.0	
Travel Time (s)		3.3	12.4		2.7	
Confl. Peds. (#/hr)					2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	20%	25%	50%	0%	0%
Adj. Flow (vph)	0	61	12	59	157	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	61	71	0	157	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	23.3%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
4: River Drive & Rosetta Street

1 Rosetta St TIS Update
Total AM (Five-Year)

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	0	55	11	53	141	0
Future Volume (Veh/h)	0	55	11	53	141	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	61	12	59	157	0
Pedestrians			2			
Lane Width (m)			3.6			
Walking Speed (m/s)			1.1			
Percent Blockage			0			
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			300			
pX, platoon unblocked					104	42
vC, conflicting volume	71					
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	71				104	42
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				82	100
cM capacity (veh/h)	1542				897	1035
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	61	71	157			
Volume Left	0	0	157			
Volume Right	0	59	0			
sSH	1542	1700	897			
Volume to Capacity	0.00	0.04	0.18			
Queue Length 95th (m)	0.0	0.0	4.8			
Control Delay (s)	0.0	0.0	9.9			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.9			
Approach LOS			A			
Intersection Summary						
Average Delay			5.4			
Intersection Capacity Utilization		23.3%		ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
5: Victoria Street/River Drive & St Michaels Street

1 Rosetta St TIS Update
Total AM (Five-Year)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	1	51	5	1	1	0
Future Volume (vph)	1	51	5	1	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.981			
Fit Protected		0.999			0.950	
Satd. Flow (prot)	0	1668	1535	0	1805	0
Fit Permitted		0.999			0.950	
Satd. Flow (perm)	0	1668	1535	0	1805	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		118.5	126.7		89.7	
Travel Time (s)		8.5	9.1		6.5	
Confl. Peds. (#/hr)	3			3	1	1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	14%	25%	0%	0%	0%
Adj. Flow (vph)	1	60	6	1	1	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	61	7	0	1	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	19.6%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
 5: Victoria Street/River Drive & St Michaels Street

1 Rosetta St TIS Update
 Total AM (Five-Year)

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	1	51	5	1	1	0
Future Volume (Veh/h)	1	51	5	1	1	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	1	60	6	1	1	0
Pedestrians		1	1		3	
Lane Width (m)		3.6	3.6		3.6	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	10				72	10
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	10				72	10
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1618				932	1073
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	61	7	1			
Volume Left	1	0	1			
Volume Right	0	1	0			
sSH	1618	1700	932			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.1	0.0	8.9			
Lane LOS	A		A			
Approach Delay (s)	0.1	0.0	8.9			
Approach LOS			A			
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization		19.6%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
 6: Rosset Valley Court & John Street

1 Rosetta St TIS Update
 Total AM (Five-Year)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕			↕	↕	
Traffic Volume (vph)	112	0	19	83	4	23
Future Volume (vph)	112	0	19	83	4	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.886	
Fit Protected				0.991	0.992	
Satd. Flow (prot)	1827	0	0	1567	1670	0
Fit Permitted				0.991	0.992	
Satd. Flow (perm)	1827	0	0	1567	1670	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	368.0			95.5	146.5	
Travel Time (s)	26.5			6.9	10.5	
Confl. Peds. (#/hr)		8	8			
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	4%	0%	0%	10%	0%	0%
Parking (#/hr)				0	0	
Adj. Flow (vph)	132	0	22	98	5	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	132	0	0	120	32	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	27.1%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
6: Rosset Valley Court & John Street

1 Rosetta St TIS Update
Total AM (Five-Year)

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	112	0	19	83	4	23
Future Volume (Veh/h)	112	0	19	83	4	23
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	132	0	22	98	5	27
Pedestrians					8	
Lane Width (m)				3.6		
Walking Speed (m/s)				1.1		
Percent Blockage				1		
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			140		282	140
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			140		282	140
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
pD queue free %			98		99	97
cM capacity (veh/h)			1445		696	907
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	132	120	32			
Volume Left	0	22	5			
Volume Right	0	0	27			
sSH	1700	1445	866			
Volume to Capacity	0.08	0.02	0.04			
Queue Length 95th (m)	0.0	0.4	0.9			
Control Delay (s)	0.0	1.5	9.3			
Lane LOS		A	A			
Approach Delay (s)	0.0	1.5	9.3			
Approach LOS			A			
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization			27.1%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
7: Victoria Street & John Street

1 Rosetta St TIS Update
Total AM (Five-Year)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	20	4	5	29	64	5	8	0	80	27	5
Future Volume (vph)	0	20	4	5	29	64	5	8	0	80	27	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.976			0.912							0.994
Fit Protected					0.997			0.980				0.966
Satd. Flow (prot)	0	1854	0	0	1424	0	0	1862	0	0	1762	0
Fit Permitted					0.997			0.980				0.966
Satd. Flow (perm)	0	1854	0	0	1424	0	0	1862	0	0	1762	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		145.1			102.7			117.7			102.2	
Travel Time (s)		10.4			7.4			8.5			7.4	
Confl. Peds. (#/hr)	2		5	5		2	2		7	7		2
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	0%	50%	0%	10%	0%	0%	0%	5%	0%	0%
Parking (#/hr)				0	0	0						
Adj. Flow (vph)	0	23	5	6	33	74	6	9	0	92	31	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	28	0	0	113	0	0	15	0	0	129	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	33.0%			ICU Level of Service A								
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
7: Victoria Street & John Street

1 Rosetta St TIS Update
Total AM (Five-Year)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	0	20	4	5	29	64	5	8	0	80	27	5
Future Volume (vph)	0	20	4	5	29	64	5	8	0	80	27	5
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	0	23	5	6	33	74	6	9	0	92	31	6
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	28	113	15	129								
Volume Left (vph)	0	6	6	92								
Volume Right (vph)	5	74	0	6								
Hadj (s)	-0.11	-0.23	0.08	0.18								
Departure Headway (s)	4.2	4.0	4.4	4.4								
Degree Utilization, x	0.03	0.13	0.02	0.16								
Capacity (veh/h)	810	858	773	793								
Control Delay (s)	7.4	7.6	7.5	8.2								
Approach Delay (s)	7.4	7.6	7.5	8.2								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay	7.9											
Level of Service	A											
Intersection Capacity Utilization	33.0%			ICU Level of Service	A							
Analysis Period (min)	15											

Lanes, Volumes, Timings
8: Rosetta Street & Site

1 Rosetta St TIS Update
Total AM (Five-Year)

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↕			↕	↕	
Traffic Volume (vph)	0	136	50	3	5	0
Future Volume (vph)	0	136	50	3	5	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.865					
Fit Protected				0.955		
Satd. Flow (prot)	1611	0	0	1779	1863	0
Fit Permitted	0.955					
Satd. Flow (perm)	1611	0	0	1779	1863	0
Link Speed (k/h)	50		50		50	
Link Distance (m)	43.4		38.0		77.9	
Travel Time (s)	3.1		2.7		5.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	148	54	3	5	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	148	0	0	57	5	0
Sign Control	Stop			Free		
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	31.3%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
8: Rosetta Street & Site

1 Rosetta St TIS Update
Total AM (Five-Year)

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑	↑	
Traffic Volume (veh/h)	0	136	50	3	5	0
Future Volume (Veh/h)	0	136	50	3	5	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	148	54	3	5	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None	None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	116	5	5			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	116	5	5			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	86	97			
cM capacity (veh/h)	851	1078	1616			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	148	57	5			
Volume Left	0	54	0			
Volume Right	148	0	0			
eSH	1078	1616	1700			
Volume to Capacity	0.14	0.03	0.00			
Queue Length 95th (m)	3.6	0.8	0.0			
Control Delay (s)	8.9	6.9	0.0			
Lane LOS	A	A				
Approach Delay (s)	8.9	6.9	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		8.1				
Intersection Capacity Utilization		31.3%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
9: Site & Caroline Street

1 Rosetta St TIS Update
Total AM (Five-Year)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Volume (vph)	3	6	0	1	15	0
Future Volume (vph)	3	6	0	1	15	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.905					
Fit Protected					0.950	
Satd. Flow (prot)	1686	0	0	1863	1770	0
Fit Permitted					0.950	
Satd. Flow (perm)	1686	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	89.7			45.9	33.3	
Travel Time (s)	6.5			3.3	2.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	7	0	1	16	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	0	1	16	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	20.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
9: Site & Caroline Street

1 Rosetta St TIS Update
Total AM (Five-Year)

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↘			↘	↗	
Traffic Volume (veh/h)	3	6	0	1	15	0
Future Volume (Veh/h)	3	6	0	1	15	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	7	0	1	16	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			10		8	6
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			10		8	6
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		98	100
cM capacity (veh/h)			1610		1013	1076
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	10	1	16			
Volume Left	0	0	16			
Volume Right	7	0	0			
sSH	1700	1610	1013			
Volume to Capacity	0.01	0.00	0.02			
Queue Length 95th (m)	0.0	0.0	0.4			
Control Delay (s)	0.0	0.0	8.6			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	8.6			
Approach LOS			A			
Intersection Summary						
Average Delay			5.1			
Intersection Capacity Utilization		20.0%		ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
10: Extension & John Street

1 Rosetta St TIS Update
Total AM (Five-Year)

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↘			↘	↗	
Traffic Volume (vph)	97	3	3	89	9	6
Future Volume (vph)	97	3	3	89	9	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.996				0.944	
Fit Protected				0.999	0.971	
Satd. Flow (prot)	1855	0	0	1675	1707	0
Fit Permitted				0.999	0.971	
Satd. Flow (perm)	1855	0	0	1675	1707	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	102.7			368.0	98.2	
Travel Time (s)	7.4			26.5	7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)			0	0		
Adj. Flow (vph)	105	3	3	97	10	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	108	0	0	100	17	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 23.8%				ICU Level of Service A		
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
10: Extension & John Street

1 Rosetta St TIS Update
Total AM (Five-Year)

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Volume (veh/h)	97	3	3	89	9	6
Future Volume (Veh/h)	97	3	3	89	9	6
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	105	3	3	97	10	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			108		210	106
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			108		210	106
tC, 2 stage (s)			4.1		6.4	6.2
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1483		777	948
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	108	100	17			
Volume Left	0	3	10			
Volume Right	3	0	7			
cSH	1700	1483	839			
Volume to Capacity	0.06	0.00	0.02			
Queue Length 95th (m)	0.0	0.0	0.5			
Control Delay (s)	0.0	0.2	9.4			
Lane LOS	A		A			
Approach Delay (s)	0.0	0.2	9.4			
Approach LOS	A		A			
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			23.8%	ICU Level of Service		A
Analysis Period (min)	15					

Lanes, Volumes, Timings
11: St Michaels Street/Extension & Caroline Street

1 Rosetta St TIS Update
Total AM (Five-Year)

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	
Traffic Volume (vph)	1	15	0	3	6	0
Future Volume (vph)	1	15	0	3	6	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.873		0.865			
Fit Protected	0.997		0.950			
Satd. Flow (prot)	1621	0	1611	0	0	1770
Fit Permitted	0.997		0.950			
Satd. Flow (perm)	1621	0	1611	0	0	1770
Link Speed (k/h)	50		50		50	
Link Distance (m)	89.7		89.7		98.2	
Travel Time (s)	6.5		6.5		7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	16	0	3	7	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	17	0	3	0	0	7
Sign Control	Stop		Free		Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	21.7%		ICU Level of Service A			
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
11: St Michaels Street/Extension & Caroline Street

1 Rosetta St TIS Update
Total AM (Five-Year)

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	R	T	R	T	T
Traffic Volume (veh/h)	1	15	0	3	6	0
Future Volume (Veh/h)	1	15	0	3	6	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	16	0	3	7	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None		None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	16	2			3	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	16	2			3	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	999	1083			1619	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	17	3	7			
Volume Left	1	0	7			
Volume Right	16	3	0			
sSH	1078	1700	1619			
Volume to Capacity	0.02	0.00	0.00			
Queue Length 95th (m)	0.4	0.0	0.1			
Control Delay (s)	8.4	0.0	7.2			
Lane LOS	A		A			
Approach Delay (s)	8.4	0.0	7.2			
Approach LOS	A					
Intersection Summary						
Average Delay			7.2			
Intersection Capacity Utilization			21.7%	ICU Level of Service		A
Analysis Period (min)			15			

Queuing and Blocking Report

1 Rosetta St TIS Update
Total AM (Five-Year)

Intersection: 1: Mountainview Road N & River Drive							
Movement	EB	WB	NB	NB	SB	SB	B25
Directions Served	LTR	LTR	LT	R	LT	TR	T
Maximum Queue (m)	45.2	71.4	60.4	32.1	42.9	38.2	12.9
Average Queue (m)	19.8	33.4	28.4	10.5	21.2	19.9	0.8
95th Queue (m)	37.5	60.2	51.8	23.4	36.3	33.4	7.1
Link Distance (m)	110.0	202.7	404.4	404.4	29.5	29.5	191.2
Upstream Blk Time (%)					1	1	
Queuing Penalty (veh)					4	3	
Storage Bay Dist (m)							
Storage Blk Time (%)							
Queuing Penalty (veh)							
Intersection: 2: Mountainview Road N & John Street							
Movement	EB	WB	NB	NB	SB	SB	
Directions Served	LTR	LTR	L	TR	L	TR	
Maximum Queue (m)	23.6	16.5	29.1	39.8	22.9	47.7	
Average Queue (m)	11.6	8.0	10.4	18.4	5.1	23.2	
95th Queue (m)	18.8	15.3	21.7	31.7	14.9	37.7	
Link Distance (m)	84.2	165.0		191.2		166.6	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)			30.0		30.0		
Storage Blk Time (%)			0	1	0	2	
Queuing Penalty (veh)			0	0	0	0	
Intersection: 3: River Drive & Daniella Street							
Movement	SB						
Directions Served	LR						
Maximum Queue (m)	9.2						
Average Queue (m)	2.9						
95th Queue (m)	9.7						
Link Distance (m)	120.8						
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Queuing and Blocking Report

1 Rosetta St TIS Update
Total AM (Five-Year)

Intersection: 4: River Drive & Rosetta Street

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (m)	2.9	7.3	18.7
Average Queue (m)	0.1	0.2	9.9
95th Queue (m)	2.0	3.1	14.6
Link Distance (m)	38.5	162.0	29.8
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: Victoria Street/River Drive & St Michaels Street

Movement	SB
Directions Served	LR
Maximum Queue (m)	1.3
Average Queue (m)	0.0
95th Queue (m)	0.9
Link Distance (m)	71.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Rosset Valley Court & John Street

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	7.4	9.5
Average Queue (m)	0.7	4.4
95th Queue (m)	4.5	10.9
Link Distance (m)	84.2	140.0
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report

1 Rosetta St TIS Update
Total AM (Five-Year)

Intersection: 7: Victoria Street & John Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	11.9	20.1	9.0	19.5
Average Queue (m)	4.9	10.7	2.7	10.4
95th Queue (m)	12.5	17.6	9.2	16.1
Link Distance (m)	139.7	90.2	108.9	96.8
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: Rosetta Street & Site

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (m)	23.4	1.8
Average Queue (m)	12.0	0.1
95th Queue (m)	19.5	1.2
Link Distance (m)	38.2	29.8
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9: Site & Caroline Street

Movement	NB
Directions Served	LR
Maximum Queue (m)	10.2
Average Queue (m)	2.8
95th Queue (m)	9.7
Link Distance (m)	27.6
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report

1 Rosetta St TIS Update
Total AM (Five-Year)

Intersection: 10: Extension & John Street

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	1.8	9.2
Average Queue (m)	0.1	3.2
95th Queue (m)	1.2	10.3
Link Distance (m)	356.5	89.4
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: St Michaels Street/Extension & Caroline Street

Movement	WB
Directions Served	LR
Maximum Queue (m)	9.2
Average Queue (m)	3.1
95th Queue (m)	10.2
Link Distance (m)	77.5
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 8

Lanes, Volumes, Timings


1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Total PM (Five-Year)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕			↕
Traffic Volume (vph)	3	32	124	185	45	67	135	507	189	33	389	7
Future Volume (vph)	3	32	124	185	45	67	135	507	189	33	389	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99			0.99			1.00	0.97			1.00
Frts		0.895			0.970				0.850			0.997
Fit Protected		0.999			0.970			0.990				0.996
Satd. Flow (prot)	0	1582	0	0	1687	0	0	1794	1302	0	3428	0
Fit Permitted		0.993			0.734			0.785				0.781
Satd. Flow (perm)	0	1572	0	0	1276	0	0	1422	1261	0	2688	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		138			19				210			3
Link Speed (k/h)		50			50			50				50
Link Distance (m)		127.8			212.6			412.3				41.4
Travel Time (s)		9.2			15.3			29.7				3.0
Confl. Peds. (#/hr)	13		1	1		13	2		9	9		2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	50%	0%	7%	8%	0%	2%	8%	4%	24%	0%	5%	0%
Adj. Flow (vph)	3	36	138	206	50	74	150	563	210	37	432	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	177	0	0	330	0	0	713	210	0	477	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2		2	2		
Detector Phase	4	4		4	4		2	2	2	2	2	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		30.0	30.0	30.0	30.0	30.0	
Minimum Split (s)	36.1	36.1		36.1	36.1		36.5	36.5	36.5	36.5	36.5	
Total Split (s)	35.0	35.0		35.0	35.0		45.0	45.0	45.0	45.0	45.0	
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.3%	56.3%	56.3%	56.3%	56.3%	
Maximum Green (s)	28.9	28.9		28.9	28.9		38.5	38.5	38.5	38.5	38.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5	4.5	4.5	4.5	
All-Red Time (s)	2.1	2.1		2.1	2.1		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		3.0			3.0			3.0	3.0		3.0	
Total Lost Time (s)		9.1			9.1			9.5	9.5		9.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.5	4.5	4.5	4.5	4.5	
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		14.0	14.0	14.0	14.0	14.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0		16.0	16.0	16.0	16.0	16.0	
Pedestrian Calls (#/hr)	14	14		14	14		11	11	11	11	11	
Act Effct Green (s)		20.4			20.4			35.7	35.7		35.7	
Actuated g/C Ratio		0.27			0.27			0.48	0.48		0.48	
v/c Ratio		0.33			0.91			1.05	0.30		0.37	
Control Delay		8.1			55.2			72.7	3.4		14.5	
Queue Delay		0.0			0.0			0.0	0.0		0.0	

Lanes, Volumes, Timings
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Total PM (Five-Year)




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		8.1			55.2			72.7	3.4			14.5
LOS		A			E			E	A			B
Approach Delay		8.1			55.2			57.0				14.5
Approach LOS		A			E			E	A			B
Queue Length 50th (m)		4.1			42.3			~116.5	0.0			22.2
Queue Length 95th (m)		17.2			#82.0			#193.4	11.3			37.0
Internal Link Dist (m)		103.8			188.6			388.3				17.4
Turn Bay Length (m)												
Base Capacity (vph)		641			459			678	711			1284
Starvation Cap Reductn		0			0			0	0			0
Spillback Cap Reductn		0			0			0	0			0
Storage Cap Reductn		0			0			0	0			0
Reduced v/c Ratio		0.28			0.72			1.05	0.30			0.37

Intersection Summary	
Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	74.9
Natural Cycle:	90
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	1.05
Intersection Signal Delay:	41.5
Intersection LOS:	D
Intersection Capacity Utilization:	120.0%
ICU Level of Service:	H
Analysis Period (min):	15
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	



HCM Signalized Intersection Capacity Analysis
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Total PM (Five-Year)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	
Traffic Volume (vph)	3	32	124	185	45	67	135	507	189	33	389	7
Future Volume (vph)	3	32	124	185	45	67	135	507	189	33	389	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Total Lost time (s)		9.1			9.1			9.5	9.5		9.5	
Lane Util. Factor		1.00			1.00			1.00	1.00		0.95	
Frbp, ped/bikes		0.99			1.00			1.00	0.97		1.00	
Flpb, ped/bikes		1.00			1.00			1.00	1.00		1.00	
Frt		0.89			0.97			1.00	0.85		1.00	
Flt Protected		1.00			0.97			0.99	1.00		1.00	
Satd. Flow (prot)		1582			1686			1793	1262		3430	
Flt Permitted		0.99			0.73			0.78	1.00		0.78	
Satd. Flow (perm)		1572			1276			1422	1262		2688	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	3	36	138	206	50	74	150	563	210	37	432	8
RTOR Reduction (vph)	0	100	0	0	14	0	0	110	0	2	0	0
Lane Group Flow (vph)	0	77	0	0	316	0	0	713	100	0	475	0
Confl. Peds. (#/hr)	13		1	1		13	2		9	9		2
Heavy Vehicles (%)	50%	0%	7%	8%	0%	2%	8%	4%	24%	0%	5%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			4			2		2		2
Permitted Phases	4			4			2		2	2		
Actuated Green, G (s)		23.4			23.4			38.7	38.7		38.7	
Effective Green, g (s)		20.4			20.4			35.7	35.7		35.7	
Actuated g/C Ratio		0.27			0.27			0.48	0.48		0.48	
Clearance Time (s)		6.1			6.1			6.5	6.5		6.5	
Vehicle Extension (s)		3.0			3.0			4.5	4.5		4.5	
Lane Grp Cap (vph)		429			348			679	603		1284	
v/s Ratio Prot												
v/s Ratio Perm		0.05			c0.25			c0.50	0.08		0.18	
v/c Ratio		0.18			0.91			1.05	0.17		0.37	
Uniform Delay, d1		20.7			26.2			19.5	11.1		12.4	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			26.3			48.4	0.6		0.8	
Delay (s)		20.9			52.6			67.9	11.7		13.2	
Level of Service		C			D			E	B		B	
Approach Delay (s)		20.9			52.6			55.1			13.2	
Approach LOS		C			D			E			B	

Intersection Summary	
HCM 2000 Control Delay	41.0
HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00
Actuated Cycle Length (s)	74.7
Sum of lost time (s)	18.6
Intersection Capacity Utilization	120.0%
ICU Level of Service	H
Analysis Period (min)	15
c Critical Lane Group	

Lanes, Volumes, Timings
2: Mountainview Road N & John Street

1 Rosetta St TIS Update
Total PM (Five-Year)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Volume (vph)	36	14	63	32	23	18	144	430	36	8	317	35
Future Volume (vph)	36	14	63	32	23	18	144	430	36	8	317	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.3	3.6	3.3	3.6	3.6
Storage Length (m)	0.0	0.0	0.0			0.0	30.0		0.0	30.0		0.0
Storage Lanes	0	0	0			0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.924			0.966			0.988			0.985	
Flt Protected		0.984			0.979		0.950		0.950			
Satd. Flow (prot)	0	1728	0	0	1797	0	1711	1877	0	1745	1855	0
Flt Permitted		0.984			0.979		0.950		0.950			
Satd. Flow (perm)	0	1728	0	0	1797	0	1711	1877	0	1745	1855	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		95.5			171.9			203.3			171.8	
Travel Time (s)		6.9			12.4			14.6			12.4	
Confl. Peds. (#/hr)	2		1	1		2	2		1	1		2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	1%	0%
Adj. Flow (vph)	37	14	65	33	24	19	148	443	37	8	327	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	116	0	0	76	0	148	480	0	8	363	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	53.6%											
ICU Level of Service	A											
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
2: Mountainview Road N & John Street

1 Rosetta St TIS Update
Total PM (Five-Year)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Sign Control		Stop			Stop		Stop	Stop		Stop	Stop	
Traffic Volume (vph)	36	14	63	32	23	18	144	430	36	8	317	35
Future Volume (vph)	36	14	63	32	23	18	144	430	36	8	317	35
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	37	14	65	33	24	19	148	443	37	8	327	36
Direction, Lane #												
	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total (vph)	116	76	148	480	8	363						
Volume Left (vph)	37	33	148	0	8	0						
Volume Right (vph)	65	19	0	37	0	36						
Hadj (s)	-0.27	-0.06	0.53	-0.05	0.50	-0.05						
Departure Headway (s)	6.1	6.5	6.1	5.5	6.4	5.8						
Degree Utilization, x	0.20	0.14	0.25	0.74	0.01	0.59						
Capacity (veh/h)	522	488	572	633	536	588						
Control Delay (s)	10.7	10.5	10.0	21.3	8.3	15.7						
Approach Delay (s)	10.7	10.5	18.6		15.5							
Approach LOS	B	B	C		C							
Intersection Summary												
Delay	16.4											
Level of Service	C											
Intersection Capacity Utilization	53.6%											
ICU Level of Service	A											
Analysis Period (min)	15											

Lanes, Volumes, Timings
3: River Drive & Daniella Street

1 Rosetta St TIS Update
Total PM (Five-Year)

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	5	140	186	16	8	3
Future Volume (vph)	5	140	186	16	8	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.990		0.966		
Flt Protected		0.998		0.964		
Satd. Flow (prot)	0	1729	1767	0	1769	0
Flt Permitted		0.998		0.964		
Satd. Flow (perm)	0	1729	1767	0	1769	0
Link Speed (k/h)		50	50	50		
Link Distance (m)		172.1	127.8	126.0		
Travel Time (s)		12.4	9.2	9.1		
Confl. Peds. (#/hr)	4			4		
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	10%	7%	0%	0%	0%
Adj. Flow (vph)	6	161	214	18	9	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	167	232	0	12	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	26.4%		ICU Level of Service A			
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
3: River Drive & Daniella Street

1 Rosetta St TIS Update
Total PM (Five-Year)

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	5	140	186	16	8	3
Future Volume (Veh/h)	5	140	186	16	8	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	6	161	214	18	9	3
Pedestrians					4	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			128			
pX, platoon unblocked					400	227
vC, conflicting volume	236				400	227
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	236				400	227
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1338				605	814
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	167	232	12			
Volume Left	6	0	9			
Volume Right	0	18	3			
eSH	1338	1700	646			
Volume to Capacity	0.00	0.14	0.02			
Queue Length 95th (m)	0.1	0.0	0.4			
Control Delay (s)	0.3	0.0	10.7			
Lane LOS	A		B			
Approach Delay (s)	0.3	0.0	10.7			
Approach LOS			B			
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization		26.4%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings
4: River Drive & Rosetta Street

1 Rosetta St TIS Update
Total PM (Five-Year)

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	0	51	40	140	90	3
Future Volume (vph)	0	51	40	140	90	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.895		0.995		
Flt Protected				0.954		
Satd. Flow (prot)	0	1712	1534	0	1804	0
Flt Permitted				0.954		
Satd. Flow (perm)	0	1712	1534	0	1804	0
Link Speed (k/h)		50		50		
Link Distance (m)		46.1		172.1		38.0
Travel Time (s)		3.3		12.4		2.7
Confl. Peds. (#/hr)	3			3		
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	11%	0%	14%	0%	0%
Adj. Flow (vph)	0	61	48	167	107	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	61	215	0	111	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	28.0%		ICU Level of Service A			
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
4: River Drive & Rosetta Street

1 Rosetta St TIS Update
Total PM (Five-Year)

	EBL	EBT	WBT	WBR	SBL	SBR
Movement		↕	↕		↕	
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	0	51	40	140	90	3
Future Volume (Veh/h)	0	51	40	140	90	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	61	48	167	107	4
Pedestrians					3	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			300			
pX, platoon unblocked						
vC, conflicting volume	218				196	134
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	218				196	134
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				87	100
cM capacity (veh/h)	1360				796	917
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	61	215	111			
Volume Left	0	0	107			
Volume Right	0	167	4			
eSH	1360	1700	799			
Volume to Capacity	0.00	0.13	0.14			
Queue Length 95th (m)	0.0	0.0	3.7			
Control Delay (s)	0.0	0.0	10.2			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	10.2			
Approach LOS			B			
Intersection Summary						
Average Delay			2.9			
Intersection Capacity Utilization	28.0%		ICU Level of Service	A		
Analysis Period (min)	15					

Lanes, Volumes, Timings
5: Victoria Street/River Drive & St Michaels Street

1 Rosetta St TIS Update
Total PM (Five-Year)

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	0	38	38	3	7	0
Future Volume (vph)	0	38	38	3	7	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.989					
Fit Protected				0.950		
Satd. Flow (prot)	0	1712	1879	0	1504	0
Fit Permitted	0.950					
Satd. Flow (perm)	0	1712	1879	0	1504	0
Link Speed (k/h)	50			50		
Link Distance (m)	118.5		126.7		89.7	
Travel Time (s)	8.5		9.1		6.5	
Confl. Peds. (#/hr)	2		2			
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	11%	0%	0%	20%	0%
Adj. Flow (vph)	0	45	45	4	8	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	45	49	0	8	0
Sign Control	Free		Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	19.0%		ICU Level of Service A			
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
5: Victoria Street/River Drive & St Michaels Street

1 Rosetta St TIS Update
Total PM (Five-Year)

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	0	38	38	3	7	0
Future Volume (Veh/h)	0	38	38	3	7	0
Sign Control	Free		Free		Stop	
Grade	0%					
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	45	45	4	8	0
Pedestrians	2					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	51				94 49	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	51				94 49	
tC, single (s)	4.1				6.6 6.2	
tC, 2 stage (s)						
tF (s)	2.2				3.7 3.3	
p0 queue free %	100				99 100	
cM capacity (veh/h)	1565				862 1023	
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	45	49	8			
Volume Left	0	0	8			
Volume Right	0	4	0			
eSH	1565	1700	862			
Volume to Capacity	0.00	0.03	0.01			
Queue Length 95th (m)	0.0	0.0	0.2			
Control Delay (s)	0.0	0.0	9.2			
Lane LOS	A		A			
Approach Delay (s)	0.0	0.0	9.2			
Approach LOS	A		A			
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization	19.0%		ICU Level of Service		A	
Analysis Period (min)	15					

Lanes, Volumes, Timings
6: Rosset Valley Court & John Street

1 Rosetta St TIS Update
Total PM (Five-Year)

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↘			↖	↗	
Traffic Volume (vph)	125	7	22	167	3	19
Future Volume (vph)	125	7	22	167	3	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.993				0.885	
Flt Protected				0.994	0.993	
Satd. Flow (prot)	1769	0	0	1628	1670	0
Flt Permitted				0.994	0.993	
Satd. Flow (perm)	1769	0	0	1628	1670	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	368.0			95.5	146.5	
Travel Time (s)	26.5			6.9	10.5	
Confl. Peds. (#/hr)		6	6		1	3
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	7%	0%	0%	5%	0%	0%
Parking (#/hr)			0	0		
Adj. Flow (vph)	149	8	26	199	4	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	157	0	0	225	27	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	40.0%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
6: Rosset Valley Court & John Street

1 Rosetta St TIS Update
Total PM (Five-Year)

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↘			↖	↗	
Traffic Volume (veh/h)	125	7	22	167	3	19
Future Volume (Veh/h)	125	7	22	167	3	19
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	149	8	26	199	4	23
Pedestrians	1			3	6	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	0			0	1	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			163		411	162
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			163		411	162
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		99	97
cM capacity (veh/h)			1420		586	881

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	157	225	27
Volume Left	0	26	4
Volume Right	8	0	23
sSH	1700	1420	820
Volume to Capacity	0.09	0.02	0.03
Queue Length 95th (m)	0.0	0.4	0.8
Control Delay (s)	0.0	1.0	9.5
Lane LOS	A	A	A
Approach Delay (s)	0.0	1.0	9.5
Approach LOS		A	

Intersection Summary

Average Delay		1.2
Intersection Capacity Utilization	40.0%	ICU Level of Service
Analysis Period (min)	15	A

Lanes, Volumes, Timings
7: Victoria Street & John Street

1 Rosetta St TIS Update
Total PM (Five-Year)

	↖	→	↘	↙	←	↖	↙	↑	↘	↙	↓	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	4	48	1	8	43	108	12	22	1	83	25	4
Future Volume (vph)	4	48	1	8	43	108	12	22	1	83	25	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.908			0.997			0.996	
Flt Protected		0.997			0.997			0.984			0.964	
Satd. Flow (prot)	0	1891	0	0	1460	0	0	1864	0	0	1666	0
Flt Permitted		0.997			0.997			0.984			0.964	
Satd. Flow (perm)	0	1891	0	0	1460	0	0	1864	0	0	1666	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		145.1			102.7			117.7			102.2	
Travel Time (s)		10.4			7.4			8.5			7.4	
Confl. Peds. (#/hr)	2		10	10		2	2		5	5		2
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	50%	3%	4%	0%	0%	0%	11%	6%	0%
Parking (#/hr)				0	0	0						
Adj. Flow (vph)	4	54	1	9	48	121	13	25	1	93	28	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	59	0	0	178	0	0	39	0	0	125	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	35.3% ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
7: Victoria Street & John Street

1 Rosetta St TIS Update
Total PM (Five-Year)

	↖	→	↘	↙	←	↖	↙	↑	↘	↙	↓	↘
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	4	48	1	8	43	108	12	22	1	83	25	4
Future Volume (vph)	4	48	1	8	43	108	12	22	1	83	25	4
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	4	54	1	9	48	121	13	25	1	93	28	4
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	59	178	39	125								
Volume Left (vph)	4	9	13	93								
Volume Right (vph)	1	121	1	4								
Hadj (s)	0.00	-0.29	0.05	0.29								
Departure Headway (s)	4.5	4.1	4.6	4.8								
Degree Utilization, x	0.07	0.20	0.05	0.17								
Capacity (veh/h)	761	837	727	712								
Control Delay (s)	7.9	8.1	7.9	8.7								
Approach Delay (s)	7.9	8.1	7.9	8.7								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				8.2								
Level of Service				A								
Intersection Capacity Utilization			35.3%		ICU Level of Service					A		
Analysis Period (min)			15									

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	35.3% ICU Level of Service A
Analysis Period (min)	15

Lanes, Volumes, Timings
8: Rosetta Street & Site

1 Rosetta St TIS Update
Total PM (Five-Year)

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	82	130	10	11	0
Future Volume (vph)	0	82	130	10	11	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr	0.865					
Fit Protected				0.956		
Satd. Flow (prot)	1611	0	0	1781	1863	0
Fit Permitted				0.956		
Satd. Flow (perm)	1611	0	0	1781	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	43.4			38.0	77.9	
Travel Time (s)	3.1			2.7	5.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	89	141	11	12	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	89	0	0	152	12	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	32.8%
ICU Level of Service A	
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
8: Rosetta Street & Site

1 Rosetta St TIS Update
Total PM (Five-Year)

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	82	130	10	11	0
Future Volume (Veh/h)	0	82	130	10	11	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	89	141	11	12	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	305	12	12			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	305	12	12			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	92	91			
cM capacity (veh/h)	627	1069	1607			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	89	152	12			
Volume Left	0	141	0			
Volume Right	89	0	0			
sSH	1069	1607	1700			
Volume to Capacity	0.08	0.09	0.01			
Queue Length 95th (m)	2.1	2.2	0.0			
Control Delay (s)	8.7	7.0	0.0			
Lane LOS	A	A				
Approach Delay (s)	8.7	7.0	0.0			
Approach LOS	A					

Intersection Summary			
Average Delay		7.2	
Intersection Capacity Utilization	32.8%	ICU Level of Service	A
Analysis Period (min)		15	

Lanes, Volumes, Timings
9: Site & Caroline Street

1 Rosetta St TIS Update
Total PM (Five-Year)

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕			↕	↕	
Traffic Volume (vph)	3	14	0	7	10	0
Future Volume (vph)	3	14	0	7	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.887					
Fit Protected				0.950		
Satd. Flow (prot)	1652	0	0	1863	1770	0
Fit Permitted				0.950		
Satd. Flow (perm)	1652	0	0	1863	1770	0
Link Speed (k/h)	50		50		50	
Link Distance (m)	89.7		45.9		33.3	
Travel Time (s)	6.5		3.3		2.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	15	0	8	11	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	18	0	0	8	11	0
Sign Control	Free		Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	20.0%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis
9: Site & Caroline Street

1 Rosetta St TIS Update
Total PM (Five-Year)

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕			↕	↕	
Traffic Volume (veh/h)	3	14	0	7	10	0
Future Volume (Veh/h)	3	14	0	7	10	0
Sign Control	Free		Free		Stop	
Grade	0%					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	15	0	8	11	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			18		18 10	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			18		18 10	
tC, single (s)			4.1		6.4 6.2	
tC, 2 stage (s)						
tF (s)			2.2		3.5 3.3	
p0 queue free %			100		99 100	
cM capacity (veh/h)			1599		999 1071	

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	18	8	11
Volume Left	0	0	11
Volume Right	15	0	0
eSH	1700	1599	999
Volume to Capacity	0.01	0.00	0.01
Queue Length 95th (m)	0.0	0.0	0.3
Control Delay (s)	0.0	0.0	8.6
Lane LOS	A		
Approach Delay (s)	0.0	0.0	8.6
Approach LOS	A		

Intersection Summary			
Average Delay			2.6
Intersection Capacity Utilization	20.0%	ICU Level of Service	A
Analysis Period (min)			15

Lanes, Volumes, Timings
10: Extension & John Street

1 Rosetta St TIS Update
Total PM (Five-Year)

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↘			↘	↗	↗
Traffic Volume (vph)	125	8	6	154	6	4
Future Volume (vph)	125	8	6	154	6	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.992				0.951	
Flt Protected				0.998	0.969	
Satd. Flow (prot)	1848	0	0	1673	1717	0
Flt Permitted				0.998	0.969	
Satd. Flow (perm)	1848	0	0	1673	1717	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	102.7			368.0	98.2	
Travel Time (s)	7.4			26.5	7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)			0	0		
Adj. Flow (vph)	136	9	7	167	7	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	145	0	0	174	11	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	29.6%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
10: Extension & John Street

1 Rosetta St TIS Update
Total PM (Five-Year)

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↘			↘	↗	↗
Traffic Volume (veh/h)	125	8	6	154	6	4
Future Volume (Veh/h)	125	8	6	154	6	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	136	9	7	167	7	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			145		322	140
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			145		322	140
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	100
cM capacity (veh/h)			1437		669	907
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	145	174	11			
Volume Left	0	7	7			
Volume Right	9	0	4			
sSH	1700	1437	740			
Volume to Capacity	0.09	0.00	0.01			
Queue Length 95th (m)	0.0	0.1	0.3			
Control Delay (s)	0.0	0.3	9.9			
Lane LOS	A		A			
Approach Delay (s)	0.0	0.3	9.9			
Approach LOS	A		A			
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization	29.6%		ICU Level of Service		A	
Analysis Period (min)	15					

Lanes, Volumes, Timings
11: St Michaels Street/Extension & Caroline Street

1 Rosetta St TIS Update
Total PM (Five-Year)

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	7	10	0	3	14	0
Future Volume (vph)	7	10	0	3	14	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.922	0.865				
Flt Protected	0.979			0.950		
Satd. Flow (prot)	1681	0	1611	0	0	1770
Flt Permitted	0.979			0.950		
Satd. Flow (perm)	1681	0	1611	0	0	1770
Link Speed (k/h)	50	50		50		
Link Distance (m)	89.7	89.7		98.2		
Travel Time (s)	6.5	6.5		7.1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	11	0	3	15	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	19	0	3	0	0	15
Sign Control	Stop	Free		Free		

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	24.1% ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
11: St Michaels Street/Extension & Caroline Street

1 Rosetta St TIS Update
Total PM (Five-Year)

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	7	10	0	3	14	0
Future Volume (Veh/h)	7	10	0	3	14	0
Sign Control	Stop	Free		Free		
Grade	0%	0%		0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	11	0	3	15	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	32	2			3	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	32	2			3	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	99			99	
cM capacity (veh/h)	973	1083			1619	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	19	3	15
Volume Left	8	0	15
Volume Right	11	3	0
sSH	1034	1700	1619
Volume to Capacity	0.02	0.00	0.01
Queue Length 95th (m)	0.4	0.0	0.2
Control Delay (s)	8.5	0.0	7.2
Lane LOS	A		A
Approach Delay (s)	8.5	0.0	7.2
Approach LOS	A		

Intersection Summary			
Average Delay	7.3		
Intersection Capacity Utilization	24.1%	ICU Level of Service	A
Analysis Period (min)	15		

Queuing and Blocking Report

1 Rosetta St TIS Update
Total PM (Five-Year)

Intersection: 1: Mountainview Road N & River Drive

Movement	EB	WB	NB	NB	SB	SB	B25
Directions Served	LTR	LTR	LT	R	LT	TR	T
Maximum Queue (m)	37.5	74.9	170.8	64.0	37.6	34.5	4.7
Average Queue (m)	14.5	38.0	74.0	14.0	18.1	16.6	0.2
95th Queue (m)	27.7	62.9	142.2	35.3	31.2	30.5	3.3
Link Distance (m)	110.0	202.7	404.4	404.4	29.5	29.5	191.2
Upstream Blk Time (%)					1	0	
Queuing Penalty (veh)					2	1	
Storage Bay Dist (m)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: Mountainview Road N & John Street

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (m)	22.8	18.7	32.2	59.4	8.8	32.5
Average Queue (m)	9.9	9.6	15.1	24.3	2.1	17.5
95th Queue (m)	15.9	15.6	29.6	43.1	8.2	27.6
Link Distance (m)	84.2	165.0		191.2		166.6
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)			30.0		30.0	
Storage Blk Time (%)			0	2		0
Queuing Penalty (veh)			0	3		0

Intersection: 3: River Drive & Daniella Street

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (m)	6.3	10.5
Average Queue (m)	0.4	2.9
95th Queue (m)	4.0	9.8
Link Distance (m)	162.0	120.8
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report

1 Rosetta St TIS Update
Total PM (Five-Year)

Intersection: 4: River Drive & Rosetta Street

Movement	SB
Directions Served	LR
Maximum Queue (m)	17.3
Average Queue (m)	9.6
95th Queue (m)	13.8
Link Distance (m)	29.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Victoria Street/River Drive & St Michaels Street

Movement	SB
Directions Served	LR
Maximum Queue (m)	8.3
Average Queue (m)	1.1
95th Queue (m)	5.4
Link Distance (m)	71.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Rosset Valley Court & John Street

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	11.7	9.5
Average Queue (m)	1.1	4.0
95th Queue (m)	6.3	10.4
Link Distance (m)	84.2	140.0
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report

1 Rosetta St TIS Update
Total PM (Five-Year)

Intersection: 7: Victoria Street & John Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	14.6	24.3	11.8	23.0
Average Queue (m)	7.6	12.3	6.1	11.9
95th Queue (m)	13.6	19.9	13.3	19.3
Link Distance (m)	139.7	90.2	108.9	96.8
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: Rosetta Street & Site

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (m)	20.3	5.1
Average Queue (m)	9.8	0.2
95th Queue (m)	16.6	2.7
Link Distance (m)	38.2	29.8
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9: Site & Caroline Street

Movement	NB
Directions Served	LR
Maximum Queue (m)	8.8
Average Queue (m)	2.4
95th Queue (m)	8.7
Link Distance (m)	27.6
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report

1 Rosetta St TIS Update
Total PM (Five-Year)

Intersection: 10: Extension & John Street

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	1.9	9.2
Average Queue (m)	0.1	2.8
95th Queue (m)	1.3	9.7
Link Distance (m)	356.5	89.4
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: St Michaels Street/Extension & Caroline Street

Movement	WB
Directions Served	LR
Maximum Queue (m)	9.2
Average Queue (m)	3.7
95th Queue (m)	11.0
Link Distance (m)	77.5
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 7

Appendix J

Ten-Year Total Traffic Operations



Lanes, Volumes, Timings
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Total AM (Ten-Year)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	
Traffic Volume (vph)	2	42	159	165	19	30	53	330	177	53	570	5
Future Volume (vph)	2	42	159	165	19	30	53	330	177	53	570	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		1.00			1.00				0.97		1.00	
Frt		0.894			0.981				0.850		0.999	
Flt Protected					0.963			0.993			0.996	
Satd. Flow (prot)	0	1499	0	0	1365	0	0	1768	1380	0	3485	0
Flt Permitted		0.997			0.678			0.833			0.876	
Satd. Flow (perm)	0	1495	0	0	961	0	0	1483	1346	0	3064	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		169			11			188			1	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		127.8			212.6			412.3			41.4	
Travel Time (s)		9.2			15.3			29.7			3.0	
Confl. Peds. (#/hr)	5					5			4	4		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	17%	35%	40%	5%	11%	6%	17%	12%	2%	33%
Adj. Flow (vph)	2	45	169	176	20	32	56	351	188	56	606	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	216	0	0	228	0	0	407	188	0	667	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			4			2		2		2
Permitted Phases	4			4			2		2	2		
Detector Phase	4	4		4	4		2	2	2	2		2
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		30.0	30.0	30.0	30.0		30.0
Minimum Split (s)	36.1	36.1		36.1	36.1		36.5	36.5	36.5	36.5		36.5
Total Split (s)	35.0	35.0		35.0	35.0		45.0	45.0	45.0	45.0		45.0
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.3%	56.3%	56.3%	56.3%		56.3%
Maximum Green (s)	28.9	28.9		28.9	28.9		38.5	38.5	38.5	38.5		38.5
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	2.1	2.1		2.1	2.1		2.0	2.0	2.0	2.0		2.0
Lost Time Adjust (s)		3.0			3.0			3.0		3.0		3.0
Total Lost Time (s)		9.1			9.1			9.5		9.5		9.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.5	4.5	4.5	4.5		4.5
Recall Mode	None	None		None	None		Max	Max	Max	Max		Max
Walk Time (s)	10.0	10.0		10.0	10.0		14.0	14.0	14.0	14.0		14.0
Flash Dont Walk (s)	20.0	20.0		20.0	20.0		16.0	16.0	16.0	16.0		16.0
Pedestrian Calls (#/hr)	5	5		5	5		4	4	4	4		4
Act Effct Green (s)		18.6			18.6			35.8		35.8		35.8
Actuated g/C Ratio		0.25			0.25			0.49		0.49		0.49
v/c Ratio		0.43			0.90			0.56		0.25		0.44
Control Delay		8.8			62.0			18.7		3.3		14.6
Queue Delay		0.0			0.0			0.0		0.0		0.0

Lanes, Volumes, Timings
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Total AM (Ten-Year)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		8.8			62.0			18.7	3.3		14.6	
LOS		A			E			B	A		B	
Approach Delay		8.8			62.0			13.8			14.6	
Approach LOS		A			E			B			B	
Queue Length 50th (m)		4.9			28.8			38.1	0.0		30.5	
Queue Length 95th (m)		19.6			#61.0			76.4	10.6		52.1	
Internal Link Dist (m)		103.8			188.6			388.3			17.4	
Turn Bay Length (m)												
Base Capacity (vph)		645			352			725	754		1499	
Starvation Cap Reductn		0			0			0	0		0	
Spillback Cap Reductn		0			0			0	0		0	
Storage Cap Reductn		0			0			0	0		0	
Reduced v/c Ratio		0.33			0.65			0.56	0.25		0.44	

Intersection Summary

Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	73.2
Natural Cycle:	75
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.90
Intersection Signal Delay:	19.9
Intersection LOS:	B
Intersection Capacity Utilization:	107.1%
ICU Level of Service:	G
Analysis Period (min):	15
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Spits and Phases: 1: Mountainview Road N & River Drive



HCM Signalized Intersection Capacity Analysis
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Total AM (Ten-Year)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	
Traffic Volume (vph)	2	42	159	165	19	30	53	330	177	53	570	5
Future Volume (vph)	2	42	159	165	19	30	53	330	177	53	570	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Total Lost time (s)	9.1			9.1			9.5			9.5		
Lane Util. Factor	1.00			1.00			1.00			0.95		
Frbp, ped/bikes	1.00			1.00			1.00			0.98		
Flpb, ped/bikes	1.00			1.00			1.00			1.00		
Frt	0.89			0.98			1.00			0.85		
Flt Protected	1.00			0.96			0.99			1.00		
Satd. Flow (prot)	1499			1365			1769			1346		
Flt Permitted	1.00			0.68			0.83			1.00		
Satd. Flow (perm)	1495			961			1484			1346		
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	2	45	169	176	20	32	56	351	188	56	606	5
RTOR Reduction (vph)	0	126	0	0	8	0	0	0	96	0	1	0
Lane Group Flow (vph)	0	90	0	0	220	0	0	407	92	0	666	0
Confl. Peds. (#/hr)	5			5			4			4		
Heavy Vehicles (%)	0%	0%	17%	35%	40%	5%	11%	6%	17%	12%	2%	33%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	4		4		4		2		2		2	
Permitted Phases	4		4		2		2		2		2	
Actuated Green, G (s)	21.7		21.7		38.8		38.8		38.8		38.8	
Effective Green, g (s)	18.7		18.7		35.8		35.8		35.8		35.8	
Actuated g/C Ratio	0.26		0.26		0.49		0.49		0.49		0.49	
Clearance Time (s)	6.1		6.1		6.5		6.5		6.5		6.5	
Vehicle Extension (s)	3.0		3.0		4.5		4.5		4.5		4.5	
Lane Grp Cap (vph)	382		245		726		659		1499		1499	
v/s Ratio Prot	0.06		c0.23		c0.27		0.07		0.22		0.22	
v/c Ratio	0.24		0.90		0.56		0.14		0.44		0.44	
Uniform Delay, d1	21.5		26.3		13.1		10.2		12.2		12.2	
Progression Factor	1.00		1.00		1.00		1.00		1.00		1.00	
Incremental Delay, d2	0.3		31.5		3.1		0.4		1.0		1.0	
Delay (s)	21.9		57.7		16.2		10.7		13.1		13.1	
Level of Service	C		E		B		B		B		B	
Approach Delay (s)	21.9		57.7		14.5		13.1		13.1		13.1	
Approach LOS	C		E		B		B		B		B	
Intersection Summary												
HCM 2000 Control Delay	20.7		HCM 2000 Level of Service				C					
HCM 2000 Volume to Capacity ratio	0.67											
Actuated Cycle Length (s)	73.1		Sum of lost time (s)				18.6					
Intersection Capacity Utilization	107.1%		ICU Level of Service				G					
Analysis Period (min)	15											
c Critical Lane Group												

Lanes, Volumes, Timings
2: Mountainview Road N & John Street

1 Rosetta St TIS Update
Total AM (Ten-Year)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	
Traffic Volume (vph)	29	11	117	29	15	12	70	265	24	24	471	29
Future Volume (vph)	29	11	117	29	15	12	70	265	24	24	471	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.3	3.6	3.6
Storage Length (m)	0.0		0.0		0.0		30.0		0.0		30.0	
Storage Lanes	0		0		0		1		0		1	
Taper Length (m)	2.5		2.5		2.5		2.5		2.5		2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.900											
Frt	0.991			0.971			0.987			0.991		
Flt Protected	0		1637		0		1707		0		1544	
Satd. Flow (prot)	0		1637		0		1707		0		1544	
Flt Permitted	0.991		0.975		0.950		0.950		0.950		0.950	
Satd. Flow (perm)	0		1637		0		1707		0		1544	
Link Speed (k/h)	50			50			50			50		
Link Distance (m)	95.5			171.9			203.3			171.8		
Travel Time (s)	6.9			12.4			14.6			12.4		
Confl. Peds. (#/hr)	2		5		5		2		9		9	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	7%	0%	3%	5%	0%	13%	13%	4%	13%	6%	4%	0%
Adj. Flow (vph)	31	12	124	31	16	13	74	282	26	26	501	31
Shared Lane Traffic (%)	0											
Lane Group Flow (vph)	0	167	0	0	60	0	74	308	0	26	532	0
Sign Control	Stop		Stop		Stop		Stop		Stop		Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	58.5%						ICU Level of Service B					
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
 2: Mountainview Road N & John Street

1 Rosetta St TIS Update
 Total AM (Ten-Year)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↖	↗		↖	↗	
Sign Control	Stop			Stop			Stop	Stop		Stop	Stop	
Traffic Volume (vph)	29	11	117	29	15	12	70	265	24	24	471	29
Future Volume (vph)	29	11	117	29	15	12	70	265	24	24	471	29
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	31	12	124	31	16	13	74	282	26	26	501	31
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total (vph)	167	60	74	308	26	532						
Volume Left (vph)	31	31	74	0	26	0						
Volume Right (vph)	124	13	0	26	0	31						
Hadj (s)	-0.35	0.07	0.72	0.02	0.60	0.02						
Departure Headway (s)	6.1	6.8	6.7	6.0	6.4	5.8						
Degree Utilization, x	0.28	0.11	0.14	0.51	0.05	0.86						
Capacity (veh/h)	545	471	512	578	545	611						
Control Delay (s)	11.5	10.7	9.6	13.9	8.5	32.5						
Approach Delay (s)	11.5	10.7	13.1	31.4								
Approach LOS	B	B	B	D								
Intersection Summary												
Delay			21.5									
Level of Service			C									
Intersection Capacity Utilization			58.5%	ICU Level of Service	B							
Analysis Period (min)			15									

Lanes, Volumes, Timings
 3: River Drive & Daniella Street

1 Rosetta St TIS Update
 Total AM (Ten-Year)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Volume (vph)	3	206	68	3	11	5
Future Volume (vph)	3	206	68	3	11	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.995			0.957
Fit Protected			0.999			0.967
Satd. Flow (prot)	0	1585	1434	0	1758	0
Fit Permitted			0.999			0.967
Satd. Flow (perm)	0	1585	1434	0	1758	0
Link Speed (k/h)			50			50
Link Distance (m)			172.1	127.8	126.0	
Travel Time (s)			12.4	9.2	9.1	
Confl. Peds. (#/hr)	3				3	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	20%	33%	0%	0%	0%
Adj. Flow (vph)	3	240	79	3	13	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	243	82	0	19	0
Sign Control	Free		Free	Stop		
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	28.2%		ICU Level of Service		A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
3: River Drive & Daniella Street

1 Rosetta St TIS Update
Total AM (Ten-Year)

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	3	206	68	3	11	5
Future Volume (Veh/h)	3	206	68	3	11	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	3	240	79	3	13	6
Pedestrians					3	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			128			
pX, platoon unblocked						
vC, conflicting volume	85				330	84
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	85				330	84
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				98	99
cM capacity (veh/h)	1520				666	979
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	243	82	19			
Volume Left	3	0	13			
Volume Right	0	3	6			
sSH	1520	1700	741			
Volume to Capacity	0.00	0.05	0.03			
Queue Length 95th (m)	0.0	0.0	0.6			
Control Delay (s)	0.1	0.0	10.0			
Lane LOS	A		A			
Approach Delay (s)	0.1	0.0	10.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization		28.2%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
4: River Drive & Rosetta Street

1 Rosetta St TIS Update
Total AM (Ten-Year)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	0	61	12	53	142	0
Future Volume (vph)	0	61	12	53	142	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.889			
Fit Protected					0.950	
Satd. Flow (prot)	0	1583	1161	0	1805	0
Fit Permitted					0.950	
Satd. Flow (perm)	0	1583	1161	0	1805	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		46.1	172.1		38.0	
Travel Time (s)		3.3	12.4		2.7	
Confl. Peds. (#/hr)					2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	20%	25%	50%	0%	0%
Adj. Flow (vph)	0	68	13	59	158	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	68	72	0	158	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 23.4%				ICU Level of Service A		
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
4: River Drive & Rosetta Street

1 Rosetta St TIS Update
Total AM (Ten-Year)

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	0	61	12	53	142	0
Future Volume (Veh/h)	0	61	12	53	142	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	68	13	59	158	0
Pedestrians			2			
Lane Width (m)			3.6			
Walking Speed (m/s)			1.1			
Percent Blockage			0			
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			300			
pX, platoon unblocked						
vC, conflicting volume	72				112	42
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	72				112	42
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				82	100
cM capacity (veh/h)	1541				887	1034
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	68	72	158			
Volume Left	0	0	158			
Volume Right	0	59	0			
cSH	1541	1700	887			
Volume to Capacity	0.00	0.04	0.18			
Queue Length 95th (m)	0.0	0.0	4.9			
Control Delay (s)	0.0	0.0	9.9			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.9			
Approach LOS			A			
Intersection Summary						
Average Delay			5.3			
Intersection Capacity Utilization		23.4%		ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings
5: Victoria Street/River Drive & St Michaels Street

1 Rosetta St TIS Update
Total AM (Ten-Year)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	2	56	6	2	2	0
Future Volume (vph)	2	56	6	2	2	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.970			
Fit Protected		0.999			0.950	
Satd. Flow (prot)	0	1671	1543	0	1805	0
Fit Permitted		0.999			0.950	
Satd. Flow (perm)	0	1671	1543	0	1805	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		118.5	126.7		89.7	
Travel Time (s)		8.5	9.1		6.5	
Confl. Peds. (#/hr)	3			3	1	1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	14%	25%	0%	0%	0%
Adj. Flow (vph)	2	66	7	2	2	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	68	9	0	2	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	19.9%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
5: Victoria Street/River Drive & St Michaels Street

1 Rosetta St TIS Update
Total AM (Ten-Year)

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	2	56	6	2	2	0
Future Volume (Veh/h)	2	56	6	2	2	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	2	66	7	2	2	0
Pedestrians		1	1		3	
Lane Width (m)		3.6	3.6		3.6	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	12				82	12
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	12				82	12
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
pD queue free %	100				100	100
cM capacity (veh/h)	1616				920	1071
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	68	9	2			
Volume Left	2	0	2			
Volume Right	0	2	0			
sSH	1616	1700	920			
Volume to Capacity	0.00	0.01	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.2	0.0	8.9			
Lane LOS	A		A			
Approach Delay (s)	0.2	0.0	8.9			
Approach LOS			A			
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization		19.9%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
6: Rosset Valley Court & John Street

1 Rosetta St TIS Update
Total AM (Ten-Year)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕			↕	↕	
Traffic Volume (vph)	123	0	21	91	5	26
Future Volume (vph)	123	0	21	91	5	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.887	
Fit Protected				0.991	0.992	
Satd. Flow (prot)	1827	0	0	1568	1672	0
Fit Permitted				0.991	0.992	
Satd. Flow (perm)	1827	0	0	1568	1672	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	368.0			95.5	146.5	
Travel Time (s)	26.5			6.9	10.5	
Confl. Peds. (#/hr)		8	8			
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	4%	0%	0%	10%	0%	0%
Parking (#/hr)				0	0	
Adj. Flow (vph)	145	0	25	107	6	31
Shared Lane Traffic (%)						
Lane Group Flow (vph)	145	0	0	132	37	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	34.9%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
6: Rosset Valley Court & John Street

1 Rosetta St TIS Update
Total AM (Ten-Year)

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	123	0	21	91	5	26
Future Volume (Veh/h)	123	0	21	91	5	26
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	145	0	25	107	6	31
Pedestrians					8	
Lane Width (m)				3.6		
Walking Speed (m/s)				1.1		
Percent Blockage				1		
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			153		310	153
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			153		310	153
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
pD queue free %			98		99	97
cM capacity (veh/h)			1429		670	892
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	145	132	37			
Volume Left	0	25	6			
Volume Right	0	0	31			
sSH	1700	1429	846			
Volume to Capacity	0.09	0.02	0.04			
Queue Length 95th (m)	0.0	0.4	1.0			
Control Delay (s)	0.0	1.5	9.4			
Lane LOS		A	A			
Approach Delay (s)	0.0	1.5	9.4			
Approach LOS			A			
Intersection Summary						
Average Delay			1.8			
Intersection Capacity Utilization		34.9%		ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
7: Victoria Street & John Street

1 Rosetta St TIS Update
Total AM (Ten-Year)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	22	5	6	32	70	6	9	0	88	30	6
Future Volume (vph)	0	22	5	6	32	70	6	9	0	88	30	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.974			0.913							0.993
Fit Protected					0.997			0.980				0.966
Satd. Flow (prot)	0	1851	0	0	1424	0	0	1862	0	0	1760	0
Fit Permitted					0.997			0.980				0.966
Satd. Flow (perm)	0	1851	0	0	1424	0	0	1862	0	0	1760	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		145.1			102.7			117.7			102.2	
Travel Time (s)		10.4			7.4			8.5			7.4	
Confl. Peds. (#/hr)	2		5	5		2	2		7	7		2
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	0%	50%	0%	10%	0%	0%	0%	5%	0%	0%
Parking (#/hr)				0	0	0						
Adj. Flow (vph)	0	25	6	7	37	80	7	10	0	101	34	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	31	0	0	124	0	0	17	0	0	142	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	35.1%						ICU Level of Service A					
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
7: Victoria Street & John Street

1 Rosetta St TIS Update
Total AM (Ten-Year)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	0	22	5	6	32	70	6	9	0	88	30	6
Future Volume (vph)	0	22	5	6	32	70	6	9	0	88	30	6
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	0	25	6	7	37	80	7	10	0	101	34	7
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	31	124	17	142								
Volume Left (vph)	0	7	7	101								
Volume Right (vph)	6	80	0	7								
Hadj (s)	-0.12	-0.22	0.08	0.17								
Departure Headway (s)	4.3	4.1	4.5	4.4								
Degree Utilization, x	0.04	0.14	0.02	0.17								
Capacity (veh/h)	799	846	761	786								
Control Delay (s)	7.5	7.8	7.6	8.4								
Approach Delay (s)	7.5	7.8	7.6	8.4								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay	8.0											
Level of Service	A											
Intersection Capacity Utilization	35.1%			ICU Level of Service	A							
Analysis Period (min)	15											

Lanes, Volumes, Timings
8: Rosetta Street & Site

1 Rosetta St TIS Update
Total AM (Ten-Year)

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↕			↕	↕	
Traffic Volume (vph)	0	136	50	3	6	0
Future Volume (vph)	0	136	50	3	6	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.865					
Fit Protected				0.955		
Satd. Flow (prot)	1611	0	0	1779	1863	0
Fit Permitted				0.955		
Satd. Flow (perm)	1611	0	0	1779	1863	0
Link Speed (k/h)	50		50		50	
Link Distance (m)	43.4		38.0		77.9	
Travel Time (s)	3.1		2.7		5.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	148	54	3	7	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	148	0	0	57	7	0
Sign Control	Stop		Free		Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	31.3%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
8: Rosetta Street & Site

1 Rosetta St TIS Update
Total AM (Ten-Year)

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑	↑	
Traffic Volume (veh/h)	0	136	50	3	6	0
Future Volume (Veh/h)	0	136	50	3	6	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	148	54	3	7	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	118	7	7			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	118	7	7			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	86	97			
cM capacity (veh/h)	848	1075	1614			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	148	57	7			
Volume Left	0	54	0			
Volume Right	148	0	0			
eSH	1075	1614	1700			
Volume to Capacity	0.14	0.03	0.00			
Queue Length 95th (m)	3.6	0.8	0.0			
Control Delay (s)	8.9	6.9	0.0			
Lane LOS	A	A				
Approach Delay (s)	8.9	6.9	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		8.1				
Intersection Capacity Utilization		31.3%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
9: Site & Caroline Street

1 Rosetta St TIS Update
Total AM (Ten-Year)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Volume (vph)	3	6	0	2	15	0
Future Volume (vph)	3	6	0	2	15	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.905					
Fit Protected					0.950	
Satd. Flow (prot)	1686	0	0	1863	1770	0
Fit Permitted					0.950	
Satd. Flow (perm)	1686	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	89.7			45.9	33.3	
Travel Time (s)	6.5			3.3	2.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	7	0	2	16	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	0	2	16	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	20.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
9: Site & Caroline Street

1 Rosetta St TIS Update
Total AM (Ten-Year)

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	3	6	0	2	15	0
Future Volume (Veh/h)	3	6	0	2	15	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	7	0	2	16	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			10		8	6
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			10		8	6
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		98	100
cM capacity (veh/h)			1610		1012	1076
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	10	2	16			
Volume Left	0	0	16			
Volume Right	7	0	0			
cSH	1700	1610	1012			
Volume to Capacity	0.01	0.00	0.02			
Queue Length 95th (m)	0.0	0.0	0.4			
Control Delay (s)	0.0	0.0	8.6			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	8.6			
Approach LOS	A					
Intersection Summary						
Average Delay			4.9			
Intersection Capacity Utilization			20.0%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings
10: Extension & John Street

1 Rosetta St TIS Update
Total AM (Ten-Year)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (vph)	108	3	3	99	9	6
Future Volume (vph)	108	3	3	99	9	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.997			0.944		
Fit Protected				0.999	0.971	
Satd. Flow (prot)	1857	0	0	1675	1707	0
Fit Permitted				0.999	0.971	
Satd. Flow (perm)	1857	0	0	1675	1707	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	102.7			368.0	98.2	
Travel Time (s)	7.4			26.5	7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)				0	0	
Adj. Flow (vph)	117	3	3	108	10	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	120	0	0	111	17	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	24.3%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
10: Extension & John Street

1 Rosetta St TIS Update
Total AM (Ten-Year)

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Volume (veh/h)	108	3	3	99	9	6
Future Volume (Veh/h)	108	3	3	99	9	6
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	117	3	3	108	10	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			120		232 118	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			120		232 118	
tC, single (s)			4.1		6.4 6.2	
tC, 2 stage (s)						
tF (s)			2.2		3.5 3.3	
p0 queue free %			100		99 99	
cM capacity (veh/h)			1468		754 933	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	120	111	17			
Volume Left	0	3	10			
Volume Right	3	0	7			
cSH	1700	1468	819			
Volume to Capacity	0.07	0.00	0.02			
Queue Length 95th (m)	0.0	0.0	0.5			
Control Delay (s)	0.0	0.2	9.5			
Lane LOS	A		A			
Approach Delay (s)	0.0	0.2	9.5			
Approach LOS	A		A			
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			24.3%		ICU Level of Service A	
Analysis Period (min)	15					

Lanes, Volumes, Timings
11: St Michaels Street/Extension & Caroline Street

1 Rosetta St TIS Update
Total AM (Ten-Year)

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	
Traffic Volume (vph)	2	15	0	3	6	0
Future Volume (vph)	2	15	0	3	6	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.880		0.865			
Fit Protected	0.994		0.950			
Satd. Flow (prot)	1629		0 1611		0 1770	
Fit Permitted	0.994		0.950			
Satd. Flow (perm)	1629		0 1611		0 1770	
Link Speed (k/h)	50		50		50	
Link Distance (m)	89.7		89.7		98.2	
Travel Time (s)	6.5		6.5		7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	16	0	3	7	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	18	0	3	0	0	7
Sign Control	Stop		Free		Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	21.7%		ICU Level of Service A			
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
11: St Michaels Street/Extension & Caroline Street

1 Rosetta St TIS Update
Total AM (Ten-Year)

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (veh/h)	2	15	0	3	6	0
Future Volume (Veh/h)	2	15	0	3	6	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	16	0	3	7	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None		None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	16	2			3	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	16	2			3	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	999	1083			1619	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	18	3	7			
Volume Left	2	0	7			
Volume Right	16	3	0			
cSH	1073	1700	1619			
Volume to Capacity	0.02	0.00	0.00			
Queue Length 95th (m)	0.4	0.0	0.1			
Control Delay (s)	8.4	0.0	7.2			
Lane LOS	A		A			
Approach Delay (s)	8.4	0.0	7.2			
Approach LOS	A		A			
Intersection Summary						
Average Delay			7.2			
Intersection Capacity Utilization			21.7%	ICU Level of Service		A
Analysis Period (min)			15			

Queuing and Blocking Report

1 Rosetta St TIS Update
Total AM (Ten-Year)

Intersection: 1: Mountainview Road N & River Drive

Movement	EB	WB	NB	NB	SB	SB	B25
Directions Served	LTR	LTR	LT	R	LT	TR	T
Maximum Queue (m)	42.6	74.6	70.9	32.0	44.8	38.7	24.1
Average Queue (m)	20.0	36.9	31.8	10.9	24.2	22.9	1.5
95th Queue (m)	35.8	66.0	59.0	23.2	41.0	37.2	10.7
Link Distance (m)	110.0	202.7	404.4	404.4	29.5	29.5	191.2
Upstream Blk Time (%)					3	2	
Queuing Penalty (veh)					9	6	
Storage Bay Dist (m)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: Mountainview Road N & John Street

Movement	EB	WB	NB	NB	B25	B25	SB	SB
Directions Served	LTR	LTR	L	TR	T		L	TR
Maximum Queue (m)	24.4	20.0	30.8	36.6	2.3	2.4	23.7	69.2
Average Queue (m)	12.6	8.6	11.7	19.1	0.1	0.1	5.7	27.5
95th Queue (m)	21.0	16.9	23.7	30.6	1.6	1.7	16.6	49.0
Link Distance (m)	84.2	165.0		191.2	29.5	29.5		166.6
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)			30.0				30.0	
Storage Blk Time (%)			0	1			0	5
Queuing Penalty (veh)			0	0			0	1

Intersection: 3: River Drive & Daniella Street

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (m)	1.8	10.7
Average Queue (m)	0.1	3.7
95th Queue (m)	1.3	11.0
Link Distance (m)	162.0	120.8
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report

1 Rosetta St TIS Update
Total AM (Ten-Year)

Intersection: 4: River Drive & Rosetta Street

Movement	SB
Directions Served	LR
Maximum Queue (m)	16.4
Average Queue (m)	9.9
95th Queue (m)	13.4
Link Distance (m)	29.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Victoria Street/River Drive & St Michaels Street

Movement	SB
Directions Served	LR
Maximum Queue (m)	7.0
Average Queue (m)	0.4
95th Queue (m)	3.1
Link Distance (m)	71.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Rosset Valley Court & John Street

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	9.0	11.8
Average Queue (m)	0.4	5.2
95th Queue (m)	3.5	11.5
Link Distance (m)	84.2	140.0
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report

1 Rosetta St TIS Update
Total AM (Ten-Year)

Intersection: 7: Victoria Street & John Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	10.4	25.1	11.8	19.8
Average Queue (m)	5.5	11.5	3.9	10.8
95th Queue (m)	12.6	19.1	11.3	16.3
Link Distance (m)	139.7	90.2	108.9	96.8
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: Rosetta Street & Site

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (m)	23.5	3.6
Average Queue (m)	12.5	0.1
95th Queue (m)	20.2	1.8
Link Distance (m)	38.2	29.8
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9: Site & Caroline Street

Movement	NB
Directions Served	LR
Maximum Queue (m)	8.9
Average Queue (m)	3.5
95th Queue (m)	10.5
Link Distance (m)	27.6
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report

1 Rosetta St TIS Update
Total AM (Ten-Year)

Intersection: 10: Extension & John Street

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	3.6	9.2
Average Queue (m)	0.1	3.6
95th Queue (m)	1.8	10.8
Link Distance (m)	356.5	89.4
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: St Michaels Street/Extension & Caroline Street

Movement	WB
Directions Served	LR
Maximum Queue (m)	9.2
Average Queue (m)	3.9
95th Queue (m)	11.2
Link Distance (m)	77.5
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	


Network Summary

Network wide Queuing Penalty: 17

Lanes, Volumes, Timings

1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Total PM (Ten-Year)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	
Traffic Volume (vph)	3	33	131	205	47	74	139	560	209	36	429	8
Future Volume (vph)	3	33	131	205	47	74	139	560	209	36	429	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99			0.99			1.00	0.97		1.00	
Frnt		0.894			0.969			0.850	0.997		0.997	
Fit Protected		0.999			0.969			0.990	0.996		0.996	
Satd. Flow (prot)	0	1580	0	0	1683	0	0	1795	1302	0	3428	0
Fit Permitted		0.993			0.732			0.780	0.701		0.701	
Satd. Flow (perm)	0	1571	0	0	1271	0	0	1414	1261	0	2412	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		146			19			232	3			3
Link Speed (k/h)		50			50			50	50			50
Link Distance (m)		127.8			212.6			412.3	41.4			41.4
Travel Time (s)		9.2			15.3			29.7	3.0			3.0
Confl. Peds. (#/hr)	13		1	1		13	2		9	9		2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	50%	0%	7%	8%	0%	2%	8%	4%	24%	0%	5%	0%
Adj. Flow (vph)	3	37	146	228	52	82	154	622	232	40	477	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	186	0	0	362	0	0	776	232	0	526	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2		2	2		
Detector Phase	4	4		4	4		2	2	2	2	2	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		30.0	30.0	30.0	30.0	30.0	
Minimum Split (s)	36.1	36.1		36.1	36.1		36.5	36.5	36.5	36.5	36.5	
Total Split (s)	35.0	35.0		35.0	35.0		45.0	45.0	45.0	45.0	45.0	
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.3%	56.3%	56.3%	56.3%	56.3%	
Maximum Green (s)	28.9	28.9		28.9	28.9		38.5	38.5	38.5	38.5	38.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5	4.5	4.5	4.5	
All-Red Time (s)	2.1	2.1		2.1	2.1		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		3.0			3.0			3.0	3.0		3.0	
Total Lost Time (s)		9.1			9.1			9.5	9.5		9.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.5	4.5	4.5	4.5	4.5	
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		14.0	14.0	14.0	14.0	14.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0		16.0	16.0	16.0	16.0	16.0	
Pedestrian Calls (#/hr)	14	14		14	14		11	11	11	11	11	
Act Effct Green (s)		22.6			22.6			35.6	35.6		35.6	
Actuated g/C Ratio		0.29			0.29			0.46	0.46		0.46	
v/c Ratio		0.33			0.94			1.19	0.33		0.47	
Control Delay		7.7			58.6			122.5	3.5		16.7	
Queue Delay		0.0			0.0			0.0	0.0		0.0	

Lanes, Volumes, Timings
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Total PM (Ten-Year)

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		7.7			58.6			122.5	3.5			16.7
LOS		A			E			F	A			B
Approach Delay		7.7			58.6			95.1				16.7
Approach LOS		A			E			F	A			B
Queue Length 50th (m)		4.2			48.4			~148.4	0.0			28.5
Queue Length 95th (m)		17.6			#94.9			#216.1	11.8			43.1
Internal Link Dist (m)		103.8			188.6			388.3				17.4
Turn Bay Length (m)												
Base Capacity (vph)		631			445			654	708			1118
Starvation Cap Reductn		0			0			0	0			0
Spillback Cap Reductn		0			0			0	0			0
Storage Cap Reductn		0			0			0	0			0
Reduced v/c Ratio		0.29			0.81			1.19	0.33			0.47

Intersection Summary	
Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	76.9
Natural Cycle:	120
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	1.19
Intersection Signal Delay:	61.1
Intersection LOS:	E
Intersection Capacity Utilization:	124.6%
ICU Level of Service:	H
Analysis Period (min):	15
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	



HCM Signalized Intersection Capacity Analysis
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Total PM (Ten-Year)

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔			↔
Traffic Volume (vph)	3	33	131	205	47	74	139	560	209	36	429	8
Future Volume (vph)	3	33	131	205	47	74	139	560	209	36	429	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Total Lost time (s)		9.1			9.1			9.5	9.5		9.5	
Lane Util. Factor		1.00			1.00			1.00	1.00		0.95	
Frpb, ped/bikes		0.99			1.00			1.00	0.97		1.00	
Flpb, ped/bikes		1.00			1.00			1.00	1.00		1.00	
FrT		0.89			0.97			1.00	0.85		1.00	
FlT Protected		1.00			0.97			0.99	1.00		1.00	
Satd. Flow (prot)		1581			1684			1795	1262		3430	
FlT Permitted		0.99			0.73			0.78	1.00		0.70	
Satd. Flow (perm)		1571			1272			1413	1262		2414	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	3	37	146	228	52	82	154	622	232	40	477	9
RTOR Reduction (vph)	0	103	0	0	13	0	0	0	124	0	2	0
Lane Group Flow (vph)	0	83	0	0	349	0	0	776	108	0	524	0
Confl. Peds. (#/hr)	13		1	1		13	2		9	9		2
Heavy Vehicles (%)	50%	0%	7%	8%	0%	2%	8%	4%	24%	0%	5%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2		2	2		
Actuated Green, G (s)		25.6			25.6			38.7	38.7		38.7	
Effective Green, g (s)		22.6			22.6			35.7	35.7		35.7	
Actuated g/C Ratio		0.29			0.29			0.46	0.46		0.46	
Clearance Time (s)		6.1			6.1			6.5	6.5		6.5	
Vehicle Extension (s)		3.0			3.0			4.5	4.5		4.5	
Lane Grp Cap (vph)		461			373			655	585		1120	
v/s Ratio Prot												
v/s Ratio Perm		0.05			0.27			0.55	0.09		0.22	
v/c Ratio		0.18			0.93			1.18	0.18		0.47	
Uniform Delay, d1		20.2			26.4			20.6	12.1		14.1	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			30.2			98.1	0.7		1.4	
Delay (s)		20.4			56.6			118.7	12.8		15.5	
Level of Service		C			E			F	B		B	
Approach Delay (s)		20.4			56.6			94.3			15.5	
Approach LOS		C			E			F			B	

Intersection Summary	
HCM 2000 Control Delay	61.2
HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.09
Actuated Cycle Length (s)	76.9
Sum of lost time (s)	18.6
Intersection Capacity Utilization	124.6%
ICU Level of Service	H
Analysis Period (min)	15
c Critical Lane Group	

Lanes, Volumes, Timings
2: Mountainview Road N & John Street

1 Rosetta St TIS Update
Total PM (Ten-Year)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Volume (vph)	39	15	70	35	26	20	159	474	39	9	350	38
Future Volume (vph)	39	15	70	35	26	20	159	474	39	9	350	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6
Storage Length (m)	0.0	0.0	0.0		0.0	30.0		0.0	30.0		0.0	
Storage Lanes	0	0	0		0	1		0	1		0	
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.923			0.966			0.989			0.985	
Flt Protected		0.984			0.979		0.950		0.950			
Satd. Flow (prot)	0	1726	0	0	1797	0	1711	1879	0	1745	1855	0
Flt Permitted		0.984			0.979		0.950		0.950			
Satd. Flow (perm)	0	1726	0	0	1797	0	1711	1879	0	1745	1855	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		95.5			171.9			203.3			171.8	
Travel Time (s)		6.9			12.4			14.6			12.4	
Confl. Peds. (#/hr)	2		1	1		2	2		1	1		2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	1%	0%
Adj. Flow (vph)	40	15	72	36	27	21	164	489	40	9	361	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	127	0	0	84	0	164	529	0	9	400	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	56.8%											
ICU Level of Service	B											
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
2: Mountainview Road N & John Street

1 Rosetta St TIS Update
Total PM (Ten-Year)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Sign Control		Stop			Stop		Stop	Stop		Stop	Stop	
Traffic Volume (vph)	39	15	70	35	26	20	159	474	39	9	350	38
Future Volume (vph)	39	15	70	35	26	20	159	474	39	9	350	38
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	40	15	72	36	27	21	164	489	40	9	361	39
Direction, Lane #												
	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total (vph)	127	84	164	529	9	400						
Volume Left (vph)	40	36	164	0	9	0						
Volume Right (vph)	72	21	0	40	0	39						
Hadj (s)	-0.28	-0.06	0.53	-0.05	0.50	-0.05						
Departure Headway (s)	6.4	6.8	6.3	5.7	6.6	6.1						
Degree Utilization, x	0.23	0.16	0.29	0.84	0.02	0.68						
Capacity (veh/h)	511	475	556	619	518	568						
Control Delay (s)	11.3	11.1	10.6	30.4	8.5	19.6						
Approach Delay (s)	11.3	11.1	25.7		19.3							
Approach LOS	B	B	D		C							
Intersection Summary												
Delay	21.4											
Level of Service	C											
Intersection Capacity Utilization	56.8%											
ICU Level of Service	B											
Analysis Period (min)	15											

Lanes, Volumes, Timings
3: River Drive & Daniella Street

1 Rosetta St TIS Update
Total PM (Ten-Year)

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	6	146	192	18	9	3
Future Volume (vph)	6	146	192	18	9	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.988		0.969	
Flt Protected		0.998			0.963	
Satd. Flow (prot)	0	1730	1764	0	1773	0
Flt Permitted		0.998			0.963	
Satd. Flow (perm)	0	1730	1764	0	1773	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		172.1	127.8		126.0	
Travel Time (s)		12.4	9.2		9.1	
Confl. Peds. (#/hr)	4			4		
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	10%	7%	0%	0%	0%
Adj. Flow (vph)	7	168	221	21	10	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	175	242	0	13	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	27.5%		ICU Level of Service A			
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
3: River Drive & Daniella Street

1 Rosetta St TIS Update
Total PM (Ten-Year)

	EBL	EBT	WBT	WBR	SBL	SBR
Movement		↕	↕		↕	
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	6	146	192	18	9	3
Future Volume (Veh/h)	6	146	192	18	9	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	7	168	221	21	10	3
Pedestrians					4	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			128			
pX, platoon unblocked					418	236
vC, conflicting volume	246				418	236
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	246				418	236
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				98	100
cM capacity (veh/h)	1327				590	806
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	175	242	13			
Volume Left	7	0	10			
Volume Right	0	21	3			
eSH	1327	1700	629			
Volume to Capacity	0.01	0.14	0.02			
Queue Length 95th (m)	0.1	0.0	0.5			
Control Delay (s)	0.4	0.0	10.8			
Lane LOS	A		B			
Approach Delay (s)	0.4	0.0	10.8			
Approach LOS			B			
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization	27.5%		ICU Level of Service		A	
Analysis Period (min)	15					

Lanes, Volumes, Timings
4: River Drive & Rosetta Street

1 Rosetta St TIS Update
Total PM (Ten-Year)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	56	44	141	91	3
Future Volume (vph)	0	56	44	141	91	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.897		0.995		
Flt Protected				0.954		
Satd. Flow (prot)	0	1712	1540	0	1804	0
Flt Permitted				0.954		
Satd. Flow (perm)	0	1712	1540	0	1804	0
Link Speed (k/h)		50		50		
Link Distance (m)		46.1		172.1		38.0
Travel Time (s)		3.3		12.4		2.7
Confl. Peds. (#/hr)	3			3		
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	11%	0%	14%	0%	0%
Adj. Flow (vph)	0	67	52	168	108	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	67	220	0	112	0
Sign Control		Free		Free		Stop
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	28.3%		ICU Level of Service A			
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
4: River Drive & Rosetta Street

1 Rosetta St TIS Update
Total PM (Ten-Year)

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	56	44	141	91	3
Future Volume (Veh/h)	0	56	44	141	91	3
Sign Control		Free		Free		Stop
Grade		0%		0%		0%
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	67	52	168	108	4
Pedestrians					3	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None		None		
Median storage (veh)						
Upstream signal (m)			300			
pX, platoon unblocked					206	139
vC, conflicting volume	223					
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	223				206	139
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				86	100
cM capacity (veh/h)	1354				785	912
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	67	220	112			
Volume Left	0	0	108			
Volume Right	0	168	4			
eSH	1354	1700	789			
Volume to Capacity	0.00	0.13	0.14			
Queue Length 95th (m)	0.0	0.0	3.8			
Control Delay (s)	0.0	0.0	10.3			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	10.3			
Approach LOS			B			
Intersection Summary						
Average Delay		2.9				
Intersection Capacity Utilization	28.3%		ICU Level of Service		A	
Analysis Period (min)	15					

Lanes, Volumes, Timings
5: Victoria Street/River Drive & St Michaels Street

1 Rosetta St TIS Update
Total PM (Ten-Year)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	42	42	3	8	0
Future Volume (vph)	0	42	42	3	8	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.990					
Fit Protected				0.950		
Satd. Flow (prot)	0	1712	1881	0	1504	0
Fit Permitted	0.950					
Satd. Flow (perm)	0	1712	1881	0	1504	0
Link Speed (k/h)	50			50		
Link Distance (m)	118.5		126.7		89.7	
Travel Time (s)	8.5		9.1		6.5	
Confl. Peds. (#/hr)	2		2			
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	11%	0%	0%	20%	0%
Adj. Flow (vph)	0	50	50	4	10	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	50	54	0	10	0
Sign Control	Free		Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	19.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
5: Victoria Street/River Drive & St Michaels Street

1 Rosetta St TIS Update
Total PM (Ten-Year)

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	42	42	3	8	0
Future Volume (Veh/h)	0	42	42	3	8	0
Sign Control	Free		Free		Stop	
Grade	0%					
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	50	50	4	10	0
Pedestrians	2					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	56				104	54
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	56				104	54
tC, single (s)	4.1				6.6	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.7	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1559				851	1017
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	50	54	10			
Volume Left	0	0	10			
Volume Right	0	4	0			
eSH	1559	1700	851			
Volume to Capacity	0.00	0.03	0.01			
Queue Length 95th (m)	0.0	0.0	0.3			
Control Delay (s)	0.0	0.0	9.3			
Lane LOS	A		A			
Approach Delay (s)	0.0	0.0	9.3			
Approach LOS	A		A			
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization	19.0%		ICU Level of Service		A	
Analysis Period (min)	15					

Lanes, Volumes, Timings
6: Rosset Valley Court & John Street

1 Rosetta St TIS Update
Total PM (Ten-Year)

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↘			↖	↗	
Traffic Volume (vph)	137	8	24	183	3	21
Future Volume (vph)	137	8	24	183	3	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.992				0.884	
Flt Protected				0.994	0.993	
Satd. Flow (prot)	1768	0	0	1628	1668	0
Flt Permitted				0.994	0.993	
Satd. Flow (perm)	1768	0	0	1628	1668	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	368.0			95.5	146.5	
Travel Time (s)	26.5			6.9	10.5	
Confl. Peds. (#/hr)		6	6		1	3
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	7%	0%	0%	5%	0%	0%
Parking (#/hr)			0	0		
Adj. Flow (vph)	163	10	29	218	4	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	173	0	0	247	29	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	41.5%
ICU Level of Service A	
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
6: Rosset Valley Court & John Street

1 Rosetta St TIS Update
Total PM (Ten-Year)

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↘			↖	↗	
Traffic Volume (veh/h)	137	8	24	183	3	21
Future Volume (Veh/h)	137	8	24	183	3	21
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	163	10	29	218	4	25
Pedestrians	1			3	6	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	0			0	1	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			179		451	177
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			179		451	177
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		99	97
cM capacity (veh/h)			1401		555	864

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	173	247	29
Volume Left	0	29	4
Volume Right	10	0	25
sSH	1700	1401	802
Volume to Capacity	0.10	0.02	0.04
Queue Length 95th (m)	0.0	0.5	0.9
Control Delay (s)	0.0	1.1	9.7
Lane LOS		A	A
Approach Delay (s)	0.0	1.1	9.7
Approach LOS			A

Intersection Summary

Average Delay		1.2
Intersection Capacity Utilization	41.5%	ICU Level of Service A
Analysis Period (min)	15	

Lanes, Volumes, Timings
7: Victoria Street & John Street

1 Rosetta St TIS Update
Total PM (Ten-Year)

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	5	53	2	9	47	119	14	24	2	91	27	5
Future Volume (vph)	5	53	2	9	47	119	14	24	2	91	27	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.996			0.908			0.994			0.994	
Flt Protected		0.996			0.997			0.983			0.964	
Satd. Flow (prot)	0	1885	0	0	1459	0	0	1856	0	0	1664	0
Flt Permitted		0.996			0.997			0.983			0.964	
Satd. Flow (perm)	0	1885	0	0	1459	0	0	1856	0	0	1664	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		145.1			102.7			117.7			102.2	
Travel Time (s)		10.4			7.4			8.5			7.4	
Confl. Peds. (#/hr)	2		10	10		2	2		5	5		2
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	50%	3%	4%	0%	0%	0%	11%	6%	0%
Parking (#/hr)				0	0	0						
Adj. Flow (vph)	6	60	2	10	53	134	16	27	2	102	30	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	68	0	0	197	0	0	45	0	0	138	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	37.2% ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
7: Victoria Street & John Street

1 Rosetta St TIS Update
Total PM (Ten-Year)

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations		↔			↔			↔			↔	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	5	53	2	9	47	119	14	24	2	91	27	5
Future Volume (vph)	5	53	2	9	47	119	14	24	2	91	27	5
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	6	60	2	10	53	134	16	27	2	102	30	6
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	68	197	45	138								
Volume Left (vph)	6	10	16	102								
Volume Right (vph)	2	134	2	6								
Hadj (s)	0.00	-0.29	0.04	0.28								
Departure Headway (s)	4.6	4.1	4.7	4.8								
Degree Utilization, x	0.09	0.23	0.06	0.19								
Capacity (veh/h)	745	822	710	700								
Control Delay (s)	8.0	8.4	8.0	8.9								
Approach Delay (s)	8.0	8.4	8.0	8.9								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				8.4								
Level of Service				A								
Intersection Capacity Utilization				37.2%				ICU Level of Service				A
Analysis Period (min)				15								

Lanes, Volumes, Timings
8: Rosetta Street & Site

1 Rosetta St TIS Update
Total PM (Ten-Year)

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	82	130	11	12	0
Future Volume (vph)	0	82	130	11	12	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr	0.865					
Fit Protected				0.956		
Satd. Flow (prot)	1611	0	0	1781	1863	0
Fit Permitted				0.956		
Satd. Flow (perm)	1611	0	0	1781	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	43.4			38.0	77.9	
Travel Time (s)	3.1			2.7	5.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	89	141	12	13	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	89	0	0	153	13	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	32.9%
ICU Level of Service A	
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
8: Rosetta Street & Site

1 Rosetta St TIS Update
Total PM (Ten-Year)

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	82	130	11	12	0
Future Volume (Veh/h)	0	82	130	11	12	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	89	141	12	13	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	307	13	13			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	307	13	13			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	92	91			
cM capacity (veh/h)	625	1067	1606			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	89	153	13			
Volume Left	0	141	0			
Volume Right	89	0	0			
eSH	1067	1606	1700			
Volume to Capacity	0.08	0.09	0.01			
Queue Length 95th (m)	2.1	2.2	0.0			
Control Delay (s)	8.7	6.9	0.0			
Lane LOS	A	A				
Approach Delay (s)	8.7	6.9	0.0			
Approach LOS	A					

Intersection Summary	
Average Delay	7.2
Intersection Capacity Utilization	32.9%
ICU Level of Service A	
Analysis Period (min)	15

Lanes, Volumes, Timings
9: Site & Caroline Street

1 Rosetta St TIS Update
Total PM (Ten-Year)

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (vph)	3	14	0	8	10	0
Future Volume (vph)	3	14	0	8	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.887					
Fit Protected				0.950		
Satd. Flow (prot)	1652	0	0	1863	1770	0
Fit Permitted				0.950		
Satd. Flow (perm)	1652	0	0	1863	1770	0
Link Speed (k/h)	50		50		50	
Link Distance (m)	89.7		45.9		33.3	
Travel Time (s)	6.5		3.3		2.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	15	0	9	11	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	18	0	0	9	11	0
Sign Control	Free		Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	20.0%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis
9: Site & Caroline Street

1 Rosetta St TIS Update
Total PM (Ten-Year)

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	3	14	0	8	10	0
Future Volume (Veh/h)	3	14	0	8	10	0
Sign Control	Free		Free		Stop	
Grade	0%					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	15	0	9	11	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			18		20 10	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			18		20 10	
tC, single (s)			4.1		6.4 6.2	
tC, 2 stage (s)						
tF (s)			2.2		3.5 3.3	
p0 queue free %			100		99 100	
cM capacity (veh/h)			1599		998 1071	

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	18	9	11
Volume Left	0	0	11
Volume Right	15	0	0
sSH	1700	1599	998
Volume to Capacity	0.01	0.00	0.01
Queue Length 95th (m)	0.0	0.0	0.3
Control Delay (s)	0.0	0.0	8.6
Lane LOS	A		
Approach Delay (s)	0.0	0.0	8.6
Approach LOS	A		

Intersection Summary			
Average Delay			2.5
Intersection Capacity Utilization	20.0%	ICU Level of Service	A
Analysis Period (min)			15

Lanes, Volumes, Timings
10: Extension & John Street

1 Rosetta St TIS Update
Total PM (Ten-Year)

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (vph)	138	8	6	170	6	4
Future Volume (vph)	138	8	6	170	6	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.992				0.951	
Fit Protected				0.998	0.969	
Satd. Flow (prot)	1848	0	0	1673	1717	0
Fit Permitted				0.998	0.969	
Satd. Flow (perm)	1848	0	0	1673	1717	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	102.7			368.0	98.2	
Travel Time (s)	7.4			26.5	7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)			0	0		
Adj. Flow (vph)	150	9	7	185	7	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	159	0	0	192	11	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	30.5%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
10: Extension & John Street

1 Rosetta St TIS Update
Total PM (Ten-Year)

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	138	8	6	170	6	4
Future Volume (Veh/h)	138	8	6	170	6	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	150	9	7	185	7	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			159		354	154
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			159		354	154
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	100
cM capacity (veh/h)			1420		641	891
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	159	192	11			
Volume Left	0	7	7			
Volume Right	9	0	4			
sSH	1700	1420	714			
Volume to Capacity	0.09	0.00	0.02			
Queue Length 95th (m)	0.0	0.1	0.4			
Control Delay (s)	0.0	0.3	10.1			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.3	10.1			
Approach LOS			B			
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization		30.5%		ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
11: St Michaels Street/Extension & Caroline Street

1 Rosetta St TIS Update
Total PM (Ten-Year)

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	8	10	0	3	14	0
Future Volume (vph)	8	10	0	3	14	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.926		0.865			
Fit Protected	0.978				0.950	
Satd. Flow (prot)	1687	0	1611	0	0	1770
Fit Permitted	0.978				0.950	
Satd. Flow (perm)	1687	0	1611	0	0	1770
Link Speed (k/h)	50		50		50	
Link Distance (m)	89.7		89.7		98.2	
Travel Time (s)	6.5		6.5		7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	11	0	3	15	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	0	3	0	0	15
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	24.1% ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
11: St Michaels Street/Extension & Caroline Street

1 Rosetta St TIS Update
Total PM (Ten-Year)

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	8	10	0	3	14	0
Future Volume (Veh/h)	8	10	0	3	14	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	11	0	3	15	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	32	2			3	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	32	2			3	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	99			99	
cM capacity (veh/h)	973	1083			1619	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	20	3	15
Volume Left	9	0	15
Volume Right	11	3	0
sSH	1031	1700	1619
Volume to Capacity	0.02	0.00	0.01
Queue Length 95th (m)	0.5	0.0	0.2
Control Delay (s)	8.6	0.0	7.2
Lane LOS	A		A
Approach Delay (s)	8.6	0.0	7.2
Approach LOS	A		

Intersection Summary			
Average Delay		7.4	
Intersection Capacity Utilization	24.1%	ICU Level of Service	A
Analysis Period (min)		15	

Queuing and Blocking Report

1 Rosetta St TIS Update
Total PM (Ten-Year)

Intersection: 1: Mountainview Road N & River Drive

Movement	EB	WB	NB	NB	SB	SB	B25
Directions Served	LTR	LTR	LT	R	LT	TR	T
Maximum Queue (m)	34.8	75.0	201.1	141.2	39.6	37.7	14.3
Average Queue (m)	15.3	41.4	104.7	31.0	21.7	19.7	0.7
95th Queue (m)	28.0	66.4	187.0	101.2	35.8	34.3	9.3
Link Distance (m)	110.0	202.7	404.4	404.4	29.5	29.5	191.2
Upstream Blk Time (%)					2	1	
Queuing Penalty (veh)					6	3	
Storage Bay Dist (m)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: Mountainview Road N & John Street

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (m)	18.7	20.2	32.3	65.4	8.8	39.4
Average Queue (m)	10.2	9.4	18.8	28.6	2.5	19.4
95th Queue (m)	16.0	15.8	34.3	51.2	8.8	30.1
Link Distance (m)	84.2	165.0		191.2		166.6
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)			30.0		30.0	
Storage Blk Time (%)			0	5		1
Queuing Penalty (veh)			1	8		0

Intersection: 3: River Drive & Daniella Street

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (m)	5.4	9.2
Average Queue (m)	0.3	3.5
95th Queue (m)	2.9	10.7
Link Distance (m)	162.0	120.8
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report

1 Rosetta St TIS Update
Total PM (Ten-Year)

Intersection: 4: River Drive & Rosetta Street

Movement	SB
Directions Served	LR
Maximum Queue (m)	14.7
Average Queue (m)	8.9
95th Queue (m)	13.3
Link Distance (m)	29.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Victoria Street/River Drive & St Michaels Street

Movement	SB
Directions Served	LR
Maximum Queue (m)	16.6
Average Queue (m)	1.8
95th Queue (m)	8.5
Link Distance (m)	71.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Rosset Valley Court & John Street

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (m)	1.8	9.2	10.7
Average Queue (m)	0.1	1.0	4.3
95th Queue (m)	1.3	5.6	10.8
Link Distance (m)	356.5	84.2	140.0
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Queuing and Blocking Report

1 Rosetta St TIS Update
Total PM (Ten-Year)

Intersection: 7: Victoria Street & John Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	14.6	25.5	11.8	23.3
Average Queue (m)	8.1	13.4	6.4	12.2
95th Queue (m)	13.5	21.6	13.5	19.6
Link Distance (m)	139.7	90.2	108.9	96.8
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: Rosetta Street & Site

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (m)	22.8	8.9
Average Queue (m)	9.6	0.4
95th Queue (m)	17.5	3.2
Link Distance (m)	38.2	29.8
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9: Site & Caroline Street

Movement	NB
Directions Served	LR
Maximum Queue (m)	8.8
Average Queue (m)	2.5
95th Queue (m)	9.0
Link Distance (m)	27.6
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report

1 Rosetta St TIS Update
Total PM (Ten-Year)

Intersection: 10: Extension & John Street

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	1.8	9.2
Average Queue (m)	0.1	3.2
95th Queue (m)	1.8	10.4
Link Distance (m)	356.5	89.4
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: St Michaels Street/Extension & Caroline Street

Movement	WB
Directions Served	LR
Maximum Queue (m)	9.2
Average Queue (m)	3.9
95th Queue (m)	11.3
Link Distance (m)	77.5
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 17

Appendix K

Ten-Year Total Traffic Operations (No Underpass)



Lanes, Volumes, Timings
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Total AM (Ten-Year, No Tunnel)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	
Traffic Volume (vph)	2	42	162	165	19	30	54	330	177	53	570	5
Future Volume (vph)	2	42	162	165	19	30	54	330	177	53	570	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	0.95	0.95
Ped Bike Factor		1.00			1.00				0.97		1.00	
Frt		0.894			0.981				0.850		0.999	
Flt Protected					0.963			0.993			0.996	
Satd. Flow (prot)	0	1499	0	0	1365	0	0	1768	1380	0	3485	0
Flt Permitted		0.997			0.674			0.830			0.875	
Satd. Flow (perm)	0	1494	0	0	955	0	0	1478	1346	0	3061	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		172			11			188			1	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		127.8			212.6			412.3			41.4	
Travel Time (s)		9.2			15.3			29.7			3.0	
Confl. Peds. (#/hr)	5					5			4	4		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	17%	35%	40%	5%	11%	6%	17%	12%	2%	33%
Adj. Flow (vph)	2	45	172	176	20	32	57	351	188	56	606	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	219	0	0	228	0	0	408	188	0	667	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			4			2		2		2
Permitted Phases	4			4			2		2	2		
Detector Phase	4	4		4	4		2	2	2	2		2
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		30.0	30.0	30.0	30.0		30.0
Minimum Split (s)	36.1	36.1		36.1	36.1		36.5	36.5	36.5	36.5		36.5
Total Split (s)	35.0	35.0		35.0	35.0		45.0	45.0	45.0	45.0		45.0
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.3%	56.3%	56.3%	56.3%		56.3%
Maximum Green (s)	28.9	28.9		28.9	28.9		38.5	38.5	38.5	38.5		38.5
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	2.1	2.1		2.1	2.1		2.0	2.0	2.0	2.0		2.0
Lost Time Adjust (s)		3.0			3.0			3.0	3.0	3.0		3.0
Total Lost Time (s)		9.1			9.1			9.5	9.5	9.5		9.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.5	4.5	4.5	4.5		4.5
Recall Mode	None	None		None	None		Max	Max	Max	Max		Max
Walk Time (s)	10.0	10.0		10.0	10.0		14.0	14.0	14.0	14.0		14.0
Flash Dont Walk (s)	20.0	20.0		20.0	20.0		16.0	16.0	16.0	16.0		16.0
Pedestrian Calls (#/hr)	5	5		5	5		4	4	4	4		4
Act Effct Green (s)		18.7			18.7			35.8	35.8		35.8	
Actuated g/C Ratio		0.26			0.26			0.49	0.49		0.49	
v/c Ratio		0.43			0.90			0.57	0.25		0.45	
Control Delay		8.7			62.6			18.8	3.3		14.7	
Queue Delay		0.0			0.0			0.0	0.0		0.0	

Lanes, Volumes, Timings
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Total AM (Ten-Year, No Tunnel)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		8.7			62.6			18.8	3.3		14.7	
LOS		A			E			B	A		B	
Approach Delay		8.7			62.6			13.9			14.7	
Approach LOS		A			E			B			B	
Queue Length 50th (m)		4.9			28.8			38.6	0.0		30.6	
Queue Length 95th (m)		19.7			#61.3			76.7	10.6		52.1	
Internal Link Dist (m)		103.8			188.6			388.3			17.4	
Turn Bay Length (m)												
Base Capacity (vph)		646			350			721	753		1495	
Starvation Cap Reductn		0			0			0	0		0	
Spillback Cap Reductn		0			0			0	0		0	
Storage Cap Reductn		0			0			0	0		0	
Reduced v/c Ratio		0.34			0.65			0.57	0.25		0.45	

Intersection Summary

Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	73.3
Natural Cycle:	75
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.90
Intersection Signal Delay:	20.0
Intersection LOS:	C
Intersection Capacity Utilization:	107.3%
ICU Level of Service:	G
Analysis Period (min):	15
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Spits and Phases: 1: Mountainview Road N & River Drive



HCM Signalized Intersection Capacity Analysis
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Total AM (Ten-Year, No Tunnel)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔				↔	↔		↔	
Traffic Volume (vph)	2	42	162	165	19	30	54	330	177	53	570	5
Future Volume (vph)	2	42	162	165	19	30	54	330	177	53	570	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Total Lost time (s)	9.1			9.1			9.5			9.5		
Lane Util. Factor	1.00			1.00			1.00			0.95		
Frbp, ped/bikes	1.00			1.00			1.00			0.98		
Flpb, ped/bikes	1.00			1.00			1.00			1.00		
Frt	0.89			0.98			1.00			0.85		
Flt Protected	1.00			0.96			0.99			1.00		
Satd. Flow (prot)	1498			1365			1768			1346		
Flt Permitted	1.00			0.67			0.83			1.00		
Satd. Flow (perm)	1494			955			1479			1346		
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	2	45	172	176	20	32	57	351	188	56	606	5
RTOR Reduction (vph)	0	128	0	0	8	0	0	0	96	0	1	0
Lane Group Flow (vph)	0	91	0	0	220	0	0	408	92	0	666	0
Confl. Peds. (#/hr)	5			5			4			4		
Heavy Vehicles (%)	0%	0%	17%	35%	40%	5%	11%	6%	17%	12%	2%	33%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	4		4		4		2		2		2	
Permitted Phases	4		4		2		2		2		2	
Actuated Green, G (s)	21.8		21.8		38.8		38.8		38.8		38.8	
Effective Green, g (s)	18.8		18.8		35.8		35.8		35.8		35.8	
Actuated g/C Ratio	0.26		0.26		0.49		0.49		0.49		0.49	
Clearance Time (s)	6.1		6.1		6.5		6.5		6.5		6.5	
Vehicle Extension (s)	3.0		3.0		4.5		4.5		4.5		4.5	
Lane Grp Cap (vph)	383		245		723		658		1497			
v/s Ratio Prot	0.06		c0.23		c0.28		0.07		0.22			
v/c Ratio	0.24		0.90		0.56		0.14		0.45			
Uniform Delay, d1	21.5		26.3		13.2		10.3		12.2			
Progression Factor	1.00		1.00		1.00		1.00		1.00			
Incremental Delay, d2	0.3		31.5		3.2		0.4		1.0			
Delay (s)	21.9		57.7		16.4		10.7		13.2			
Level of Service	C		E		B		B		B			
Approach Delay (s)	21.9		57.7		14.6		13.2					
Approach LOS	C		E		B		B					
Intersection Summary												
HCM 2000 Control Delay	20.7		HCM 2000 Level of Service				C					
HCM 2000 Volume to Capacity ratio	0.68											
Actuated Cycle Length (s)	73.2		Sum of lost time (s)				18.6					
Intersection Capacity Utilization	107.3%		ICU Level of Service				G					
Analysis Period (min)	15											
c Critical Lane Group												

Lanes, Volumes, Timings
2: Mountainview Road N & John Street

1 Rosetta St TIS Update
Total AM (Ten-Year, No Tunnel)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔				↔	↔		↔	
Traffic Volume (vph)	29	11	117	29	15	12	70	265	24	24	471	29
Future Volume (vph)	29	11	117	29	15	12	70	265	24	24	471	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6
Storage Length (m)	0.0		0.0		0.0		30.0		0.0		30.0	
Storage Lanes	0		0		0		1		0		1	
Taper Length (m)	2.5		2.5		2.5		2.5		2.5		2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.900											
Frt	0.991			0.971			0.987			0.991		
Flt Protected	0		1637		0		1707		0		1544	
Satd. Flow (prot)	0		1637		0		1707		0		1544	
Flt Permitted	0		1637		0		1707		0		1544	
Satd. Flow (perm)	0		1637		0		1707		0		1544	
Link Speed (k/h)	50		50		50		50		50		50	
Link Distance (m)	95.5		171.9		203.3		171.8					
Travel Time (s)	6.9		12.4		14.6		12.4					
Confl. Peds. (#/hr)	2		5		5		2		9		9	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	7%	0%	3%	5%	0%	13%	13%	4%	13%	6%	4%	0%
Adj. Flow (vph)	31	12	124	31	16	13	74	282	26	26	501	31
Shared Lane Traffic (%)	0											
Lane Group Flow (vph)	0	167	0	0	60	0	74	308	0	26	532	0
Sign Control	Stop		Stop		Stop		Stop		Stop		Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	58.5%						ICU Level of Service B					
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
 2: Mountainview Road N & John Street

1 Rosetta St TIS Update
 Total AM (Ten-Year, No Tunnel)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↖	↗		↖	↗	
Sign Control	Stop			Stop			Stop	Stop		Stop	Stop	
Traffic Volume (vph)	29	11	117	29	15	12	70	265	24	24	471	29
Future Volume (vph)	29	11	117	29	15	12	70	265	24	24	471	29
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	31	12	124	31	16	13	74	282	26	26	501	31
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total (vph)	167	60	74	308	26	532						
Volume Left (vph)	31	31	74	0	26	0						
Volume Right (vph)	124	13	0	26	0	31						
Hadj (s)	-0.35	0.07	0.72	0.02	0.60	0.02						
Departure Headway (s)	6.1	6.8	6.7	6.0	6.4	5.8						
Degree Utilization, x	0.28	0.11	0.14	0.51	0.05	0.86						
Capacity (veh/h)	545	471	512	578	545	611						
Control Delay (s)	11.5	10.7	9.6	13.9	8.5	32.5						
Approach Delay (s)	11.5	10.7	13.1	31.4								
Approach LOS	B	B	B	D								
Intersection Summary												
Delay			21.5									
Level of Service			C									
Intersection Capacity Utilization			58.5%	ICU Level of Service	B							
Analysis Period (min)			15									

Lanes, Volumes, Timings
 3: River Drive & Daniella Street

1 Rosetta St TIS Update
 Total AM (Ten-Year, No Tunnel)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔		↖	↗	↔	
Traffic Volume (vph)	3	209	69	3	11	5
Future Volume (vph)	3	209	69	3	11	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.995			0.957
Fit Protected			0.999			0.967
Satd. Flow (prot)	0	1585	1434	0	1758	0
Fit Permitted			0.999			0.967
Satd. Flow (perm)	0	1585	1434	0	1758	0
Link Speed (k/h)			50			50
Link Distance (m)			172.1	127.8	126.0	
Travel Time (s)			12.4	9.2	9.1	
Confl. Peds. (#/hr)	3				3	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	20%	33%	0%	0%	0%
Adj. Flow (vph)	3	243	80	3	13	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	246	83	0	19	0
Sign Control	Free		Free	Stop		
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	28.4%		ICU Level of Service A			
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
3: River Drive & Daniella Street

1 Rosetta St TIS Update
Total AM (Ten-Year, No Tunnel)

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	3	209	69	3	11	5
Future Volume (Veh/h)	3	209	69	3	11	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	3	243	80	3	13	6
Pedestrians					3	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			128			
pX, platoon unblocked						
vC, conflicting volume	86				334	84
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	86				334	84
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				98	99
cM capacity (veh/h)	1519				663	977
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	246	83	19			
Volume Left	3	0	13			
Volume Right	0	3	6			
eSH	1519	1700	738			
Volume to Capacity	0.00	0.05	0.03			
Queue Length 95th (m)	0.0	0.0	0.6			
Control Delay (s)	0.1	0.0	10.0			
Lane LOS	A		B			
Approach Delay (s)	0.1	0.0	10.0			
Approach LOS			B			
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization		28.4%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
4: River Drive & Rosetta Street

1 Rosetta St TIS Update
Total AM (Ten-Year, No Tunnel)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	0	61	12	54	145	0
Future Volume (vph)	0	61	12	54	145	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.889			
Fit Protected					0.950	
Satd. Flow (prot)	0	1583	1161	0	1805	0
Fit Permitted					0.950	
Satd. Flow (perm)	0	1583	1161	0	1805	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		46.1	172.1		38.0	
Travel Time (s)		3.3	12.4		2.7	
Confl. Peds. (#/hr)					2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	20%	25%	50%	0%	0%
Adj. Flow (vph)	0	68	13	60	161	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	68	73	0	161	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 23.7%				ICU Level of Service A		
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
4: River Drive & Rosetta Street

1 Rosetta St TIS Update
Total AM (Ten-Year, No Tunnel)

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	0	61	12	54	145	0
Future Volume (Veh/h)	0	61	12	54	145	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	68	13	60	161	0
Pedestrians			2			
Lane Width (m)			3.6			
Walking Speed (m/s)			1.1			
Percent Blockage			0			
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			300			
pX, platoon unblocked						
vC, conflicting volume	73				113	43
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	73				113	43
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				82	100
cM capacity (veh/h)	1540				887	1033
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	68	73	161			
Volume Left	0	0	161			
Volume Right	0	60	0			
cSH	1540	1700	887			
Volume to Capacity	0.00	0.04	0.18			
Queue Length 95th (m)	0.0	0.0	5.0			
Control Delay (s)	0.0	0.0	10.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	10.0			
Approach LOS			A			
Intersection Summary						
Average Delay			5.3			
Intersection Capacity Utilization		23.7%		ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
5: Victoria Street/River Drive & St Michaels Street

1 Rosetta St TIS Update
Total AM (Ten-Year, No Tunnel)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	2	56	6	2	2	0
Future Volume (vph)	2	56	6	2	2	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.970			
Fit Protected		0.999			0.950	
Satd. Flow (prot)	0	1671	1543	0	1805	0
Fit Permitted		0.999			0.950	
Satd. Flow (perm)	0	1671	1543	0	1805	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		118.5	126.7		89.7	
Travel Time (s)		8.5	9.1		6.5	
Confl. Peds. (#/hr)	3			3	1	1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	14%	25%	0%	0%	0%
Adj. Flow (vph)	2	66	7	2	2	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	68	9	0	2	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	19.9%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
 5: Victoria Street/River Drive & St Michaels Street

1 Rosetta St TIS Update
 Total AM (Ten-Year, No Tunnel)

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	2	56	6	2	2	0
Future Volume (Veh/h)	2	56	6	2	2	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	2	66	7	2	2	0
Pedestrians		1	1		3	
Lane Width (m)		3.6	3.6		3.6	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	12				82	12
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	12				82	12
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1616				920	1071
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	68	9	2			
Volume Left	2	0	2			
Volume Right	0	2	0			
sSH	1616	1700	920			
Volume to Capacity	0.00	0.01	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.2	0.0	8.9			
Lane LOS	A		A			
Approach Delay (s)	0.2	0.0	8.9			
Approach LOS			A			
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization		19.9%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
 6: Rosset Valley Court & John Street

1 Rosetta St TIS Update
 Total AM (Ten-Year, No Tunnel)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕			↕	↕	
Traffic Volume (vph)	123	0	21	91	5	26
Future Volume (vph)	123	0	21	91	5	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.887	
Fit Protected				0.991	0.992	
Satd. Flow (prot)	1827	0	0	1568	1672	0
Fit Permitted				0.991	0.992	
Satd. Flow (perm)	1827	0	0	1568	1672	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	368.0			95.5	146.5	
Travel Time (s)	26.5			6.9	10.5	
Confl. Peds. (#/hr)		8	8			
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	4%	0%	0%	10%	0%	0%
Parking (#/hr)				0	0	
Adj. Flow (vph)	145	0	25	107	6	31
Shared Lane Traffic (%)						
Lane Group Flow (vph)	145	0	0	132	37	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	34.9%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
6: Rosset Valley Court & John Street

1 Rosetta St TIS Update
Total AM (Ten-Year, No Tunnel)

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	123	0	21	91	5	26
Future Volume (Veh/h)	123	0	21	91	5	26
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	145	0	25	107	6	31
Pedestrians					8	
Lane Width (m)				3.6		
Walking Speed (m/s)				1.1		
Percent Blockage				1		
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			153	310	153	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			153	310	153	
tC, single (s)			4.1	6.4	6.2	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
pD queue free %			98	99	97	
cM capacity (veh/h)			1429	670	892	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	145	132	37			
Volume Left	0	25	6			
Volume Right	0	0	31			
cSH	1700	1429	846			
Volume to Capacity	0.09	0.02	0.04			
Queue Length 95th (m)	0.0	0.4	1.0			
Control Delay (s)	0.0	1.5	9.4			
Lane LOS		A	A			
Approach Delay (s)	0.0	1.5	9.4			
Approach LOS			A			
Intersection Summary						
Average Delay			1.8			
Intersection Capacity Utilization		34.9%		ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
7: Victoria Street & John Street

1 Rosetta St TIS Update
Total AM (Ten-Year, No Tunnel)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	21	5	6	29	70	6	9	0	88	30	6
Future Volume (vph)	0	21	5	6	29	70	6	9	0	88	30	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.973			0.910							0.993
Fit Protected					0.997			0.980				0.966
Satd. Flow (prot)	0	1849	0	0	1416	0	0	1862	0	0	1760	0
Fit Permitted					0.997			0.980				0.966
Satd. Flow (perm)	0	1849	0	0	1416	0	0	1862	0	0	1760	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		145.1			102.7			117.7			102.2	
Travel Time (s)		10.4			7.4			8.5			7.4	
Confl. Peds. (#/hr)	2		5	5		2	2		7	7		2
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	0%	50%	0%	10%	0%	0%	0%	5%	0%	0%
Parking (#/hr)				0	0	0						
Adj. Flow (vph)	0	24	6	7	33	80	7	10	0	101	34	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	30	0	0	120	0	0	17	0	0	142	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	35.0%						ICU Level of Service A					
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
7: Victoria Street & John Street

1 Rosetta St TIS Update
Total AM (Ten-Year, No Tunnel)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	0	21	5	6	29	70	6	9	0	88	30	6
Future Volume (vph)	0	21	5	6	29	70	6	9	0	88	30	6
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	0	24	6	7	33	80	7	10	0	101	34	7
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	30	120	17	142								
Volume Left (vph)	0	7	7	101								
Volume Right (vph)	6	80	0	7								
Hadj (s)	-0.12	-0.23	0.08	0.17								
Departure Headway (s)	4.3	4.1	4.5	4.4								
Degree Utilization, x	0.04	0.14	0.02	0.17								
Capacity (veh/h)	801	848	764	789								
Control Delay (s)	7.4	7.7	7.6	8.4								
Approach Delay (s)	7.4	7.7	7.6	8.4								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				8.0								
Level of Service				A								
Intersection Capacity Utilization				35.0%	ICU Level of Service	A						
Analysis Period (min)				15								

Lanes, Volumes, Timings
8: Rosetta Street & Site

1 Rosetta St TIS Update
Total AM (Ten-Year, No Tunnel)

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↕			↕	↕	
Traffic Volume (vph)	0	139	51	3	6	0
Future Volume (vph)	0	139	51	3	6	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.865					
Fit Protected				0.955		
Satd. Flow (prot)	1611	0	0	1779	1863	0
Fit Permitted				0.955		
Satd. Flow (perm)	1611	0	0	1779	1863	0
Link Speed (k/h)	50		50		50	
Link Distance (m)	43.4		38.0		77.9	
Travel Time (s)	3.1		2.7		5.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	151	55	3	7	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	151	0	0	58	7	0
Sign Control	Stop		Free		Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	31.6%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
8: Rosetta Street & Site

1 Rosetta St TIS Update
Total AM (Ten-Year, No Tunnel)

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔		↑	↑	
Traffic Volume (veh/h)	0	139	51	3	6	0
Future Volume (Veh/h)	0	139	51	3	6	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	151	55	3	7	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None	None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	120	7	7			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	120	7	7			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	86	97			
cM capacity (veh/h)	846	1075	1614			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	151	58	7			
Volume Left	0	55	0			
Volume Right	151	0	0			
cSH	1075	1614	1700			
Volume to Capacity	0.14	0.03	0.00			
Queue Length 95th (m)	3.7	0.8	0.0			
Control Delay (s)	8.9	6.9	0.0			
Lane LOS	A	A				
Approach Delay (s)	8.9	6.9	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		8.1				
Intersection Capacity Utilization		31.6%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
9: Site & Caroline Street

1 Rosetta St TIS Update
Total AM (Ten-Year, No Tunnel)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔	↔		↔	↔	
Traffic Volume (vph)	3	5	0	2	12	0
Future Volume (vph)	3	5	0	2	12	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.916					
Fit Protected					0.950	
Satd. Flow (prot)	1706	0	0	1863	1770	0
Fit Permitted					0.950	
Satd. Flow (perm)	1706	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	89.7			45.9	33.3	
Travel Time (s)	6.5			3.3	2.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	5	0	2	13	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	8	0	0	2	13	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	20.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
9: Site & Caroline Street

1 Rosetta St TIS Update
Total AM (Ten-Year, No Tunnel)

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	↘
Traffic Volume (veh/h)	3	5	0	2	12	0
Future Volume (Veh/h)	3	5	0	2	12	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	5	0	2	13	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			8		8	6
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			8		8	6
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	100
cM capacity (veh/h)			1612		1013	1077
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	8	2	13			
Volume Left	0	0	13			
Volume Right	5	0	0			
cSH	1700	1612	1013			
Volume to Capacity	0.00	0.00	0.01			
Queue Length 95th (m)	0.0	0.0	0.3			
Control Delay (s)	0.0	0.0	8.6			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	8.6			
Approach LOS			A			
Intersection Summary						
Average Delay			4.9			
Intersection Capacity Utilization			20.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
10: Extension & John Street

1 Rosetta St TIS Update
Total AM (Ten-Year, No Tunnel)

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	↘
Traffic Volume (vph)	108	2	3	99	6	6
Future Volume (vph)	108	2	3	99	6	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.998				0.932	
Fit Protected				0.999	0.976	
Satd. Flow (prot)	1859	0	0	1675	1694	0
Fit Permitted				0.999	0.976	
Satd. Flow (perm)	1859	0	0	1675	1694	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	102.7			368.0	98.2	
Travel Time (s)	7.4			26.5	7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)			0	0		
Adj. Flow (vph)	117	2	3	108	7	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	119	0	0	111	14	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	24.3%		ICU Level of Service A			
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
10: Extension & John Street

1 Rosetta St TIS Update
Total AM (Ten-Year, No Tunnel)

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	108	2	3	99	6	6
Future Volume (Veh/h)	108	2	3	99	6	6
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	117	2	3	108	7	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			119		232	118
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			119		232	118
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1469		755	934
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	119	111	14			
Volume Left	0	3	7			
Volume Right	2	0	7			
sSH	1700	1469	835			
Volume to Capacity	0.07	0.00	0.02			
Queue Length 95th (m)	0.0	0.0	0.4			
Control Delay (s)	0.0	0.2	9.4			
Lane LOS		A	A			
Approach Delay (s)	0.0	0.2	9.4			
Approach LOS			A			
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization		24.3%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings
11: St Michaels Street/Extension & Caroline Street

1 Rosetta St TIS Update
Total AM (Ten-Year, No Tunnel)

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Volume (vph)	2	12	0	3	5	0
Future Volume (vph)	2	12	0	3	5	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.883		0.865			
Fit Protected	0.993					0.950
Satd. Flow (prot)	1633	0	1611	0	0	1770
Fit Permitted	0.993					0.950
Satd. Flow (perm)	1633	0	1611	0	0	1770
Link Speed (k/h)	50		50			50
Link Distance (m)	89.7		89.7			98.2
Travel Time (s)	6.5		6.5			7.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	13	0	3	5	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	15	0	3	0	0	5
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	20.8%		ICU Level of Service A			
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
11: St Michaels Street/Extension & Caroline Street

1 Rosetta St TIS Update
Total AM (Ten-Year, No Tunnel)

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Volume (veh/h)	2	12	0	3	5	0
Future Volume (Veh/h)	2	12	0	3	5	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	13	0	3	5	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None		None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	12	2			3	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	12	2			3	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
pD queue free %	100	99			100	
cM capacity (veh/h)	1005	1083			1619	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	15	3	5			
Volume Left	2	0	5			
Volume Right	13	3	0			
sSH	1072	1700	1619			
Volume to Capacity	0.01	0.00	0.00			
Queue Length 95th (m)	0.3	0.0	0.1			
Control Delay (s)	8.4	0.0	7.2			
Lane LOS	A		A			
Approach Delay (s)	8.4	0.0	7.2			
Approach LOS	A					
Intersection Summary						
Average Delay			7.1			
Intersection Capacity Utilization			20.8%	ICU Level of Service		A
Analysis Period (min)			15			

Queuing and Blocking Report

1 Rosetta St TIS Update
Total AM (Ten-Year, No Tunnel)

Intersection: 1: Mountainview Road N & River Drive

Movement	EB	WB	NB	NB	SB	SB	B25
Directions Served	LTR	LTR	LT	R	LT	TR	T
Maximum Queue (m)	54.5	81.1	62.3	32.8	43.7	38.9	20.8
Average Queue (m)	19.5	39.6	31.4	10.7	24.4	22.8	1.2
95th Queue (m)	37.7	68.7	52.8	23.0	39.9	36.8	9.8
Link Distance (m)	110.0	202.7	404.4	404.4	29.5	29.5	191.2
Upstream Blk Time (%)					3	2	
Queuing Penalty (veh)					9	6	
Storage Bay Dist (m)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: Mountainview Road N & John Street

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (m)	34.7	17.1	30.3	43.7	32.2	75.4
Average Queue (m)	12.8	9.0	11.3	19.8	6.7	29.5
95th Queue (m)	22.8	16.0	23.7	33.7	20.6	56.0
Link Distance (m)	84.2	165.0		191.2		166.6
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)			30.0		30.0	
Storage Blk Time (%)			0	1	0	8
Queuing Penalty (veh)			0	1	0	2

Intersection: 3: River Drive & Daniella Street

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (m)	1.9	10.5
Average Queue (m)	0.1	3.3
95th Queue (m)	1.3	10.4
Link Distance (m)	162.0	120.8
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report

1 Rosetta St TIS Update
Total AM (Ten-Year, No Tunnel)

Intersection: 4: River Drive & Rosetta Street

Movement	SB
Directions Served	LR
Maximum Queue (m)	19.8
Average Queue (m)	10.1
95th Queue (m)	14.6
Link Distance (m)	29.8
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Victoria Street/River Drive & St Michaels Street

Movement	SB
Directions Served	LR
Maximum Queue (m)	5.6
Average Queue (m)	0.4
95th Queue (m)	3.1
Link Distance (m)	71.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Rosset Valley Court & John Street

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	9.1	9.5
Average Queue (m)	0.6	4.9
95th Queue (m)	4.3	11.1
Link Distance (m)	84.2	140.0
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report

1 Rosetta St TIS Update
Total AM (Ten-Year, No Tunnel)

Intersection: 7: Victoria Street & John Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	10.4	23.4	10.6	23.4
Average Queue (m)	4.8	11.7	3.4	11.2
95th Queue (m)	12.1	19.6	10.6	17.8
Link Distance (m)	139.7	90.2	108.9	96.8
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: Rosetta Street & Site

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (m)	23.0	3.3
Average Queue (m)	12.8	0.1
95th Queue (m)	21.0	2.3
Link Distance (m)	38.2	29.8
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9: Site & Caroline Street

Movement	NB
Directions Served	LR
Maximum Queue (m)	11.6
Average Queue (m)	3.7
95th Queue (m)	11.1
Link Distance (m)	27.6
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report

1 Rosetta St TIS Update
Total AM (Ten-Year, No Tunnel)

Intersection: 10: Extension & John Street

Movement	NB
Directions Served	LR
Maximum Queue (m)	10.5
Average Queue (m)	3.6
95th Queue (m)	10.9
Link Distance (m)	89.4
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: St Michaels Street/Extension & Caroline Street

Movement	WB
Directions Served	LR
Maximum Queue (m)	9.2
Average Queue (m)	3.8
95th Queue (m)	11.1
Link Distance (m)	77.5
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 18

Lanes, Volumes, Timings

1 Rosetta St TIS Update
Total PM (Ten-Year, No Tunnel)

1: Mountainview Road N & River Drive

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group												
Lane Configurations		↔			↔			↔	↔		↔	
Traffic Volume (vph)	3	33	133	205	47	74	142	560	209	36	429	8
Future Volume (vph)	3	33	133	205	47	74	142	560	209	36	429	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99			0.99			1.00	0.97		1.00	
Frnt		0.894			0.969				0.850		0.997	
Fit Protected		0.999			0.969			0.990			0.996	
Satd. Flow (prot)	0	1580	0	0	1683	0	0	1795	1302	0	3428	0
Fit Permitted		0.993			0.732			0.776			0.698	
Satd. Flow (perm)	0	1571	0	0	1271	0	0	1406	1261	0	2402	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		148			19				232		3	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		127.8			212.6			412.3			41.4	
Travel Time (s)		9.2			15.3			29.7			3.0	
Confl. Peds. (#/hr)	13		1	1		13	2		9	9		2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	50%	0%	7%	8%	0%	2%	8%	4%	24%	0%	5%	0%
Adj. Flow (vph)	3	37	148	228	52	82	158	622	232	40	477	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	188	0	0	362	0	0	780	232	0	526	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2		2	2		
Detector Phase	4	4		4	4		2	2	2	2	2	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		30.0	30.0	30.0	30.0	30.0	
Minimum Split (s)	36.1	36.1		36.1	36.1		36.5	36.5	36.5	36.5	36.5	
Total Split (s)	35.0	35.0		35.0	35.0		45.0	45.0	45.0	45.0	45.0	
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.3%	56.3%	56.3%	56.3%	56.3%	
Maximum Green (s)	28.9	28.9		28.9	28.9		38.5	38.5	38.5	38.5	38.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5	4.5	4.5	4.5	
All-Red Time (s)	2.1	2.1		2.1	2.1		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		3.0			3.0			3.0	3.0		3.0	
Total Lost Time (s)		9.1			9.1			9.5	9.5		9.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.5	4.5	4.5	4.5	4.5	
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		14.0	14.0	14.0	14.0	14.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0		16.0	16.0	16.0	16.0	16.0	
Pedestrian Calls (#/hr)	14	14		14	14		11	11	11	11	11	
Act Effct Green (s)		22.6			22.6			35.6	35.6		35.6	
Actuated g/C Ratio		0.29			0.29			0.46	0.46		0.46	
v/c Ratio		0.33			0.94			1.20	0.33		0.47	
Control Delay		7.7			58.6			127.8	3.5		16.7	
Queue Delay		0.0			0.0			0.0	0.0		0.0	

Lanes, Volumes, Timings
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Total PM (Ten-Year, No Tunnel)

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		7.7			58.6			127.8	3.5		16.7	
LOS		A			E			F	A		B	
Approach Delay		7.7			58.6			99.3			16.7	
Approach LOS		A			E			F	A		B	
Queue Length 50th (m)		4.2			48.4			~150.3	0.0		28.6	
Queue Length 95th (m)		17.6			#94.9			#218.0	11.8		43.2	
Internal Link Dist (m)		103.8			188.6			388.3			17.4	
Turn Bay Length (m)												
Base Capacity (vph)		632			445			651	708		1114	
Starvation Cap Reductn		0			0			0	0		0	
Spillback Cap Reductn		0			0			0	0		0	
Storage Cap Reductn		0			0			0	0		0	
Reduced v/c Ratio		0.30			0.81			1.20	0.33		0.47	

Intersection Summary	
Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	76.9
Natural Cycle:	110
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	1.20
Intersection Signal Delay:	63.2
Intersection LOS:	E
Intersection Capacity Utilization:	124.9%
ICU Level of Service:	H
Analysis Period (min):	15
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	



HCM Signalized Intersection Capacity Analysis
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Total PM (Ten-Year, No Tunnel)

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	
Traffic Volume (vph)	3	33	133	205	47	74	142	560	209	36	429	8
Future Volume (vph)	3	33	133	205	47	74	142	560	209	36	429	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Total Lost time (s)		9.1			9.1			9.5	9.5		9.5	
Lane Util. Factor		1.00			1.00			1.00	1.00		0.95	
Frpb, ped/bikes		0.99			1.00			1.00	0.97		1.00	
Flpb, ped/bikes		1.00			1.00			1.00	1.00		1.00	
Fr t		0.89			0.97			1.00	0.85		1.00	
Fl t Protected		1.00			0.97			0.99	1.00		1.00	
Satd. Flow (prot)		1580			1684			1794	1262		3430	
Fl t Permitted		0.99			0.73			0.78	1.00		0.70	
Satd. Flow (perm)		1570			1272			1407	1262		2403	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	3	37	148	228	52	82	158	622	232	40	477	9
RTOR Reduction (vph)	0	105	0	0	13	0	0	124	0	2	0	0
Lane Group Flow (vph)	0	83	0	0	349	0	0	780	108	0	524	0
Confl. Peds. (#/hr)	13		1	1		13	2		9	9		2
Heavy Vehicles (%)	50%	0%	7%	8%	0%	2%	8%	4%	24%	0%	5%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2		2	2		
Actuated Green, G (s)		25.6			25.6			38.7	38.7		38.7	
Effective Green, g (s)		22.6			22.6			35.7	35.7		35.7	
Actuated g/C Ratio		0.29			0.29			0.46	0.46		0.46	
Clearance Time (s)		6.1			6.1			6.5	6.5		6.5	
Vehicle Extension (s)		3.0			3.0			4.5	4.5		4.5	
Lane Grp Cap (vph)		461			373			653	585		1115	
v/s Ratio Prot												
v/s Ratio Perm		0.05			0.27			0.55	0.09		0.22	
v/c Ratio		0.18			0.93			1.19	0.18		0.47	
Uniform Delay, d1		20.2			26.4			20.6	12.1		14.1	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			30.2			102.0	0.7		1.4	
Delay (s)		20.4			56.6			122.6	12.8		15.5	
Level of Service		C			E			F	B		B	
Approach Delay (s)		20.4			56.6			97.5			15.5	
Approach LOS		C			E			F			B	

Intersection Summary	
HCM 2000 Control Delay	62.8
HCM 2000 Volume to Capacity ratio	1.09
Actuated Cycle Length (s)	76.9
Sum of lost time (s)	18.6
Intersection Capacity Utilization	124.9%
ICU Level of Service	H
Analysis Period (min)	15
c Critical Lane Group	

Lanes, Volumes, Timings
2: Mountainview Road N & John Street

1 Rosetta St TIS Update
Total PM (Ten-Year, No Tunnel)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Volume (vph)	39	15	70	35	26	20	159	474	39	9	350	38
Future Volume (vph)	39	15	70	35	26	20	159	474	39	9	350	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6
Storage Length (m)	0.0	0.0	0.0		0.0	30.0		0.0	30.0		0.0	
Storage Lanes	0	0	0		0	1		0	1		0	
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.923			0.966			0.989			0.985	
Flt Protected		0.984			0.979		0.950		0.950			
Satd. Flow (prot)	0	1726	0	0	1797	0	1711	1879	0	1745	1855	0
Flt Permitted		0.984			0.979		0.950		0.950			
Satd. Flow (perm)	0	1726	0	0	1797	0	1711	1879	0	1745	1855	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		95.5			171.9			203.3			171.8	
Travel Time (s)		6.9			12.4			14.6			12.4	
Confl. Peds. (#/hr)	2		1	1		2	2		1	1		2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	1%	0%
Adj. Flow (vph)	40	15	72	36	27	21	164	489	40	9	361	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	127	0	0	84	0	164	529	0	9	400	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	56.8%											
ICU Level of Service	B											
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
2: Mountainview Road N & John Street

1 Rosetta St TIS Update
Total PM (Ten-Year, No Tunnel)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Sign Control		Stop			Stop		Stop	Stop		Stop	Stop	
Traffic Volume (vph)	39	15	70	35	26	20	159	474	39	9	350	38
Future Volume (vph)	39	15	70	35	26	20	159	474	39	9	350	38
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	40	15	72	36	27	21	164	489	40	9	361	39
Direction, Lane #												
	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total (vph)	127	84	164	529	9	400						
Volume Left (vph)	40	36	164	0	9	0						
Volume Right (vph)	72	21	0	40	0	39						
Hadj (s)	-0.28	-0.06	0.53	-0.05	0.50	-0.05						
Departure Headway (s)	6.4	6.8	6.3	5.7	6.6	6.1						
Degree Utilization, x	0.23	0.16	0.29	0.84	0.02	0.68						
Capacity (veh/h)	511	475	556	619	518	568						
Control Delay (s)	11.3	11.1	10.6	30.4	8.5	19.6						
Approach Delay (s)	11.3	11.1	25.7		19.3							
Approach LOS	B	B	D		C							
Intersection Summary												
Delay	21.4											
Level of Service	C											
Intersection Capacity Utilization	56.8%											
ICU Level of Service	B											
Analysis Period (min)	15											

Lanes, Volumes, Timings
3: River Drive & Daniella Street

1 Rosetta St TIS Update
Total PM (Ten-Year, No Tunnel)

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	6	148	195	18	9	3
Future Volume (vph)	6	148	195	18	9	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.988		0.969	
Flt Protected		0.998			0.963	
Satd. Flow (prot)	0	1730	1764	0	1773	0
Flt Permitted		0.998			0.963	
Satd. Flow (perm)	0	1730	1764	0	1773	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		172.1	127.8		126.0	
Travel Time (s)		12.4	9.2		9.1	
Confl. Peds. (#/hr)	4			4		
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	10%	7%	0%	0%	0%
Adj. Flow (vph)	7	170	224	21	10	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	177	245	0	13	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	27.7%		ICU Level of Service A			
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
3: River Drive & Daniella Street

1 Rosetta St TIS Update
Total PM (Ten-Year, No Tunnel)

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	6	148	195	18	9	3
Future Volume (Veh/h)	6	148	195	18	9	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	7	170	224	21	10	3
Pedestrians					4	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			128			
pX, platoon unblocked					422	238
vC, conflicting volume	249					
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	249				422	238
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				98	100
cM capacity (veh/h)	1324				587	802
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	177	245	13			
Volume Left	7	0	10			
Volume Right	0	21	3			
eSH	1324	1700	625			
Volume to Capacity	0.01	0.14	0.02			
Queue Length 95th (m)	0.1	0.0	0.5			
Control Delay (s)	0.3	0.0	10.9			
Lane LOS	A		B			
Approach Delay (s)	0.3	0.0	10.9			
Approach LOS			B			
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization	27.7%		ICU Level of Service		A	
Analysis Period (min)	15					

Lanes, Volumes, Timings
4: River Drive & Rosetta Street

1 Rosetta St TIS Update
Total PM (Ten-Year, No Tunnel)

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	0	56	44	144	93	3
Future Volume (vph)	0	56	44	144	93	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.896		0.995		
Flt Protected				0.954		
Satd. Flow (prot)	0	1712	1537	0	1804	0
Flt Permitted				0.954		
Satd. Flow (perm)	0	1712	1537	0	1804	0
Link Speed (k/h)		50	50	50		
Link Distance (m)		46.1	172.1	38.0		
Travel Time (s)		3.3	12.4	2.7		
Confl. Peds. (#/hr)	3			3		
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	11%	0%	14%	0%	0%
Adj. Flow (vph)	0	67	52	171	111	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	67	223	0	115	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	28.6%		ICU Level of Service A			
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
4: River Drive & Rosetta Street

1 Rosetta St TIS Update
Total PM (Ten-Year, No Tunnel)

	EBL	EBT	WBT	WBR	SBL	SBR
Movement		↕	↕		↕	
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	0	56	44	144	93	3
Future Volume (Veh/h)	0	56	44	144	93	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	67	52	171	111	4
Pedestrians					3	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			300			
pX, platoon unblocked					208	140
vC, conflicting volume	226					
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	226				208	140
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				86	100
cM capacity (veh/h)	1351				783	910
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	67	223	115			
Volume Left	0	0	111			
Volume Right	0	171	4			
eSH	1351	1700	787			
Volume to Capacity	0.00	0.13	0.15			
Queue Length 95th (m)	0.0	0.0	3.9			
Control Delay (s)	0.0	0.0	10.4			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	10.4			
Approach LOS			B			
Intersection Summary						
Average Delay			2.9			
Intersection Capacity Utilization	28.6%		ICU Level of Service	A		
Analysis Period (min)	15					

Lanes, Volumes, Timings
5: Victoria Street/River Drive & St Michaels Street

1 Rosetta St TIS Update
Total PM (Ten-Year, No Tunnel)

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	0	42	42	3	8	0
Future Volume (vph)	0	42	42	3	8	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.990				
Flt Protected					0.950	
Satd. Flow (prot)	0	1712	1881	0	1504	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1712	1881	0	1504	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		118.5	126.7		89.7	
Travel Time (s)		8.5	9.1		6.5	
Confl. Peds. (#/hr)	2			2		
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	11%	0%	0%	20%	0%
Adj. Flow (vph)	0	50	50	4	10	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	50	54	0	10	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	19.0%		ICU Level of Service A			
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
5: Victoria Street/River Drive & St Michaels Street

1 Rosetta St TIS Update
Total PM (Ten-Year, No Tunnel)

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	0	42	42	3	8	0
Future Volume (Veh/h)	0	42	42	3	8	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	50	50	4	10	0
Pedestrians					2	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	56				104	54
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	56				104	54
tC, single (s)	4.1				6.6	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.7	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1559				851	1017
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	50	54	10			
Volume Left	0	0	10			
Volume Right	0	4	0			
eSH	1559	1700	851			
Volume to Capacity	0.00	0.03	0.01			
Queue Length 95th (m)	0.0	0.0	0.3			
Control Delay (s)	0.0	0.0	9.3			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.3			
Approach LOS			A			
Intersection Summary						
Average Delay		0.8				
Intersection Capacity Utilization	19.0%		ICU Level of Service		A	
Analysis Period (min)	15					

Lanes, Volumes, Timings
6: Rosset Valley Court & John Street

1 Rosetta St TIS Update
Total PM (Ten-Year, No Tunnel)

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↘			↘	↗	↗
Traffic Volume (vph)	137	8	24	183	3	21
Future Volume (vph)	137	8	24	183	3	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.992				0.884	
Flt Protected				0.994	0.993	
Satd. Flow (prot)	1768	0	0	1628	1668	0
Flt Permitted				0.994	0.993	
Satd. Flow (perm)	1768	0	0	1628	1668	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	368.0			95.5	146.5	
Travel Time (s)	26.5			6.9	10.5	
Confl. Peds. (#/hr)		6	6		1	3
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	7%	0%	0%	5%	0%	0%
Parking (#/hr)			0	0		
Adj. Flow (vph)	163	10	29	218	4	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	173	0	0	247	29	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	41.5%
ICU Level of Service A	
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
6: Rosset Valley Court & John Street

1 Rosetta St TIS Update
Total PM (Ten-Year, No Tunnel)

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↘			↘	↗	↗
Traffic Volume (veh/h)	137	8	24	183	3	21
Future Volume (Veh/h)	137	8	24	183	3	21
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	163	10	29	218	4	25
Pedestrians	1			3	6	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	0			0	1	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			179		451	177
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			179		451	177
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		99	97
cM capacity (veh/h)			1401		555	864

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	173	247	29
Volume Left	0	29	4
Volume Right	10	0	25
sSH	1700	1401	802
Volume to Capacity	0.10	0.02	0.04
Queue Length 95th (m)	0.0	0.5	0.9
Control Delay (s)	0.0	1.1	9.7
Lane LOS		A	A
Approach Delay (s)	0.0	1.1	9.7
Approach LOS			A

Intersection Summary

Average Delay		1.2	
Intersection Capacity Utilization	41.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
7: Victoria Street & John Street

1 Rosetta St TIS Update
Total PM (Ten-Year, No Tunnel)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	5	50	2	9	45	119	14	24	2	91	27	5
Future Volume (vph)	5	50	2	9	45	119	14	24	2	91	27	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.996			0.907			0.994			0.994	
Flt Protected		0.995			0.997			0.983			0.964	
Satd. Flow (prot)	0	1883	0	0	1457	0	0	1856	0	0	1664	0
Flt Permitted		0.995			0.997			0.983			0.964	
Satd. Flow (perm)	0	1883	0	0	1457	0	0	1856	0	0	1664	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		145.1			102.7			117.7			102.2	
Travel Time (s)		10.4			7.4			8.5			7.4	
Confl. Peds. (#/hr)	2		10	10		2	2		5	5		2
Confl. Bikes (#/hr)								1				
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	50%	3%	4%	0%	0%	0%	11%	6%	0%
Parking (#/hr)				0	0	0						
Adj. Flow (vph)	6	56	2	10	51	134	16	27	2	102	30	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	64	0	0	195	0	0	45	0	0	138	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	37.0%
Analysis Period (min)	15
ICU Level of Service A	

HCM Unsignalized Intersection Capacity Analysis
7: Victoria Street & John Street

1 Rosetta St TIS Update
Total PM (Ten-Year, No Tunnel)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	5	50	2	9	45	119	14	24	2	91	27	5
Future Volume (vph)	5	50	2	9	45	119	14	24	2	91	27	5
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	6	56	2	10	51	134	16	27	2	102	30	6
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	64	195	45	138								
Volume Left (vph)	6	10	16	102								
Volume Right (vph)	2	134	2	6								
Hadj (s)	0.00	-0.30	0.04	0.28								
Departure Headway (s)	4.6	4.1	4.7	4.8								
Degree Utilization, x	0.08	0.22	0.06	0.18								
Capacity (veh/h)	745	824	713	703								
Control Delay (s)	8.0	8.3	8.0	8.9								
Approach Delay (s)	8.0	8.3	8.0	8.9								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				8.4								
Level of Service				A								
Intersection Capacity Utilization				37.0%				ICU Level of Service			A	
Analysis Period (min)				15								

Lanes, Volumes, Timings
8: Rosetta Street & Site

1 Rosetta St TIS Update
Total PM (Ten-Year, No Tunnel)

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	84	133	11	12	0
Future Volume (vph)	0	84	133	11	12	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.865					
Fit Protected				0.956		
Satd. Flow (prot)	1611	0	0	1781	1863	0
Fit Permitted	0.956					
Satd. Flow (perm)	1611	0	0	1781	1863	0
Link Speed (k/h)	50		50		50	
Link Distance (m)	43.4		38.0		77.9	
Travel Time (s)	3.1		2.7		5.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	91	145	12	13	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	91	0	0	157	13	0
Sign Control	Stop		Free		Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	33.1%
ICU Level of Service A	
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
8: Rosetta Street & Site

1 Rosetta St TIS Update
Total PM (Ten-Year, No Tunnel)

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	84	133	11	12	0
Future Volume (Veh/h)	0	84	133	11	12	0
Sign Control	Stop			Free		Free
Grade	0%					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	91	145	12	13	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	315	13	13			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	315	13	13			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	91	91			
cM capacity (veh/h)	617	1067	1606			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	91	157	13
Volume Left	0	145	0
Volume Right	91	0	0
sSH	1067	1606	1700
Volume to Capacity	0.09	0.09	0.01
Queue Length 95th (m)	2.1	2.3	0.0
Control Delay (s)	8.7	6.9	0.0
Lane LOS	A	A	
Approach Delay (s)	8.7	6.9	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		7.2	
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
9: Site & Caroline Street

1 Rosetta St TIS Update
Total PM (Ten-Year, No Tunnel)

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (vph)	3	11	0	8	8	0
Future Volume (vph)	3	11	0	8	8	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr	0.892					
Fit Protected				0.950		
Satd. Flow (prot)	1662	0	0	1863	1770	0
Fit Permitted				0.950		
Satd. Flow (perm)	1662	0	0	1863	1770	0
Link Speed (k/h)	50		50		50	
Link Distance (m)	89.7		45.9		33.3	
Travel Time (s)	6.5		3.3		2.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	12	0	9	9	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	15	0	0	9	9	0
Sign Control	Free		Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	20.0%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis
9: Site & Caroline Street

1 Rosetta St TIS Update
Total PM (Ten-Year, No Tunnel)

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	3	11	0	8	8	0
Future Volume (Veh/h)	3	11	0	8	8	0
Sign Control	Free		Free		Stop	
Grade	0%					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	12	0	9	9	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			15		18 9	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			15		18 9	
tC, single (s)			4.1		6.4 6.2	
tC, 2 stage (s)						
tF (s)			2.2		3.5 3.3	
p0 queue free %			100		99 100	
cM capacity (veh/h)			1603		1000 1073	

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	15	9	9
Volume Left	0	0	9
Volume Right	12	0	0
sSH	1700	1603	1000
Volume to Capacity	0.01	0.00	0.01
Queue Length 95th (m)	0.0	0.0	0.2
Control Delay (s)	0.0	0.0	8.6
Lane LOS	A		
Approach Delay (s)	0.0	0.0	8.6
Approach LOS	A		

Intersection Summary			
Average Delay			2.4
Intersection Capacity Utilization	20.0%	ICU Level of Service	A
Analysis Period (min)			15

Lanes, Volumes, Timings
10: Extension & John Street

1 Rosetta St TIS Update
Total PM (Ten-Year, No Tunnel)

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	↖
Traffic Volume (vph)	138	5	6	170	4	4
Future Volume (vph)	138	5	6	170	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.996				0.932	
Flt Protected				0.998	0.976	
Satd. Flow (prot)	1855	0	0	1673	1694	0
Flt Permitted				0.998	0.976	
Satd. Flow (perm)	1855	0	0	1673	1694	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	102.7			368.0	98.2	
Travel Time (s)	7.4			26.5	7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)			0	0		
Adj. Flow (vph)	150	5	7	185	4	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	155	0	0	192	8	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	30.5%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
10: Extension & John Street

1 Rosetta St TIS Update
Total PM (Ten-Year, No Tunnel)

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	↖
Traffic Volume (veh/h)	138	5	6	170	4	4
Future Volume (Veh/h)	138	5	6	170	4	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	150	5	7	185	4	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume				155	352	152
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol				155	352	152
tC, single (s)				4.1	6.4	6.2
tC, 2 stage (s)						
tF (s)				2.2	3.5	3.3
p0 queue free %				100	99	100
cM capacity (veh/h)				1425	643	894
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	155	192	8			
Volume Left	0	7	4			
Volume Right	5	0	4			
sSH	1700	1425	748			
Volume to Capacity	0.09	0.00	0.01			
Queue Length 95th (m)	0.0	0.1	0.2			
Control Delay (s)	0.0	0.3	9.9			
Lane LOS	A			A		
Approach Delay (s)	0.0	0.3	9.9			
Approach LOS	A			A		
Intersection Summary						
Average Delay				0.4		
Intersection Capacity Utilization	30.5%			ICU Level of Service		A
Analysis Period (min)	15					

Lanes, Volumes, Timings
11: St Michaels Street/Extension & Caroline Street

1 Rosetta St TIS Update
Total PM (Ten-Year, No Tunnel)

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	8	8	0	3	11	0
Future Volume (vph)	8	8	0	3	11	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.932	0.865				
Flt Protected	0.976			0.950		
Satd. Flow (prot)	1694	0	1611	0	0	1770
Flt Permitted	0.976			0.950		
Satd. Flow (perm)	1694	0	1611	0	0	1770
Link Speed (k/h)	50	50		50		
Link Distance (m)	89.7	89.7		98.2		
Travel Time (s)	6.5	6.5		7.1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	9	0	3	12	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	18	0	3	0	0	12
Sign Control	Stop	Free		Free		

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	23.9%
ICU Level of Service A	
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
11: St Michaels Street/Extension & Caroline Street

1 Rosetta St TIS Update
Total PM (Ten-Year, No Tunnel)

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	8	8	0	3	11	0
Future Volume (Veh/h)	8	8	0	3	11	0
Sign Control	Stop	Free		Free		
Grade	0%	0%		0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	9	0	3	12	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	26	2			3	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	26	2			3	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	99			99	
cM capacity (veh/h)	983	1083			1619	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	18	3	12
Volume Left	9	0	12
Volume Right	9	3	0
sSH	1030	1700	1619
Volume to Capacity	0.02	0.00	0.01
Queue Length 95th (m)	0.4	0.0	0.2
Control Delay (s)	8.6	0.0	7.2
Lane LOS	A		A
Approach Delay (s)	8.6	0.0	7.2
Approach LOS	A		

Intersection Summary			
Average Delay	7.3		
Intersection Capacity Utilization	23.9%	ICU Level of Service	A
Analysis Period (min)	15		

Queuing and Blocking Report

1 Rosetta St TIS Update
Total PM (Ten-Year, No Tunnel)

Intersection: 1: Mountainview Road N & River Drive

Movement	EB	WB	NB	NB	SB	SB	B25
Directions Served	LTR	LTR	LT	R	LT	TR	T
Maximum Queue (m)	36.7	83.2	194.7	133.8	36.1	35.9	3.1
Average Queue (m)	15.0	40.3	97.0	25.6	19.8	18.4	0.1
95th Queue (m)	28.3	68.1	168.4	77.4	33.0	33.1	2.4
Link Distance (m)	110.0	202.7	404.4	404.4	29.5	29.5	191.2
Upstream Blk Time (%)					2	1	
Queuing Penalty (veh)					3	2	
Storage Bay Dist (m)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: Mountainview Road N & John Street

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (m)	18.8	19.0	32.3	72.0	8.9	33.9
Average Queue (m)	10.8	9.0	17.6	28.4	2.7	18.3
95th Queue (m)	17.2	15.7	33.2	53.2	9.3	29.0
Link Distance (m)	84.2	165.0		191.2		166.6
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)			30.0		30.0	
Storage Blk Time (%)			0	4		1
Queuing Penalty (veh)			0	7		0

Intersection: 3: River Drive & Daniella Street

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (m)	3.7	9.2
Average Queue (m)	0.2	2.8
95th Queue (m)	2.3	9.4
Link Distance (m)	162.0	120.8
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report

1 Rosetta St TIS Update
Total PM (Ten-Year, No Tunnel)

Intersection: 4: River Drive & Rosetta Street

Movement	WB	SB
Directions Served	TR	LR
Maximum Queue (m)	3.3	19.9
Average Queue (m)	0.1	9.4
95th Queue (m)	1.7	14.3
Link Distance (m)	162.0	29.8
Upstream Blk Time (%)		0
Queuing Penalty (veh)		0
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Victoria Street/River Drive & St Michaels Street

Movement	SB
Directions Served	LR
Maximum Queue (m)	12.8
Average Queue (m)	1.9
95th Queue (m)	8.1
Link Distance (m)	71.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Rosset Valley Court & John Street

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	11.7	9.6
Average Queue (m)	1.3	4.5
95th Queue (m)	6.9	10.9
Link Distance (m)	84.2	140.0
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report

1 Rosetta St TIS Update
Total PM (Ten-Year, No Tunnel)

Intersection: 7: Victoria Street & John Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	11.9	25.3	14.9	26.5
Average Queue (m)	7.8	13.0	7.7	13.2
95th Queue (m)	13.6	20.7	14.4	22.3
Link Distance (m)	139.7	90.2	108.9	96.8
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: Rosetta Street & Site

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (m)	20.3	6.7
Average Queue (m)	9.2	0.4
95th Queue (m)	15.7	3.8
Link Distance (m)	38.2	29.8
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9: Site & Caroline Street

Movement	NB
Directions Served	LR
Maximum Queue (m)	10.3
Average Queue (m)	1.6
95th Queue (m)	7.4
Link Distance (m)	27.6
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report

1 Rosetta St TIS Update
Total PM (Ten-Year, No Tunnel)

Intersection: 10: Extension & John Street

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	5.5	9.2
Average Queue (m)	0.2	1.6
95th Queue (m)	2.3	7.4
Link Distance (m)	356.5	89.4
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: St Michaels Street/Extension & Caroline Street

Movement	WB
Directions Served	LR
Maximum Queue (m)	9.2
Average Queue (m)	3.1
95th Queue (m)	10.1
Link Distance (m)	77.5
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

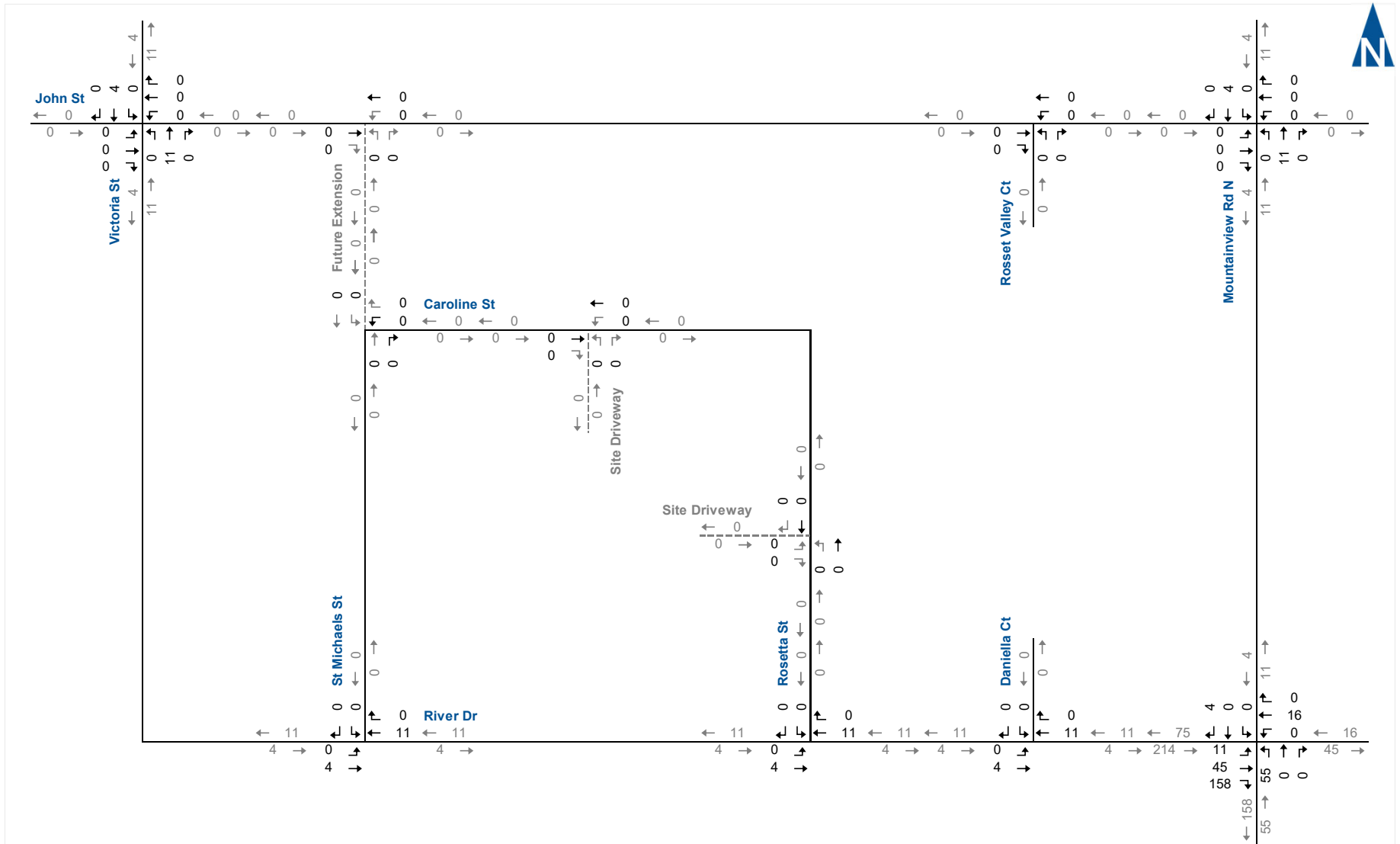
Network Summary

Network wide Queuing Penalty: 13

Appendix L

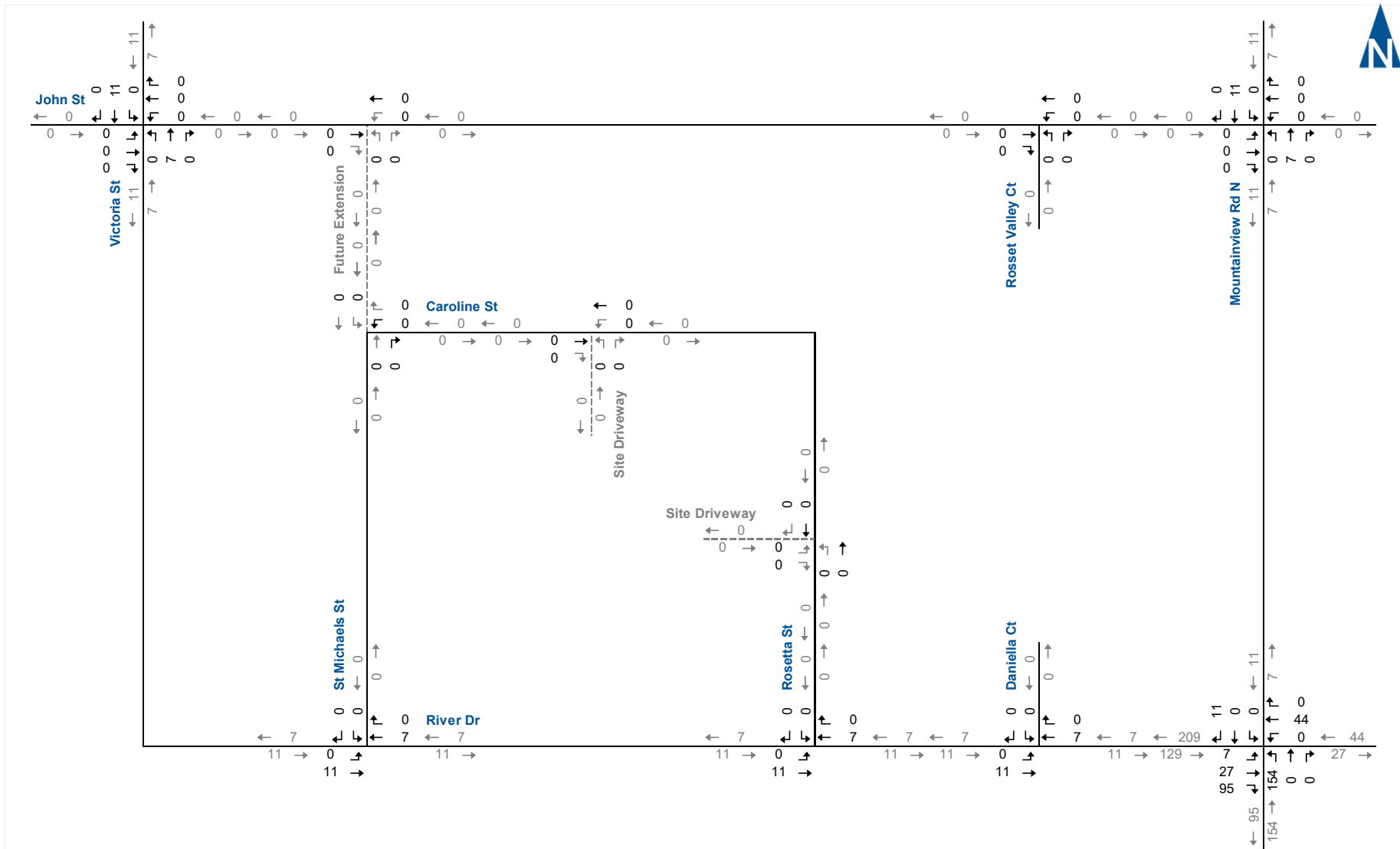
130 Mountainview Road Traffic Volumes





130 Mountainview Road

AM Peak Hour



130 Mountainview Road

PM Peak Hour

1 Rosetta Street, Town of Halton Hills - Update
210781

Appendix M

Ten-Year Total Traffic Operations (with 130 Mountainview Road)



Lanes, Volumes, Timings
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Total AM (Ten-Year, BGD)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	
Traffic Volume (vph)	13	87	317	165	35	30	108	330	177	53	570	9
Future Volume (vph)	13	87	317	165	35	30	108	330	177	53	570	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		1.00			1.00				0.97		1.00	
Frt		0.898			0.982				0.850		0.998	
Flt Protected		0.998			0.965			0.988			0.996	
Satd. Flow (prot)	0	1508	0	0	1363	0	0	1751	1380	0	3474	0
Flt Permitted		0.985			0.448			0.663			0.840	
Satd. Flow (perm)	0	1488	0	0	633	0	0	1175	1346	0	2929	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		182			10				188			2
Link Speed (k/h)		50			50			50				50
Link Distance (m)		127.8			212.6			412.3				41.4
Travel Time (s)		9.2			15.3			29.7				3.0
Confl. Peds. (#/hr)	5					5			4	4		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	17%	35%	40%	5%	11%	6%	17%	12%	2%	33%
Adj. Flow (vph)	14	93	337	176	37	32	115	351	188	56	606	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	444	0	0	245	0	0	466	188	0	672	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			4			2		2		2
Permitted Phases	4			4			2		2	2		
Detector Phase	4	4		4	4		2	2	2	2		2
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		30.0	30.0	30.0	30.0		30.0
Minimum Split (s)	36.1	36.1		36.1	36.1		36.5	36.5	36.5	36.5		36.5
Total Split (s)	35.0	35.0		35.0	35.0		45.0	45.0	45.0	45.0		45.0
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.3%	56.3%	56.3%	56.3%		56.3%
Maximum Green (s)	28.9	28.9		28.9	28.9		38.5	38.5	38.5	38.5		38.5
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	2.1	2.1		2.1	2.1		2.0	2.0	2.0	2.0		2.0
Lost Time Adjust (s)		3.0			3.0			3.0	3.0	3.0		3.0
Total Lost Time (s)		9.1			9.1			9.5	9.5	9.5		9.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.5	4.5	4.5	4.5		4.5
Recall Mode	None	None		None	None		Max	Max	Max	Max		Max
Walk Time (s)	10.0	10.0		10.0	10.0		14.0	14.0	14.0	14.0		14.0
Flash Dont Walk (s)	20.0	20.0		20.0	20.0		16.0	16.0	16.0	16.0		16.0
Pedestrian Calls (#/hr)	5	5		5	5		4	4	4	4		4
Act Effct Green (s)		26.1			26.1			35.5	35.5			35.5
Actuated g/C Ratio		0.33			0.33			0.44	0.44			0.44
v/c Ratio		0.73			1.16			0.90	0.27			0.52
Control Delay		22.1			138.3			44.0	3.4			18.0
Queue Delay		0.0			0.0			0.0	0.0			0.0

Lanes, Volumes, Timings
1: Mountainview Road N & River Drive

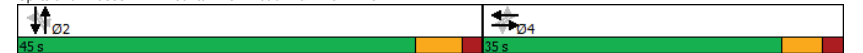
1 Rosetta St TIS Update
Total AM (Ten-Year, BGD)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		22.1			138.3			44.0	3.4			18.0
LOS		C			F			D	A			B
Approach Delay		22.1			138.3			32.3				18.0
Approach LOS		C			F			C				B
Queue Length 50th (m)		34.7			~43.8			62.8	0.0			37.2
Queue Length 95th (m)		69.3			#86.9			#122.4	10.6			53.4
Internal Link Dist (m)		103.8			188.6			388.3				17.4
Turn Bay Length (m)												
Base Capacity (vph)		606			212			520	700			1297
Starvation Cap Reductn		0			0			0	0			0
Spillback Cap Reductn		0			0			0	0			0
Storage Cap Reductn		0			0			0	0			0
Reduced v/c Ratio		0.73			1.16			0.90	0.27			0.52

Intersection Summary

Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	80.2
Natural Cycle:	100
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	1.16
Intersection Signal Delay:	38.2
Intersection LOS:	D
Intersection Capacity Utilization:	120.5%
ICU Level of Service:	H
Analysis Period (min):	15
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 1: Mountainview Road N & River Drive



HCM Signalized Intersection Capacity Analysis
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Total AM (Ten-Year, BGD)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	
Traffic Volume (vph)	13	87	317	165	35	30	108	330	177	53	570	9
Future Volume (vph)	13	87	317	165	35	30	108	330	177	53	570	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Total Lost time (s)	9.1			9.1			9.5			9.5		
Lane Util. Factor	1.00			1.00			1.00			0.95		
Frbp, ped/bikes	1.00			1.00			1.00			0.97		
Flpb, ped/bikes	1.00			1.00			1.00			1.00		
Frt	0.90			0.98			1.00			0.85		
Flt Protected	1.00			0.97			0.99			1.00		
Satd. Flow (prot)	1508			1364			1750			1346		
Flt Permitted	0.99			0.45			0.66			1.00		
Satd. Flow (perm)	1488			633			1174			1346		
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	14	93	337	176	37	32	115	351	188	56	606	10
RTOR Reduction (vph)	0	123	0	0	7	0	0	0	105	0	1	0
Lane Group Flow (vph)	0	321	0	0	238	0	0	466	83	0	671	0
Confl. Peds. (#/hr)	5			5			4			4		
Heavy Vehicles (%)	0%	0%	17%	35%	40%	5%	11%	6%	17%	12%	2%	33%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	4		4		4		2		2		2	
Permitted Phases	4		4		2		2		2		2	
Actuated Green, G (s)	29.1		29.1		38.5		38.5		38.5		38.5	
Effective Green, g (s)	26.1		26.1		35.5		35.5		35.5		35.5	
Actuated g/C Ratio	0.33		0.33		0.44		0.44		0.44		0.44	
Clearance Time (s)	6.1		6.1		6.5		6.5		6.5		6.5	
Vehicle Extension (s)	3.0		3.0		4.5		4.5		4.5		4.5	
Lane Grp Cap (vph)	484		206		519		595		1296			
v/s Ratio Prot												
v/s Ratio Perm	0.22		c0.38		c0.40		0.06		0.23			
v/c Ratio	0.66		1.16		0.90		0.14		0.52			
Uniform Delay, d1	23.3		27.1		20.7		13.3		16.2			
Progression Factor	1.00		1.00		1.00		1.00		1.00			
Incremental Delay, d2	3.4		111.3		20.9		0.5		1.5			
Delay (s)	26.7		138.4		41.6		13.8		17.6			
Level of Service	C		F		D		B		B			
Approach Delay (s)	26.7		138.4		33.6		17.6					
Approach LOS	C		F		C		B					

Intersection Summary			
HCM 2000 Control Delay	39.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	80.2	Sum of lost time (s)	18.6
Intersection Capacity Utilization	120.5%	ICU Level of Service	H
Analysis Period (min)	15		

Lanes, Volumes, Timings
2: Mountainview Road N & John Street

1 Rosetta St TIS Update
Total AM (Ten-Year, BGD)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	
Traffic Volume (vph)	29	11	117	29	15	12	70	276	24	24	475	29
Future Volume (vph)	29	11	117	29	15	12	70	276	24	24	475	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	0.0	0.0	0.0	0.0	0.0	30.0	0.0	30.0	0.0	30.0	0.0	0.0
Storage Lanes	0	0	0	0	0	1	0	1	0	1	0	0
Taper Length (m)	2.5		2.5		2.5		2.5		2.5		2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt	0.900			0.971			0.988			0.991		
Flt Protected	0.991			0.975			0.950			0.950		
Satd. Flow (prot)	0	1637	0	0	1707	0	1544	1792	0	1646	1815	0
Flt Permitted	0.991			0.975			0.950			0.950		
Satd. Flow (perm)	0	1637	0	0	1707	0	1544	1792	0	1646	1815	0
Link Speed (k/h)	50			50			50			50		
Link Distance (m)	95.5			171.9			203.3			171.8		
Travel Time (s)	6.9			12.4			14.6			12.4		
Confl. Peds. (#/hr)	2		5		5		2		9		9	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	7%	0%	3%	5%	0%	13%	13%	4%	13%	6%	4%	0%
Adj. Flow (vph)	31	12	124	31	16	13	74	294	26	26	505	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	167	0	0	60	0	74	320	0	26	536	0
Sign Control	Stop		Stop		Stop		Stop		Stop		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	58.7%
ICU Level of Service	B
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
 2: Mountainview Road N & John Street

1 Rosetta St TIS Update
 Total AM (Ten-Year, BGD)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕	↕		↕	↕	↕
Sign Control	Stop			Stop			Stop	Stop		Stop	Stop	Stop
Traffic Volume (vph)	29	11	117	29	15	12	70	276	24	24	475	29
Future Volume (vph)	29	11	117	29	15	12	70	276	24	24	475	29
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	31	12	124	31	16	13	74	294	26	26	505	31
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total (vph)	167	60	74	320	26	536						
Volume Left (vph)	31	31	74	0	26	0						
Volume Right (vph)	124	13	0	26	0	31						
Hadj (s)	-0.35	0.07	0.72	0.02	0.60	0.02						
Departure Headway (s)	6.1	6.9	6.7	6.0	6.4	5.8						
Degree Utilization, x	0.28	0.11	0.14	0.53	0.05	0.87						
Capacity (veh/h)	543	468	511	577	543	607						
Control Delay (s)	11.6	10.8	9.6	14.5	8.5	33.9						
Approach Delay (s)	11.6	10.8	13.6	32.7								
Approach LOS	B	B	B	D								
Intersection Summary												
Delay			22.2									
Level of Service			C									
Intersection Capacity Utilization			58.7%		ICU Level of Service		B					
Analysis Period (min)			15									

Lanes, Volumes, Timings
 3: River Drive & Daniella Street

1 Rosetta St TIS Update
 Total AM (Ten-Year, BGD)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↕		↕	↕	↕	
Traffic Volume (vph)	3	210	79	3	11	5
Future Volume (vph)	3	210	79	3	11	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.996			0.957
Fit Protected	0.999				0.967	
Satd. Flow (prot)	0	1585	1434	0	1758	0
Fit Permitted	0.999				0.967	
Satd. Flow (perm)	0	1585	1434	0	1758	0
Link Speed (k/h)	50		50		50	
Link Distance (m)	172.1		127.8		126.0	
Travel Time (s)	12.4		9.2		9.1	
Confl. Peds. (#/hr)	3		3			
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	20%	33%	0%	0%	0%
Adj. Flow (vph)	3	244	92	3	13	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	247	95	0	19	0
Sign Control	Free		Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	28.4%		ICU Level of Service A			
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
3: River Drive & Daniella Street

1 Rosetta St TIS Update
Total AM (Ten-Year, BGD)

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	3	210	79	3	11	5
Future Volume (Veh/h)	3	210	79	3	11	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	3	244	92	3	13	6
Pedestrians					3	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			128			
pX, platoon unblocked						
vC, conflicting volume	98				346	96
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	98				346	96
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				98	99
cM capacity (veh/h)	1504				651	963
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	247	95	19			
Volume Left	3	0	13			
Volume Right	0	3	6			
eSH	1504	1700	725			
Volume to Capacity	0.00	0.06	0.03			
Queue Length 95th (m)	0.0	0.0	0.6			
Control Delay (s)	0.1	0.0	10.1			
Lane LOS	A		B			
Approach Delay (s)	0.1	0.0	10.1			
Approach LOS			B			
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization		28.4%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
4: River Drive & Rosetta Street

1 Rosetta St TIS Update
Total AM (Ten-Year, BGD)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	0	65	23	53	142	0
Future Volume (vph)	0	65	23	53	142	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.906			
Fit Protected					0.950	
Satd. Flow (prot)	0	1583	1209	0	1805	0
Fit Permitted					0.950	
Satd. Flow (perm)	0	1583	1209	0	1805	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		46.1	172.1		38.0	
Travel Time (s)		3.3	12.4		2.7	
Confl. Peds. (#/hr)					2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	20%	25%	50%	0%	0%
Adj. Flow (vph)	0	72	26	59	158	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	72	85	0	158	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	24.0%				ICU Level of Service A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
4: River Drive & Rosetta Street

1 Rosetta St TIS Update
Total AM (Ten-Year, BGD)

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	0	65	23	53	142	0
Future Volume (Veh/h)	0	65	23	53	142	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	72	26	59	158	0
Pedestrians			2			
Lane Width (m)			3.6			
Walking Speed (m/s)			1.1			
Percent Blockage			0			
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			300			
pX, platoon unblocked						
vC, conflicting volume	85				130	56
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	85				130	56
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				82	100
cM capacity (veh/h)	1524				868	1017
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	72	85	158			
Volume Left	0	0	158			
Volume Right	0	59	0			
cSH	1524	1700	868			
Volume to Capacity	0.00	0.05	0.18			
Queue Length 95th (m)	0.0	0.0	5.0			
Control Delay (s)	0.0	0.0	10.1			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	10.1			
Approach LOS			B			
Intersection Summary						
Average Delay			5.1			
Intersection Capacity Utilization		24.0%		ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
5: Victoria Street/River Drive & St Michaels Street

1 Rosetta St TIS Update
Total AM (Ten-Year, BGD)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	2	60	17	2	2	0
Future Volume (vph)	2	60	17	2	2	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.988			
Fit Protected		0.999			0.950	
Satd. Flow (prot)	0	1671	1530	0	1805	0
Fit Permitted		0.999			0.950	
Satd. Flow (perm)	0	1671	1530	0	1805	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		118.5	126.7		89.7	
Travel Time (s)		8.5	9.1		6.5	
Confl. Peds. (#/hr)	3			3	1	1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	14%	25%	0%	0%	0%
Adj. Flow (vph)	2	71	20	2	2	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	73	22	0	2	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 20.1%				ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
5: Victoria Street/River Drive & St Michaels Street

1 Rosetta St TIS Update
Total AM (Ten-Year, BGD)

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	2	60	17	2	2	0
Future Volume (Veh/h)	2	60	17	2	2	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	2	71	20	2	2	0
Pedestrians		1	1		3	
Lane Width (m)		3.6	3.6		3.6	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	25				100	25
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	25				100	25
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1598				899	1053
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	73	22	2			
Volume Left	2	0	2			
Volume Right	0	2	0			
cSH	1598	1700	899			
Volume to Capacity	0.00	0.01	0.00			
Queue Length 95th (m)	0.0	0.0	0.1			
Control Delay (s)	0.2	0.0	9.0			
Lane LOS	A		A			
Approach Delay (s)	0.2	0.0	9.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization		20.1%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
6: Rosset Valley Court & John Street

1 Rosetta St TIS Update
Total AM (Ten-Year, BGD)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕			↕	↕	
Traffic Volume (vph)	123	0	21	91	5	26
Future Volume (vph)	123	0	21	91	5	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.887	
Fit Protected				0.991	0.992	
Satd. Flow (prot)	1827	0	0	1568	1672	0
Fit Permitted				0.991	0.992	
Satd. Flow (perm)	1827	0	0	1568	1672	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	368.0			95.5	146.5	
Travel Time (s)	26.5			6.9	10.5	
Confl. Peds. (#/hr)		8	8			
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	4%	0%	0%	10%	0%	0%
Parking (#/hr)				0	0	
Adj. Flow (vph)	145	0	25	107	6	31
Shared Lane Traffic (%)						
Lane Group Flow (vph)	145	0	0	132	37	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	34.9%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
6: Rosset Valley Court & John Street

1 Rosetta St TIS Update
Total AM (Ten-Year, BGD)

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	123	0	21	91	5	26
Future Volume (Veh/h)	123	0	21	91	5	26
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	145	0	25	107	6	31
Pedestrians					8	
Lane Width (m)				3.6		
Walking Speed (m/s)				1.1		
Percent Blockage				1		
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			153		310	153
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			153		310	153
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
pD queue free %			98		99	97
cM capacity (veh/h)			1429		670	892
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	145	132	37			
Volume Left	0	25	6			
Volume Right	0	0	31			
sSH	1700	1429	846			
Volume to Capacity	0.09	0.02	0.04			
Queue Length 95th (m)	0.0	0.4	1.0			
Control Delay (s)	0.0	1.5	9.4			
Lane LOS		A	A			
Approach Delay (s)	0.0	1.5	9.4			
Approach LOS			A			
Intersection Summary						
Average Delay			1.8			
Intersection Capacity Utilization		34.9%		ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
7: Victoria Street & John Street

1 Rosetta St TIS Update
Total AM (Ten-Year, BGD)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	22	5	6	32	70	6	20	0	88	34	6
Future Volume (vph)	0	22	5	6	32	70	6	20	0	88	34	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.974			0.913							0.994
Fit Protected					0.997			0.988				0.967
Satd. Flow (prot)	0	1851	0	0	1424	0	0	1877	0	0	1766	0
Fit Permitted					0.997			0.988				0.967
Satd. Flow (perm)	0	1851	0	0	1424	0	0	1877	0	0	1766	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		145.1			102.7			117.7			102.2	
Travel Time (s)		10.4			7.4			8.5			7.4	
Confl. Peds. (#/hr)	2		5	5		2	2		7	7		2
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	0%	50%	0%	10%	0%	0%	0%	5%	0%	0%
Parking (#/hr)				0	0	0						
Adj. Flow (vph)	0	25	6	7	37	80	7	23	0	101	39	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	31	0	0	124	0	0	30	0	0	147	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	37.0%			ICU Level of Service A								
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
7: Victoria Street & John Street

1 Rosetta St TIS Update
Total AM (Ten-Year, BGD)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	0	22	5	6	32	70	6	20	0	88	34	6
Future Volume (vph)	0	22	5	6	32	70	6	20	0	88	34	6
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	0	25	6	7	37	80	7	23	0	101	39	7
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	31	124	30	147								
Volume Left (vph)	0	7	7	101								
Volume Right (vph)	6	80	0	7								
Hadj (s)	-0.12	-0.22	0.05	0.17								
Departure Headway (s)	4.3	4.1	4.5	4.4								
Degree Utilization, x	0.04	0.14	0.04	0.18								
Capacity (veh/h)	788	834	766	774								
Control Delay (s)	7.5	7.8	7.6	8.4								
Approach Delay (s)	7.5	7.8	7.6	8.4								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				8.0								
Level of Service				A								
Intersection Capacity Utilization				37.0%	ICU Level of Service	A						
Analysis Period (min)				15								

Lanes, Volumes, Timings
8: Rosetta Street & Site

1 Rosetta St TIS Update
Total AM (Ten-Year, BGD)

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↕			↕	↕	
Traffic Volume (vph)	0	136	50	3	6	0
Future Volume (vph)	0	136	50	3	6	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.865					
Fit Protected			0.955			
Satd. Flow (prot)	1611	0	0	1779	1863	0
Fit Permitted			0.955			
Satd. Flow (perm)	1611	0	0	1779	1863	0
Link Speed (k/h)	50		50			
Link Distance (m)	43.4		38.0			
Travel Time (s)	3.1		2.7			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	148	54	3	7	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	148	0	0	57	7	0
Sign Control	Stop		Free			
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	31.3%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
8: Rosetta Street & Site

1 Rosetta St TIS Update
Total AM (Ten-Year, BGD)

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔		↕	↕	
Traffic Volume (veh/h)	0	136	50	3	6	0
Future Volume (Veh/h)	0	136	50	3	6	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	148	54	3	7	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	118	7	7			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	118	7	7			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	86	97			
cM capacity (veh/h)	848	1075	1614			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	148	57	7			
Volume Left	0	54	0			
Volume Right	148	0	0			
eSH	1075	1614	1700			
Volume to Capacity	0.14	0.03	0.00			
Queue Length 95th (m)	3.6	0.8	0.0			
Control Delay (s)	8.9	6.9	0.0			
Lane LOS	A	A				
Approach Delay (s)	8.9	6.9	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		8.1				
Intersection Capacity Utilization		31.3%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
9: Site & Caroline Street

1 Rosetta St TIS Update
Total AM (Ten-Year, BGD)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕			↕	↕	
Traffic Volume (vph)	3	6	0	2	15	0
Future Volume (vph)	3	6	0	2	15	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.905					
Fit Protected					0.950	
Satd. Flow (prot)	1686	0	0	1863	1770	0
Fit Permitted					0.950	
Satd. Flow (perm)	1686	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	89.7			45.9	33.3	
Travel Time (s)	6.5			3.3	2.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	7	0	2	16	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	0	2	16	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	20.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
9: Site & Caroline Street

1 Rosetta St TIS Update
Total AM (Ten-Year, BGD)

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	3	6	0	2	15	0
Future Volume (Veh/h)	3	6	0	2	15	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	7	0	2	16	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			10		8	6
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			10		8	6
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		98	100
cM capacity (veh/h)			1610		1012	1076
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	10	2	16			
Volume Left	0	0	16			
Volume Right	7	0	0			
cSH	1700	1610	1012			
Volume to Capacity	0.01	0.00	0.02			
Queue Length 95th (m)	0.0	0.0	0.4			
Control Delay (s)	0.0	0.0	8.6			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	8.6			
Approach LOS			A			
Intersection Summary						
Average Delay			4.9			
Intersection Capacity Utilization			20.0%	ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
10: Extension & John Street

1 Rosetta St TIS Update
Total AM (Ten-Year, BGD)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (vph)	108	3	3	99	9	6
Future Volume (vph)	108	3	3	99	9	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.997			0.944		
Fit Protected				0.999	0.971	
Satd. Flow (prot)	1857	0	0	1675	1707	0
Fit Permitted				0.999	0.971	
Satd. Flow (perm)	1857	0	0	1675	1707	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	102.7			368.0	98.2	
Travel Time (s)	7.4			26.5	7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)				0	0	
Adj. Flow (vph)	117	3	3	108	10	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	120	0	0	111	17	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:			Other			
Control Type:	Unsignalized					
Intersection Capacity Utilization	24.3%				ICU Level of Service A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
10: Extension & John Street

1 Rosetta St TIS Update
Total AM (Ten-Year, BGD)

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	108	3	3	99	9	6
Future Volume (Veh/h)	108	3	3	99	9	6
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	117	3	3	108	10	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			120		232	118
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			120		232	118
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1468		754	933
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	120	111	17			
Volume Left	0	3	10			
Volume Right	3	0	7			
cSH	1700	1468	819			
Volume to Capacity	0.07	0.00	0.02			
Queue Length 95th (m)	0.0	0.0	0.5			
Control Delay (s)	0.0	0.2	9.5			
Lane LOS		A	A			
Approach Delay (s)	0.0	0.2	9.5			
Approach LOS			A			
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization		24.3%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings
11: St Michaels Street/Extension & Caroline Street

1 Rosetta St TIS Update
Total AM (Ten-Year, BGD)

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Volume (vph)	2	15	0	3	6	0
Future Volume (vph)	2	15	0	3	6	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.880		0.865			
Fit Protected	0.994					0.950
Satd. Flow (prot)	1629	0	1611	0	0	1770
Fit Permitted	0.994					0.950
Satd. Flow (perm)	1629	0	1611	0	0	1770
Link Speed (k/h)	50		50			50
Link Distance (m)	89.7		89.7			98.2
Travel Time (s)	6.5		6.5			7.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	16	0	3	7	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	18	0	3	0	0	7
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	21.7%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
11: St Michaels Street/Extension & Caroline Street

1 Rosetta St TIS Update
Total AM (Ten-Year, BGD)

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↕	↔	↔	↕
Traffic Volume (veh/h)	2	15	0	3	6	0
Future Volume (Veh/h)	2	15	0	3	6	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	16	0	3	7	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None		None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	16	2			3	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	16	2			3	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	999	1083			1619	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	18	3	7			
Volume Left	2	0	7			
Volume Right	16	3	0			
sSH	1073	1700	1619			
Volume to Capacity	0.02	0.00	0.00			
Queue Length 95th (m)	0.4	0.0	0.1			
Control Delay (s)	8.4	0.0	7.2			
Lane LOS	A		A			
Approach Delay (s)	8.4	0.0	7.2			
Approach LOS	A		A			
Intersection Summary						
Average Delay			7.2			
Intersection Capacity Utilization			21.7%	ICU Level of Service		A
Analysis Period (min)			15			

Queuing and Blocking Report

1 Rosetta St TIS Update
Total AM (Ten-Year, BGD)

Intersection: 1: Mountainview Road N & River Drive

Movement	EB	WB	NB	NB	SB	SB	B25
Directions Served	LTR	LTR	LT	R	LT	TR	T
Maximum Queue (m)	91.8	85.0	117.1	51.3	44.0	42.4	32.0
Average Queue (m)	49.5	39.8	50.8	12.6	27.6	25.2	2.6
95th Queue (m)	83.2	70.1	96.2	32.4	43.0	40.1	14.9
Link Distance (m)	110.0	202.7	404.4	404.4	29.5	29.5	191.2
Upstream Blk Time (%)	0				4	3	
Queuing Penalty (veh)	0				11	9	
Storage Bay Dist (m)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: Mountainview Road N & John Street

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (m)	28.7	20.1	32.1	40.8	27.0	65.0
Average Queue (m)	12.9	8.9	12.0	20.7	5.5	28.4
95th Queue (m)	22.0	16.3	25.1	33.9	17.7	48.2
Link Distance (m)	84.2	165.0		191.2		166.6
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)			30.0		30.0	
Storage Blk Time (%)			0	1	0	7
Queuing Penalty (veh)			0	1	0	2

Intersection: 3: River Drive & Daniella Street

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (m)	5.8	9.2
Average Queue (m)	0.3	3.7
95th Queue (m)	3.5	10.9
Link Distance (m)	162.0	120.8
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report

1 Rosetta St TIS Update
Total AM (Ten-Year, BGD)

Intersection: 4: River Drive & Rosetta Street

Movement	SB
Directions Served	LR
Maximum Queue (m)	18.6
Average Queue (m)	10.1
95th Queue (m)	14.2
Link Distance (m)	29.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Victoria Street/River Drive & St Michaels Street

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (m)	3.0	5.7
Average Queue (m)	0.1	0.3
95th Queue (m)	2.1	2.5
Link Distance (m)	105.9	71.8
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Rosset Valley Court & John Street

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	7.2	9.7
Average Queue (m)	0.5	4.5
95th Queue (m)	4.0	11.0
Link Distance (m)	84.2	140.0
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report

1 Rosetta St TIS Update
Total AM (Ten-Year, BGD)

Intersection: 7: Victoria Street & John Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	9.0	25.1	11.8	19.4
Average Queue (m)	5.5	11.7	5.0	10.7
95th Queue (m)	12.5	19.0	12.4	16.5
Link Distance (m)	139.7	90.2	108.9	96.8
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: Rosetta Street & Site

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (m)	24.4	1.8
Average Queue (m)	11.9	0.1
95th Queue (m)	19.3	1.8
Link Distance (m)	38.2	29.8
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9: Site & Caroline Street

Movement	NB
Directions Served	LR
Maximum Queue (m)	8.8
Average Queue (m)	3.1
95th Queue (m)	10.0
Link Distance (m)	27.6
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report

1 Rosetta St TIS Update
Total AM (Ten-Year, BGD)

Intersection: 10: Extension & John Street

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	5.5	9.2
Average Queue (m)	0.2	3.3
95th Queue (m)	2.6	10.5
Link Distance (m)	356.5	89.4
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: St Michaels Street/Extension & Caroline Street

Movement	WB
Directions Served	LR
Maximum Queue (m)	9.2
Average Queue (m)	3.4
95th Queue (m)	10.5
Link Distance (m)	77.5
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 23

Lanes, Volumes, Timings


1 Rosetta St TIS Update
Total PM (Ten-Year, BGD)

1: Mountainview Road N & River Drive

	↖	→	↘	↙	←	↖	↘	↗	↙	↘	↗	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	↕
Traffic Volume (vph)	10	60	226	205	91	74	293	560	209	36	429	19
Future Volume (vph)	10	60	226	205	91	74	293	560	209	36	429	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.99			1.00			1.00	0.97		1.00	
Frnt		0.897			0.973				0.850		0.994	
Fit Protected		0.998			0.973			0.983			0.996	
Satd. Flow (prot)	0	1574	0	0	1708	0	0	1772	1302	0	3419	0
Fit Permitted		0.980			0.624			0.667			0.562	
Satd. Flow (perm)	0	1545	0	0	1095	0	0	1202	1261	0	1929	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		214			17				218			6
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		127.8			212.6			412.3			41.4	
Travel Time (s)		9.2			15.3			29.7			3.0	
Confl. Peds. (#/hr)	13		1	1		13	2		9	9		2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	50%	0%	7%	8%	0%	2%	8%	4%	24%	0%	5%	0%
Adj. Flow (vph)	11	67	251	228	101	82	326	622	232	40	477	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	329	0	0	411	0	0	948	232	0	538	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2		2	2		
Detector Phase	4	4		4	4		2	2	2	2	2	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		30.0	30.0	30.0	30.0	30.0	
Minimum Split (s)	36.1	36.1		36.1	36.1		36.5	36.5	36.5	36.5	36.5	
Total Split (s)	35.0	35.0		35.0	35.0		45.0	45.0	45.0	45.0	45.0	
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.3%	56.3%	56.3%	56.3%	56.3%	
Maximum Green (s)	28.9	28.9		28.9	28.9		38.5	38.5	38.5	38.5	38.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5	4.5	4.5	4.5	
All-Red Time (s)	2.1	2.1		2.1	2.1		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		3.0			3.0			3.0	3.0		3.0	
Total Lost Time (s)		9.1			9.1			9.5	9.5		9.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		4.5	4.5	4.5	4.5	4.5	
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		14.0	14.0	14.0	14.0	14.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0		16.0	16.0	16.0	16.0	16.0	
Pedestrian Calls (#/hr)	14	14		14	14		11	11	11	11	11	
Act Effct Green (s)		26.1			26.1			35.5	35.5		35.5	
Actuated g/C Ratio		0.33			0.33			0.44	0.44		0.44	
v/c Ratio		0.51			1.12			1.78	0.34		0.63	
Control Delay		10.9			110.6			381.8	4.1		21.2	
Queue Delay		0.0			0.0			0.0	0.0		0.0	

Lanes, Volumes, Timings
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Total PM (Ten-Year, BGD)




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		10.9			110.6			381.8	4.1		21.2	
LOS		B			F			F	A		C	
Approach Delay		10.9			110.6			307.6			21.2	
Approach LOS		B			F			F			C	
Queue Length 50th (m)		12.6			~71.6			~218.8	1.2		31.5	
Queue Length 95th (m)		34.4			#124.1			#291.2	13.3		49.3	
Internal Link Dist (m)		103.8			188.6			388.3			17.4	
Turn Bay Length (m)												
Base Capacity (vph)		647			368			532	679		857	
Starvation Cap Reductn		0			0			0	0		0	
Spillback Cap Reductn		0			0			0	0		0	
Storage Cap Reductn		0			0			0	0		0	
Reduced v/c Ratio		0.51			1.12			1.78	0.34		0.63	

Intersection Summary	
Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	80.2
Natural Cycle:	130
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	1.78
Intersection Signal Delay:	172.2
Intersection LOS:	F
Intersection Capacity Utilization:	142.0%
ICU Level of Service:	H
Analysis Period (min):	15
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	



HCM Signalized Intersection Capacity Analysis
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Total PM (Ten-Year, BGD)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	
Traffic Volume (vph)	10	60	226	205	91	74	293	560	209	36	429	19
Future Volume (vph)	10	60	226	205	91	74	293	560	209	36	429	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Total Lost time (s)		9.1			9.1			9.5	9.5		9.5	
Lane Util. Factor		1.00			1.00			1.00	1.00		0.95	
Frbp, ped/bikes		0.99			1.00			1.00	0.97		1.00	
Flpb, ped/bikes		1.00			1.00			1.00	1.00		1.00	
Frt		0.90			0.97			1.00	0.85		0.99	
Flt Protected		1.00			0.97			0.98	1.00		1.00	
Satd. Flow (prot)		1574			1708			1772	1261		3421	
Flt Permitted		0.98			0.62			0.67	1.00		0.56	
Satd. Flow (perm)		1545			1094			1201	1261		1929	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	67	251	228	101	82	326	622	232	40	477	21
RTOR Reduction (vph)	0	144	0	0	11	0	0	0	122	0	3	0
Lane Group Flow (vph)	0	185	0	0	400	0	0	948	110	0	535	0
Confl. Peds. (#/hr)	13		1	1		13	2		9	9		2
Heavy Vehicles (%)	50%	0%	7%	8%	0%	2%	8%	4%	24%	0%	5%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			4			2		2		2
Permitted Phases	4			4			2		2	2		
Actuated Green, G (s)		29.1			29.1			38.5	38.5		38.5	
Effective Green, g (s)		26.1			26.1			35.5	35.5		35.5	
Actuated g/C Ratio		0.33			0.33			0.44	0.44		0.44	
Clearance Time (s)		6.1			6.1			6.5	6.5		6.5	
Vehicle Extension (s)		3.0			3.0			4.5	4.5		4.5	
Lane Grp Cap (vph)		502			356			531	558		853	
v/s Ratio Prot												
v/s Ratio Perm		0.12			0.37			0.79	0.09		0.28	
v/c Ratio		0.37			1.12			1.79	0.20		0.63	
Uniform Delay, d1		20.7			27.1			22.4	13.7		17.2	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.5			85.1			360.9	0.8		3.5	
Delay (s)		21.2			112.1			383.3	14.4		20.7	
Level of Service		C			F			F	B		C	
Approach Delay (s)		21.2			112.1			310.8			20.7	
Approach LOS		C			F			F			C	

Intersection Summary	
HCM 2000 Control Delay	175.3
HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.50
Actuated Cycle Length (s)	80.2
Sum of lost time (s)	18.6
Intersection Capacity Utilization	142.0%
ICU Level of Service	H
Analysis Period (min)	15
c Critical Lane Group	

Lanes, Volumes, Timings
2: Mountainview Road N & John Street

1 Rosetta St TIS Update
Total PM (Ten-Year, BGD)

	↖	→	↘	↙	←	↖	↘	↙	↖	↘	↙	↖	↘	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		↕			↕		↕	↕		↕	↕			
Traffic Volume (vph)	39	15	70	35	26	20	159	481	39	9	361	38		
Future Volume (vph)	39	15	70	35	26	20	159	481	39	9	361	38		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6		
Storage Length (m)	0.0	0.0	0.0		0.0	30.0		0.0	30.0		0.0			
Storage Lanes	0	0	0		0	1		0	1		0			
Taper Length (m)	2.5		2.5		2.5		2.5		2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Ped Bike Factor														
Frt		0.923			0.966			0.989			0.986			
Flt Protected		0.984			0.979		0.950		0.950		0.950			
Satd. Flow (prot)	0	1726	0	0	1797	0	1711	1879	0	1745	1857	0		
Flt Permitted		0.984			0.979		0.950		0.950		0.950			
Satd. Flow (perm)	0	1726	0	0	1797	0	1711	1879	0	1745	1857	0		
Link Speed (k/h)		50			50			50			50			
Link Distance (m)		95.5			171.9			203.3			171.8			
Travel Time (s)		6.9			12.4			14.6			12.4			
Confl. Peds. (#/hr)	2		1	1		2	2		1	1		2		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97		
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	1%	0%		
Adj. Flow (vph)	40	15	72	36	27	21	164	496	40	9	372	39		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	127	0	0	84	0	164	536	0	9	411	0		
Sign Control		Stop			Stop			Stop			Stop			
Intersection Summary														
Area Type:	Other													
Control Type:	Unsignalized													
Intersection Capacity Utilization	57.2%													
ICU Level of Service	B													
Analysis Period (min)	15													

HCM Unsignalized Intersection Capacity Analysis
2: Mountainview Road N & John Street

1 Rosetta St TIS Update
Total PM (Ten-Year, BGD)

	↖	→	↘	↙	←	↖	↘	↙	↖	↘	↙	↖	↘	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		↕			↕		↕	↕		↕	↕			
Sign Control		Stop			Stop			Stop			Stop			
Traffic Volume (vph)	39	15	70	35	26	20	159	481	39	9	361	38		
Future Volume (vph)	39	15	70	35	26	20	159	481	39	9	361	38		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97		
Hourly flow rate (vph)	40	15	72	36	27	21	164	496	40	9	372	39		
Direction, Lane #														
	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2								
Volume Total (vph)	127	84	164	536	9	411								
Volume Left (vph)	40	36	164	0	9	0								
Volume Right (vph)	72	21	0	40	0	39								
Hadj (s)	-0.28	-0.06	0.53	-0.05	0.50	-0.05								
Departure Headway (s)	6.5	6.8	6.3	5.7	6.7	6.1								
Degree Utilization, x	0.23	0.16	0.29	0.86	0.02	0.70								
Capacity (veh/h)	508	472	554	617	517	568								
Control Delay (s)	11.4	11.1	10.7	32.2	8.6	20.7								
Approach Delay (s)	11.4	11.1	27.1		20.4									
Approach LOS	B	B	D		C									
Intersection Summary														
Delay	22.5													
Level of Service	C													
Intersection Capacity Utilization	57.2%													
ICU Level of Service	B													
Analysis Period (min)	15													

Lanes, Volumes, Timings
3: River Drive & Daniella Street

1 Rosetta St TIS Update
Total PM (Ten-Year, BGD)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	6	157	199	18	9	3
Future Volume (vph)	6	157	199	18	9	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.989		0.969	
Flt Protected		0.998			0.963	
Satd. Flow (prot)	0	1730	1766	0	1773	0
Flt Permitted		0.998			0.963	
Satd. Flow (perm)	0	1730	1766	0	1773	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		172.1	127.8		126.0	
Travel Time (s)		12.4	9.2		9.1	
Confl. Peds. (#/hr)	4			4		
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	10%	7%	0%	0%	0%
Adj. Flow (vph)	7	180	229	21	10	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	187	250	0	13	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	28.1%		ICU Level of Service A			
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
3: River Drive & Daniella Street

1 Rosetta St TIS Update
Total PM (Ten-Year, BGD)

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	6	157	199	18	9	3
Future Volume (Veh/h)	6	157	199	18	9	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	7	180	229	21	10	3
Pedestrians					4	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			128			
pX, platoon unblocked					438	244
vC, conflicting volume	254				438	244
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	254				438	244
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				98	100
cM capacity (veh/h)	1318				575	797
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	187	250	13			
Volume Left	7	0	10			
Volume Right	0	21	3			
eSH	1318	1700	615			
Volume to Capacity	0.01	0.15	0.02			
Queue Length 95th (m)	0.1	0.0	0.5			
Control Delay (s)	0.3	0.0	11.0			
Lane LOS	A		B			
Approach Delay (s)	0.3	0.0	11.0			
Approach LOS			B			
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization	28.1%		ICU Level of Service	A		
Analysis Period (min)	15					

Lanes, Volumes, Timings
4: River Drive & Rosetta Street

1 Rosetta St TIS Update
Total PM (Ten-Year, BGD)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	67	51	141	91	3
Future Volume (vph)	0	67	51	141	91	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.901		0.995	
Flt Protected					0.954	
Satd. Flow (prot)	0	1712	1552	0	1804	0
Flt Permitted					0.954	
Satd. Flow (perm)	0	1712	1552	0	1804	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		46.1	172.1		38.0	
Travel Time (s)		3.3	12.4		2.7	
Confl. Peds. (#/hr)	3			3		
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	11%	0%	14%	0%	0%
Adj. Flow (vph)	0	80	61	168	108	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	80	229	0	112	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	28.7%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
4: River Drive & Rosetta Street

1 Rosetta St TIS Update
Total PM (Ten-Year, BGD)

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	67	51	141	91	3
Future Volume (Veh/h)	0	67	51	141	91	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	80	61	168	108	4
Pedestrians					3	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			300			
pX, platoon unblocked					228	148
vC, conflicting volume	232					
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	232				228	148
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				86	100
cM capacity (veh/h)	1344				763	902
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	80	229	112			
Volume Left	0	0	108			
Volume Right	0	168	4			
eSH	1344	1700	767			
Volume to Capacity	0.00	0.13	0.15			
Queue Length 95th (m)	0.0	0.0	3.9			
Control Delay (s)	0.0	0.0	10.5			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	10.5			
Approach LOS			B			
Intersection Summary						
Average Delay			2.8			
Intersection Capacity Utilization	28.7%		ICU Level of Service		A	
Analysis Period (min)	15					

Lanes, Volumes, Timings
5: Victoria Street/River Drive & St Michaels Street

1 Rosetta St TIS Update
Total PM (Ten-Year, BGD)

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	0	53	49	3	8	0
Future Volume (vph)	0	53	49	3	8	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.991					
Fit Protected				0.950		
Satd. Flow (prot)	0	1712	1883	0	1504	0
Fit Permitted	0.950					
Satd. Flow (perm)	0	1712	1883	0	1504	0
Link Speed (k/h)	50			50		
Link Distance (m)	118.5		126.7		89.7	
Travel Time (s)	8.5		9.1		6.5	
Confl. Peds. (#/hr)	2		2			
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	11%	0%	0%	20%	0%
Adj. Flow (vph)	0	63	58	4	10	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	63	62	0	10	0
Sign Control	Free		Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	19.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
5: Victoria Street/River Drive & St Michaels Street

1 Rosetta St TIS Update
Total PM (Ten-Year, BGD)

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	0	53	49	3	8	0
Future Volume (Veh/h)	0	53	49	3	8	0
Sign Control	Free		Free		Stop	
Grade	0%					
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	63	58	4	10	0
Pedestrians	2					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	64				125 62	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	64				125 62	
tC, single (s)	4.1				6.6 6.2	
tC, 2 stage (s)						
tF (s)	2.2				3.7 3.3	
p0 queue free %	100				99 100	
cM capacity (veh/h)	1548				827 1007	
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	63	62	10			
Volume Left	0	0	10			
Volume Right	0	4	0			
eSH	1548	1700	827			
Volume to Capacity	0.00	0.04	0.01			
Queue Length 95th (m)	0.0	0.0	0.3			
Control Delay (s)	0.0	0.0	9.4			
Lane LOS	A		A			
Approach Delay (s)	0.0	0.0	9.4			
Approach LOS	A		A			
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization	19.0%		ICU Level of Service		A	
Analysis Period (min)	15					

Lanes, Volumes, Timings
6: Rosset Valley Court & John Street

1 Rosetta St TIS Update
Total PM (Ten-Year, BGD)

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↘			↖	↗	
Traffic Volume (vph)	137	8	24	183	3	21
Future Volume (vph)	137	8	24	183	3	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.992				0.884	
Flt Protected				0.994	0.993	
Satd. Flow (prot)	1768	0	0	1628	1668	0
Flt Permitted				0.994	0.993	
Satd. Flow (perm)	1768	0	0	1628	1668	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	368.0			95.5	146.5	
Travel Time (s)	26.5			6.9	10.5	
Confl. Peds. (#/hr)		6	6		1	3
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	7%	0%	0%	5%	0%	0%
Parking (#/hr)			0	0		
Adj. Flow (vph)	163	10	29	218	4	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	173	0	0	247	29	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	41.5%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
6: Rosset Valley Court & John Street

1 Rosetta St TIS Update
Total PM (Ten-Year, BGD)

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↘			↖	↗	
Traffic Volume (veh/h)	137	8	24	183	3	21
Future Volume (Veh/h)	137	8	24	183	3	21
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	163	10	29	218	4	25
Pedestrians	1			3	6	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	0			0	1	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			179		451	177
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			179		451	177
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
pD queue free %			98		99	97
cM capacity (veh/h)			1401		555	864

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	173	247	29
Volume Left	0	29	4
Volume Right	10	0	25
sSH	1700	1401	802
Volume to Capacity	0.10	0.02	0.04
Queue Length 95th (m)	0.0	0.5	0.9
Control Delay (s)	0.0	1.1	9.7
Lane LOS		A	A
Approach Delay (s)	0.0	1.1	9.7
Approach LOS			A

Intersection Summary			
Average Delay		1.2	
Intersection Capacity Utilization	41.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
7: Victoria Street & John Street

1 Rosetta St TIS Update
Total PM (Ten-Year, BGD)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	5	53	2	9	47	119	14	31	2	91	38	5
Future Volume (vph)	5	53	2	9	47	119	14	31	2	91	38	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.996			0.908			0.995			0.995	
Flt Protected		0.996			0.997			0.985			0.967	
Satd. Flow (prot)	0	1885	0	0	1459	0	0	1862	0	0	1675	0
Flt Permitted		0.996			0.997			0.985			0.967	
Satd. Flow (perm)	0	1885	0	0	1459	0	0	1862	0	0	1675	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		145.1			102.7			117.7			102.2	
Travel Time (s)		10.4			7.4			8.5			7.4	
Confl. Peds. (#/hr)	2		10	10		2	2		5	5		2
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	50%	3%	4%	0%	0%	0%	11%	6%	0%
Parking (#/hr)				0	0	0						
Adj. Flow (vph)	6	60	2	10	53	134	16	35	2	102	43	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	68	0	0	197	0	0	53	0	0	151	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	38.1% ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
7: Victoria Street & John Street

1 Rosetta St TIS Update
Total PM (Ten-Year, BGD)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	5	53	2	9	47	119	14	31	2	91	38	5
Future Volume (vph)	5	53	2	9	47	119	14	31	2	91	38	5
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	6	60	2	10	53	134	16	35	2	102	43	6
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	68	197	53	151								
Volume Left (vph)	6	10	16	102								
Volume Right (vph)	2	134	2	6								
Hadj (s)	0.00	-0.29	0.04	0.27								
Departure Headway (s)	4.6	4.2	4.7	4.8								
Degree Utilization, x	0.09	0.23	0.07	0.20								
Capacity (veh/h)	723	809	707	700								
Control Delay (s)	8.1	8.5	8.1	9.1								
Approach Delay (s)	8.1	8.5	8.1	9.1								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				8.6								
Level of Service				A								
Intersection Capacity Utilization				38.1%								
ICU Level of Service				A								
Analysis Period (min)				15								

Lanes, Volumes, Timings
8: Rosetta Street & Site

1 Rosetta St TIS Update
Total PM (Ten-Year, BGD)

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	82	130	11	12	0
Future Volume (vph)	0	82	130	11	12	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr	0.865					
Fit Protected				0.956		
Satd. Flow (prot)	1611	0	0	1781	1863	0
Fit Permitted	0.956					
Satd. Flow (perm)	1611	0	0	1781	1863	0
Link Speed (k/h)	50		50		50	
Link Distance (m)	43.4		38.0		77.9	
Travel Time (s)	3.1		2.7		5.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	89	141	12	13	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	89	0	0	153	13	0
Sign Control	Stop		Free		Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	32.9%
ICU Level of Service A	
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
8: Rosetta Street & Site

1 Rosetta St TIS Update
Total PM (Ten-Year, BGD)

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	82	130	11	12	0
Future Volume (Veh/h)	0	82	130	11	12	0
Sign Control	Stop			Free		Free
Grade	0%					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	89	141	12	13	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	307	13	13			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	307	13	13			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	92	91			
cM capacity (veh/h)	625	1067	1606			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	89	153	13
Volume Left	0	141	0
Volume Right	89	0	0
sSH	1067	1606	1700
Volume to Capacity	0.08	0.09	0.01
Queue Length 95th (m)	2.1	2.2	0.0
Control Delay (s)	8.7	6.9	0.0
Lane LOS	A	A	
Approach Delay (s)	8.7	6.9	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		7.2	
Intersection Capacity Utilization	32.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
9: Site & Caroline Street

1 Rosetta St TIS Update
Total PM (Ten-Year, BGD)

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	↖
Traffic Volume (vph)	3	14	0	8	10	0
Future Volume (vph)	3	14	0	8	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Friction	0.887					
Fit Protected				0.950		
Satd. Flow (prot)	1652	0	0	1863	1770	0
Fit Permitted				0.950		
Satd. Flow (perm)	1652	0	0	1863	1770	0
Link Speed (k/h)	50		50		50	
Link Distance (m)	89.7		45.9		33.3	
Travel Time (s)	6.5		3.3		2.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	15	0	9	11	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	18	0	0	9	11	0
Sign Control	Free		Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	20.0%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis
9: Site & Caroline Street

1 Rosetta St TIS Update
Total PM (Ten-Year, BGD)

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	↖
Traffic Volume (veh/h)	3	14	0	8	10	0
Future Volume (Veh/h)	3	14	0	8	10	0
Sign Control	Free		Free		Stop	
Grade	0%					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	15	0	9	11	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			18		20 10	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			18		20 10	
tC, single (s)			4.1		6.4 6.2	
tC, 2 stage (s)						
tF (s)			2.2		3.5 3.3	
p0 queue free %			100		99 100	
cM capacity (veh/h)			1599		998 1071	

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	18	9	11
Volume Left	0	0	11
Volume Right	15	0	0
sSH	1700	1599	998
Volume to Capacity	0.01	0.00	0.01
Queue Length 95th (m)	0.0	0.0	0.3
Control Delay (s)	0.0	0.0	8.6
Lane LOS	A		
Approach Delay (s)	0.0	0.0	8.6
Approach LOS	A		

Intersection Summary			
Average Delay			2.5
Intersection Capacity Utilization	20.0%	ICU Level of Service	A
Analysis Period (min)			15

Lanes, Volumes, Timings
10: Extension & John Street

1 Rosetta St TIS Update
Total PM (Ten-Year, BGD)

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	↖
Traffic Volume (vph)	138	8	6	170	6	4
Future Volume (vph)	138	8	6	170	6	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.992				0.951	
Fit Protected				0.998	0.969	
Satd. Flow (prot)	1848	0	0	1673	1717	0
Fit Permitted				0.998	0.969	
Satd. Flow (perm)	1848	0	0	1673	1717	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	102.7			368.0	98.2	
Travel Time (s)	7.4			26.5	7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)			0	0		
Adj. Flow (vph)	150	9	7	185	7	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	159	0	0	192	11	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	30.5%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
10: Extension & John Street

1 Rosetta St TIS Update
Total PM (Ten-Year, BGD)

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	↖
Traffic Volume (veh/h)	138	8	6	170	6	4
Future Volume (Veh/h)	138	8	6	170	6	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	150	9	7	185	7	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			159		354	154
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			159		354	154
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	100
cM capacity (veh/h)			1420		641	891
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	159	192	11			
Volume Left	0	7	7			
Volume Right	9	0	4			
sSH	1700	1420	714			
Volume to Capacity	0.09	0.00	0.02			
Queue Length 95th (m)	0.0	0.1	0.4			
Control Delay (s)	0.0	0.3	10.1			
Lane LOS	A		B			
Approach Delay (s)	0.0	0.3	10.1			
Approach LOS	A		B			
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization	30.5%		ICU Level of Service		A	
Analysis Period (min)	15					

Lanes, Volumes, Timings
11: St Michaels Street/Extension & Caroline Street

1 Rosetta St TIS Update
Total PM (Ten-Year, BGD)

	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Volume (vph)	8	10	0	3	14	0
Future Volume (vph)	8	10	0	3	14	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.926		0.865			
Fit Protected	0.978				0.950	
Satd. Flow (prot)	1687	0	1611	0	0	1770
Fit Permitted	0.978				0.950	
Satd. Flow (perm)	1687	0	1611	0	0	1770
Link Speed (k/h)	50		50		50	
Link Distance (m)	89.7		89.7		98.2	
Travel Time (s)	6.5		6.5		7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	11	0	3	15	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	0	3	0	0	15
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	24.1% ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
11: St Michaels Street/Extension & Caroline Street

1 Rosetta St TIS Update
Total PM (Ten-Year, BGD)

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Volume (veh/h)	8	10	0	3	14	0
Future Volume (Veh/h)	8	10	0	3	14	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	11	0	3	15	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	32	2			3	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	32	2			3	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	99			99	
cM capacity (veh/h)	973	1083			1619	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	20	3	15
Volume Left	9	0	15
Volume Right	11	3	0
sSH	1031	1700	1619
Volume to Capacity	0.02	0.00	0.01
Queue Length 95th (m)	0.5	0.0	0.2
Control Delay (s)	8.6	0.0	7.2
Lane LOS	A		A
Approach Delay (s)	8.6	0.0	7.2
Approach LOS	A		

Intersection Summary			
Average Delay		7.4	
Intersection Capacity Utilization	24.1%	ICU Level of Service	A
Analysis Period (min)		15	

Queuing and Blocking Report

1 Rosetta St TIS Update
Total PM (Ten-Year, BGD)

Intersection: 1: Mountainview Road N & River Drive

Movement	EB	WB	NB	NB	SB	SB	B25
Directions Served	LTR	LTR	LT	R	LT	TR	T
Maximum Queue (m)	59.6	93.3	423.6	423.6	41.3	36.6	13.6
Average Queue (m)	29.4	48.3	413.8	410.9	22.3	20.6	0.5
95th Queue (m)	52.5	78.8	427.6	439.7	36.5	34.6	4.9
Link Distance (m)	110.0	202.7	404.4	404.4	29.5	29.5	191.2
Upstream Blk Time (%)			89	86	2	1	
Queuing Penalty (veh)			0	0	5	3	
Storage Bay Dist (m)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: Mountainview Road N & John Street

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (m)	16.6	16.3	31.4	54.6	8.8	34.9
Average Queue (m)	10.2	9.3	13.4	21.4	2.2	19.2
95th Queue (m)	15.3	14.8	26.4	39.3	8.4	29.9
Link Distance (m)	84.2	165.0		191.2		166.6
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)			30.0		30.0	
Storage Blk Time (%)			0	2		1
Queuing Penalty (veh)			0	2		0

Intersection: 3: River Drive & Daniella Street

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (m)	5.5	9.2
Average Queue (m)	0.2	3.5
95th Queue (m)	2.6	10.6
Link Distance (m)	162.0	120.8
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report

1 Rosetta St TIS Update
Total PM (Ten-Year, BGD)

Intersection: 4: River Drive & Rosetta Street

Movement	SB
Directions Served	LR
Maximum Queue (m)	16.2
Average Queue (m)	9.0
95th Queue (m)	13.5
Link Distance (m)	29.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Victoria Street/River Drive & St Michaels Street

Movement	SB
Directions Served	LR
Maximum Queue (m)	13.9
Average Queue (m)	1.8
95th Queue (m)	8.5
Link Distance (m)	71.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Rosset Valley Court & John Street

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	8.6	8.2
Average Queue (m)	0.9	4.5
95th Queue (m)	5.7	10.8
Link Distance (m)	84.2	140.0
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report

1 Rosetta St TIS Update
Total PM (Ten-Year, BGD)

Intersection: 7: Victoria Street & John Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	16.2	28.1	11.9	25.0
Average Queue (m)	7.8	13.5	6.3	13.1
95th Queue (m)	13.9	22.7	13.6	20.9
Link Distance (m)	139.7	90.2	108.9	96.8
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: Rosetta Street & Site

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (m)	20.1	8.4
Average Queue (m)	9.7	0.5
95th Queue (m)	16.7	3.9
Link Distance (m)	38.2	29.8
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9: Site & Caroline Street

Movement	NB
Directions Served	LR
Maximum Queue (m)	10.5
Average Queue (m)	2.8
95th Queue (m)	9.9
Link Distance (m)	27.6
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report

1 Rosetta St TIS Update
Total PM (Ten-Year, BGD)

Intersection: 10: Extension & John Street

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	3.6	9.2
Average Queue (m)	0.2	2.5
95th Queue (m)	2.6	9.2
Link Distance (m)	356.5	89.4
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: St Michaels Street/Extension & Caroline Street

Movement	WB
Directions Served	LR
Maximum Queue (m)	9.2
Average Queue (m)	3.7
95th Queue (m)	11.0
Link Distance (m)	77.5
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 11

Appendix N

Ten-Year Total Traffic Operations (with Remedial Measures)



Lanes, Volumes, Timings
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Total AM (Ten-Year, Improved)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	2	42	159	165	19	30	53	330	177	53	570	5
Future Volume (vph)	2	42	159	165	19	30	53	330	177	53	570	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	0.0	0.0	0.0		0.0	60.0		0.0	50.0		0.0	
Storage Lanes	0	0	0		0	1		1	1		0	
Taper Length (m)	2.5		2.5		2.5			2.5			2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			0.97	1.00			
Frt		0.894			0.981			0.850			0.999	
Flt Protected					0.963			0.950			0.950	
Satd. Flow (prot)	0	1499	0	0	1362	0	1572	1792	1380	1612	1856	0
Flt Permitted		0.998			0.627		0.203		0.551			
Satd. Flow (perm)	0	1496	0	0	887	0	336	1792	1343	931	1856	0
Right Turn on Red			Yes		Yes			Yes			Yes	
Satd. Flow (RTOR)		158			8			188				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		128.0			212.6			102.4			244.6	
Travel Time (s)		9.2			15.3			7.4			17.6	
Confl. Peds. (#/hr)	5					5			4	4		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	17%	35%	40%	5%	11%	6%	17%	12%	2%	33%
Adj. Flow (vph)	2	45	169	176	20	32	56	351	188	56	606	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	216	0	0	228	0	56	351	188	56	611	0
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		3	8		5	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		7.0	30.0	30.0	30.0	30.0	
Minimum Split (s)	36.1	36.1		11.0	36.1		11.0	36.5	36.5	36.5	36.5	
Total Split (s)	37.0	37.0		11.0	48.0		11.0	62.0	62.0	51.0	51.0	
Total Split (%)	33.6%	33.6%		10.0%	43.6%		10.0%	56.4%	56.4%	46.4%	46.4%	
Maximum Green (s)	30.9	30.9		7.0	41.9		7.0	55.5	55.5	44.5	44.5	
Yellow Time (s)	4.0	4.0		3.0	4.0		3.0	4.5	4.5	4.5	4.5	
All-Red Time (s)	2.1	2.1		1.0	2.1		1.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		3.0			3.0		0.0	3.0	3.0	3.0	3.0	
Total Lost Time (s)		9.1			9.1		4.0	9.5	9.5	9.5	9.5	
Lead/Lag	Lag	Lag		Lead			Lead		Lag	Lag		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	4.5	4.5	4.5	4.5	
Recall Mode	None	None		None	None		None	Max	Max	Max	Max	
Walk Time (s)	10.0	10.0		10.0			14.0	14.0	14.0	14.0		
Flash Dont Walk (s)	20.0	20.0		20.0			16.0	16.0	16.0	16.0		
Pedestrian Calls (#/hr)	5	5		5			4	4	4	4		
Act Effct Green (s)		35.5			35.5		58.2	52.7	52.7	44.1	44.1	
Actuated g/C Ratio		0.33			0.33		0.54	0.49	0.49	0.41	0.41	

Lanes, Volumes, Timings
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Total AM (Ten-Year, Improved)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.36			0.76		0.21	0.40	0.25	0.15	0.80	
Control Delay		9.7			48.3		14.7	19.6	3.3	24.1	39.0	
Queue Delay		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		9.7			48.3		14.7	19.6	3.3	24.1	39.0	
LOS		A			D		B	B	A	C	D	
Approach Delay		9.7			48.3		14.0				37.7	
Approach LOS		A			D		B	B	A	C	D	
Queue Length 50th (m)		8.3			40.6		5.7	47.5	0.0	7.9	120.3	
Queue Length 95th (m)		25.6			#76.6		11.8	70.1	11.4	17.0	#183.6	
Internal Link Dist (m)		104.0			188.6		78.4				220.6	
Turn Bay Length (m)							60.0				50.0	
Base Capacity (vph)		611			329		264	884	757	384	766	
Starvation Cap Reductn		0			0		0	0	0	0	0	
Spillback Cap Reductn		0			0		0	0	0	0	0	
Storage Cap Reductn		0			0		0	0	0	0	0	
Reduced v/c Ratio		0.35			0.69		0.21	0.40	0.25	0.15	0.80	

Intersection Summary

Area Type:	Other
Cycle Length:	110
Actuated Cycle Length:	106.8
Natural Cycle:	95
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.80
Intersection Signal Delay:	27.3
Intersection Capacity Utilization:	93.3%
Intersection LOS:	C
ICU Level of Service:	F
Analysis Period (min):	15
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 1: Mountainview Road N & River Drive



HCM Signalized Intersection Capacity Analysis
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Total AM (Ten-Year, Improved)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	2	42	159	165	19	30	53	330	177	53	570	5
Future Volume (vph)	2	42	159	165	19	30	53	330	177	53	570	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Total Lost time (s)	9.1			9.1			4.0	9.5	9.5	9.5	9.5	
Lane Util. Factor	1.00			1.00			1.00	1.00	1.00	1.00	1.00	
Frbp, ped/bikes	1.00			1.00			1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	1.00			1.00			1.00	1.00	1.00	1.00	1.00	
Frt	0.89			0.98			1.00	1.00	0.85	1.00	1.00	
Flt Protected	1.00			0.96			0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1499			1362			1572	1792	1343	1605	1856	
Flt Permitted	1.00			0.63			0.20	1.00	1.00	0.55	1.00	
Satd. Flow (perm)	1496			888			336	1792	1343	930	1856	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	2	45	169	176	20	32	56	351	188	56	606	5
RTOR Reduction (vph)	0	106	0	0	5	0	0	0	94	0	0	0
Lane Group Flow (vph)	0	110	0	0	223	0	56	351	94	56	611	0
Confl. Peds. (#/hr)	5			5			4		4			
Heavy Vehicles (%)	0%	0%	17%	35%	40%	5%	11%	6%	17%	12%	2%	33%
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	4		3		8	5		2	6		6	
Permitted Phases	4		8		2		2		6			
Actuated Green, G (s)	38.5		38.5		56.6		56.6		47.1	47.1		
Effective Green, g (s)	35.5		35.5		56.6		53.6		44.1	44.1		
Actuated g/C Ratio	0.33		0.33		0.53		0.50		0.50	0.41		
Clearance Time (s)	6.1		6.1		4.0		6.5		6.5	6.5		
Vehicle Extension (s)	3.0		3.0		3.0		4.5		4.5	4.5		
Lane Grp Cap (vph)	493		292		239		891		668	759		
v/s Ratio Prot					0.01		c0.20		c0.33			
v/s Ratio Perm	0.07		c0.25		0.11		0.07		0.06			
v/c Ratio	0.22		0.76		0.23		0.39		0.14	0.15		0.81
Uniform Delay, d1	26.1		32.3		16.3		16.9		20.0	28.0		
Progression Factor	1.00		1.00		1.00		1.00		1.00	1.00		
Incremental Delay, d2	0.2		11.2		0.5		1.3		0.4	8.9		
Delay (s)	26.4		43.5		16.8		18.2		20.8	36.9		
Level of Service	C		D		B		B		C	D		
Approach Delay (s)	26.4		43.5		17.1				35.6			
Approach LOS	C		D		B				D			
Intersection Summary												
HCM 2000 Control Delay	29.0		HCM 2000 Level of Service				C					
HCM 2000 Volume to Capacity ratio	0.83											
Actuated Cycle Length (s)	107.7		Sum of lost time (s)				29.6					
Intersection Capacity Utilization	93.3%		ICU Level of Service				F					
Analysis Period (min)	15											
c Critical Lane Group												

Queuing and Blocking Report

1 Rosetta St TIS Update
Total AM (Ten-Year, Improved)

Intersection: 1: Mountainview Road N & River Drive

Movement	EB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	T	R	L	TR
Maximum Queue (m)	66.6	105.4	34.8	60.7	25.9	41.2	127.1
Average Queue (m)	26.7	53.2	9.6	28.8	9.3	10.4	63.2
95th Queue (m)	54.2	94.1	24.0	53.0	20.8	32.4	108.2
Link Distance (m)	111.3	202.6		94.0	94.0		230.9
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)	60.0			50.0			
Storage Blk Time (%)	0		0		0		12
Queuing Penalty (veh)	0		0		0		6

Lanes, Volumes, Timings
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Total PM (Ten-Year, Improved)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔	↔	↔	↔	
Traffic Volume (vph)	3	33	131	205	47	74	139	560	209	36	429	8
Future Volume (vph)	3	33	131	205	47	74	139	560	209	36	429	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	0.0	0.0	0.0		0.0	60.0		0.0	50.0		0.0	
Storage Lanes	0	0	0		0	1		1	1		0	
Taper Length (m)	2.5		2.5		2.5			2.5				
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.98			0.99		1.00		0.97		0.99	1.00
Frt		0.894			0.969		0.850		0.997			
Flt Protected		0.999			0.969		0.950		0.950			
Satd. Flow (prot)	0	1569	0	0	1675	0	1616	1827	1302	1805	1805	0
Flt Permitted		0.994			0.724		0.261		0.332			
Satd. Flow (perm)	0	1561	0	0	1251	0	443	1827	1257	627	1805	0
Right Turn on Red			Yes		Yes		Yes		Yes		Yes	
Satd. Flow (RTOR)		146			17				232		1	
Link Speed (k/h)		50			50		50		50		50	
Link Distance (m)		128.0			212.6		102.4		244.6		17.6	
Travel Time (s)		9.2			15.3		7.4		17.6			
Confl. Peds. (#/hr)	13		1	1		13	2		9	9		2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	50%	0%	7%	8%	0%	2%	8%	4%	24%	0%	5%	0%
Adj. Flow (vph)	3	37	146	228	52	82	154	622	232	40	477	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	186	0	0	362	0	154	622	232	40	486	0
Turn Type	Perm	NA	pm+pt	NA	pm+pt	NA	Perm	Perm	NA	NA	NA	NA
Protected Phases		4		3	8		5	2			6	
Permitted Phases		4		8			2		2		6	
Detector Phase		4	4	3	8		5	2	2		6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		7.0	30.0	30.0	30.0	30.0	
Minimum Split (s)	36.1	36.1		11.0	36.1		11.0	36.5	36.5	36.5	36.5	
Total Split (s)	37.0	37.0		11.0	48.0		11.0	52.0	52.0	41.0	41.0	
Total Split (%)	37.0%	37.0%		11.0%	48.0%		11.0%	52.0%	52.0%	41.0%	41.0%	
Maximum Green (s)	30.9	30.9		7.0	41.9		7.0	45.5	45.5	34.5	34.5	
Yellow Time (s)	4.0	4.0		3.0	4.0		3.0	4.5	4.5	4.5	4.5	
All-Red Time (s)	2.1	2.1		1.0	2.1		1.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		3.0			3.0		0.0	3.0	3.0	3.0	3.0	
Total Lost Time (s)		9.1			9.1		4.0	9.5	9.5	9.5	9.5	
Lead/Lag	Lag	Lag		Lead			Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	4.5	4.5	4.5	4.5	
Recall Mode	None	None		None	None		None	Max	Max	Max	Max	
Walk Time (s)	10.0	10.0		10.0			14.0	14.0	14.0	14.0		
Flash Dont Walk (s)	20.0	20.0		20.0			16.0	16.0	16.0	16.0		
Pedestrian Calls (#/hr)	14	14		14			11	11	11	11		
Act Effct Green (s)		33.8			33.8		48.3	42.7	42.7	31.7	31.7	
Actuated g/C Ratio		0.36			0.36		0.51	0.45	0.45	0.33	0.33	

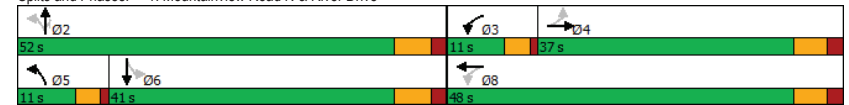
Lanes, Volumes, Timings
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Total PM (Ten-Year, Improved)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.29			0.80		0.50	0.76	0.34	0.19	0.81	
Control Delay		7.0			40.1		20.3	30.7	3.9	27.9	42.6	
Queue Delay		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		7.0			40.1		20.3	30.7	3.9	27.9	42.6	
LOS		A			D		C	C	A	C	D	
Approach Delay		7.0			40.1		23.0				41.5	
Approach LOS		A			D		C				D	
Queue Length 50th (m)		4.8			56.2		16.5	102.5	0.0	5.6	87.5	
Queue Length 95th (m)		18.3			91.7		28.5	#150.0	13.4	14.2	#142.1	
Internal Link Dist (m)		104.0			188.6		78.4				220.6	
Turn Bay Length (m)							60.0			50.0		
Base Capacity (vph)		668			524		311	819	691	208	601	
Starvation Cap Reductn		0			0		0	0	0	0	0	
Spillback Cap Reductn		0			0		0	0	0	0	0	
Storage Cap Reductn		0			0		0	0	0	0	0	
Reduced v/c Ratio		0.28			0.69		0.50	0.76	0.34	0.19	0.81	

Intersection Summary	
Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	95.2
Natural Cycle:	95
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.81
Intersection Signal Delay:	29.2
Intersection Capacity Utilization:	116.9%
Intersection LOS:	C
ICU Level of Service:	H
Analysis Period (min):	15
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 1: Mountainview Road N & River Drive



HCM Signalized Intersection Capacity Analysis
1: Mountainview Road N & River Drive

1 Rosetta St TIS Update
Total PM (Ten-Year, Improved)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	3	33	131	205	47	74	139	560	209	36	429	8
Future Volume (vph)	3	33	131	205	47	74	139	560	209	36	429	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6
Total Lost time (s)	9.1			9.1			4.0	9.5	9.5	9.5	9.5	
Lane Util. Factor	1.00			1.00			1.00	1.00	1.00	1.00	1.00	
Frbp, ped/bikes	0.98			0.99			1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	1.00			1.00			1.00	1.00	1.00	0.99	1.00	
Frt	0.89			0.97			1.00	1.00	0.85	1.00	1.00	
Flt Protected	1.00			0.97			0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1569			1676			1615	1827	1258	1795	1805	
Flt Permitted	0.99			0.72			0.26	1.00	1.00	0.33	1.00	
Satd. Flow (perm)	1562			1252			443	1827	1258	627	1805	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	3	37	146	228	52	82	154	622	232	40	477	9
RTOR Reduction (vph)	0	94	0	0	11	0	0	128	0	1	0	0
Lane Group Flow (vph)	0	92	0	0	351	0	154	622	104	40	485	0
Confl. Peds. (#/hr)	13		1	1		13	2		9	9		2
Heavy Vehicles (%)	50%	0%	7%	8%	0%	2%	8%	4%	24%	0%	5%	0%
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4			8			2		2		6	
Actuated Green, G (s)		36.8			36.8		45.7	45.7	45.7	34.7	34.7	
Effective Green, g (s)		33.8			33.8		45.7	42.7	42.7	31.7	31.7	
Actuated g/C Ratio		0.36			0.36		0.48	0.45	0.45	0.33	0.33	
Clearance Time (s)		6.1			6.1		4.0	6.5	6.5	6.5	6.5	
Vehicle Extension (s)		3.0			3.0		3.0	4.5	4.5	4.5	4.5	
Lane Grp Cap (vph)		555			444		299	820	564	209	601	
v/s Ratio Prot							0.04	0.34			0.27	
v/s Ratio Perm		0.06			0.28		0.21		0.08	0.06		
v/c Ratio		0.17			0.79		0.52	0.76	0.18	0.19	0.81	
Uniform Delay, d1		21.0			27.5		16.3	21.9	15.7	22.6	28.9	
Progression Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.1			9.3		1.5	6.5	0.7	2.0	11.1	
Delay (s)		21.1			36.8		17.8	28.4	16.5	24.6	40.1	
Level of Service		C			D		B	C	B	C	D	
Approach Delay (s)		21.1			36.8		24.0				38.9	
Approach LOS		C			D		C				D	

Intersection Summary			
HCM 2000 Control Delay	29.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	95.1	Sum of lost time (s)	29.6
Intersection Capacity Utilization	116.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Queuing and Blocking Report

1 Rosetta St TIS Update
Total PM (Ten-Year, Improved)

Intersection: 1: Mountainview Road N & River Drive

Movement	EB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	T	R	L	TR
Maximum Queue (m)	38.3	86.9	62.4	101.2	83.7	52.3	102.1
Average Queue (m)	17.6	50.5	24.9	59.7	16.2	11.7	51.8
95th Queue (m)	32.3	78.9	56.5	101.2	42.8	35.7	86.4
Link Distance (m)	111.3	202.6		94.0	94.0		230.9
Upstream Blk Time (%)				2	0		
Queuing Penalty (veh)				0	0		
Storage Bay Dist (m)			60.0			50.0	
Storage Blk Time (%)			0	6		0	9
Queuing Penalty (veh)			1	9		0	3

Appendix O

Traffic Control Signal Warrant



Signal Justification Calculation for Forecasted Volumes (OTM Book 12 - Justification 7)



Horizon Year: 2043 Total
 Region/City/Township: Halton Hills (Georgetown)

Major Street: Mountainview Road North
 Minor Street: John Street

North/South?: Y

Number of Approach Lanes: 2 or more
 Tee Intersection? N
 Flow Conditions: Restricted

PM Forecast Only? N

Warrant Results		
150% Satisfied	No	Justification for new intersections with forecast traffic
120% Satisfied	No	Justification for existing intersections with forecast traffic

Time Period	Major Street Mountainview Road North						Minor Street John Street						Peds Crossing
	Northbound			Southbound			Eastbound			Westbound			
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
AM Peak Hour	70	265	24	24	471	29	29	11	117	29	15	12	7
PM Peak Hour	159	474	39	9	350	38	39	15	70	35	26	20	3
Avg. Hourly Volume	57	185	16	8	205	17	17	7	47	16	10	8	3

Warrant	AHV
1A - All	593
1B - Minor	105
2A - Major	488
2B - Cross	46

Warrant 1 - Minimum Vehicular Volume

1A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
	All Approaches	480	720	600	900	593
		% Fulfilled				66%

1B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
	Minor Street Approaches	120	170	120	170	105
		% Fulfilled				61%

Warrant 2 - Delay To Cross Traffic

2A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
	Major Street Approaches	480	720	600	900	488
		% Fulfilled				54%

2B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
	Traffic Crossing Major Street	50	75	50	75	46
		% Fulfilled				61%

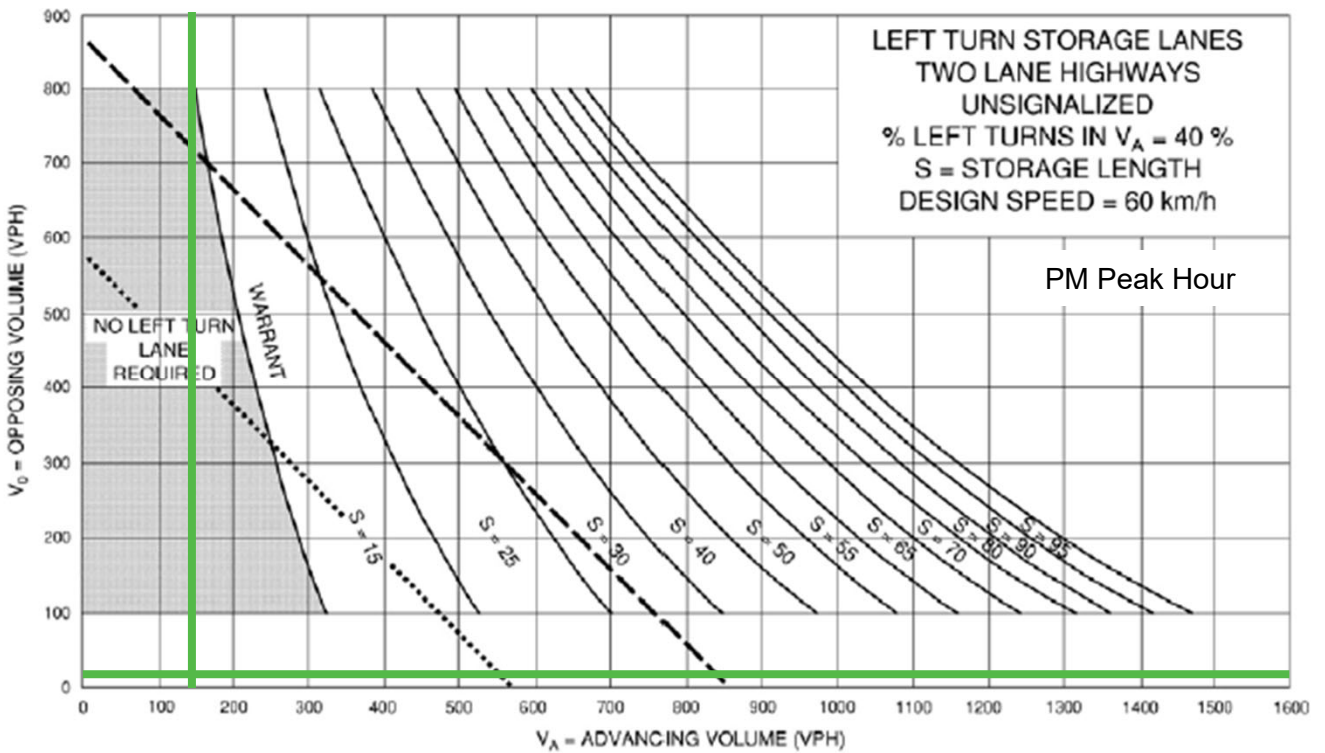
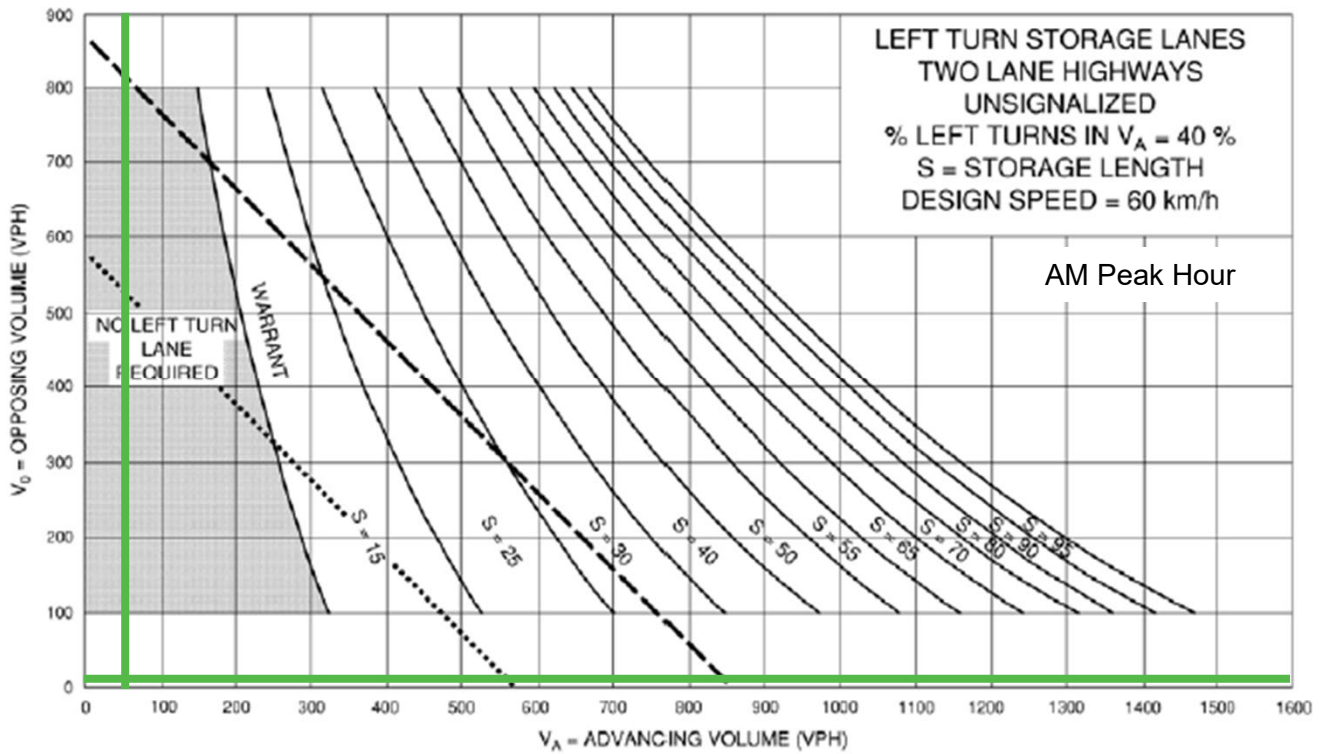
Appendix P

Left-Turn Lane Warrant



Roadway	Rosetta Street	
Intersection	Site Driveway	
Approach Direction	Northbound	
Design Speed	60 km/h	
Horizon	Total 2043	
Peak Hour	AM	PM
Advancing Volume	53	141
Opposing Volume	6	12
Left Turning Traffic	50	130
% of Left Turning Traffic	94%	92%
Figure Used*	9A-10	9A-10
Warranted	No	No
Storage Length Required	-	-

*Ontario Ministry of Transportation, *MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads*, (Toronto: Queens Printer for Ontario, 2020).



Rosetta Street at Site Driveway Left-Turn Lane Warrant

Appendix Q

TTS Mode Share and Vehicle Ownership Data



Thu Mar 31 2022 13:07:06 GMT-0300 (Atlantic Daylight Time) - Run Time: 2377ms

Cross Tabulation Query Form - Trip - 2006,2011,2016 v1.1

Row: Planning district of household - pd_hhld
Column: Primary travel mode of trip - mode_prime

RowG:(37)
ColG:
TblG:

Filters:
No Filters

Trip 2006

ROW : pd_hhld

COLUMN : mode_prime

pd_hhld	mode_prime	total
1	B	291
1	C	371
1	D	87140
1	G	1000
1	J	309
1	O	86
1	P	16464
1	S	5377
1	T	262
1	W	4493

Trip 2011

ROW : pd_hhld

COLUMN : mode_prime

pd_hhld	mode_prime	total
1	B	573
1	C	342
1	D	99314
1	G	1520
1	J	448
1	M	124
1	O	133
1	P	17353
1	S	4080
1	T	220
1	W	4547

Trip 2016

ROW : pd_hhld

COLUMN : mode_prime

pd_hhld	mode_prime	total
1	B	422

1	C	1145
1	D	99378
1	G	998
1	J	524
1	M	33
1	O	367
1	P	18048
1	S	5204
1	T	366
1	U	18
1	W	4914

Thu Mar 31 2022 13:27:01 GMT-0300 (Atlantic Daylight Time) - Run Time: 4079ms

Cross Tabulation Query Form - Trip - 2006,2011,2016 v1.1

Row: 2006 GTA zone of household - gta06_hhld

Column: Primary travel mode of trip - mode_prime

RowG: (7144,7145,7145,7146,4143,7134,7133,7136,7129,7128,4163,4166,4162,4194,4164,3463,3457,3456,3375,3482,3483,3431,8116,8115,8114,8113,8118,8121,4177,4197,4178,4176,4196)

ColG:

TblG:

Filters:

No Filters

Trip 2006

ROW : gta06_hhld

COLUMN : mode_prime

gta06_hhld	mode_prime	total
1	B	146
1	D	3259
1	G	35
1	P	592
1	S	106
1	W	133

Trip 2011

ROW : gta06_hhld

COLUMN : mode_prime

gta06_hhld	mode_prime	total
1	B	65
1	D	2940
1	J	21
1	P	483
1	S	41
1	W	124

Trip 2016

ROW : gta06_hhld

COLUMN : mode_prime

gta06_hhld	mode_prime	total
1	B	291
1	D	4166
1	O	46
1	P	1023
1	S	217
1	W	177

Tue Mar 29 2022 13:24:48 GMT-0300 (Atlantic Daylight Time) - Run Time: 752ms

Cross Tabulation Query Form - Household - 2016 v1.1

Row: 2006 GTA zone of household - gta06_hhld
Column: No. of vehicles in household - n_vehicle

RowG: (7144,7145,7145,7146,4143,7134,7133,7136,7129,7128,4163,4166,4162,4194,4164,3463,3457,3456,3375,3482,3483,3431,8116,8115,8114,8113,8118,8121,4177,4197,4178,4176,4196)
ColG:
TblG:

Filters:
Type of dwelling unit - dwell_type In 2,

Household 2016
ROW : gta06_hhld
COLUMN : n_vehicle

gta06_hhld	n_vehicle	total
1	0	170
1	1	257

Appendix R

Proxy Site Parking Data



Survey Date

City	Address	Name	Type	Designation	Supply	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	1:00	2:00		
Branford	63-65 Sympatica Crescent	Lyden Park Towers	Resident / Tenant	232	74	77	78	79	85	94	100	101	104	106	107	107		
			Visitor	20	7	8	8	7	7	7	7	7	7	10	11	10	10	
	9 Bonheur Court	lynden Manor	Resident / Tenant	252	81	85	86	86	92	101	109	111	115	116	117	117	118	
			Visitor	75	112	117	122	121	124	123	126	127	128	128	128	128	128	
			Total	207	193	203	207	215	235	238	236	236	239	243	244	244	244	246
Acton	192 Churchill Road South	The Winston	Resident / Tenant	40	16	17	17	21	22	24	25	24	24	24	24	24	24	
			Visitor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	196 Churchill Road South	Churchill Court	Resident / Tenant	38	25	33	28	29	27	29	32	33	33	33	33	33	33	33
			Visitor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Total	38	25	33	28	27	29	32	33	33	33	33	33	33	33	33
200 Churchill Road South	The Valleyview	Resident / Tenant	50	30	41	33	38	25	40	42	40	40	40	40	40	40	40	
		Visitor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Georgetown	21335 Baylawn Crescent	N/A	Resident / Tenant	46	32	32	40	37	33	36	37	40	36	39	39	40	40	
			Visitor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Total	46	32	32	40	37	33	36	37	40	36	39	39	40	40	40

Saturday, November 28, 2020

Survey Date

City	Address	Name	Type	Designation	Supply	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	1:00	2:00		
Orangeville	35 & 45 Bredin Parkway	N/A	Resident / Tenant	94	70	74	75	77	77	79	81	84	85	85	85	85		
			Visitor	31	14	10	10	10	10	9	8	7	6	6	6	6	6	
	16 4th Street	N/A	Resident / Tenant	125	84	84	85	87	87	88	90	92	91	91	91	91	91	
			Visitor	72	40	40	38	39	40	39	38	40	40	40	40	40	40	40
			Total	72	40	40	38	39	40	39	38	40	40	40	40	40	40	40

Saturday April 8, 2017

Survey Date

City	Address	Name	Type	Designation	Supply	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	1:00	2:00		
Branford	63-65 Sympatica Crescent	Lyden Park Towers	Resident / Tenant	232	67	80	86	96	103	108	111	110	114	114	114	114		
			Visitor	20	4	5	5	6	9	10	10	6	6	6	6	6	6	
	9 Bonheur Court	lynden Manor	Resident / Tenant	252	71	85	91	102	112	118	117	116	120	120	120	120	120	
			Visitor	75	105	113	115	121	126	125	127	128	129	129	129	129	129	
			Total	207	176	204	217	233	243	243	243	243	243	243	243	243	243	
Acton	192 Churchill Road South	The Winston	Resident / Tenant	40	15	19	22	22	23	21	23	23	23	23	23	23	23	
			Visitor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	196 Churchill Road South	Churchill Court	Resident / Tenant	38	28	25	32	32	36	36	37	37	37	37	37	37	37	
			Visitor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Total	38	28	25	32	36	36	37	37	37	37	37	37	37	37	37
200 Churchill Road South	The Valleyview	Resident / Tenant	50	25	25	36	40	38	40	41	41	41	41	41	41	41		
		Visitor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Georgetown	21335 Baylawn Crescent	N/A	Resident / Tenant	46	26	26	32	36	38	38	41	41	41	41	41	41	41	
			Visitor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Total	46	26	26	32	36	38	41	41	41	41	41	41	41	41	41

Tuesday, December 1, 2020

Survey Date

City	Address	Name	Type	Designation	Supply	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	1:00	2:00		
Orangeville	35 & 45 Bredin Parkway	N/A	Resident / Tenant	94	73	77	78	78	79	79	80	84	83	83	83	84		
			Visitor	31	11	12	12	13	12	11	9	8	7	6	6	6	6	
	16 4th Street	N/A	Resident / Tenant	125	84	89	90	91	91	90	89	92	90	90	90	90	90	
			Visitor	72	34	34	36	37	39	38	38	39	39	38	38	38	38	38
			Total	72	34	34	36	37	39	38	39	39	38	38	38	38	38	38

Friday, April 7, 2017

Observed Maximum	Observed Time	Units	Maximum Observed Demand
107	0:00	168	0.64
111	0:00	168	0.67
118	0:00	144	0.70
128	0:00	144	0.89
141	21:00	144	0.89
141	21:00	144	0.88
25	22:00	22	1.14
25	0:00	0	1.14
33	23:00	33	1.00
33	0:00	0	1.00
42	22:00	36	1.17
42	0:00	0	1.17
42	0:00	0	1.17
46	23:00	43	0.93
46	0:00	0	0.93
40	0:00	0	0.93

Observed Maximum	Observed Time	Units	Maximum Observed Demand
114	0:00	168	0.68
120	21:00	168	0.68
129	0:00	144	0.90
141	21:00	144	0.85
21	22:00	22	1.05
23	0:00	0	1.05
37	22:00	33	1.12
37	0:00	0	1.12
42	1:00	36	1.17
42	0:00	0	1.17
42	0:00	0	1.17
42	0:00	0	1.17
42	0:00	0	1.17

Observed Maximum	Observed Time	Units	Maximum Observed Demand
86	0:00	93	0.92
86	0:00	93	0.92
13	19:30	6	0.14
99	92	52	1.06
39	39	39	0.81
0	0	0	0.00
39	39	39	0.81

16 Concord Place, Town of Grimsby

Aqua Zul - Parking Survey

Surveyor - Scott Catton

Friday, 03 June 2022

Area #	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00
At Grade #1-2	16	14	16	15	15	18	24	20
At Grade #3	1	4	4	5	5	4	4	4
At Grade #4-5	16	12	12	13	9	12	12	12
At Grade #7	23	20	26	27	26	31	31	31
At Grade #8-9	27	36	34	37	38	41	37	37
U/G	123	147	158	170	185	198	211	216
Illegal	0	0	0	0	3	0	0	0
Aqua Blu (off site)	14	14	18	19	20	21	23	23

Aqua Zul	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00
Visitor	59	62	62	65	65	71	73	69
Occupant	147	171	188	202	216	233	246	251
Sum	206	233	250	267	281	304	319	320
Overall Ratio	0.60	0.68	0.73	0.78	0.82	0.89	0.93	0.94
Visitor Ratio	0.17	0.18	0.18	0.19	0.19	0.21	0.21	0.20
Occupant Ratio	0.43	0.50	0.55	0.59	0.63	0.68	0.72	0.73

Notes

- *Areas 1 & 2 merged for counting purposes. All visitor parking
- *Area 3 is not signed visitor parking = assume occupant
- *Areas 4 & 5 merged for counting purposes. All visitor parking
- *Area 6 does not exist
- *Area 7 is not signed visitor parking = assume occupant
- *Areas 8 & 9 merged for counting purposes. All visitor parking

Observations

- *On-demand transit service in use. Noticed 3 times
- *pick-up/drop-off activity high around 18:00 (uber eats)
- *some spaces in u/g have a car + motorcycle. Counted as 2
- *Aqua Blu (off site) parking used by persons going to Aqua Zul, pick-up/drop-off, and Aqua Blu.
- *one at grade space in #8 used by boat
- *one at grade space in #8 used by large commercial truck
- *sky jack on edge of site not counted
- *Resident commented on occupants using at grade parking
- *3 illegal parked trucks in fire route at front of site. Appear to be work trucks
- *DeSantis truck parked in U/G

16 Concord Place, Town of Grimsby

Aqua Zul - Parking Survey

Surveyor - Scott Catton

Saturday, 04 June 2022

Area #	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00
At Grade #1-2	17	15	16	16	17	17	20	20
At Grade #3	6	5	5	6	6	5	5	5
At Grade #4-5	12	13	13	13	10	12	13	13
At Grade #7	29	25	28	31	25	25	27	29
At Grade #8-9	40	37	39	45	39	37	42	40
U/G	142	142	147	156	163	179	191	197
Illegal	0	0	0	0	0	0	0	0
Aqua Blu (off site)	18	24	21	21	26	26	27	27

Aqua Zul	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00
Visitor	69	65	68	74	66	66	75	73
Occupant	177	172	180	193	194	209	223	231
Sum	246	237	248	267	260	275	298	304
Overall Ratio	0.72	0.69	0.73	0.78	0.76	0.80	0.87	0.89
Visitor Ratio	0.20	0.19	0.20	0.22	0.19	0.19	0.22	0.21
Occupant Ratio	0.52	0.50	0.53	0.56	0.57	0.61	0.65	0.68

Notes

- Areas 1 & 2 merged for counting purposes. All visitor parking
- Area 3 is not signed visitor parking = assume occupant
- Areas 4 & 5 merged for counting purposes. All visitor parking
- Area 6 does not exist
- Area 7 is not signed visitor parking = assume occupant
- Areas 8 & 9 merged for counting purposes. All visitor parking

Observations

- *some spaces in u/g have a car + motorcycle. Counted as 2
- *Aqua Blu (off site) parking used by persons going to Aqua Zul, pick-up/drop-off, and Aqua Blu.
- *one at grade space in #8 used by boat
- *one at grade space in #8 used by large commercial truck
- *sky jack on edge of site not counted
- *DeSantis truck parked in U/G

Parking Survey
Sapphire Condominium
101 & 125 Shoreview Place, Hamilton ON
(456 Residential Units)

Date	Occupant	Visitor	Overall
Thursday, 12 May 2022	0.75	0.19	0.94
Friday, 13 May 2022	0.65	0.20	0.85
Saturday, 14 May 2022	0.68	0.20	0.88
Peak	0.75	0.20	0.95

Occupant Parking + On-Street – Buffer Calculations

Date	Occupant + On-Street	20% Buffer	w Buffer
Thursday, 12 May 2022	0.85	0.17	1.02
Friday, 13 May 2022	0.75	0.15	0.90
Saturday, 14 May 2022	0.78	0.16	0.94
Peak	0.85	0.17	1.02

Parking Survey
Sapphire Condominium
101 & 125 Shoreview Place, Hamilton ON
(456 Residential Units)

Time	Thursday, 12 May 2022								Friday, 13 May 2022								Saturday, 14 May 2022							
	Parked Vehicles				Ratio				Parked Vehicles				Ratio				Parked Vehicles				Ratio			
	Occupant	Visitor	On-Street	Overall	Occupant	Visitor	On-Street	Overall	Occupant	Visitor	On-Street	Overall	Occupant	Visitor	On-Street	Overall	Occupant	Visitor	On-Street	Overall	Occupant	Visitor	On-Street	Overall
5:00 PM	199	58	46	303	0.44	0.13	0.10	0.66	179	53	46	278	0.39	0.12	0.10	0.61	206	91	46	343	0.45	0.20	0.10	0.75
5:15 PM	204	62	46	312	0.45	0.14	0.10	0.68	180	56	46	282	0.39	0.12	0.10	0.62	204	87	46	337	0.45	0.19	0.10	0.74
5:30 PM	208	61	46	315	0.46	0.13	0.10	0.69	192	62	46	300	0.42	0.14	0.10	0.66	207	77	46	330	0.45	0.17	0.10	0.72
5:45 PM	218	63	46	327	0.48	0.14	0.10	0.72	195	56	46	297	0.43	0.12	0.10	0.65	213	79	46	338	0.47	0.17	0.10	0.74
6:00 PM	220	62	46	328	0.48	0.14	0.10	0.72	194	64	46	304	0.43	0.14	0.10	0.67	219	75	46	340	0.48	0.16	0.10	0.75
6:15 PM	227	63	46	336	0.50	0.14	0.10	0.74	200	65	46	311	0.44	0.14	0.10	0.68	218	74	46	338	0.48	0.16	0.10	0.74
6:30 PM	232	61	46	339	0.51	0.13	0.10	0.74	200	65	46	311	0.44	0.14	0.10	0.68	222	72	46	340	0.49	0.16	0.10	0.75
6:45 PM	239	60	46	345	0.52	0.13	0.10	0.76	209	67	46	322	0.46	0.15	0.10	0.71	223	75	46	344	0.49	0.16	0.10	0.75
7:00 PM	248	60	46	354	0.54	0.13	0.10	0.78	207	66	46	319	0.45	0.14	0.10	0.70	226	71	46	343	0.50	0.16	0.10	0.75
7:15 PM	258	63	46	367	0.57	0.14	0.10	0.80	212	64	46	322	0.46	0.14	0.10	0.71	229	72	46	347	0.50	0.16	0.10	0.76
7:30 PM	263	69	46	378	0.58	0.15	0.10	0.83	212	65	46	323	0.46	0.14	0.10	0.71	232	76	46	354	0.51	0.17	0.10	0.78
7:45 PM	273	70	46	389	0.60	0.15	0.10	0.85	215	67	46	328	0.47	0.15	0.10	0.72	235	77	46	358	0.52	0.17	0.10	0.79
8:00 PM	284	67	46	397	0.62	0.15	0.10	0.87	217	72	46	335	0.48	0.16	0.10	0.73	241	81	46	368	0.53	0.18	0.10	0.81
8:15 PM	287	65	46	398	0.63	0.14	0.10	0.87	229	76	46	351	0.50	0.17	0.10	0.77	245	79	46	370	0.54	0.17	0.10	0.81
8:30 PM	292	64	46	402	0.64	0.14	0.10	0.88	234	78	46	358	0.51	0.17	0.10	0.79	252	76	46	374	0.55	0.17	0.10	0.82
8:45 PM	303	67	46	416	0.66	0.15	0.10	0.91	243	79	46	368	0.53	0.17	0.10	0.81	256	80	46	382	0.56	0.18	0.10	0.84
9:00 PM	308	70	46	424	0.68	0.15	0.10	0.93	247	84	46	377	0.54	0.18	0.10	0.83	258	76	46	380	0.57	0.17	0.10	0.83
9:15 PM	313	72	46	431	0.69	0.16	0.10	0.95	259	85	46	390	0.57	0.19	0.10	0.86	264	78	46	388	0.58	0.17	0.10	0.85
9:30 PM	318	74	46	438	0.70	0.16	0.10	0.96	266	86	46	398	0.58	0.19	0.10	0.87	268	80	46	394	0.59	0.18	0.10	0.86
9:45 PM	326	74	46	446	0.71	0.16	0.10	0.98	269	82	46	397	0.59	0.18	0.10	0.87	273	78	46	397	0.60	0.17	0.10	0.87
10:00 PM	328	75	46	449	0.72	0.16	0.10	0.98	273	85	46	404	0.60	0.19	0.10	0.89	274	82	46	402	0.60	0.18	0.10	0.88
10:15 PM	332	76	46	454	0.73	0.17	0.10	1.00	278	87	46	411	0.61	0.19	0.10	0.90	282	85	46	413	0.62	0.19	0.10	0.91
10:30 PM	332	78	46	456	0.73	0.17	0.10	1.00	284	89	46	419	0.62	0.20	0.10	0.92	287	88	46	421	0.63	0.19	0.10	0.92
10:45 PM	334	77	46	457	0.73	0.17	0.10	1.00	287	91	46	424	0.63	0.20	0.10	0.93	296	81	46	423	0.65	0.18	0.10	0.93
11:00 PM	334	82	46	462	0.73	0.18	0.10	1.01	290	91	46	427	0.64	0.20	0.10	0.94	299	79	46	424	0.66	0.17	0.10	0.93
11:15 PM	341	85	46	472	0.75	0.19	0.10	1.04	293	87	46	426	0.64	0.19	0.10	0.93	302	78	46	426	0.66	0.17	0.10	0.93
11:30 PM	341	84	46	471	0.75	0.18	0.10	1.03	297	88	46	431	0.65	0.19	0.10	0.95	305	75	46	426	0.67	0.16	0.10	0.93
11:45 PM	343	88	46	477	0.75	0.19	0.10	1.05	296	88	46	430	0.65	0.19	0.10	0.94	309	76	46	431	0.68	0.17	0.10	0.95
Peak	343	88	46	477	0.75	0.19	0.10	1.05	297	91	46	431	0.65	0.20	0.10	0.95	309	91	46	431	0.68	0.20	0.10	0.95

115 John Street, Georgetown

Time		Surface Lot						Underground Lot	
		Tuesday			Saturday			Tuesday	Saturday
Tuesday	Saturday	Visitors (Supply 6 Spaces)	Accessible (Supply 2 Spaces)	Resident (Supply 44 Spaces)	Visitors (Supply 6 Spaces)	Accessible (Supply 2 Spaces)	Resident (Supply 44 Spaces)	Resident (Supply 23 Spaces)	
7:00	9:00	4	2	30	4	2	33	14	19
7:15	9:15	4	2	29	4	2	32	13	19
7:30	9:30	4	2	27	4	2	30	13	18
7:45	9:45	4	2	26	4	2	28	13	17
8:00	10:00	4	2	26	4	2	28	13	16
8:15	10:15	4	1	27	4	2	31	12	15
8:30	10:30	4	1	25	3	2	31	13	15
8:45	10:45	5	1	23	3	2	31	11	15
9:00	11:00	5	1	22	4	2	30	11	15
9:15	11:15	5	1	22	4	2	30	11	15
9:30	11:30	5	1	22	4	2	28	7	14
9:45	11:45	4	1	22	4	2	28	7	13
10:00	12:00	4	1	22	3	2	27	7	13
12:00	12:15	4	1	15	3	2	25	7	12
12:15	12:30	4	1	15	4	2	25	7	11
12:30	12:45	4	1	14	4	2	26	6	12
12:45	13:00	4	1	14	4	2	25	6	11
13:00	13:15	4	1	14	4	2	27	6	11
13:15	13:30	4	1	16	4	2	30	6	11
13:30	13:45	4	1	15	4	2	31	6	11
13:45	14:00	4	1	14	4	2	31	9	12
14:00	16:00	4	1	15	4	2	30	10	12
16:00	16:15	4	1	19	4	2	30	10	12
16:15	16:30	4	1	19	4	2	30	11	12
16:30	16:45	4	1	19	4	2	32	13	12
16:45	17:00	4	1	23	4	2	31	13	13
17:00	17:15	4	1	25	4	2	31	13	13
17:15	17:30	4	1	28	4	2	31	13	13
17:30	17:45	5	2	28	4	2	31	13	14
17:45	18:00	5	2	27	4	2	30	15	14
18:00	18:15	5	2	28	4	2	31	15	14
18:15	18:30	6	2	26	4	2	30	14	14
18:30	18:45	6	2	26	4	2	31	13	15
18:45	19:00	6	2	27	4	2	30	17	15
19:00	21:00	6	2	28	4	2	29	17	15
21:00	21:15	5	2	27	4	1	30	16	15
21:15	21:30	5	2	27	5	1	31	17	16
21:30	21:45	5	2	27	5	1	30	17	16
21:45	22:00	5	2	28	5	1	30	18	16
22:00	22:15	5	2	28	5	1	31	18	16
22:15	22:30	5	2	29	5	1	31	18	16
22:30	22:45	5	2	29	5	1	32	18	16
22:45	23:00	5	2	30	5	1	32	18	16
23:00		5	2	30				18	

42 Mill Street

Thursday, February 22 2024

Observation Time: 9:30 AM

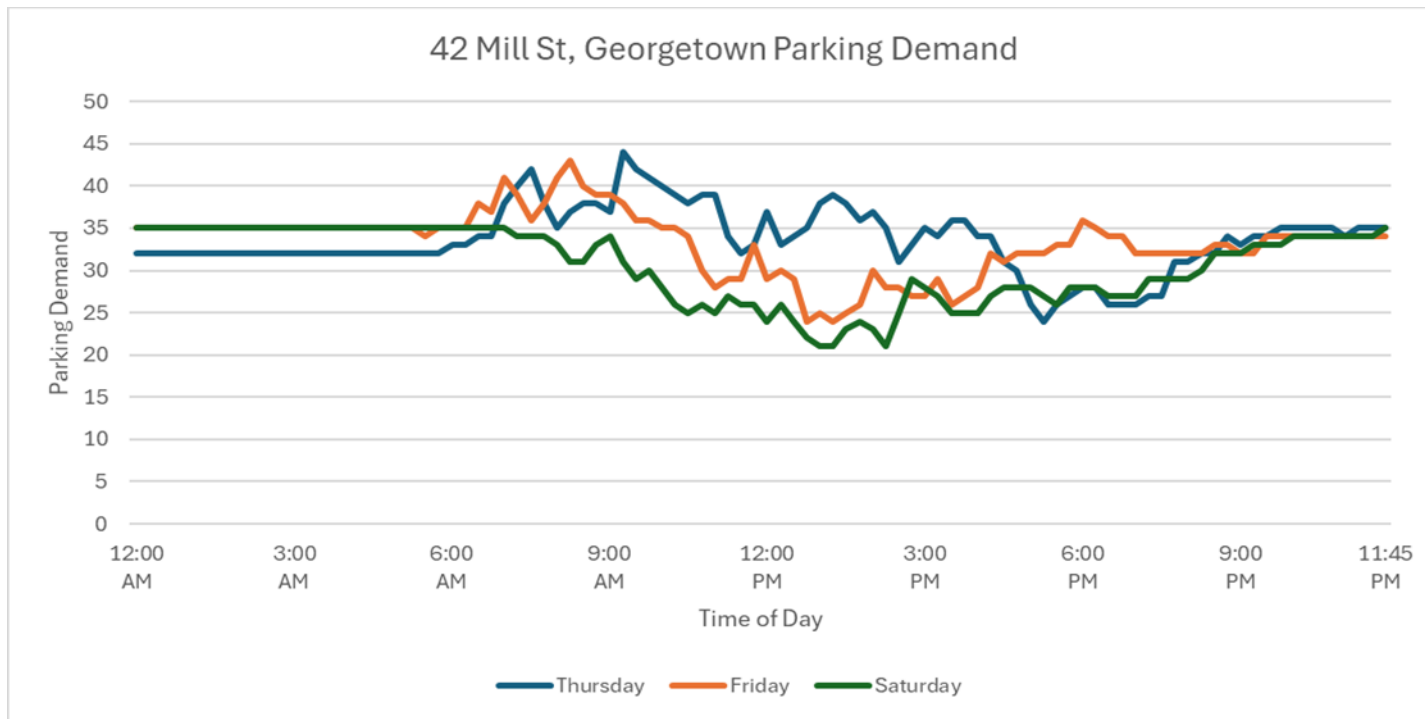
Thanks for the email. We will not be able to provide detailed occupancy information but it is fair to assume that the building is 90% sold out. Although everyone has interim occupancy, we do not know who specifically is living there yet and who is not. Please see below for building suite break down of the 78 units.

Unit Size	Units	Beds
1 Bed	11	11
1 Bed + Den	11	11
2 Bed	43	86
2 Bed + Den	12	24
3 Bed	1	3
Total	78	135
Rate	1.46	
Occupied at time of survey	70	

	Supply	Occupied	Construction Material
At Grade	21		
P1	68	21	1
P2	46	13	6
Total (9:30 am)	114	34	

Survey Date	Parking Demand (Peak)	Ratio per Unit
Day 1 - 2024-02-22 - Thursday	44	0.63
Day 2 - 2024-02-23 - Friday	43	0.61
Day 3 - 2024-02-24 - Saturday	35	0.50

Building		Units	Ratio
Building 01	14-storey		
Building 02	14-storey		
Building 03	8-storey		
Total		637	
Parking Occupant		700	1.10
Parking visitor		71	0.11
Parking total		771	1.21



Appendix S

Region of Waterloo TDM Checklist





Parking Management Worksheet

Version 9/18/2013

Case Study: 210781 Site Context: Georgetown GO Station
 Date: May 2023 Reduction Worksheet No: 1

"Urban Growth Centres - (UGC) area classification includes the Downtown / Uptown and RT Station Areas of Kitchener, Waterloo and Cambridge.
 "Intensification Corridor" (IC) classification is applied to sites within 800 metres of the future CTC line
 "Other" classification applies to all other sites

Please highlight the cell percentages applicable to your development under the appropriate classification. Please note that the Parking Management Worksheet and the Transportation Demand Management (TDM) Checklist are not designed for residential properties, but can be used for mixed-use developments. Local municipalities are the decision-making bodies with respect to consideration of parking reductions below Zoning By-law requirements.

TABLE A Pedestrian and Cyclist Orientation				
In creating an environment that supports pedestrian and cycling activity, the public realm must be accessible, safe, and comfortable to encourage movement on the street and in the surrounding area(s). These facilities and features should encourage walking and cycling.				
	Features	UGC	IC	Other
A1	Development incorporates functional building entrances that are oriented to public space or to locations where pedestrians and transit users arrive from such as a street, square, park or plaza.	1%	1%	1%
A2	Continuous sidewalks (1.5m min. width) are provided along both sides of all adjacent public streets and pedestrian walkways (1.5m min width) are provided through large parking areas to link the building with the public street sidewalk system	0%	0%	1%
A3	Non-Residential: Development provides secure bike storage for 4% of the building occupants	2%	2%	1%
A4	Shower and change facilities provided on-site consistent with LEED requirements.	1%	1%	1%
A5	Provision of active uses at-grade along street frontages.	1%	1%	1%
Category Maximum		4%	4%	4%
Available Parking Reduction			1%	

TABLE B Public Transportation Access				
The availability and proximity of convenient public transit service with direct pedestrian linkages to the building will provide viable travel options for employees, visitors and residents.				
	Features	UGC	IC	Other
B1	Bus shelters with seating are provided at the transit stop immediately adjacent to the development, in consultation with Transportation Planning at the Region of Waterloo	0%	0%	1%
B2	Information regarding public transit routes, schedules and fares are provided in an accessible and visible location on site and in adjacent bus stops	0%	0%	1%
B3a	Located in an UGC or within 800 m of a future Rapid Transit Station	24%	12%	0%
B3b	Located within 600m a transit route with 15 minute headways (or less) or is located in a designated mixed use corridor or node. Note: Points are awarded for either B3a, B3b or B3c only. Please choose whichever represents the highest order of transit.	-	-	3%
B3c	Located within 400 metres of a bus service with headways of 15 min to 30 min. Note: Points are awarded for either B3a, B3b or B3c only. Please choose whichever represents the highest order of transit.	-	-	1%
Category Maximum		24%	12%	5%
Available Parking Reduction			0%	

TABLE C Parking				
Vehicle parking facilities can affect the character, travel mode and cost of a development. Reducing parking supply to match expected demand can have a positive influence on the selection of alternative travel modes.				
	Features	UGC	IC	Other
C1	Provides priority parking for carpooling/vanpooling participants equivalent to 5% of employee spaces	0%	0%	5%
C2	Commercial Uses: Provide car-share spaces equivalent to 2% of building occupants	2%	2%	0%
C3	Implements paid parking system on all or part of the site (e.g. parking permits, paid parking zones near main entrances)	2%	2%	1%
C4	Parking is not located on major street frontage.	0%	0%	1%
C5	25% to 50% of parking is located underground or in a structure	2%	1%	0%
C6	50% to 75% of parking is located underground or in a structure	4%	2%	0%
C7	75% of parking or more is located underground or in a structure	5%	3%	0%
Category Maximum		6%	4%	6%
Available Parking Reduction			3%	



Case Study: 210781 Site Context: Georgetown GO Station
 Date: May 2023 Worksheet No: 1

TABLE D Trip Reduction Incentives				
A formal TDM plan will identify specific initiatives that will be initiated in order to encourage reduced single occupant vehicle travel.				
	Features	UGC	IC	Other
D1	The building owner/occupant will provide a ride matching service for car/vanpooling	0%	0%	1%
D2	The building owner/occupant will provide emergency ride home options	3%	2%	1%
D3	The building owner/occupant will provide subsidized transit passes for all occupants for a period of two years	10%	4%	2%
D4	The building owner/occupant agrees to charge for parking as a separate cost to occupants	10%	5%	2%
D5	The building owner/occupant agrees to provide reduced cost for users of car/van pool, bicycle, moped/motorcycle spaces	0%	0%	1%
D6	The development agrees to join Travelwise (TMA) that provides the same services outlined under items D1 and D2	9%	6%	4%
Category Maximum		23%	11%	7%
Available Parking Reduction			9%	

TABLE E Parking Reduction Summary					
Please indicate the total reduction available based upon Tables A through D above.					
Category	Reduction Achieved	Maximum Achievable Reduction			Comments
		UGC	IC	Other	
Pedestrian & Cyclist Orientation	1%	4%	4%	4%	
Public Transit Access	0%	24%	12%	5%	
Parking	3%	6%	4%	6%	
Trip Reduction Incentives	9%	23%	11%	7%	
TOTAL	13%	57%	31%	22%	

TABLE F	TOTAL REDUCTION ACHIEVED	13%
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