10-24 Grove Street West
Barrie, ON

Proposed Residential Development

Updated Transportation Impact Study

Paradigm Transportation Solutions Limited

March 2022
200669

ptsl.com

Project Summary

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Executive Summary

Content

SkyDev retained Paradigm Transportation Solutions Limited (Paradigm) to conduct this Transportation Impact Study (TIS) for a proposed redevelopment of 10-24 Grove Street West in the City of Barrie. The purpose of this study is to determine the transportation impacts of the proposed residential redevelopment on the surrounding road network. The findings, conclusions and recommendations of this study are summarized below and outlined in detail in the body of the report.

This report is an update to the Transportation Impact Study previously prepared by Paradigm[1].

Development Concept

The proposed redevelopment will consist of three residential apartment towers, ranging in height from 23 storeys to 27 storeys, connected via a five-storey podium, a total of 798 units will be provided in this section of the redevelopment. A separate nine-storey residential building containing 130 units is proposed at the southerly limits of the site.

Overall, a total of 928 dwelling units will be constructed via a mix of studio, one- and two-bedroom units. The redevelopment is expected to be completed in three phases, with full build-out anticipated to occur by 2028.

Access to the site will be provided via an all-turns private driveway connection to Grove Street West. It is noted that a secondary emergency access only connection will also be provided to Grove Street West. During Phase 1 of development, it is our understanding that the existing site driveway connection to Toronto Street will remain in place; however, it will be removed once Phase 2 commences.

Conclusions

Based on the investigations carried out, the following is concluded:

- **Existing Traffic Operations:** Most study area intersections are operating at acceptable levels of service and within capacity.

[1] 10-24 Grove Street West, Barrie, Ontario - Proposed Residential Development Transportation Impact Study, September 2021.

The exception would be the Bayfield Street and Highway 400 ramp terminal intersections where poor operations are reported.

- **Site Generated Traffic:** The site is conservatively forecast to generate a total of 306 vehicle trips during the AM peak hour and 355 vehicle trips during the PM peak hour.
- **2026 Traffic Operations:** Most study area intersections are forecast to continue operating at acceptable levels of service and within capacity under background and total traffic conditions. The exceptions would be the Bayfield Street and Highway 400 ramp terminal intersections with operations further exacerbated due to background growth and the addition of Phase 1 site traffic (i.e., Building 1 and Building 2).
- **2031 Traffic Operations:** Similar to 2026 traffic operations, the majority of study area intersections are forecast to continue operating at acceptable levels of service and within capacity. The exceptions would be at the Bayfield Street intersections with the Highway 400 ramp terminals, and Grove Street intersections. The previously identified traffic operational concerns are forecast to be further exacerbated due to background growth and the addition of site traffic generated.
- **2036 Traffic Operations:** The analysis accounts for future planned road network improvements to be implemented by the City of Barrie. Specifically, improvements at the Bayfield Street and Highway 400 ramp terminal intersections.

  Most study area intersections are forecast to continue operating at acceptable levels of service and within capacity. The exception would be the intersections of Bayfield Street and Highway 400 ramp terminals and Grove Street, and Wellington Street.

  While it was anticipated the future roadway network improvements by the responsible road authorities would mitigate the Highway 400 ramp terminal intersection operations, poor traffic operations are still forecast.
- **Remedial Measures:** No interim improvements have been accounted for in the base year, 2026, and 2031 horizons recognizing that planned improvements by the City of Barrie are forthcoming as related to the Bayfield Street and Highway 400 ramp terminal intersections. As we understand, these improvements would be in place by the 2036 horizon. Investigation for feasible remedial measures above and beyond the planned improvements were investigated for the 2036 horizon.

Investigations were undertaken to determine appropriate remedial measures to mitigate identified critical movements reported under the future horizons for Bayfield Street with Grove Street and Wellington Street.

At the Bayfield Street and Highway 400 SB Off-Ramp terminal intersection, the analysis determined the provision of three through lanes on the southbound intersection approach would mitigate the poor operations. It is noted there are three receiving lanes per the improvement plan drawings.

At the Bayfield Street and Highway 400 NB Off/On-Ramp terminal intersection, the analysis determined the provision of dual southbound left turn lanes would mitigate the poor operations.

At the intersections of Bayfield Street with Grove Street and Wellington Street, it was determined that geometric intersection improvements to provide additional capacity may be not feasible for implementation due to spatial constraints. Recognizing this constraint, successful implementation of a TDM plan should assist in reducing site generated vehicle trips and parking demands.

No remedial measures were determined to be required at the proposed site access intersection with Grove Street. Upon full build-out of the development, it was determined that auxiliary left or right turn lanes would not be required from an operational standpoint on Grove Street at the site access.

Recommendations

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

- The City of Barrie and Ministry of Transportation, Ontario recognize the conclusions drawn above;
- Responsible jurisdictions should monitor traffic volumes and modify signal timing plans at the study area intersections as required in response to higher traffic volumes in the future as well as anticipated changes in traffic patterns, and road cross-sections as planned network improvements by the City of Barrie are implemented. Additionally, the feasibility of providing identified mitigation measures should be investigated further;
- A TDM Plan should be developed identifying applicable mitigation measures to assist in reducing vehicle trips and parking demands; and

- From a transportation perspective, the required planning applications to allow the proposed development should be approved.

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1 Introduction

1.1 Overview

SkyDev retained Paradigm Transportation Solutions Limited (Paradigm) to conduct this Transportation Impact Study (TIS) for a proposed redevelopment of 10-24 Grove Street West in the City of Barrie. The site location is generally situated south of Highway 400 and on the west side of Bayfield Street.

This report is an update to the Transportation Impact Study previously prepared by Paradigm[2].

Figure 1.1 illustrates the subject site location and study area limits.

The proposed redevelopment will consist of three residential apartment towers, ranging in height from 23 storeys to 27 storeys, connected via a five-storey podium, a total of 798 units will be provided in this section of the redevelopment. A separate nine-storey residential building containing 130 units is proposed at the southerly limits of the site.

Overall, a total of 928 dwelling units will be constructed via a mix of studio, one- and two-bedroom units. The redevelopment is expected to be completed in three phases, with full build-out anticipated to occur by 2028.

Access to the site will be provided via an all-turns private driveway connection to Grove Street West. It is noted that a secondary emergency access only connection will also be provided to Grove Street West. It is out understanding that during Phase 1 of the development, the existing site driveway connection to Toronto Street will remain in place; however, it will be removed once Phase 2 commences.

1.2 Purpose and Scope

The scope of the study is as follows:

- Determine the traffic impacts and any related improvements required at the study area intersections;
- Traffic forecasts for 2026, 2031, and 2036; and

[2] 10-24 Grove Street West, Barrie, Ontario Proposed Residential Development Transportation Impact Study, September 2021.

- Weekday AM and PM peak hour analysis time periods, representing typical commuter periods.

The methodology used in the study is summarized below:

- Determine and assess the current study area traffic conditions;
- Estimate the peak hour background traffic for the future horizon years by applying growth rates to base year traffic volumes and inclusion of site traffic for applicable other area background developments, if any;
- Estimate the net increase in vehicular traffic generated by the proposed development;
- Combine the future background traffic forecasts with the net increase in site traffic to determine total traffic forecasts;
- Analyse base year, future background and total traffic conditions; and
- Determine the net impact on operational performance due to the site traffic, and the need for road and/or traffic control improvements to address the identified impacts.

This study has been carried out in general accordance with the City of Barrie Transportation Impact Study Guidelines (January 2021) and the Ministry of Transportation (MTO) General Guidelines for the Preparation of Traffic Impact Studies (February 2021).

Pre-study consultation was undertaken with City of Barrie and MTO staff during the months of June and July 2021. The consultation established the work plan, assumptions, and requirements for the study.

Appendix A contains the pre-study consultation materials.

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Study Area and Subject Development Location

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Figure 1.1

1.3 Study Area

The intersections assessed in this study, as confirmed by City staff, include:

- Bayfield Street and Coulter Street/Highway 400 Southbound Off-Ramp (signalized);
- Bayfield Street and Rose Street/Highway 400 Northbound Off-Ramp (signalized);
- Rose Street and Highway 400 Northbound On-Ramp (unsignalized);
- Bayfield Street and Grove Street (signalized);
- Bayfield Street and Dalton Street (unsignalized);
- Bayfield Street and Wellington Street (signalized);
- Toronto Street and Dalton Street (unsignalized);
- Toronto Street and Wellington Street (signalized);
- Mary Street and Dalton Street (unsignalized);
- Mary Street and Wellington Street (unsignalized);
- Maple Avenue and Dalton Street (unsignalized)
- Maple Avenue and Wellington Street (unsignalized);
- Wellington Street and Sunnidale Road/Ross Street (signalized); and
- Proposed Site Driveway and Grove Street (unsignalized).

2 Existing Conditions

This section documents current traffic conditions, operational deficiencies and constraints experienced by the public travelling at the intersections within the study area. The operational deficiencies and constraints identified at this stage will be fundamental to the process of defining the required remedial measures.

2.1 Roadway Characteristics

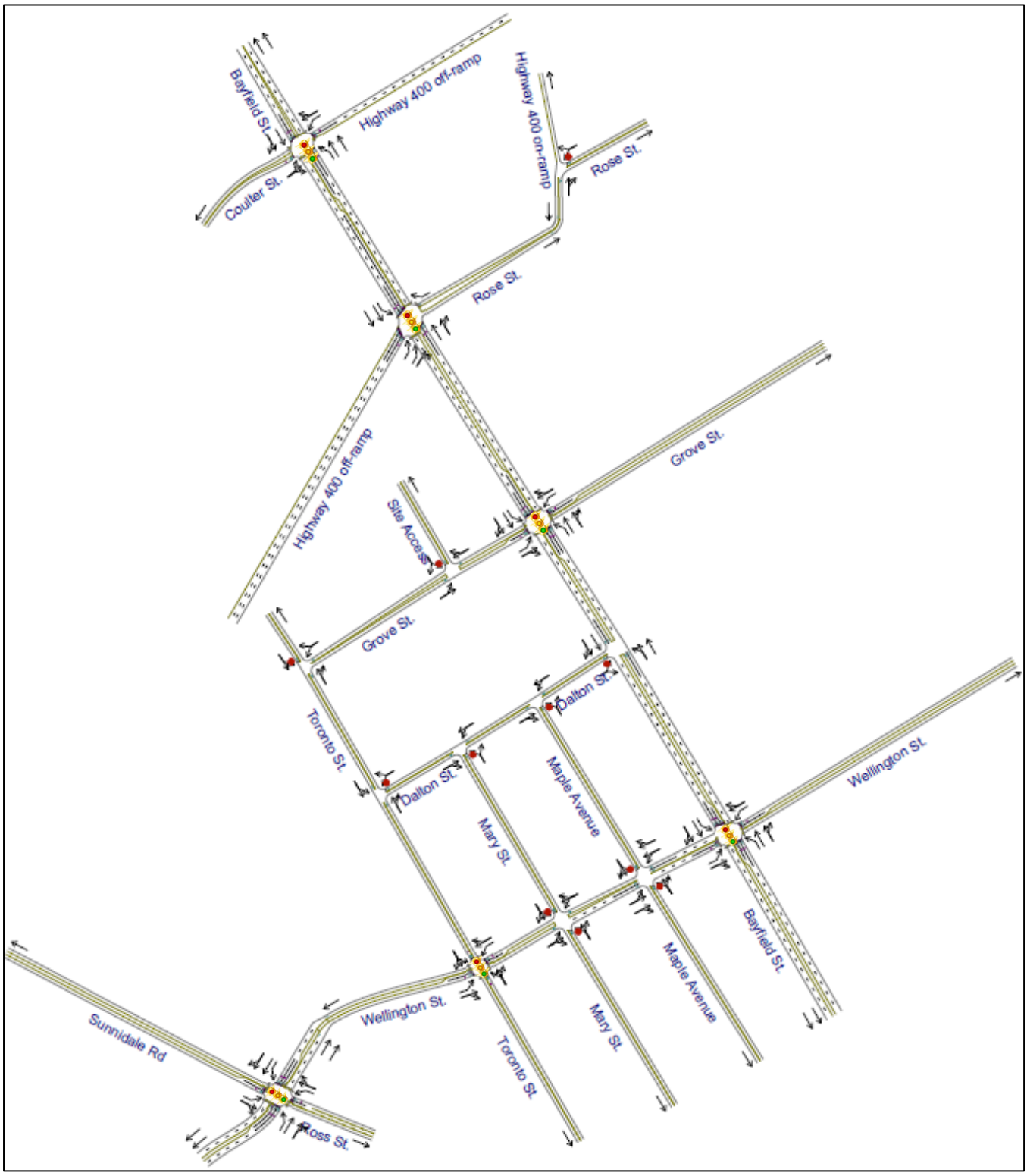
All study area roads operate under the City of Barrie's jurisdiction with the exception of Highway 400 and the associated off/on ramps, which are under the jurisdiction of the Ministry of Transportation, Ontario (MTO). Reference was made to the City of Barrie Official Plan[3] for roadway classification. For the purposes of this report Bayfield Street and the other parallel roadways oriented in a northwest/southeast direction within the study area will herein be referenced as oriented north-south. Similarly, Grove Street and the other parallel roadways oriented in a northeast/southwest direction will herein be referenced as oriented east-west. Descriptions of the study area roadways are as follows:

- **Bayfield Street** is a north-south arterial road with two travel lanes in each direction within the study area. The posted speed limit is 50 km/h. Bayfield Street has an urban cross-section with sidewalks provided along both sides of the roadway.
- **Coulter Street** is a two-lane local road with an urban cross-section and a sidewalk on the north side. The assumed (unposted) speed limit on Coulter Street is the statutory limit of 50 km/h.
- **Rose Street** is a two-lane minor collector road with a semi-urban cross-section and a sidewalk on the south side. The posted speed limit on Rose Street is 50 km/h.
- **Grove Street** is a two-lane minor collector road with an urban cross-section and an assumed (unposted) speed limit of 50 km/h. Sidewalk is provided on the south side of the roadway west of Bayfield Street and sidewalk is provided on the north side of the roadway east of Bayfield Street. Grove Street is a signed bicycle route further delineated with "sharrow" pavement markings on both sides of the road within the study area.

[3] City of Barrie. City of Barrie Official Plan – Schedule D Roads Plan. January 2018

- **Dalton Street** is a two-lane local road with an urban cross-section and a sidewalk along the south side of the roadway. The assumed (unposted) speed limit on Dalton Street is 50 km/h.
- **Wellington Street** is a two-lane east-west arterial road. The exception would be a short section between Mary Street and Bayfield Street where it has a four-lane cross-section (two travel lanes in each direction). The posted speed limit is 50 km/h, except for a community safety zone extending from east of Sunnidale Road/Ross Street to just west of Bayfield Street with a maximum posted limit of 40 km/h. Wellington Street has an urban cross-section with sidewalks provided along both sides of the roadway.
- **Toronto Street** is a two-lane minor collector road with an urban cross-section and sidewalks on both sides of the street. The posted speed limit is 50 km/h north of Dalton Street and 40 km/h south of Dalton Street within a community safety zone.
- **Mary Street** is a two-lane local road with an urban cross-section and a sidewalk on the east side of the street. The assumed (unposted) speed limit on Mary Street is 50 km/h.
- **Maple Avenue** is a two-lane local road with an urban cross-section and a sidewalk on the west side of the street. The assumed (unposted) speed limit on Maple Avenue is 50 km/h.
- **Sunnidale Road/Ross Street** is a two-lane major collector road with an urban cross-section and sidewalks on both sides of the street. The assumed (unposted) speed limit is 50 km/h. Sunnidale Road exists north of Wellington Street and Ross Street exists south of Wellington Street.

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



Existing Lane Configurations and Traffic Control

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Figure 2.1

2.2 Active Transportation Facilities

2.2.1 Walking

Pedestrian travel within the study area is facilitated by sidewalks on both sides of all roads. The exceptions are noted below:

- Coulter Street, north side only;
- Rose Street, south side only;
- Grove Street West, south side only, west of Bayfield Street;
- Grove Street East, north side only, east of Bayfield Street;
- Dalton Street, south side only;
- Mary Street, east side only; and
- Maple Avenue, west side only.

At the signalized intersections within the study area, pedestrian signal heads and curb ramps are provided. Push buttons for pedestrian actuation are also provided.

An Intersection Pedestrian Signal (IPS) is provided at the intersection of Toronto Street/Dalton Street across the south intersection leg. This IPS facilitates and provides a controlled crossing of Toronto Street to access the Hillcrest Public School.

Walk Score is an online tool that assigns a numerical walkability score between 0 and 100 for addresses in Australia, Canada, United States, and New Zealand. Walk Score ranks communities nationwide based on how many businesses, parks, theatres, schools, and other common destinations are within walking distance of any given address. The subject site has a Walk Score of 56 and is considered “Somewhat Walkable” which means some errands can be accomplished on foot[4].

2.2.2 Cycling

Dedicated cycling routes are signed and further delineated through “sharrows” indicating a shared on-road bike lane along Grove Street from Toronto Street in the west to Penetanguishene Road in the east. It is noted this cycling route does not connect to any other bike routes or facilities.

[4] https://www.walkscore.com/score/24-grove-st-w-barrie-on-canada

As per the City's Transportation Master Plan[5], Toronto Street, situated 190 metres west of the site and Davidson Street, situated approximately 875 metres east of the site are two roadways designated as future "signed bike routes". St. Vincent Street, situated 1.5 kilometres east of the site, is designated as a future buffered bike lane. The timing of implementation for these future cycling infrastructure improvements is currently unknown.

2.3 Transit Service

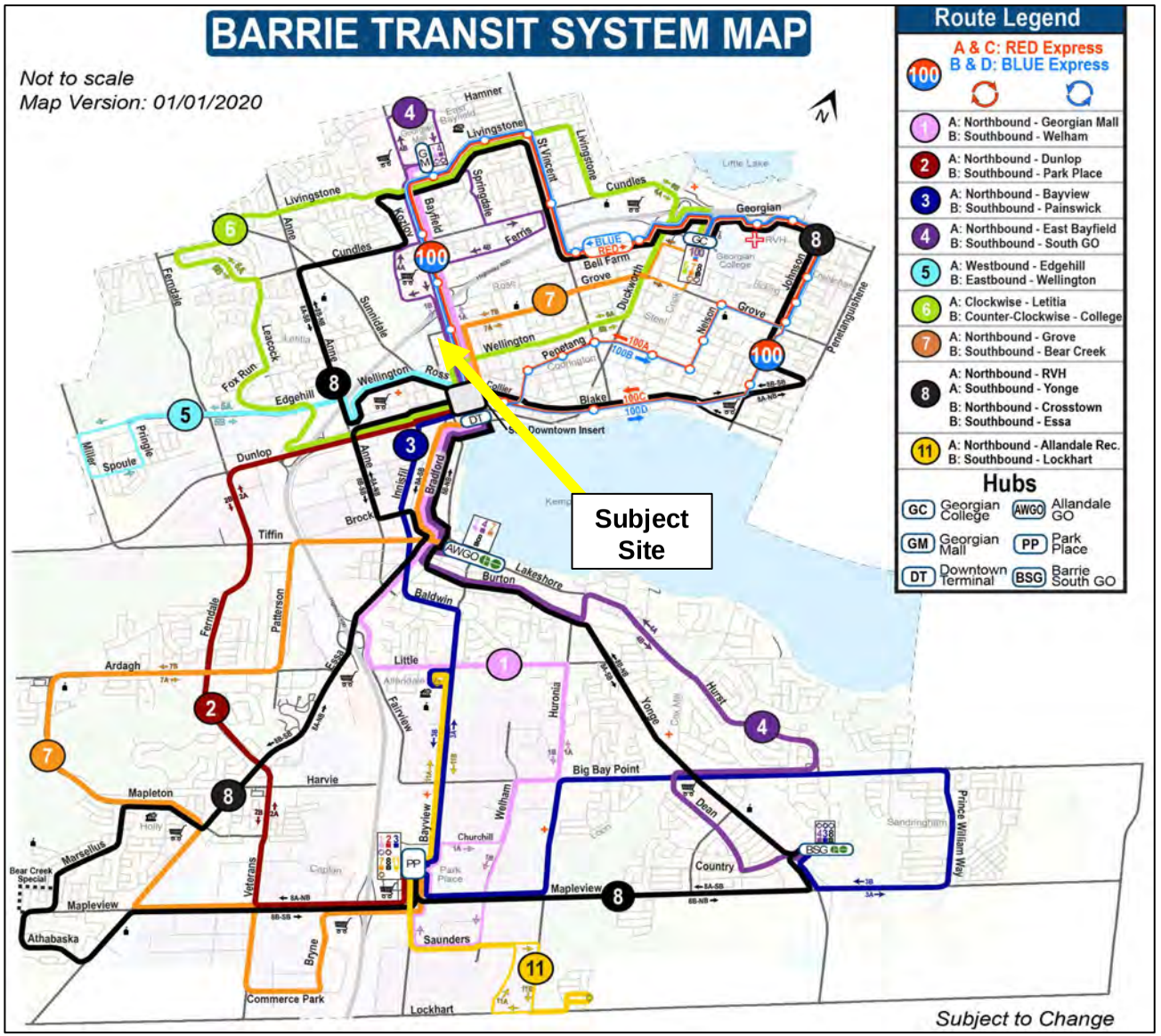
Barrie Transit operates five routes within the study area. These routes provide service to key locations throughout the city including Georgian Mall, Georgian College, and two GO Transit train stations. Transit connections can be made at both the street-level and at the Downtown Terminal located approximately one kilometre south of the site (i.e., approximately a 15-minute walk). Within the study area, all nearby transit routes operate on Bayfield Street, except for Route 6, which operates along Wellington Street within the study area.

Table 2.1 summarizes the exiting transit routes servicing the subject development site based on current information posted online. **Figure 2.2** illustrates the existing available transit routes serving the site.

The closest transit stops are located on the southeast corner (northbound service) and southwest corner (southbound service) of Bayfield Street and Grove Street East located approximately 185 metres or a 2-3-minute walk from the site. Transit amenities at these stops include a shelter and seating.

In summary, the site is adequately served by local transit, which also provides connections to larger transit hubs facilitating inter-regional travel by public transport.

[5] Figure 2.2 Existing Cycling Network, Transportation Master Plan, City of Barrie, June 2019



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Study Area Transit Services

TABLE 2.1 EXISTING BARRIE TRANSIT ROUTE INFORMATION

Route	Description	Operating Hours
1A Georgian Mall (northbound) 1B Welham (southbound)	Route 1 is a north-south route that operates between Park Place shopping centre in the south and Georgian Mall in the north.	Weekday service runs from about 5:00 AM to midnight on 20-minute headways. Saturday service runs from about 7:00 AM to midnight on 30-minute headways. Sunday service runs from about 9:00 AM to 10:00 PM on alternating 30 and 60-minute headways.
4A East Bayfield (northbound) 4B South GO (southbound)	Route 4 is a north-south route that operates between the Barrie South GO station in the south and Georgian Mall in the north. It also provides service to the Allandale GO station and Downtown Barrie.	Weekday service runs from about 5:30 AM to 11:30 PM on 60-minute headways. Saturday service from about 7:30 AM to 11:30 PM on 60-minute headways. Sunday service runs from about 9:00 AM to 10:30 PM on 60-minute headways.
6A Letitia (northbound) 6B College (southbound)	Route 6 is a circular route that begins and ends at the Downtown (Barrie) Terminal. It provides service through several residential areas, Georgian Mall and Georgian College.	Weekday service runs from about 5:45 AM to midnight on 30 to 60-minute headways. Saturday service from about 7:15 AM to midnight on 30 to 60-minute headways. Sunday service runs from about 9:00 AM to 10:30 PM on 60-minute headways.

Route	Description	Operating Hours
7A Grove (northbound) 7B Bear Creek (southbound)	Route 7 is a north-south route that operates between Park Place shopping centre in the south and Georgian College in the north. It provides service to the Holly Recreation Centre, Allandale GO station and Downtown Terminal.	Weekday service runs from about 5:30 AM to midnight on 60-minute headways. Saturday service from about 6:30 AM to midnight on 60-minute headways. Sunday service runs from about 9:30 AM to 10:00 PM on 60-minute headways.
100 A/C Red Express (clockwise) 100 B/D Blue Express (counter-clockwise)	Route 100 is a clockwise/ counter-clockwise route that operates to/from the Downtown Terminal. It provides service to Georgian Mall and Georgian College.	Weekday service runs from about 7:00 AM to 10:30 PM on predominantly 25-minute headways. Saturday service from about 7:45 AM to 9:30 PM on 45-minute headways. Sunday service runs from about 9:30 AM to 9:30 PM on 45-minute headways.

2.4 Traffic Volumes

Existing traffic volumes are typically obtained through the completion of turning movement counts. These counts summarize the quantity and type of traffic traversing an intersection, including cars, trucks, pedestrians, and cyclists. The counts are usually completed during heavy travel times to determine the peak traffic conditions for analyses.

Due to the on-going COVID-19 global pandemic, typical travel volumes and travel patterns have been impacted. At the onset of this assignment, it was determined the collection of new count data may not reflect typical traffic conditions within the study area.

In consultation with City of Barrie staff, 2021 base year traffic volumes representative of pre-COVID conditions were developed. The methodology and process for estimating base year traffic volumes undertaken was as follows:

- Traffic Data:
  - Historical 2014, 2017, and 2018 traffic count data was provided for review and use;
  - EMME outputs from the City's travel demand forecasting model were provided for the base year and 2031 horizons; and
  - Paradigm undertook traffic counts at the study area intersections in August 2021 to determine and assess whether impacts due to the COVID-19 global pandemic were still evident.
- Analysis:
  - The historical 2014, 2017, and 2018 count data was reviewed and compared. 2018 count data was deemed not applicable for use as volumes were found to be lower in comparison to the 2017 data set;
  - Applicable growth rates for roadway corridors were provided by City staff;
  - Using the EMME model outputs, 2021 traffic conditions were prorated for comparison;
  - Using the 2017 count data, applicable growth rates were applied to factor the data to 2021 base year conditions;
  - The 2021 volumes factored up from 2017 data, and the August 2021 traffic volumes were then compared to determine which data set would be suitable for use. It is

noted that the 2021 EMME volumes were utilized as a tool to validate use of the two data sets; and

- In comparing the two data sets, the newly collected August 2021 counts were found to be close to the factored counts; however, slightly lower for two roadway sections. ***Therefore, it was determined that use of the 2017 traffic data factored to 2021 conditions would be a suitable representation of base year traffic volumes.***

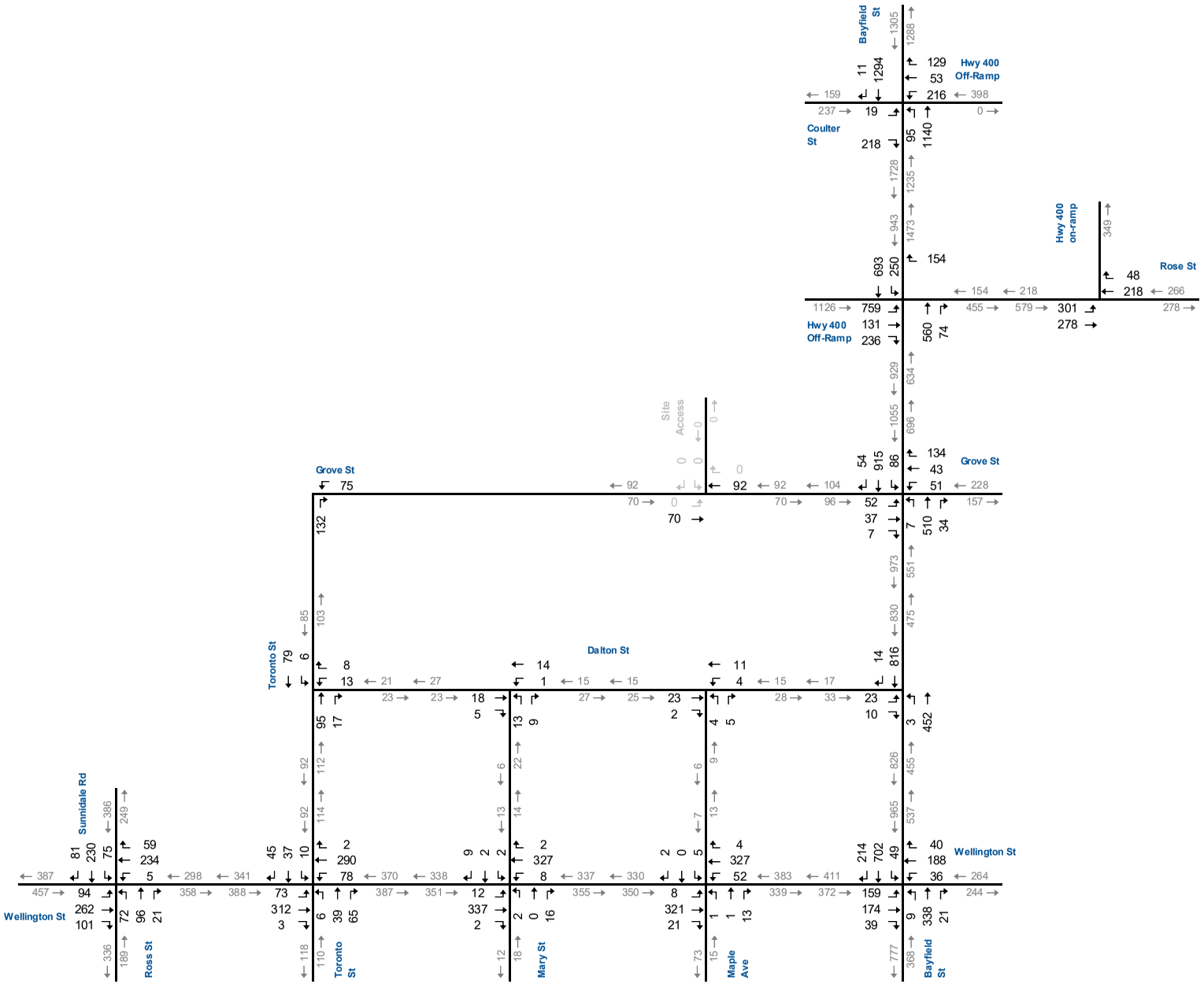
- Exceptions:
  - 2019 traffic count data for the Bayfield Street and Highway 400 ramp terminal intersections was obtained from MTO and factored to 2021 conditions instead of utilizing the 2017 count data;
  - The magnitude of the traffic volumes along Ross Street between Toronto Street and Wellington Street were determined by averaging between the 2021 EMME data set and factored from 2017 volumes; and
  - For the section of Grove Street west of Bayfield Street, 2021 EMME volumes were utilized as they reported lower volumes reflecting the closure of the YMCA development on the subject site and associated removal of traffic from the network.

- Application:
  - A growth rate of 3.0% per annum was applied to Grove Street approaches;
  - A growth rate of 1.0% per annum was applied to the Highway 400 off-ramp approaches; and
  - A growth rate of 2.0% per annum was applied to Bayfield Street and all other study area roadways.

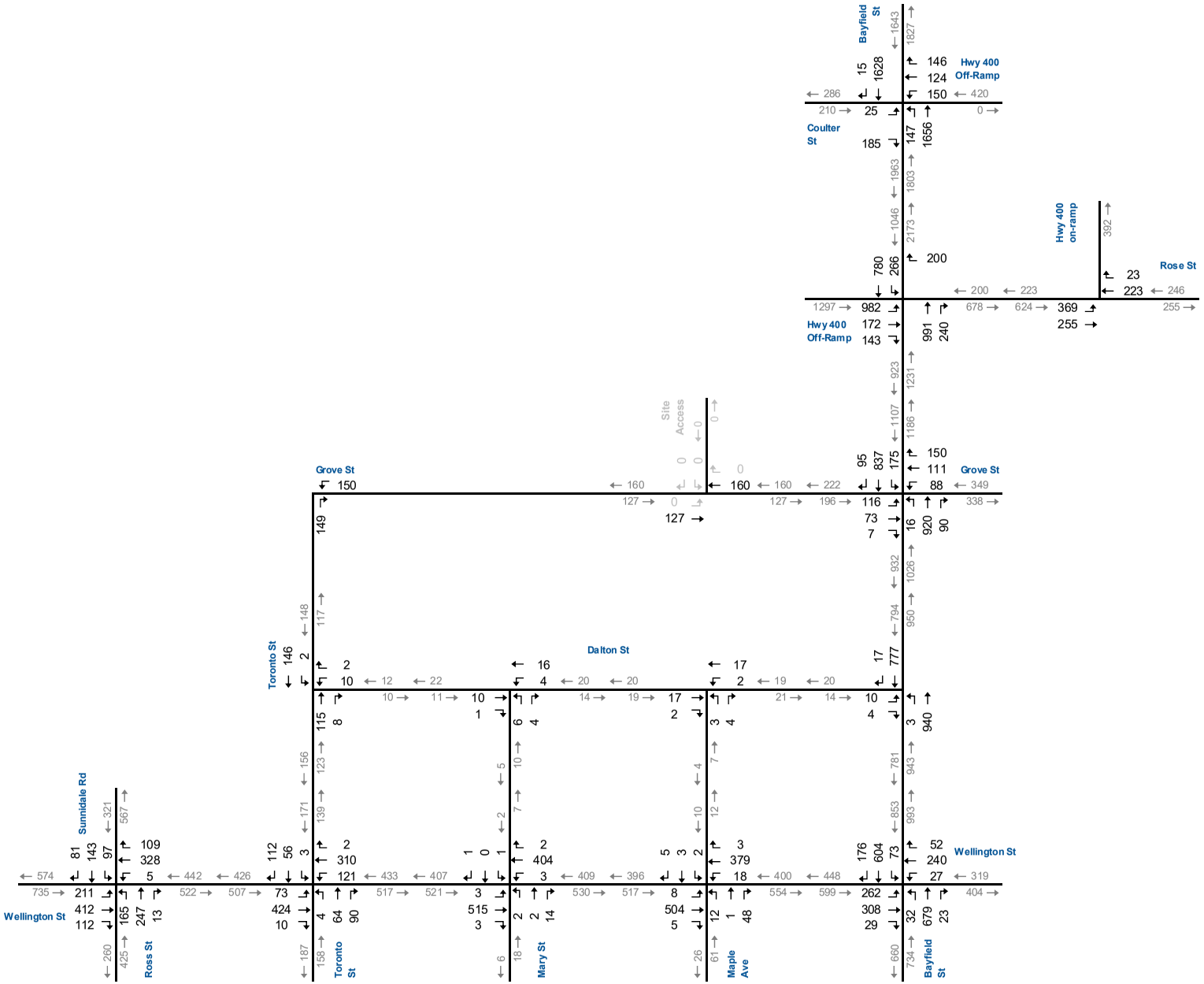
- Adjustment:
  - The traffic generated by the now-closed YMCA facility was factored out of the traffic forecasts to represent real-world conditions.

Figure 2.3 and **Figure 2.4** illustrate the estimated existing AM and PM peak hour traffic, respectively.

Appendix B contains the raw traffic data and a summary screenline comparison table between the various data sets for reference.



Existing AM Peak Hour Traffic



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Existing PM Peak Hour Traffic

2.5 Traffic Operations

Intersection level of service (LOS) is a recognized method of quantifying the average delay experienced by drivers 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 intending to make a particular movement, compared to the estimated capacity for that movement. The capacity is based on several criteria related to the opposing traffic flows and intersection geometry.

The highest possible rating is LOS A, under which the average total delay is equal or less than 10.0 seconds per vehicle. When the average delay exceeds 80 seconds for signalized intersections, 50 seconds for unsignalized intersections or when the volume to capacity ratio is greater than 1.0, the movement is classed as LOS F and remedial measures are usually implemented if they are feasible. LOS E is usually used as a guideline for the determination of road improvement needs on through lanes, while LOS F may be acceptable for left-turn movements at peak times, depending on delays.

MTO's Traffic Impact Study Guideline defines critical movements as follows:

- At signalized intersections, movements with v/c ratio greater than 0.85 are deemed to be "critical" in terms of operations. Movements that experience a v/c ratio of 0.85 or greater should be evaluated for possible operational improvements; and
- For ramps, a v/c ratio for terminal ramp approaches with a value greater than 0.75 would be deemed critical and should be evaluated for possible operational improvements.

The City of Barrie TIS Guidelines define critical movements at intersections as follows:

- Signalized intersections:
  - Level of service (LOS) for overall intersection operations exceeds LOS D;
  - V/C ratios for overall intersection operations, through movements, or shared through/turning movements increase to 0.85 or above;
  - V/C for exclusive movements increase to 0.85 or above;
  - Where the 50th and 95th percentile queue length exceed available turning lane storage; and

- Queues for exclusive left and right turn lanes that are inaccessible due to the through lane queue length.

- Unsignalized intersections:
  - LOS, based on average delay per vehicle, on individual movements exceed LOS E; and
  - The estimated 95th percentile queue length for an individual movement exceeds the lesser of five vehicles or the available queue storage.

An operational analysis was conducted for the existing weekday AM and PM peak hour traffic volumes at the study area intersections using Synchro software, which implements the methods of the Highway Capacity Manual (HCM). The key parameters used in the analysis include:

- Existing lane configurations;
- Heavy vehicle percentages derived from existing traffic count data;
- Conflicting pedestrian volumes derived from existing traffic count data;
- Obtained signal timing plan data; and
- Synchro default values for all other inputs.

Table 2.2 and **Table 2.3** present the existing AM and PM peak intersection operations which include the level of service (LOS), average vehicle delay in seconds, volume-to-capacity (v/c) ratio, and 95th percentile queue length in metres. Any critical movements are highlighted in orange. **Appendix C** contains the Synchro analysis outputs for reference.

In summary, the analyses indicate that most study area intersections are operating at acceptable levels of service and within capacity.

The exceptions would be at the following intersections:

- Bayfield Street and Highway 400 SB Off-Ramp;
- Bayfield Street and Highway 400 NB Off-Ramp.

Several movements at the noted intersections are reported to be operating over-capacity under existing conditions. Additionally, turn lane storage deficiencies in the magnitude of 1-3 vehicles are noted.

TABLE 2.2: EXISITING TRAFFIC OPERATIONS (AM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																	
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	1 - Bayfield Street and Coulter Street/Highway 400 Westbound off-ramp	TCS	LOS	C		>	C	F	D	>	F	C	B		B		C	>	C	D
			Delay	34		>	34	311	38	>	186	20	13		14		24	>	24	41
			V/C	0.22		>		1.54	0.40	>		0.35	0.53				0.80	>		0.94
			Q	25		>		115	42	>		16	100				150	>		
			Ex	-		>		-	-	>		50	-				-	>		
			Avail.	-		>		-	-	>		34	-				-	>		
	2 - Bayfield Street and Rose Street/Highway 400 Eastbound off-ramp	TCS	LOS	D	D	>	D			B	B		C	>	C	B	B		B	C
			Delay	43	39	>	42			13	13		24	>	24	18	13		14	27
			V/C	0.85	0.69	>				0.16			0.51	>		0.52	0.35			0.65
			Q	113	93	>				17			49	>		36	57			
			Ex	-	-	>				-			-	>		115	-			
			Avail.	-	-	>				-			-	>		79	-			
	3 - Rose Street and Highway 400 Eastbound on-ramp	TWSC	LOS					C		>	C		A	>	A					A
			Delay					18		>	18		0	>	0					6
			V/C					0.51		>			0.37	>						
			Q					23		>			0	>						
			Ex					-		>			-	>						
			Avail.					-		>			-	>						
	4 - Bayfield Street and Grove Street	TCS	LOS	C	B	>	B	C	C	>	C	B	B	>	B	B	C	>	C	C
			Delay	20	19	>	20	28	28	>	28	18	20	>	20	17	23	>	22	22
			V/C	0.14	0.06	>		0.15	0.19	>		0.05	0.45	>		0.25	0.61	>		0.46
			Q	15	12	>		19	25	>		3	52	>		15	131	>		
			Ex	20	-	>		30	-	>		30	-	>		50	-	>		
			Avail.	5	-	>		12	-	>		27	-	>		35	-	>		
	5 - Bayfield Street and Dalton Street	TWSC	LOS	B		>	B					<	A		A		A	>	A	A
			Delay	15		>	15					<	0		0		0	>	0	0
			V/C	0.09		>						<	0.19				0.35	>		
			Q	2		>						<	0				0	>		
			Ex	-		>						<	-				-	>		
			Avail.	-		>						<	-				-	>		
	6 - Bayfield Street and Wellington Street	TCS	LOS	C	C	>	C	C	C	>	C	B	C	>	C	B	B	>	B	B
			Delay	27	23	>	25	29	34	>	34	20	22	>	22	12	14	>	14	20
			V/C	0.48	0.33	>		0.13	0.50	>		0.05	0.29	>		0.11	0.57	>		0.58
			Q	39	51	>		15	66	>		5	40	>		7	59	>		
			Ex	-	-	>		30	-	>		20	-	>		20	-	>		
			Avail.	-	-	>		15	-	>		15	-	>		13	-	>		
	7 - Toronto Street and Dalton Street	TWSC	LOS					A		>	A		A	>	A	<	A		A	A
			Delay					10		>	10		0	>	0	<	1		1	1
			V/C					0.03		>			0.07	>		<	0			
			Q					1		>			0	>		<	0			
			Ex					-		>			-	>		<	-			
			Avail.					-		>			-	>		<	-			
	8 - Toronto Street and Wellington Street	TCS	LOS	B	B	>	B	B	B	>	B	<	A	>	A	<	A	>	A	B
			Delay	15	19	>	18	15	18	>	17	<	8	>	8	<	8	>	8	16
			V/C	0.31	0.66	>		0.36	0.60	>		<	0.11	>		<	0.10	>		0.31
			Q	15	49	>		16	46	>		<	11	>		<	10	>		
			Ex	25	-	>		20	-	>		<	-	>		<	-	>		
			Avail.	10	-	>		4	-	>		<	-	>		<	-	>		
	9 - Mary Street and Dalton Street	TWSC	LOS		A	>	A	<	A		A	<	A	>	A					A
			Delay		0	>	0	<	1		1	<	9	>	9					3
			V/C		0.01	>		<	0.00			<	0.03	>						
			Q		0.0	>		<	0.0			<	1	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						
	10 - Mary Street and Wellington Street	TWSC	LOS	<	A	>	A	<	A	>	A	<	B	>	B	<	B	>	B	A
			Delay	<	0	>	0	<	0	>	0	<	11	>	11	<	12	>	12	1
			V/C	<	0.01	>		<	0.01	>		<	0.03	>		<	0.03	>		
			Q	<	0	>		<	0	>		<	1	>		<	1	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	11 - Maple Street and Dalton Street	TWSC	LOS		A	>	A	<	A		A	<	A	>	A					A
			Delay		0	>	0	<	2		2	<	9	>	9					2
			V/C		0.02	>		<	0.00			<	0.01	>						
			Q		0	>		<	0			<	0	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						
	12 - Maple Street and Wellington Street	TWSC	LOS	<	A	>	A	<	A	>	A	<	B	>	B	<	C	>	C	A
			Delay	<	1	>	0	<	2	>	1	<	11	>	11	<	15	>	15	1
			V/C	<	0.12	>		<	0.11	>		<	0.02	>		<	0.02	>		
			Q	<	0	>		<	1	>		<	1	>		<	1	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	13 - Ross Street/Wellington Street and Sunnidale Road	TCS	LOS	B	C	>	C	C	C	>	C	B	B	>	B	B	C	>	B	C
			Delay	18	22	>	22	23	27	>	27	12	16	>	15	12	21	>	19	21
			V/C	0.29	0.40	>		0.03	0.46	>		0.18	0.19	>		0.14	0.49	>		0.43
			Q	21	38	>		3	34	>		13	26	>		13	69	>		
			Ex	20	-	>		30	-	>		15	-	>		25	-	>		
			Avail.	-1	-	>		27	-	>		2	-	>		12	-	>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds

Q - 95th Percentile Queue Length
Ex. - Existing Available Storage
Avail. - Available Storage

TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control

RBT - Roundabout

TABLE 2.3: EXISITING TRAFFIC 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	1 - Bayfield Street and Coulter Street/Highway 400 Westbound off-ramp	TCS	LOS	E		>	E	F	F	>	F	D	B		B		C	>	C	D
			Delay	66		>	66	272	88	>	153	49	12		15		33	>	33	39
			V/C	0.46		>		1.37	0.88	>		0.54	0.69				0.88	>		0.95
			Q	51		>		117	136	>		55	164				282	>		
			Ex	-		>		-	-	>		50	-				-	>		
			Avail.	-		>		-	-	>		-5	-				-	>		
	2 - Bayfield Street and Rose Street/Highway 400 Eastbound off-ramp	TCS	LOS	E	D	>	E			F	F		D	>	D	F	B		D	D
			Delay	61	41	>	56			87	87		48	>	48	123	18		44	52
			V/C	0.93	0.55	>				0.82			0.90	>		1.07	0.40			1.04
			Q	203	113	>				97			240	>		144	91			
			Ex	-	-	>				-			-	>		115	-			
			Avail.	-	-	>				-			-	>		-29	-			
	3 - Rose Street and Highway 400 Eastbound on-ramp	TWSC	LOS					C		>	C		A	>	A					A
			Delay					19		>	19		0	>	0					5
			V/C					0.52		>			0.40	>						
			Q					23		>			0	>						
			Ex					-		>			-	>						
			Avail.					-		>			-	>						
	4 - Bayfield Street and Grove Street	TCS	LOS	C	C	>	C	C	D	>	C	C	C	>	C	E	B	>	C	C
			Delay	25	21	>	23	31	35	>	34	26	32	>	32	68	19	>	27	30
			V/C	0.37	0.12	>		0.28	0.53	>		0.09	0.80	>		0.93	0.58	>		0.78
			Q	29	21	>		30	66	>		4	109	>		63	92	>		
			Ex	20	-	>		30	-	>		30	-	>		50	-	>		
			Avail.	-9	-	>		0	-	>		26	-	>		-13	-	>		
	5 - Bayfield Street and Dalton Street	TWSC	LOS	B		>	B					<	A		A		A	>	A	A
			Delay	12		>	12					<	0		0		0	>	0	0
			V/C	0.03		>						<	0.40				0.33	>		
			Q	1		>						<	0				0.0	>		
			Ex	-		>						<	-				-	>		
			Avail.	-		>						<	-				-	>		
	6 - Bayfield Street and Wellington Street	TCS	LOS	D	C	>	C	C	D	>	D	C	C	>	C	B	B	>	B	C
			Delay	41	25	>	32	30	42	>	41	23	27	>	27	16	16	>	16	26
			V/C	0.81	0.50	>		0.11	0.69	>		0.16	0.59	>		0.27	0.51	>		0.72
			Q	72	82	>		12	88	>		12	84	>		11	56	>		
			Ex	-	-	>		30	-	>		20	-	>		20	-	>		
			Avail.	-	-	>		18	-	>		8	-	>		9	-	>		
	7 - Toronto Street and Dalton Street	TWSC	LOS					A		>	A		A	>	A	<	A		A	A
			Delay					10		>	10		0	>	0	<	0		0	1
			V/C					0.02		>			0.08	>		<	0.00			
			Q					0		>			0	>		<	0			
			Ex					-		>			-	>		<	-			
			Avail.					-		>			-	>		<	-			
	8 - Toronto Street and Wellington Street	TCS	LOS	B	C	>	B	C	B	>	B	<	A	>	A	<	A	>	A	B
			Delay	14	20	>	19	24	16	>	18	<	10	>	10	<	10	>	10	16
			V/C	0.25	0.74	>		0.67	0.53	>		<	0.16	>		<	0.16	>		0.41
			Q	14	69	>		29	47	>		<	18	>		<	16	>		
			Ex	25	-	>		20	-	>		<	-	>		<	-	>		
			Avail.	11	-	>		-9	-	>		<	-	>		<	-	>		
	9 - Mary Street and Dalton Street	TWSC	LOS		A	>	A	<	A		A	<	A	>	A					A
			Delay		0	>	0	<	1		1	<	9	>	9					3
			V/C		0.01	>		<	0.00			<	0.01	>						
			Q		0.0	>		<	0			<	0	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						
	10 - Mary Street and Wellington Street	TWSC	LOS	<	A	>	A	<	A	>	A	<	B	>	B	<	B	>	B	A
			Delay	<	0	>	0	<	0	>	0	<	13	>	13	<	14	>	14	0
			V/C	<	0.00	>		<	0.00	>		<	0.04	>		<	0.00	>		
			Q	<	0	>		<	0	>		<	1	>		<	0	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	11 - Maple Street and Dalton Street	TWSC	LOS		A	>	A	<	A		A	<	A	>	A					A
			Delay		0	>	0	<	1		1	<	9	>	9					2
			V/C		0.01	>		<	0.00			<	0.01	>						
			Q		0	>		<	0.0			<	0	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						
	12 - Maple Street and Wellington Street	TWSC	LOS	<	A	>	A	<	A	>	A	<	B	>	B	<	C	>	C	A
			Delay	<	0	>	0	<	1	>	1	<	13	>	13	<	15	>	15	1
			V/C	<	0.16	>		<	0.12	>		<	0.13	>		<	0.03	>		
			Q	<	0	>		<	1	>		<	4	>		<	1	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	13 - Ross Street/Wellington Street and Sunnidale Road	TCS	LOS	C	C	>	C	C	C	>	C	B	C	>	C	B	C	>	C	C
			Delay	23	23	>	23	25	31	>	31	15	24	>	20	17	25	>	22	24
			V/C	0.64	0.49	>		0.02	0.58	>		0.35	0.43	>		0.22	0.40	>		0.56
			Q	43	59	>		3	50	>		29	64	>		18	51	>		
			Ex	20	-	>		30	-	>		15	-	>		25	-	>		
			Avail.	-23	-	>		27	-	>		-14	-	>		7	-	>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds

Q - 95th Percentile Queue Length
Ex. - Existing Available Storage
Avail. - Available Storage

TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control

RBT - Roundabout

3 Development Concept

3.1 Site Location

The subject site is located at the municipal addresses of 10-24 Grove Street West. The site is generally located just south of Highway 400 and west of Bayfield Street in the City of Barrie.

3.2 Existing Site

The site was occupied by a former YMCA recreational centre building. The site is served by two access points, an all-turns private driveway connection with Grove Street West and one direct connection via the current terminus of Toronto Street at the westerly limits of the site. The existing YMCA building, along with the residential homes at 10 and 14 Grove Street West will be demolished to facilitate redevelopment of the site.

3.3 Proposed Redevelopment

The proposed redevelopment will consist of three residential apartment towers, ranging in height from 23 storeys to 27 storeys, connected via a five-storey podium. A separate nine-storey residential building is proposed at the southerly limits of the site. Overall, a total of 928 dwelling units will be constructed via a mix of studio, one- and two-bedroom units in three phases as follows:

- Phase 1:
  - Building 1: 23-storey building containing 251 units
  - Building 2: 25-storey building containing 258 units
  - Phase 1 build-out is expected in 2025
- Phase 2:
  - Building 3: 27-storey building containing 289 units
  - Phase 2 build-out is expected in 2026
- Phase 3:
  - Building 4: nine-storey building containing 130 units
  - Phase 3 build-out is expected in 2028

Access to the site will be provided via an all-turns private driveway connection to Grove Street West. It is noted that a secondary emergency access only connection will also be provided to Grove

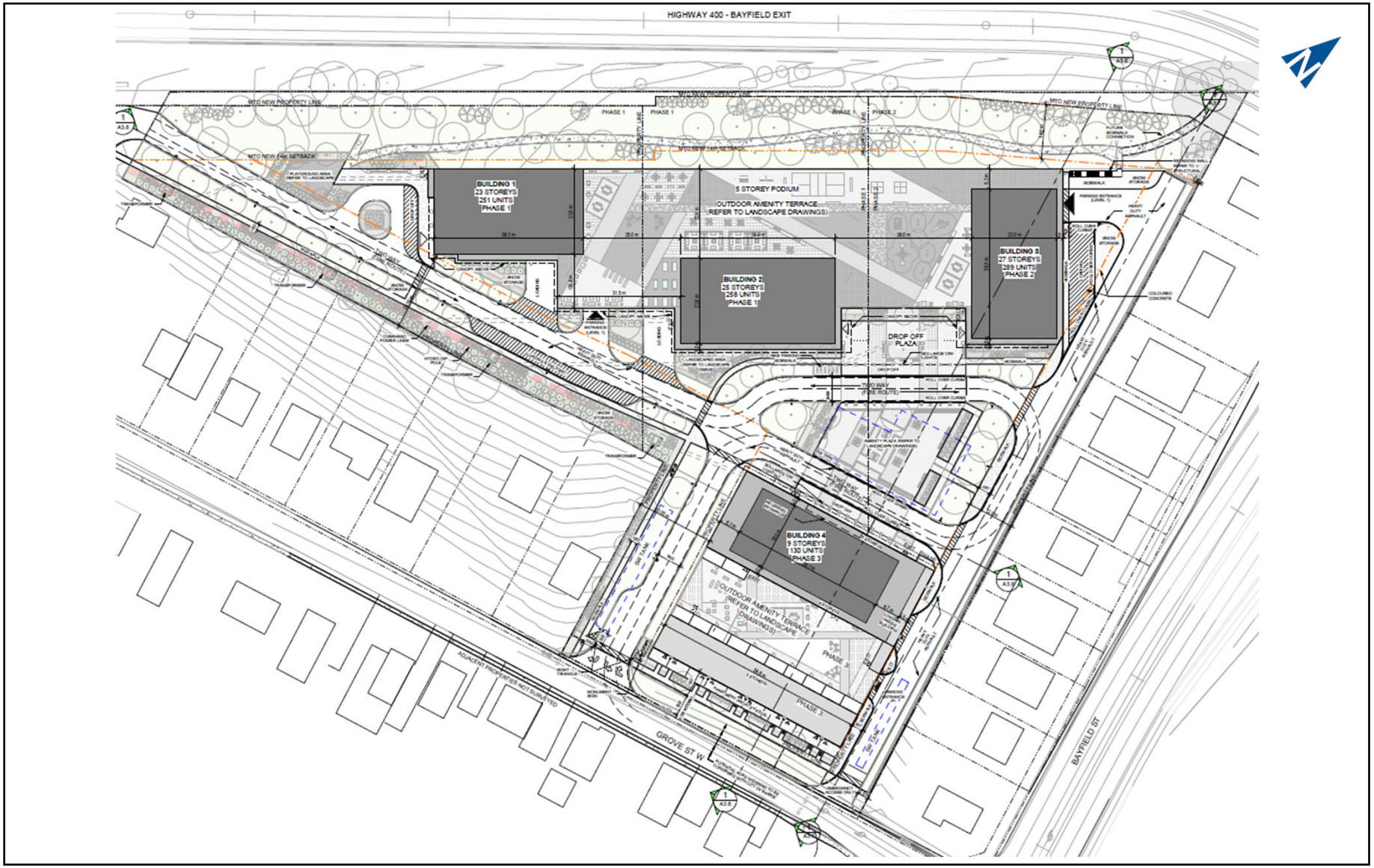
Street West. It is out understanding that during Phase 1 of the development, the existing site driveway connection to Toronto Street will remain in place; however, it will be removed once Phase 2 commences.

The previous secondary site access serving the YMCA building via Toronto Street will terminate as a cul-de-sac.

A total of 1,119 vehicular parking spaces, or a ratio of 1.21 spaces per unit, is proposed to serve the site.

It is our understand that with redevelopment of the site a sidewalk will be constructed along the north side of Grove Street from the site limits to Bayfield Street. This will facilitate pedestrian access between the site and the adjacent municipal sidewalk network.

Figure 3.1 illustrates the proposed site plan.



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Proposed Site Plan

Figure 3.1

3.4 Development Trip Generation

The trip generation for the subject development has been estimated using information contained in the Institute of Transportation Engineers (ITE) publication, "Trip Generation Manual, 10th Edition". Subsequent to submission of the original Transportation Impact Study (TIS), ITE released the 11th Edition Trip Generation Manual. However, City staff requested this TIS update use the 10th Edition data based upon the following rationale:

- To remain consistent with the previous study; and
- To provide conservative trip generation estimates which allow for some flexibility in the unit counts, recognizing the planned phased development approach.

The trip equations for the following Land Use Codes (LUC) have been used to estimate the site's vehicular trip generation:

- LUC 221 Multifamily Housing (Mid-Rise) which is defined as "apartments, townhouses and condominiums located within the same building with at least three other dwelling units and that have between three and 10 levels (floors)"; and
- LUC 222 Multifamily Housing (High-Rise) which is defined as "apartments, townhouses and condominiums that have more than 10 levels (floors).

Table 3.1 summarizes the estimated site trip generation and indicates the site will generate:

- Phase 1:
  - 168 AM peak hour trips; and
  - 191 PM peak hour trips
- Phase 2:
  - 94 AM peak hour trips; and
  - 107 PM peak hour trips
- Phase 3:
  - 44 AM peak hour trips; and
  - 57 PM peak hour trips
- All Three Phases Combined (Build-out):
  - 306 AM peak hour trips; and
  - 355 PM peak hour trips

3.5 Development Trip Distribution and Assignment

The site-generated trips were assigned to the road network based on a review of the existing peak hour travel patterns. The existing distribution was determined to be suitable since it reflects the current trip making characteristics representative of the surrounding residential neighbourhood (i.e., typical commuter patterns).

Table 3.2 summarizes the resultant trip distribution.

Figure 3.2 and **Figure 3.3** illustrate the Phase 1 site-generated vehicle trip assignments for the AM and PM peak hours, respectively.

Figure 3.4 and **Figure 3.5** illustrate the Phase 2 site-generated vehicle trip assignments for the AM and PM peak hours, respectively.

Figure 3.6 and **Figure 3.7** illustrate the Phase 3 site-generated vehicle trip assignments for the AM and PM peak hours, respectively.

Figure 3.8 and **Figure 3.9** illustrate the full development (Phase 1, Phase 2, and Phase 3) site-generated vehicle trip assignments for the AM and PM peak hours, respectively.

Slight differences with respect to the site-trip generation estimates are due to rounding.

TABLE 3.1: SITE TRIP GENERATION

Phase	Land Use Code	Units	AM Peak Hour				PM Peak Hour			
			Rate	In	Out	Total	Rate	In	Out	Total
1	LUC 222 - Multifamily Housing (High-Rise)	251	Eq[1]	20	63	**83**	Eq[2]	57	37	**94**
		258	Eq[1]	20	65	**85**	Eq[2]	59	38	**97**
Phase 1 Total		**509**		**40**	**128**	**168**		**116**	**75**	**191**
2	LUC 222 - Multifamily Housing (High-Rise)	289	Eq[1]	23	71	**94**	Eq[2]	65	42	**107**
Phase 2 Total		**289**		**23**	**71**	**94**		**65**	**42**	**107**
Phase 1 and 2 Subtotal		**798**		**63**	**199**	**262**		**181**	**117**	**298**
3	LUC 221 - Multifamily Housing (Mid-Rise)	130	Eq[3]	11	33	**44**	Eq[4]	35	22	**57**
Phase 3 Total		**130**		**11**	**33**	**44**		**35**	**22**	**57**
Site Total		**928**		**74**	**232**	**306**		**216**	**139**	**355**

Eq[1]: T = 0.28(X) + 12.86 (24 in/76 out)

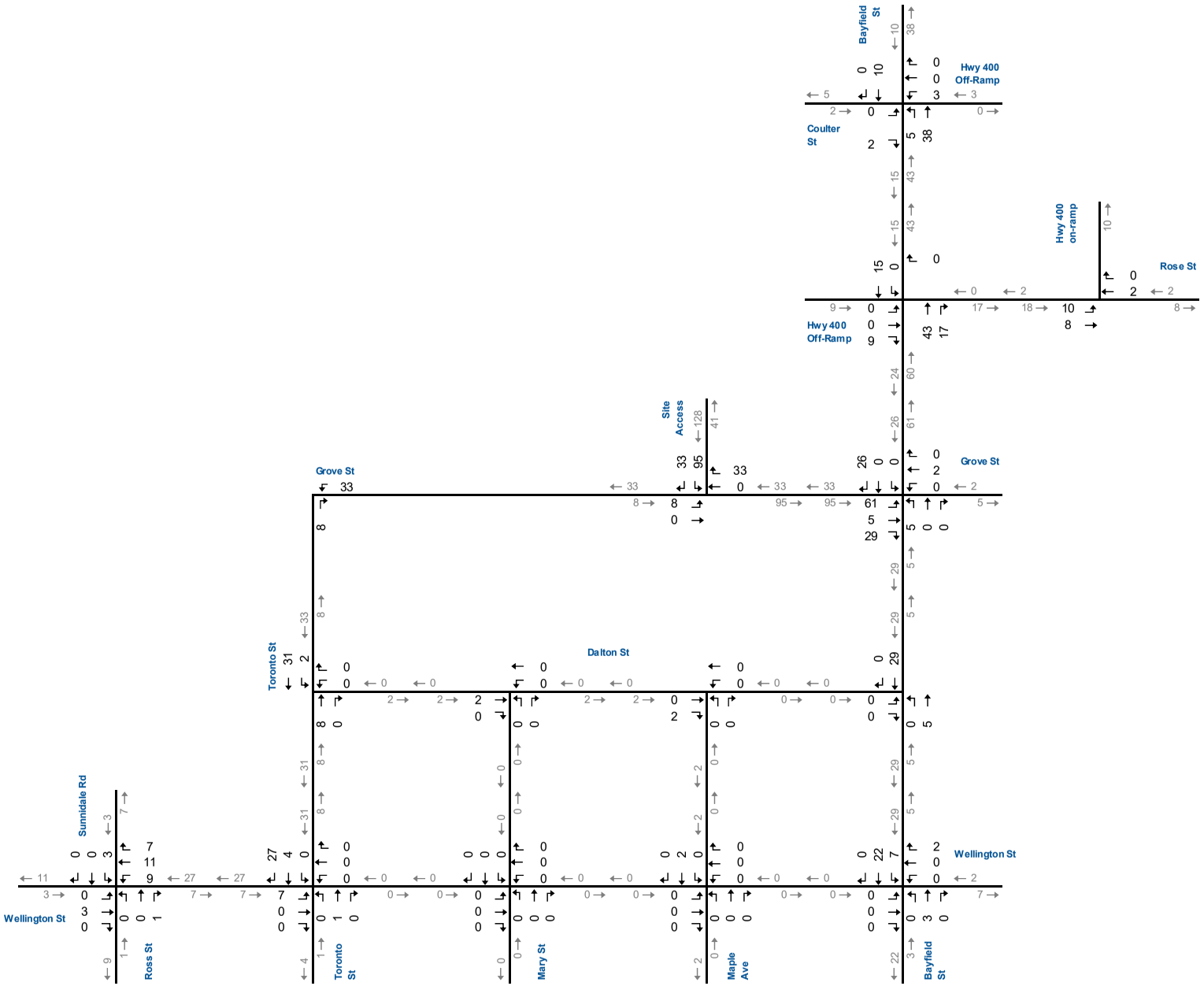
Eq[2]: T = 0.34(X) + 8.56 (61 in/39 out)

Eq[3]: Ln(T) = 0.98 Ln(X) - 0.98 (26 in/74 out)

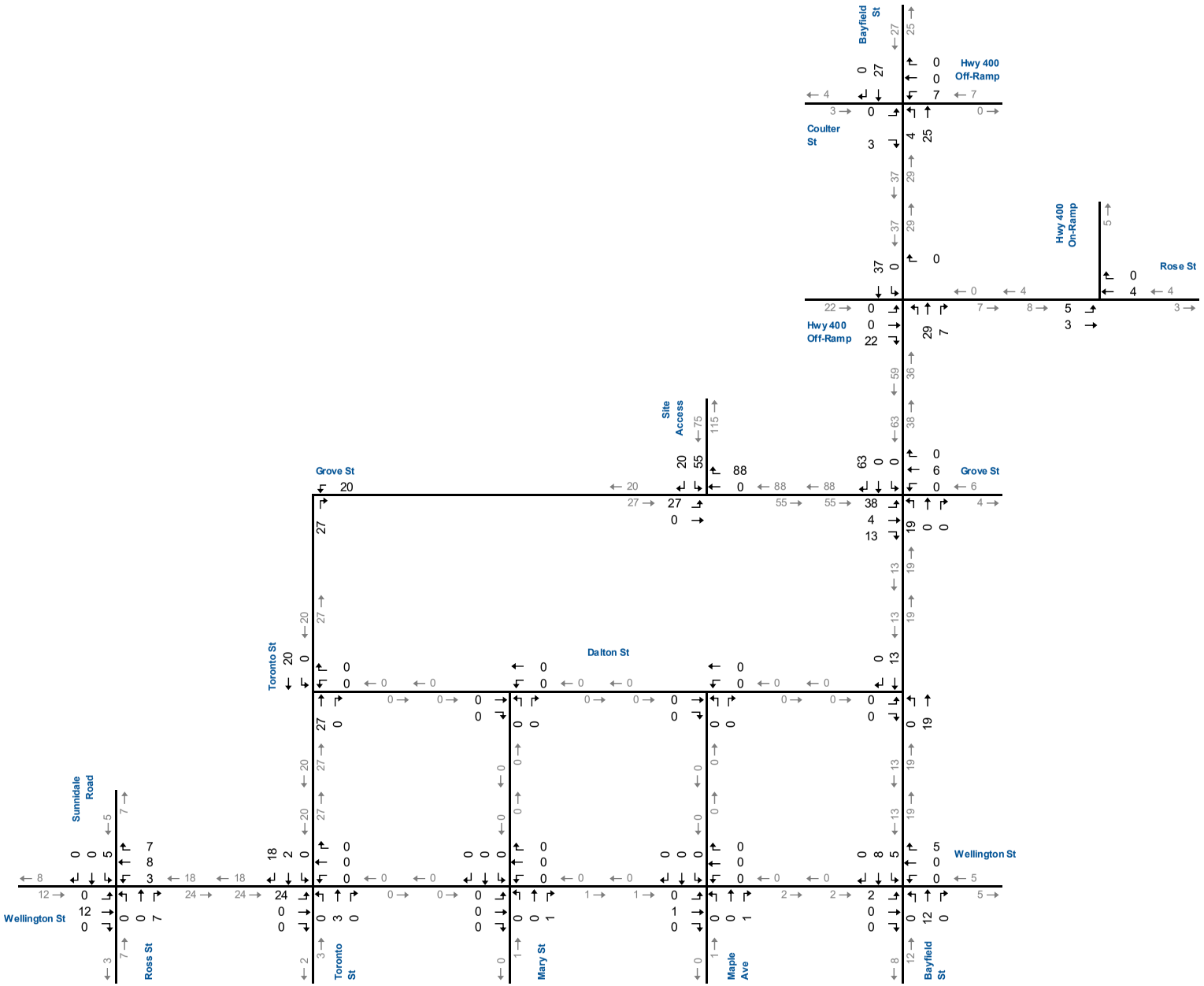
Eq[4]: Ln(T) = 0.96 Ln(X) - 0.63 (61 in/39 out)

TABLE 3.2: SITE TRIP DISTRIBUTION

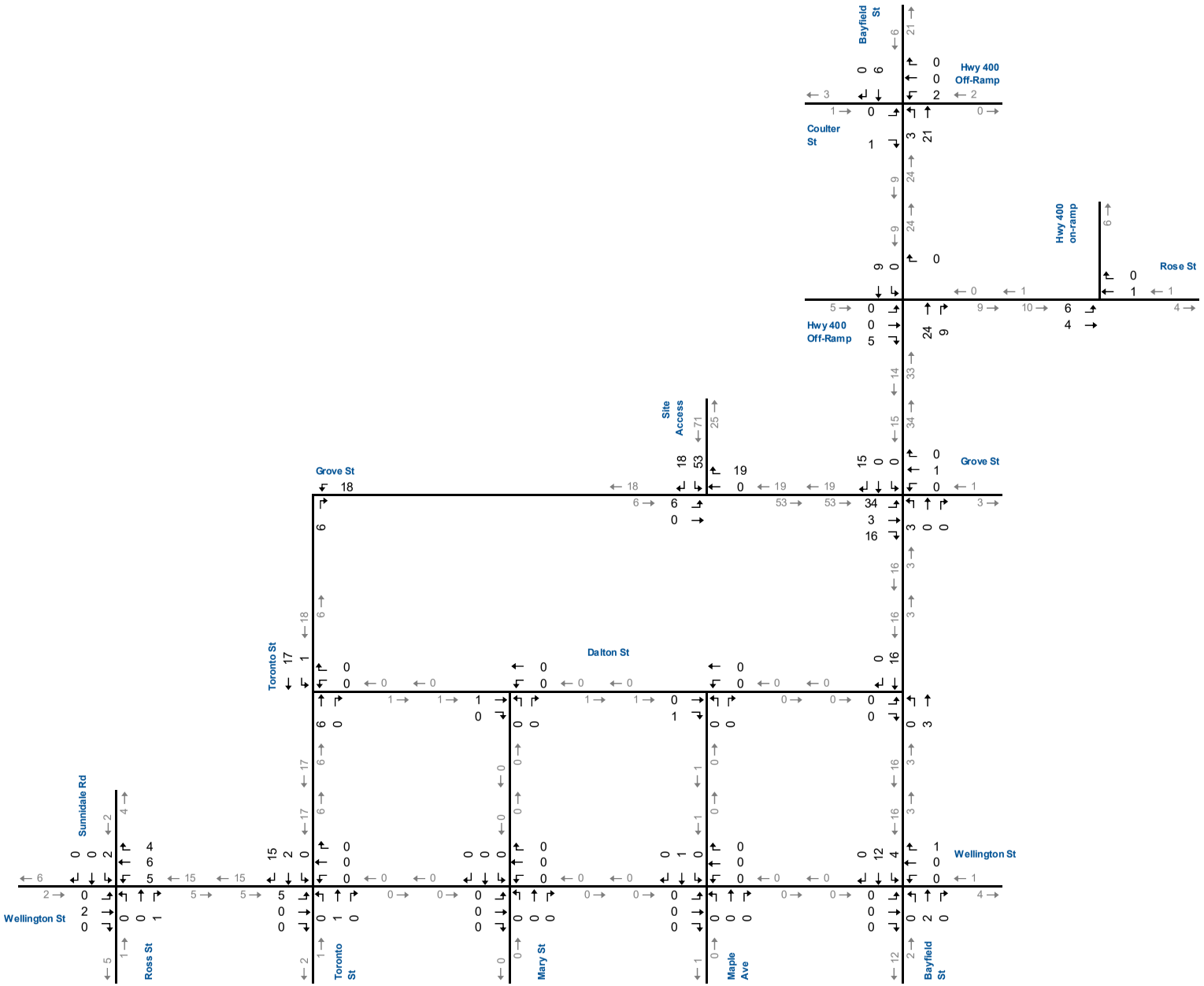
Origin / Destination	Direction	AM Peak Hour		PM Peak Hour	
		In	Out	In	Out
Bayfield Street	North	24.4%	29.4%	23.6%	31.7%
	South	6.8%	17.5%	10.4%	11.2%
Coulter Street	West	4.3%	3.6%	3.0%	4.9%
Highway 400 SB Off-Ramp	East	7.6%	0.0%	6.1%	0.0%
Rose Street	East	4.9%	6.2%	3.5%	4.3%
Highway 400 NB Off-Ramp	West	21.4%	0.0%	19.0%	0.0%
Highway 400 NB On-Ramp	North	0.0%	8.1%	0.0%	6.9%
Grove Street	East	4.5%	4.0%	4.9%	5.8%
Wellington Street	East	4.8%	5.5%	4.5%	6.8%
	West	8.6%	8.7%	10.6%	10.0%
Toronto Street	South	2.3%	2.9%	2.4%	3.3%
Mary Street	South	0.3%	0.3%	0.3%	0.1%
Maple Avenue	South	0.4%	1.7%	0.9%	0.5%
Ross Street	South	3.0%	6.7%	6.2%	4.5%
Sunnidale Road	North	6.6%	5.4%	4.6%	9.8%
Total		**100%**	**100%**	**100%**	**100%**



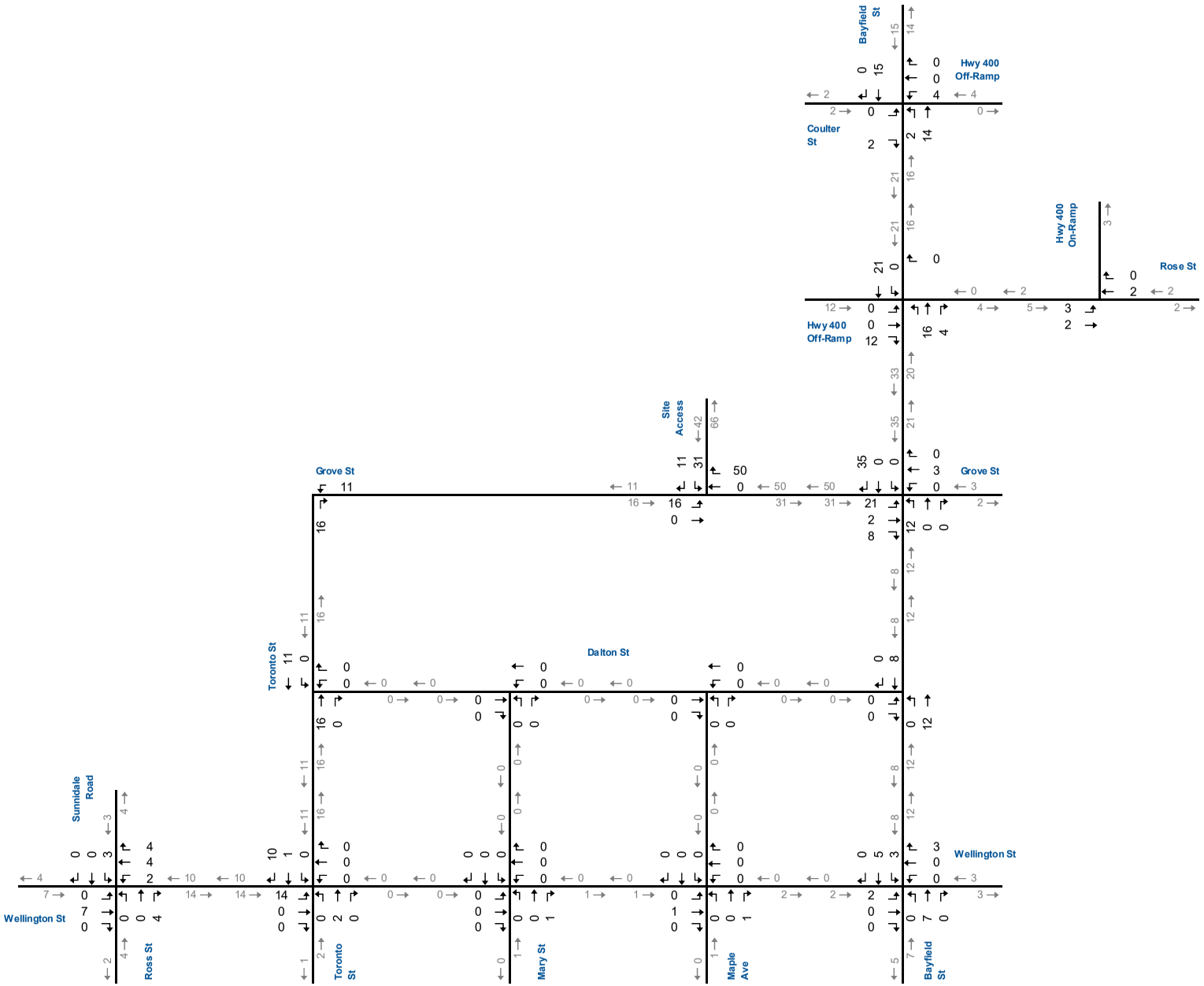
Phase 1 Site Generated AM Peak Trip Assignment



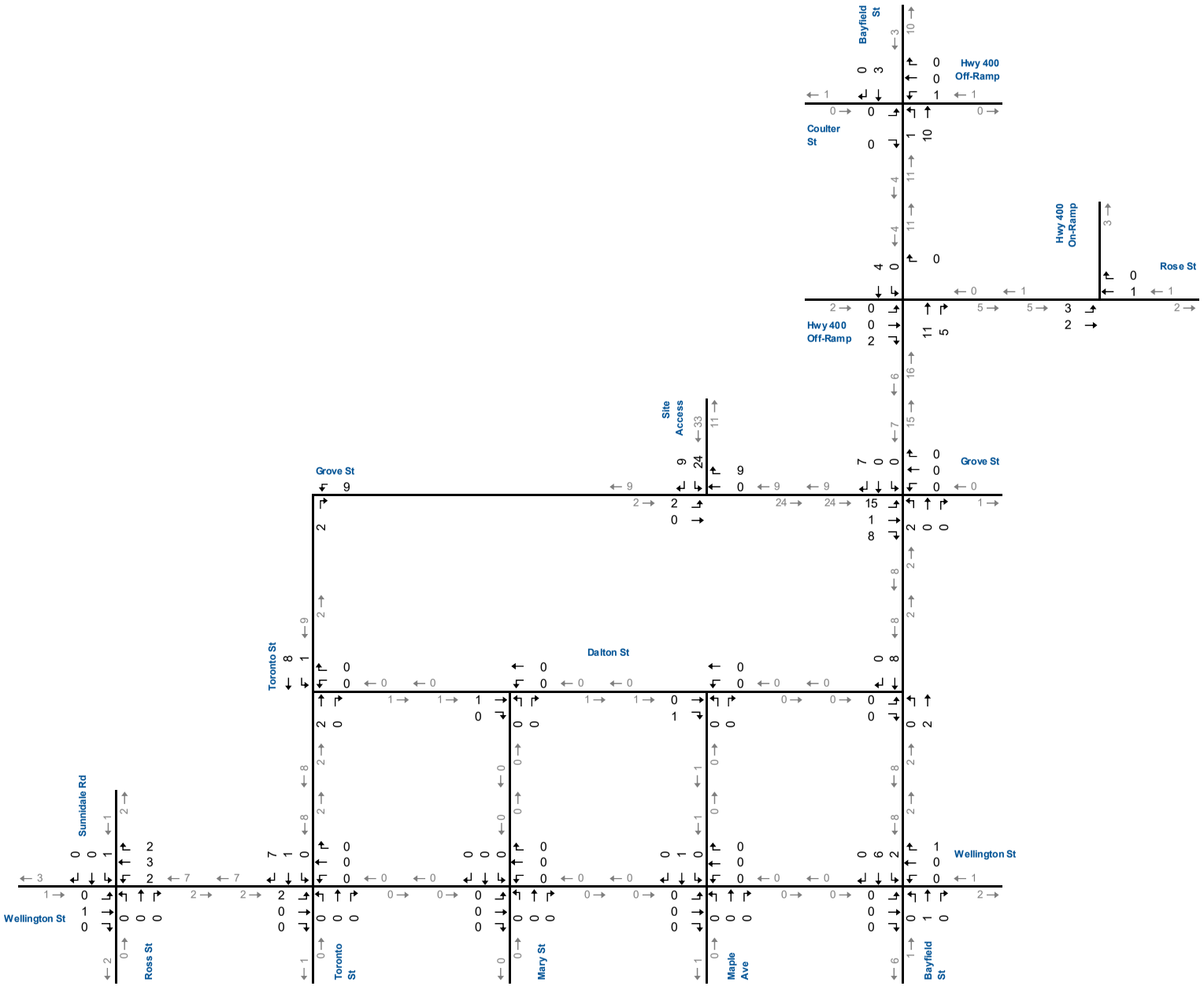
Phase 1 Site Generated PM Peak Trip Assignment



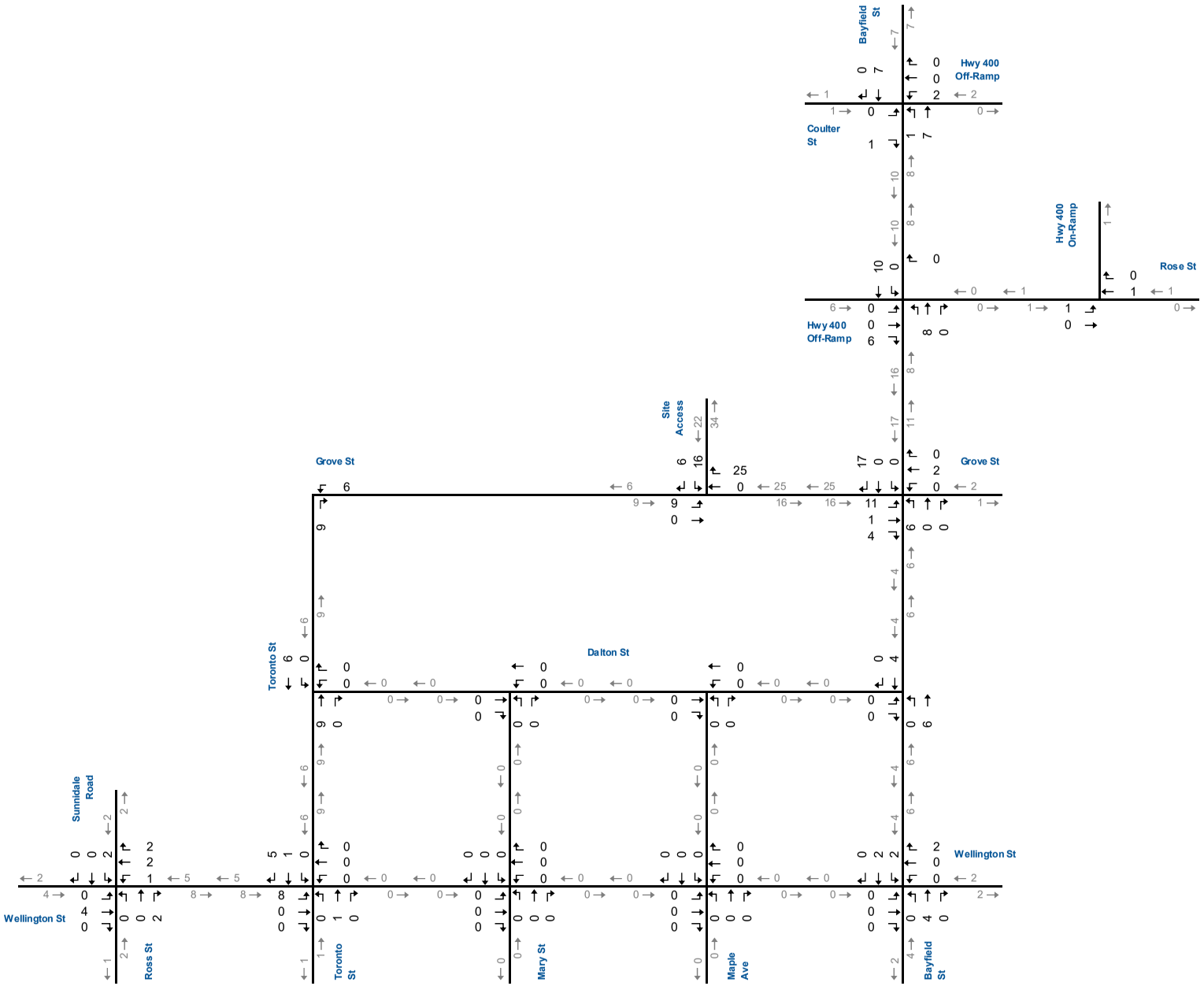
Phase 2 Site Generated AM Peak Trip Assignment



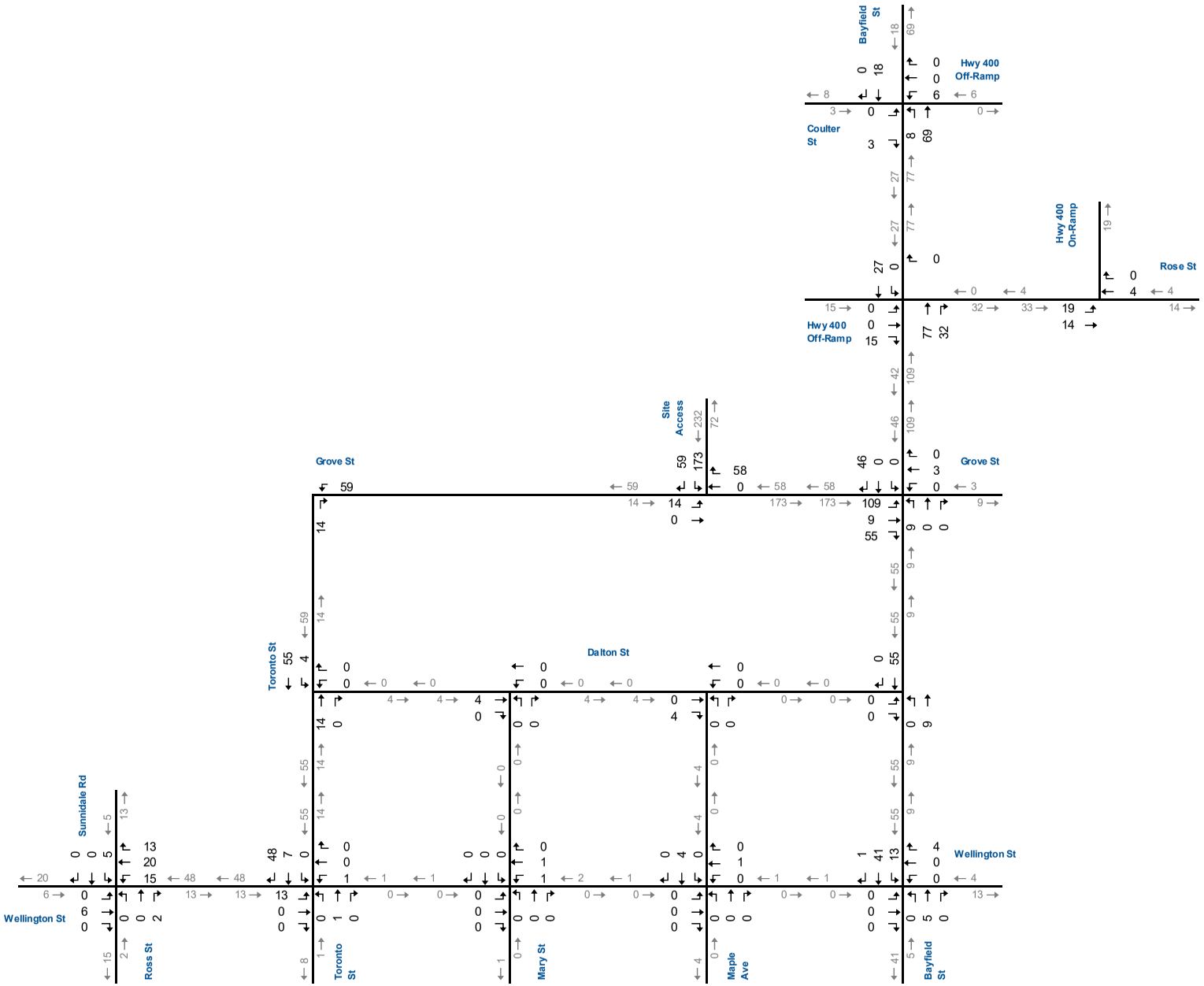
Phase 2 Site Generated PM Peak Trip Assignment



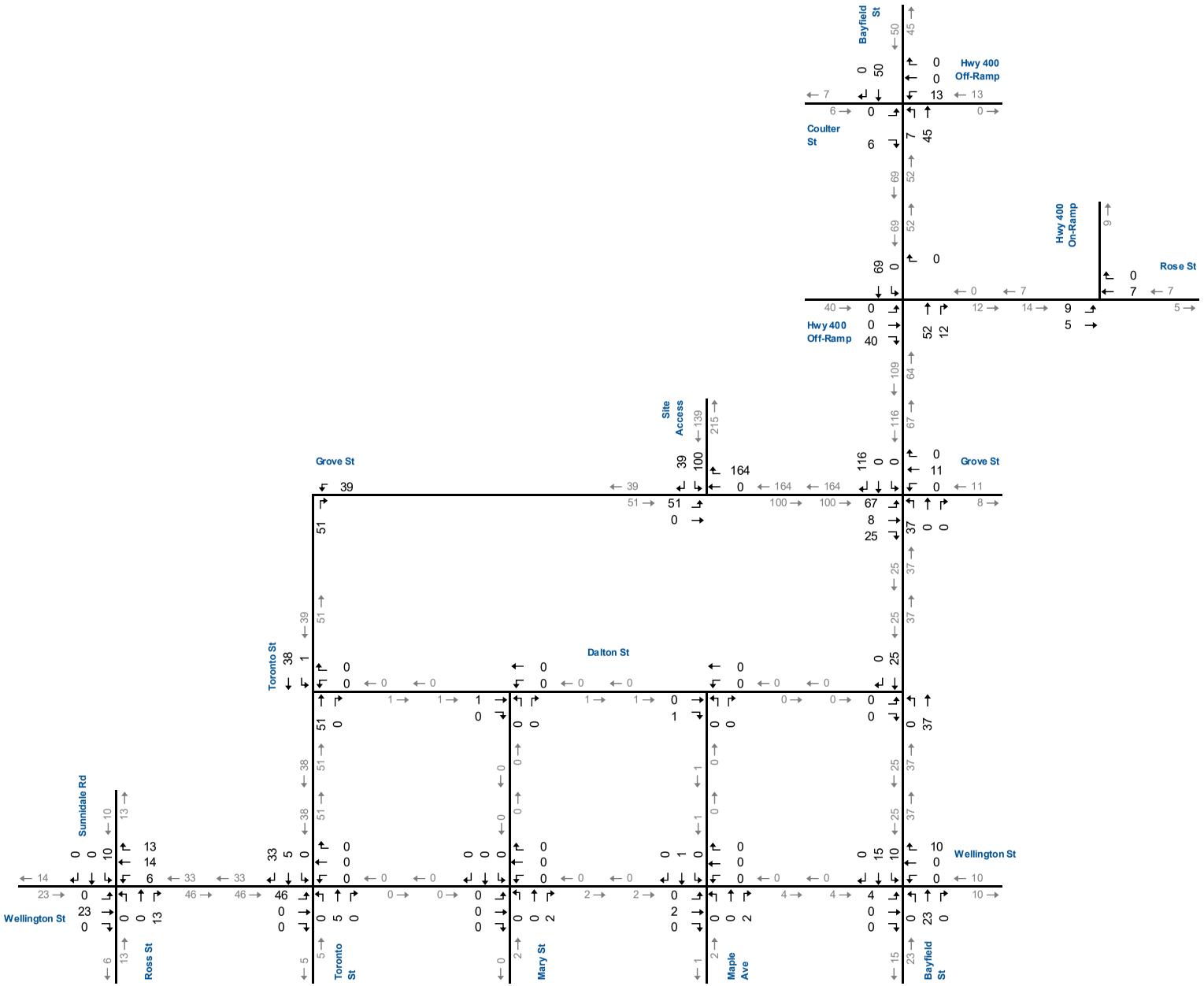
Phase 3 Site Generated AM Peak Trip Assignment



Phase 3 Site Generated PM Peak Trip Assignment



Total Site Generated AM Peak Trip Assignment



Total Site Generated PM Peak Trip Assignment

4 Evaluation of Future Traffic Conditions

The assessment of future traffic conditions contained in this section includes forecasts and analyses of future background and total traffic conditions under the 2026, 2031, and 2036 horizons.

The future traffic volumes in the vicinity of the development will consist of increased non-site traffic volumes (background traffic), traffic generated by other area developments, if any, and the site generated traffic.

4.1 2026 Background Traffic Volumes

The growth rates outlined in **Section 2.4** were compounded for an additional five years and applied to the existing traffic volumes to derive 2026 background traffic volumes. City staff confirmed there are no recently approved or in-stream developments to be included over and above the general background traffic growth.

Figure 4.1 and **Figure 4.2** illustrate the 2026 AM and PM peak hour background traffic forecasts.

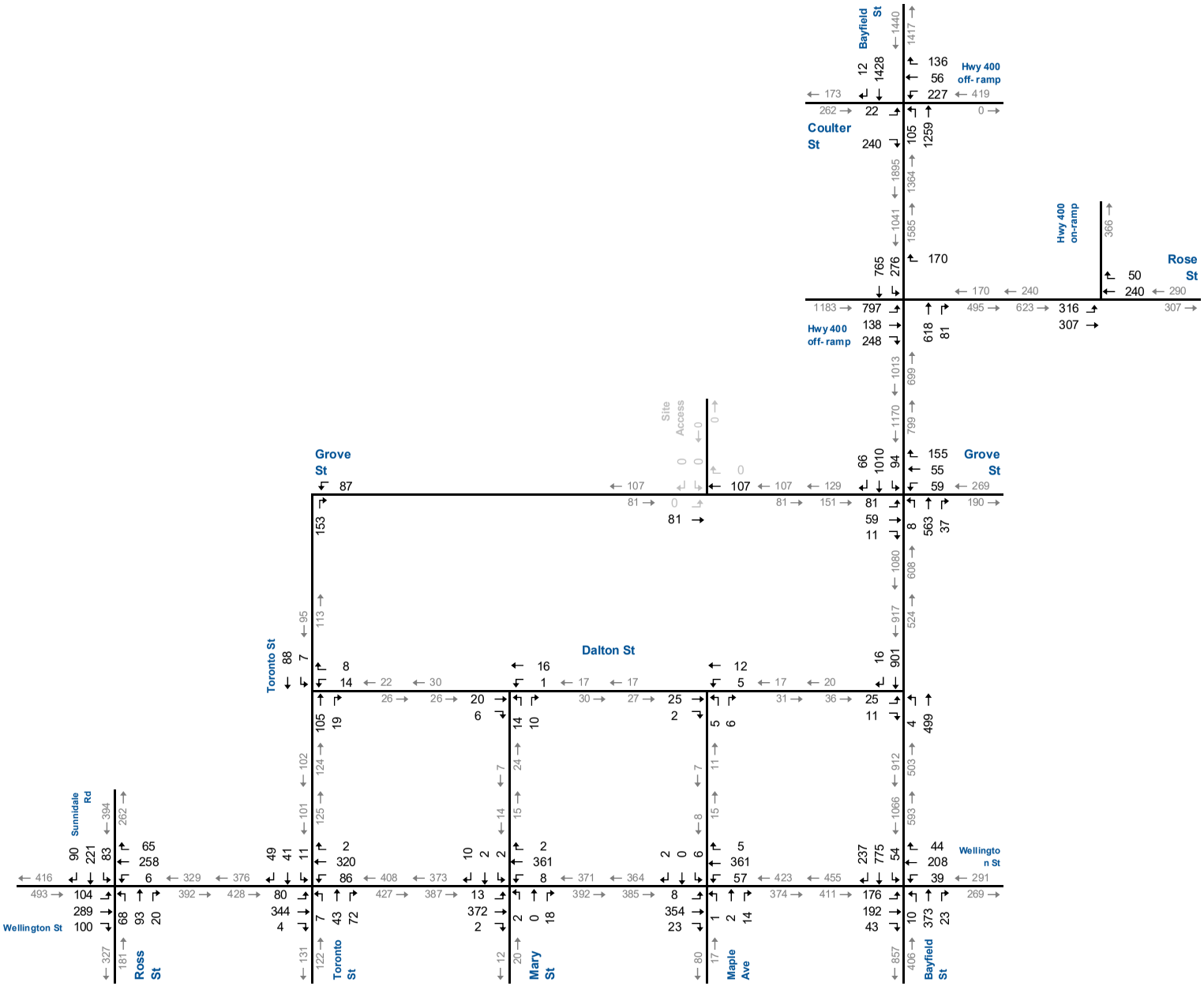
4.2 2026 Background Traffic Operations

Operations of the study area intersections under 2026 background conditions were evaluated using the same methodology, parameters, and traffic control devices as used for existing conditions, with optimized signal timing splits.

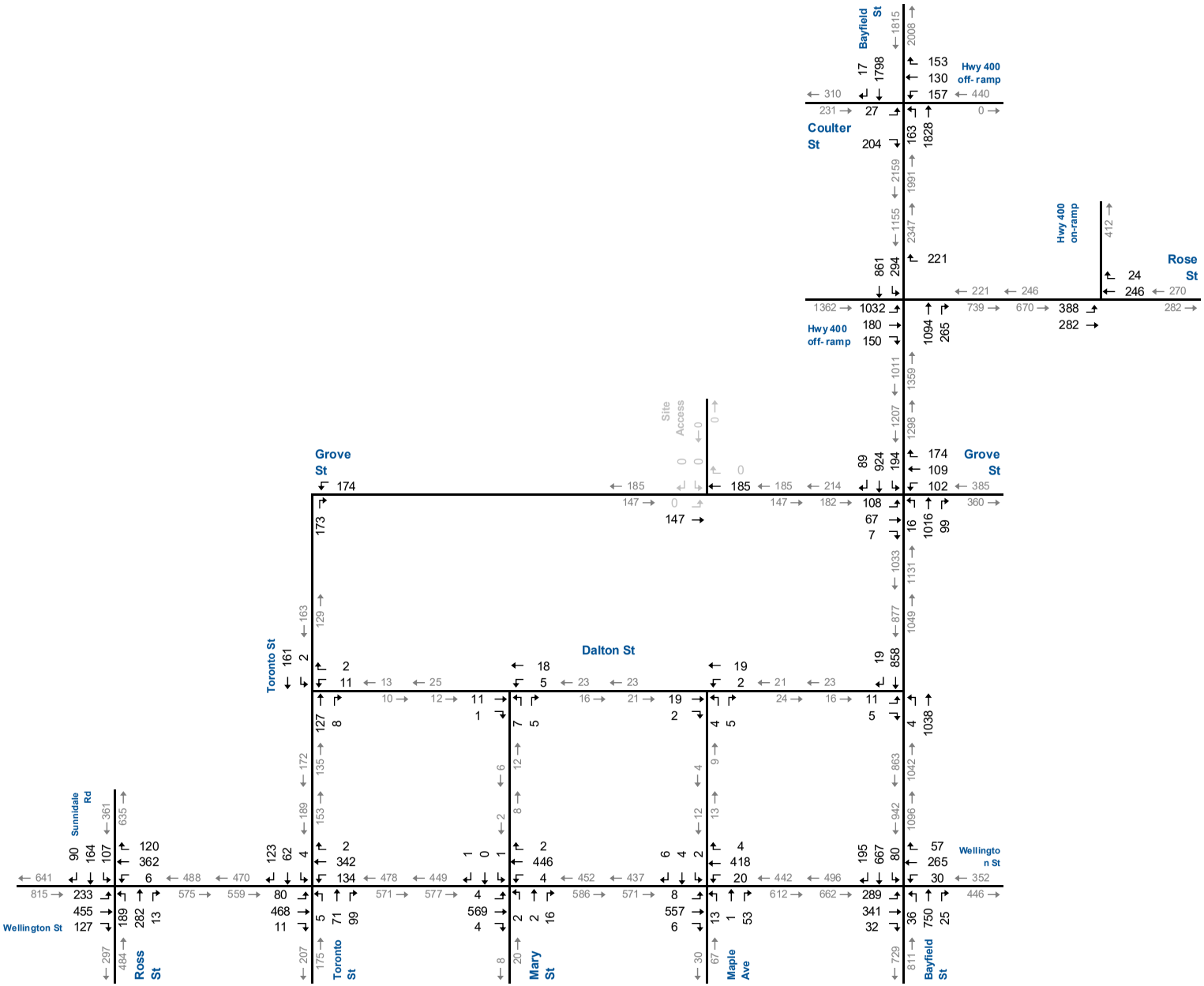
Table 4.1 and **Table 4.2** present the operational analysis results including level of service (LOS), average vehicle delay in seconds, volume to capacity (v/c) ratio, and 95th percentile queues length in metres for 2026 background traffic. Critical movements are highlighted in orange, if any.

Appendix D contains the detailed Synchro reports.

The analysis of background conditions (without the subject development) indicates that most study area intersections will continue to operate at acceptable levels of service. The exception would be the previously identified Bayfield Street and Highway 400 ramp terminal intersections. It is noted traffic operations have improved slightly due to signal timing split optimization.



2026 AM Peak Hour Background Traffic



2026 PM Peak Hour Background Traffic

TABLE 4.1: 2026 BACKGROUND TRAFFIC OPERATIONS (AM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																	
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	1 - Bayfield St & Coulter St/Hwy 400 Westbound off-ramp	TCS	LOS	<	C	>	C	E	C	>	D	E	C		C		C	>	C	C
			Delay	<	30	>	30	61	28	>	46	65	20		24		33	>	33	30
			V/C	<	0.45	>		0.87	0.37	>		0.82	0.70				0.91	>		0.89
			Q	<	57	>		94	48	>		24	108				203	>		
			Ex	<	-	>		-	-	>		50	-				-	>		
			Avail.	<	-	>		-	-	>		26	-				-	>		
	2 - Bayfield St & Rose St/Hwy 400 Eastbound off-ramp	TCS	LOS	D	D	>	D			C	C		C	>	C	C	B		B	C
			Delay	40	37	>	39			26	26		25	>	25	27	16		19	29
			V/C	0.84	0.69	>				0.14			0.60	>		0.63	0.40			0.72
			Q	110	96	>				0			55	>		45	64			
			Ex	-	-	>				-			-	>		115	-			
			Avail.	-	-	>				-			-	>		70	-			
	3 - Rose St & Hwy 400 Eastbound on-ramp	TWSC	LOS					C		>	C		A	>	A					A
			Delay					20		>	20		0	>	0					7
			V/C					0.58		>			0.40	>						
			Q					29		>			0	>						
			Ex					-		>			-	>						
			Avail.					-		>			-	>						
	4 - Bayfield St & Grove St	TCS	LOS	C	B	>	C	C	C	>	C	B	C	>	C	B	C	>	C	C
			Delay	21	20	>	21	29	30	>	29	19	21	>	21	16	22	>	21	22
			V/C	0.23	0	>		0.18	0.28	>		0.08	0.50	>		0.29	0.68	>		0.54
			Q	21	18	>		21	35	>		3	60	>		15	144	>		
			Ex	20	-	>		30	-	>		30	-	>		50	-	>		
			Avail.	-1	-	>		9	-	>		27	-	>		35	-	>		
	5 - Bayfield St & Dalton St	TWSC	LOS	B		>	B					<	A		A		A	>	A	A
			Delay	15		>	15					<	0		0		0	>	0	0
			V/C	0.10		>						<	0.21				0.38	>		
			Q	3		>						<	0				0	>		
			Ex	-		>						<	-				-	>		
			Avail.	-		>						<	-				-	>		
	6 - Bayfield St & Wellington St	TCS	LOS	C	C	>	C	C	D	>	C	C	C	>	C	B	B	>	B	C
			Delay	30	24	>	27	29	36	>	35	20	22	>	22	14	17	>	17	22
			V/C	0.57	0.37	>		0.14	0.55	>		0.07	0.32	>		0.13	0.63	>		0.66
			Q	43	56	>		16	73	>		5	44	>		8	73	>		
			Ex	-	-	>		30	-	>		20	-	>		20	-	>		
			Avail.	-	-	>		15	-	>		15	-	>		12	-	>		
	7 - Toronto St & Dalton St	TWSC	LOS					B		>	B		A	>	A	<	A		A	A
			Delay					10		>	10		0	>	0	<	1		1	1
			V/C					0.03		>			0.08	>		<	0.01			
			Q					1		>			0	>		<	0			
			Ex					-		>			-	>		<	-			
			Avail.					-		>			-	>		<	-			
	8 - Toronto St & Wellington St	TCS	LOS	B	B	>	B	B	B	>	B	<	A	>	A	<	A	>	A	B
			Delay	15	19	>	19	16	18	>	17	<	8	>	8	<	8	>	8	16
			V/C	0.36	0.68	>		0.41	0.62	>		<	0.12	>		<	0.11	>		0.34
			Q	16	55	>		18	50	>		<	13	>		<	12	>		
			Ex	25	-	>		20	-	>		<	-	>		<	-	>		
			Avail.	9	-	>		2	-	>		<	-	>		<	-	>		
	9 - Mary St & Dalton St	TWSC	LOS		A	>	A	<	A		A	<	A	>	A					A
			Delay		0	>	0	<	0		0	<	9	>	9					3
			V/C		0.02	>		<	0.00			<	0.03	>						
			Q		0	>		<	0			<	1	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						
	10 - Mary St & Wellington St	TWSC	LOS	<	A	>	A	<	A	>	A	<	B	>	B	<	B	>	B	A
			Delay	<	0	>	0	<	0	>	0	<	11	>	11	<	12	>	12	1
			V/C	<	0.01	>		<	0.01	>		<	0.03	>		<	0.03	>		
			Q	<	0	>		<	0	>		<	1	>		<	1	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	11 - Maple St & Dalton St	TWSC	LOS		A	>	A	<	A		A	<	A	>	A					A
			Delay		0	>	0	<	2		2	<	9	>	9					2
			V/C		0.02	>		<	0.00			<	0.01	>						
			Q		0	>		<	0			<	0	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						
	12 - Maple St & Wellington St	TWSC	LOS	<	A	>	A	<	A	>	A	<	B	>	B	<	C	>	C	A
			Delay	<	0	>	0	<	2	>	1	<	11	>	11	<	17	>	17	1
			V/C	<	0.13	>		<	0.12	>		<	0.03	>		<	0.03	>		
			Q	<	0	>		<	1	>		<	1	>		<	1	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	13 - Wellington St & Ross St/Sunnidale Rd	TCS	LOS	C	C	>	C	C	C	>	C	B	B	>	B	B	B	>	B	C
			Delay	20	25	>	24	24	28	>	28	11	15	>	14	11	19	>	17	22
			V/C	0.38	0.47	>		0.04	0.49	>		0.16	0.16	>		0.14	0.45	>		0.44
			Q	24	44	>		3	38	>		12	25	>		14	67	>		
			Ex	20	-	>		30	-	>		15	-	>		25	-	>		
			Avail.	-4	-	>		27	-	>		3	-	>		11	-	>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds

Q - 95th Percentile Queue Length
Ex. - Existing Available Storage
Avail. - Available Storage

TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control

RBT - Roundabout

TABLE 4.2: 2026 BACKGROUND TRAFFIC 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	
AM Peak Hour	1 - Bayfield St & Coulter St/Hwy 400 Westbound off-ramp	TCS	LOS	<	D	>	D	F	E	>	E	F	C		C		E	>	E	D
			Delay	<	53	>	53	86	59	>	69	88	23		28		55	>	55	44
			V/C	<	0.46	>		0.84	0.69	>		0.87	0.84				1.01	>		0.95
			Q	<	60	>		95	120	>		83	269				382	>		
			Ex	<	-	>		-	-	>		50	-				-	>		
			Avail.	<	-	>		-	-	>		-33	-				-	>		
	2 - Bayfield St & Rose St/Hwy 400 Eastbound off-ramp	TCS	LOS	E	D	>	E			F	F		E	>	E	F	B		D	E
			Delay	65	41	>	59			103	103		72	>	72	150	19		52	64
			V/C	0.96	0.57	>				0.91			1.02	>		1.14	0.45			1.09
			Q	222	119	>				111			301	>		163	102			
			Ex	-	-	>				-			-	>		115	-			
			Avail.	-	-	>				-			-	>		-48	-			
	3 - Rose St & Hwy 400 Eastbound on-ramp	TWSC	LOS					C		>	C		A	>	A					A
			Delay					22		>	22		0	>	0					6
			V/C					0.59		>			0.43	>						
			Q					30		>			0	>						
			Ex					-		>			-	>						
			Avail.					-		>			-	>						
	4 - Bayfield St & Grove St	TCS	LOS	C	C	>	C	D	D	>	D	C	C	>	C	D	B	>	C	C
			Delay	33	25	>	30	37	46	>	44	23	29	>	29	50	15	>	21	28
			V/C	0.49	0.13	>		0.40	0.69	>		0.09	0.82	>		0.83	0.56	>		0.80
			Q	30	22	>		37	82	>		3	112	>		64	89	>		
			Ex	20	-	>		30	-	>		30	-	>		50	-	>		
			Avail.	-10	-	>		-7	-	>		27	-	>		-14	-	>		
	5 - Bayfield St & Dalton St	TWSC	LOS	B		>	B					<	A		A		A	>	A	A
			Delay	12		>	12					<	0		0		0	>	0	0
			V/C	0.03		>						<	0.44				0.37	>		
			Q	1		>						<	0				0	>		
			Ex	-		>						<	-				-	>		
			Avail.	-		>						<	-				-	>		
	6 - Bayfield St & Wellington St	TCS	LOS	D	C	>	C	C	D	>	D	C	C	>	C	C	B	>	B	C
			Delay	39	23	>	30	30	46	>	44	27	32	>	32	21	18	>	19	29
			V/C	0.82	0.51	>		0.13	0.75	>		0.23	0.70	>		0.36	0.60	>		0.79
			Q	73	87	>		14	106	>		15	100	>		16	67	>		
			Ex	-	-	>		30	-	>		20	-	>		20	-	>		
			Avail.	-	-	>		17	-	>		5	-	>		5	-	>		
	7 - Toronto St & Dalton St	TWSC	LOS					B		>	B		A	>	A	<	A		A	A
			Delay					10		>	10		0	>	0	<	0		0	1
			V/C					0.02		>			0.09	>		<	0			
			Q					1		>			0	>		<	0			
			Ex					-		>			-	>		<	-			
			Avail.					-		>			-	>		<	-			
	8 - Toronto St & Wellington St	TCS	LOS	B	C	>	B	D	B	>	C	<	B	>	B	<	B	>	B	B
			Delay	13	21	>	20	35	15	>	21	<	11	>	11	<	11	>	11	18
			V/C	0.28	0.76	>		0.78	0.55	>		<	0.19	>		<	0.19	>		0.46
			Q	15	77	>		41	52	>		<	22	>		<	20	>		
			Ex	25	-	>		20	-	>		<	-	>		<	-	>		
			Avail.	10	-	>		-21	-	>		<	-	>		<	-	>		
	9 - Mary St & Dalton St	TWSC	LOS		A	>	A	<	A		A	<	A	>	A					A
			Delay		0	>	0	<	2		2	<	9	>	9					3
			V/C		0.01	>		<	0.00			<	0.01	>						
			Q		0	>		<	0			<	0	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						
	10 - Mary St & Wellington St	TWSC	LOS	<	A	>	A	<	A	>	A	<	B	>	B	<	B	>	B	A
			Delay	<	0	>	0	<	0	>	0	<	13	>	13	<	15	>	15	0
			V/C	<	0.00	>		<	0.00	>		<	0.05	>		<	0.01	>		
			Q	<	0	>		<	0	>		<	1	>		<	0	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	11 - Maple St & Dalton St	TWSC	LOS		A	>	A	<	A		A	<	A	>	A					A
			Delay		0	>	0	<	1		1	<	9	>	9					2
			V/C		0.01	>		<	0.00			<	0.01	>						
			Q		0	>		<	0			<	0	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						
	12 - Maple St & Wellington St	TWSC	LOS	<	A	>	A	<	A	>	A	<	B	>	B	<	C	>	C	A
			Delay	<	0	>	0	<	1	>	1	<	14	>	14	<	16	>	16	1
			V/C	<	0.18	>		<	0.14	>		<	0.15	>		<	0.04	>		
			Q	<	0	>		<	1	>		<	4	>		<	1	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	13 - Wellington St & Ross St/Sunnidale Rd	TCS	LOS	C	C	>	C	C	C	>	C	B	C	>	C	B	C	>	C	C
			Delay	27	24	>	25	25	31	>	31	16	25	>	22	18	27	>	24	25
			V/C	0.73	0.53	>		0.03	0.61	>		0.43	0.50	>		0.27	0.47	>		0.64
			Q	50	66	>		3	56	>		36	76	>		21	62	>		
			Ex	20	-	>		30	-	>		15	-	>		25	-	>		
			Avail.	-30	-	>		27	-	>		-21	-	>		4	-	>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds

Q - 95th Percentile Queue Length
Ex. - Existing Available Storage
Avail. - Available Storage

TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control

RBT - Roundabout

4.3 2026 Future Total Traffic Operations

The 2026 background traffic forecasts were combined with the Phase 1 and Phase 2 site traffic assignments to derive the 2026 future total traffic forecasts.

Figure 4.3 and **Figure 4.4** illustrate the future 2026 total traffic forecasts for the AM and PM peak hours, respectively.

Operations of the study area intersections under 2026 total conditions were evaluated using the same methodology, parameters, and traffic control devices as background conditions.

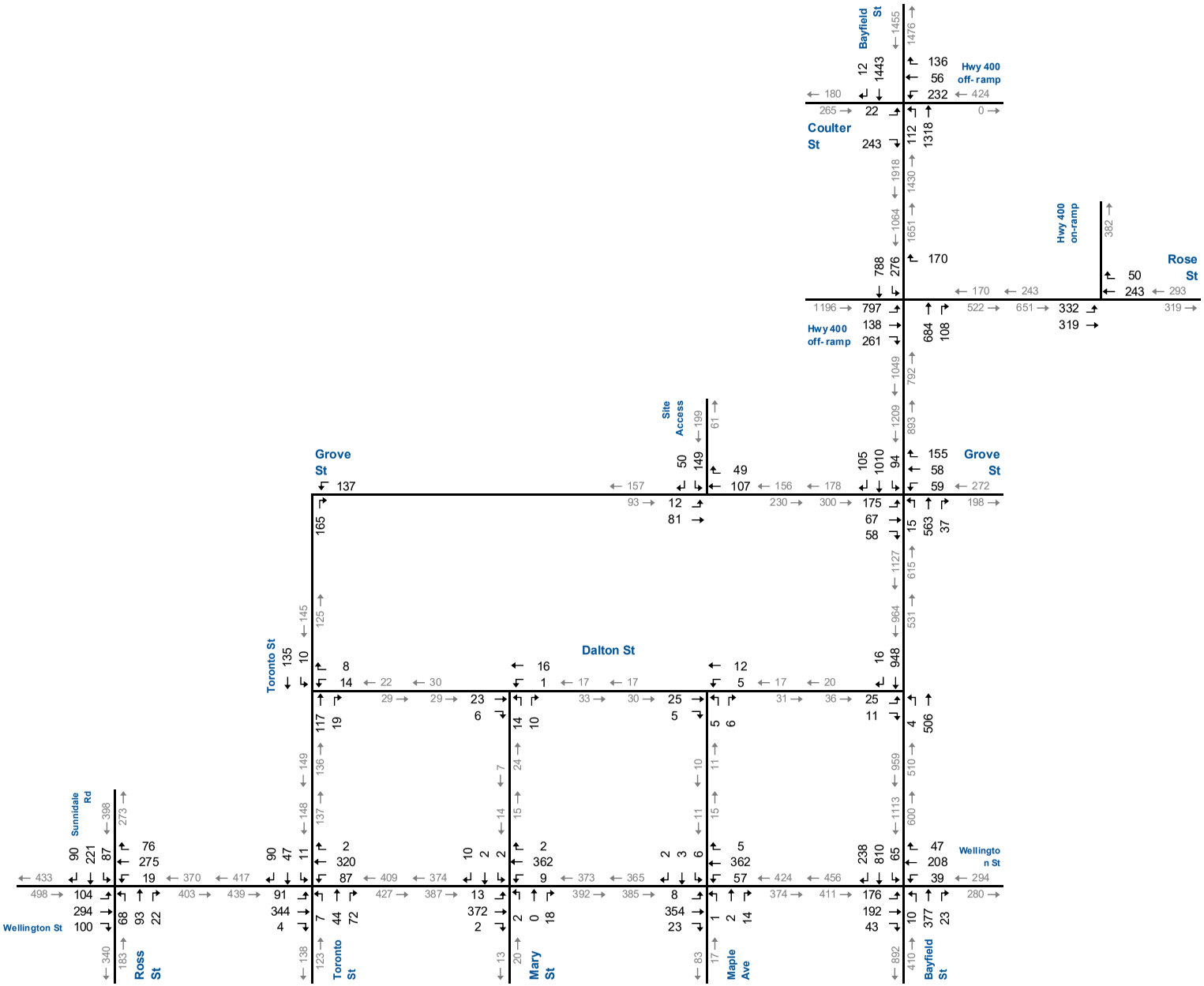
Table 4.3 and **Table 4.4** present the operational analysis results including level of service (LOS), average vehicle delay in seconds, volume to capacity (v/c) ratio, and 95th percentile queues length in metres for the 2026 horizon year. Critical movements are highlighted in orange, if any.

Appendix E contains the detailed Synchro reports.

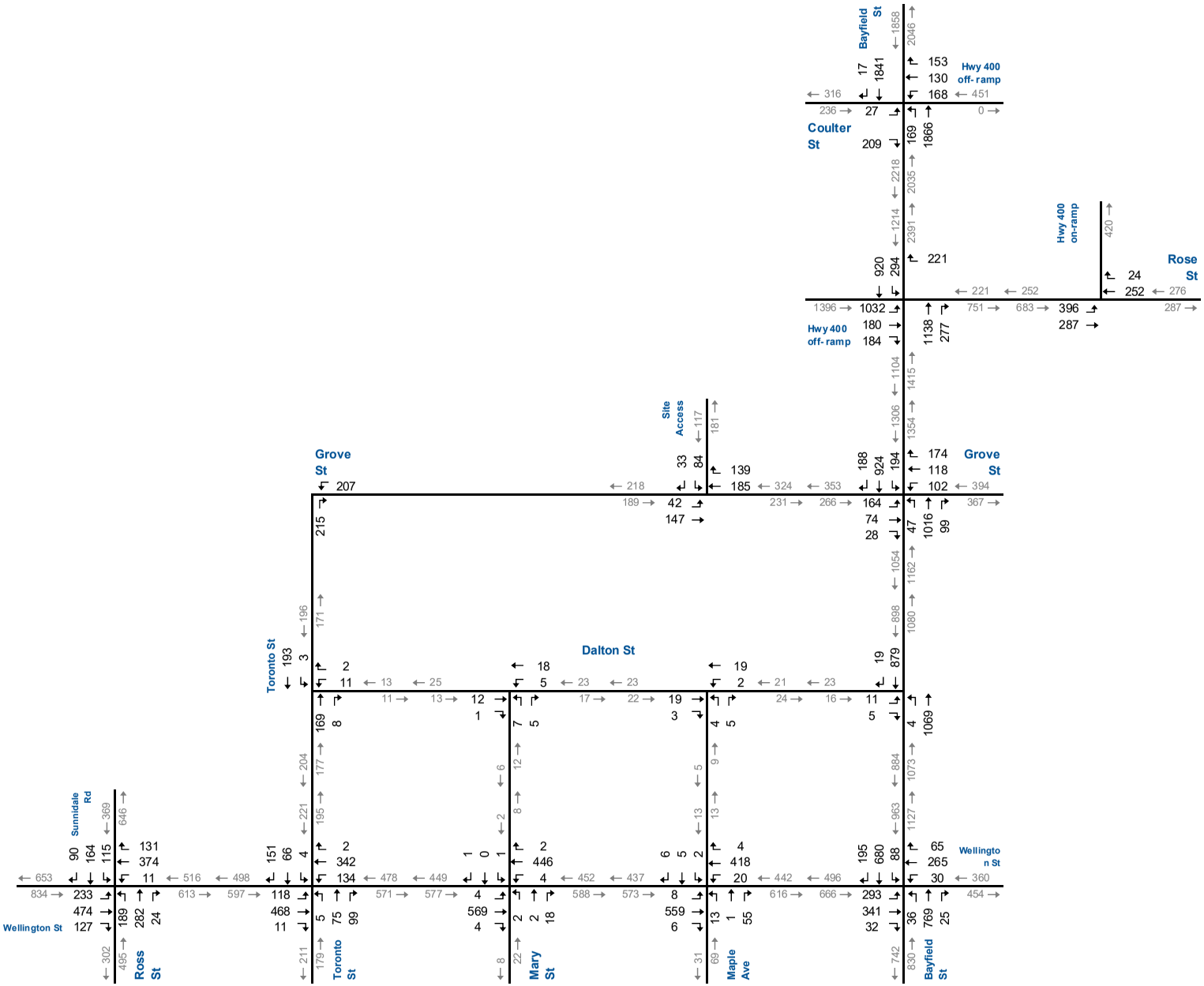
The analysis of 2026 total conditions (with Phase 1 and Phase 2 of development) indicate most study area intersections will continue to operate at acceptable levels of service, albeit slightly exacerbated with the inclusion of the site-generated traffic. The site access intersection with Grove Street is reported to operate at acceptable levels of service and well within capacity.

In addition to the previously identified Bayfield Street and Highway 400 ramp terminal intersections, the Bayfield Street and Grove Street intersection is forecast to have several critical movements during the PM peak hour. It is noted these movements are at, or slightly above, the City's critical movement threshold criteria (v/c = 0.85) but operating within acceptable levels of service and with capacity.

It is anticipated the planned improvements for Bayfield Street and the Highway 400 ramp terminals will improve operations for the identified critical movements.



2026 AM Peak Hour Future Total Traffic



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2026 PM Peak Hour Future Total Traffic

TABLE 4.3: 2026 TOTAL TRAFFIC OPERATIONS (AM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Overall
AM Peak Hour	1 - Bayfield St & Coulter St/Hwy 400 Westbound off-ramp	TCS	LOS	<	C	>	C	E	C	>	D	E	B		C		C	>	C	C
			Delay	<	30	>	30	65	29	>	49	75	20		24		34	>	34	31
			V/C	<	0.45	>		0.89	0.38	>		0.87	0.73				0.92	>		0.91
			Q	<	58	>		97	49	>		24	107				207	>		
			Ex	<	-	>		-	-	>		50	-				-	>		
			Avail.	<	-	>		-	-	>		26	-				-	>		
	2 - Bayfield St & Rose St/Hwy 400 Eastbound off-ramp	TCS	LOS	D	D	>	D			C	C		C	>	C	C	B		C	C
			Delay	40	38	>	40			26	26		27	>	27	30	17		20	29
			V/C	0.84	0.71	>				0.14			0.68	>		0.68	0.42			0.76
			Q	110	100	>				0			67	>		50	65			
			Ex	-	-	>				-			-	>		115	-			
			Avail.	-	-	>				-			-	>		65	-			
	3 - Rose St & Hwy 400 Eastbound on-ramp	TWSC	LOS					C		>	C		A	>	A					A
			Delay					22		>	22		0	>	0					7
			V/C					0.61		>			0.42	>						
			Q					32		>			0	>						
			Ex					-		>			-	>						
			Avail.					-		>			-	>						
	4 - Bayfield St & Grove St	TCS	LOS	C	C	>	C	C	C	>	C	C	C	>	C	B	C	>	C	C
			Delay	26	20	>	24	29	30	>	30	21	21	>	21	16	22	>	22	23
			V/C	0.50	0.16	>		0.19	0.29	>		0.15	0.50	>		0.29	0.71	>		0.67
			Q	42	24	>		21	37	>		6	60	>		15	150	>		
			Ex	20	-	>		30	-	>		30	-	>		50	-	>		
			Avail.	-22	-	>		9	-	>		24	-	>		35	-	>		
	5 - Bayfield St & Dalton St	TWSC	LOS	C		>	C					<	A		A		A	>	A	A
			Delay	16		>	16					<	0		0		0	>	0	0
			V/C	0.10		>						<	0.22				0.40	>		
			Q	3		>						<	0				0	>		
			Ex	-		>						<	-				-	>		
			Avail.	-		>						<	-				-	>		
	6 - Bayfield St & Wellington St	TCS	LOS	C	C	>	C	C	D	>	D	C	C	>	C	B	B	>	B	C
			Delay	30	24	>	27	29	36	>	35	20	22	>	22	15	18	>	18	23
			V/C	0.58	0.37	>		0.14	0.56	>		0.08	0.33	>		0.16	0.66	>		0.68
			Q	43	56	>		16	74	>		6	44	>		11	80	>		
			Ex	-	-	>		30	-	>		20	-	>		20	-	>		
			Avail.	-	-	>		15	-	>		15	-	>		9	-	>		
	7 - Toronto St & Dalton St	TWSC	LOS					B		>	B		A	>	A	<	A		A	A
			Delay					11		>	11		0	>	0	<	1		1	1
			V/C					0.04		>			0.09	>		<	0			
			Q					1		>			0	>		<	0			
			Ex					-		>			-	>		<	-			
			Avail.					-		>			-	>		<	-			
	8 - Toronto St & Wellington St	TCS	LOS	B	B	>	B	B	B	>	B	<	A	>	A	<	A	>	A	B
			Delay	16	19	>	19	16	18	>	17	<	8	>	8	<	8	>	8	16
			V/C	0.41	0.68	>		0.42	0.63	>		<	0.12	>		<	0.15	>		0.36
			Q	18	55	>		18	50	>		<	13	>		<	14	>		
			Ex	25	-	>		20	-	>		<	-	>		<	-	>		
			Avail.	7	-	>		2	-	>		<	-	>		<	-	>		
	9 - Mary St & Dalton St	TWSC	LOS		A	>	A	<	A		A	<	A	>	A					A
			Delay		0	>	0	<	0		0	<	9	>	9					3
			V/C		0.02	>		<	0.00			<	0.03	>						
			Q		0	>		<	0			<	1	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						
	10 - Mary St & Wellington St	TWSC	LOS	<	A	>	A	<	A	>	A	<	B	>	B	<	B	>	B	A
			Delay	<	0	>	0	<	0	>	0	<	11	>	11	<	13	>	13	1
			V/C	<	0.01	>		<	0.01	>		<	0.04	>		<	0.03	>		
			Q	<	0	>		<	0	>		<	1	>		<	1	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	11 - Maple St & Dalton St	TWSC	LOS		A	>	A	<	A		A	<	A	>	A					A
			Delay		0	>	0	<	2		2	<	9	>	9					2
			V/C		0.02	>		<	0.00			<	0.01	>						
			Q		0	>		<	0			<	0	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						
	12 - Maple St & Wellington St	TWSC	LOS	<	A	>	A	<	A	>	A	<	B	>	B	<	C	>	C	A
			Delay	<	0	>	0	<	3	>	3	<	11	>	11	<	16	>	16	1
			V/C	<	0.13	>		<	0.09	>		<	0.03	>		<	0.03	>		
			Q	<	0	>		<	1	>		<	1	>		<	1	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	13 - Wellington St & Ross St/Sunnidale Rd	TCS	LOS	B	C	>	C	C	C	>	C	B	B	>	B	B	C	>	B	C
			Delay	18	24	>	23	23	28	>	28	13	17	>	15	12	21	>	19	22
			V/C	0.34	0.46	>		0.10	0.54	>		0.18	0.18	>		0.16	0.50	>		0.46
			Q	23	43	>		7	41	>		13	27	>		16	71	>		
			Ex	20	-	>		30	-	>		15	-	>		25	-	>		
			Avail.	-3	-	>		23	-	>		2	-	>		10	-	>		
	14 - Grove St & Site Access	TWSC	LOS	<	A		A		A	>	A					B		>	B	A
			Delay	<	1		1		0	>	0					12		>	12	5
			V/C	<	0.01				0.10	>						0.29		>		
			Q	<	0				0	>						10		>		
			Ex	<	-				-	>						-		>		
			Avail.	<	-				-	>						-		>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds

Q - 95th Percentile Queue Length
Ex. - Existing Available Storage
Avail. - Available Storage

TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control

RBT - Roundabout

TABLE 4.4: 2026 TOTAL TRAFFIC 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	
AM Peak Hour	1 - Bayfield St & Coulter St/Hwy 400 Westbound off-ramp	TCS	LOS	<	D	>	D	F	E	>	E	F	C		C		E	>	E	D
			Delay	<	52	>	52	99	60	>	74	84	24		29		66	>	66	50
			V/C	<	0.45	>		0.92	0.69	>		0.86	0.86				1.04	>		0.99
			Q	<	59	>		106	120	>		84	283				402	>		
			Ex	<	-	>		-	-	>		50	-				-	>		
			Avail.	<	-	>		-	-	>		-34	-				-	>		
	2 - Bayfield St & Rose St/Hwy 400 Eastbound off-ramp	TCS	LOS	E	D	>	E			F	F		F	>	F	F	B		D	E
			Delay	65	43	>	60			103	103		86	>	86	150	19		51	68
			V/C	0.96	0.63	>				0.91			1.06	>		1.14	0.48			1.09
			Q	222	133	>				111			323	>		163	112			
			Ex	-	-	>				-			-	>		115	-			
			Avail.	-	-	>				-			-	>		-48	-			
	3 - Rose St & Hwy 400 Eastbound on-ramp	TWSC	LOS					C		>	C		A	>	A					A
			Delay					24		>	24		0	>	0					7
			V/C					0.62		>			0.44	>						
			Q					33		>			0	>						
			Ex					-		>			-	>						
			Avail.					-		>			-	>						
	4 - Bayfield St & Grove St	TCS	LOS	D	C	>	C	D	D	>	D	C	D	>	D	D	B	>	C	C
			Delay	38	24	>	33	38	48	>	45	31	35	>	35	50	18	>	23	31
			V/C	0.67	0.16	>		0.41	0.73	>		0.34	0.86	>		0.83	0.65	>		0.82
			Q	44	26	>		37	89	>		11	120	>		64	107	>		
			Ex	20	-	>		30	-	>		30	-	>		50	-	>		
			Avail.	-24	-	>		-7	-	>		19	-	>		-14	-	>		
	5 - Bayfield St & Dalton St	TWSC	LOS	B		>	B					<	A		A		A	>	A	A
			Delay	11		>	11					<	0		0		0	>	0	0
			V/C	0.03		>						<	0.46				0.37	>		
			Q	1		>						<	0				0	>		
			Ex	-		>						<	-				-	>		
			Avail.	-		>						<	-				-	>		
	6 - Bayfield St & Wellington St	TCS	LOS	D	C	>	C	C	D	>	D	C	C	>	C	C	C	>	C	C
			Delay	42	23	>	32	30	47	>	46	27	33	>	32	24	21	>	21	30
			V/C	0.85	0.51	>		0.13	0.77	>		0.24	0.72	>		0.41	0.61	>		0.81
			Q	79	87	>		14	110	>		15	103	>		15	75	>		
			Ex	-	-	>		30	-	>		20	-	>		20	-	>		
			Avail.	-	-	>		17	-	>		5	-	>		5	-	>		
	7 - Toronto St & Dalton St	TWSC	LOS					B		>	B		A	>	A	<	A		A	A
			Delay					11		>	11		0	>	0	<	0		0	0
			V/C					0.02		>			0.11	>		<	0			
			Q					1		>			0	>		<	0			
			Ex					-		>			-	>		<	-			
			Avail.					-		>			-	>		<	-			
	8 - Toronto St & Wellington St	TCS	LOS	B	C	>	B	D	B	>	C	<	B	>	B	<	B	>	B	B
			Delay	15	21	>	20	35	15	>	21	<	11	>	11	<	11	>	11	18
			V/C	0.42	0.76	>		0.78	0.55	>		<	0.20	>		<	0.23	>		0.48
			Q	22	77	>		40	51	>		<	24	>		<	24	>		
			Ex	25	-	>		20	-	>		<	-	>		<	-	>		
			Avail.	3	-	>		-20	-	>		<	-	>		<	-	>		
	9 - Mary St & Dalton St	TWSC	LOS		A	>	A	<	A		A	<	A	>	A					A
			Delay		0	>	0	<	2		2	<	9	>	9					3
			V/C		0.01	>		<	0.00			<	0.01	>						
			Q		0	>		<	0			<	0	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						
	10 - Mary St & Wellington St	TWSC	LOS	<	A	>	A	<	A	>	A	<	B	>	B	<	B	>	B	A
			Delay	<	0	>	0	<	0	>	0	<	13	>	13	<	15	>	15	0
			V/C	<	0.00	>		<	0.00	>		<	0.05	>		<	0.01	>		
			Q	<	0	>		<	0	>		<	1	>		<	0	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	11 - Maple St & Dalton St	TWSC	LOS		A	>	A	<	A		A	<	A	>	A					A
			Delay		0	>	0	<	1		1	<	9	>	9					2
			V/C		0.01	>		<	0.00			<	0.01	>						
			Q		0	>		<	0			<	0	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						
	12 - Maple St & Wellington St	TWSC	LOS	<	A	>	A	<	A	>	A	<	B	>	B	<	C	>	C	A
			Delay	<	0	>	0	<	1	>	1	<	14	>	14	<	17	>	17	1
			V/C	<	0.18	>		<	0.14	>		<	0.16	>		<	0.04	>		
			Q	<	0	>		<	1	>		<	4	>		<	1	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	13 - Wellington St & Ross St/Sunnidale Rd	TCS	LOS	C	C	>	C	C	C	>	C	B	C	>	C	B	C	>	C	C
			Delay	27	23	>	24	24	31	>	31	17	29	>	24	17	28	>	25	26
			V/C	0.73	0.53	>		0.06	0.62	>		0.45	0.56	>		0.30	0.48	>		0.66
			Q	52	69	>		4	58	>		36	80	>		23	62	>		
			Ex	20	-	>		30	-	>		15	-	>		25	-	>		
			Avail.	-32	-	>		26	-	>		-21	-	>		2	-	>		
	14 - Grove St & Site Access	TWSC	LOS	<	A		A		A	>	A					B		>	B	A
			Delay	<	2		2		0	>	0					14		>	14	3
			V/C	<	0.04				0.21	>						0.24		>		
			Q	<	1				0	>						7		>		
			Ex	<	-				-	>						-		>		
			Avail.	<	-				-	>						-		>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds

Q - 95th Percentile Queue Length
Ex. - Existing Available Storage
Avail. - Available Storage

TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control

RBT - Roundabout

4.4 2031 Background Traffic Volumes

As outlined in Section 2.4, growth rates were applied to the existing traffic volumes to derive 2031 background traffic volumes. The Phase 1 and Phase 2 site traffic assignments were included as part of the 2031 background traffic forecasts.

Figure 4.5 and **Figure 4.6** illustrate the 2031 AM and PM peak hour background traffic forecasts.

4.5 2031 Background Traffic Operations

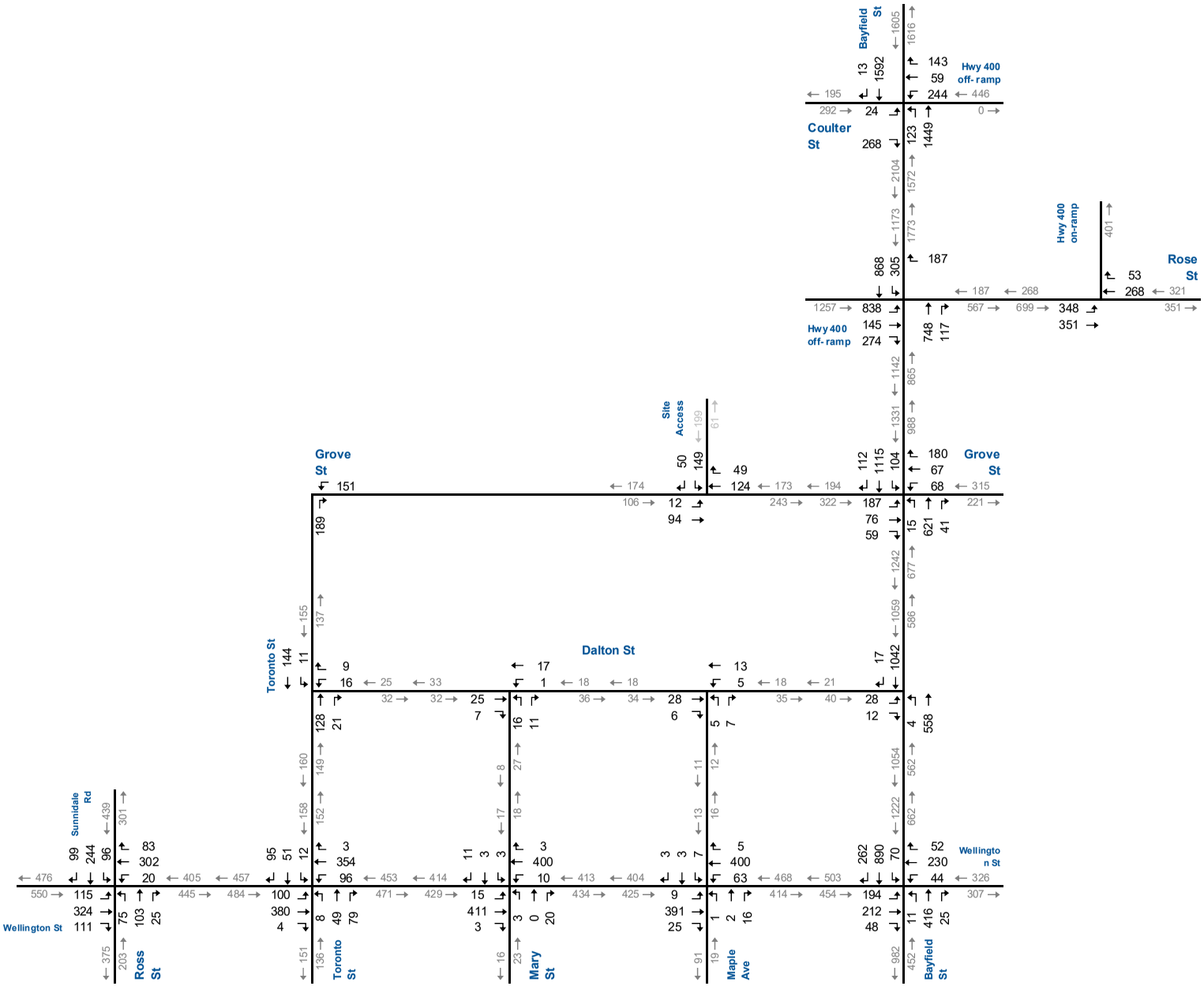
To assess operating conditions for 2031 background conditions, an operational analysis was undertaken using the same methodology, parameters, and traffic control devices as in the analysis of 2026 conditions

Table 4.5 and **Table 4.6** present the operational analysis results including level of service (LOS), average vehicle delay in seconds, volume to capacity (v/c) ratio, and 95th percentile queue lengths in metres for the 2031 horizon year. Critical movements are highlighted in orange, if any.

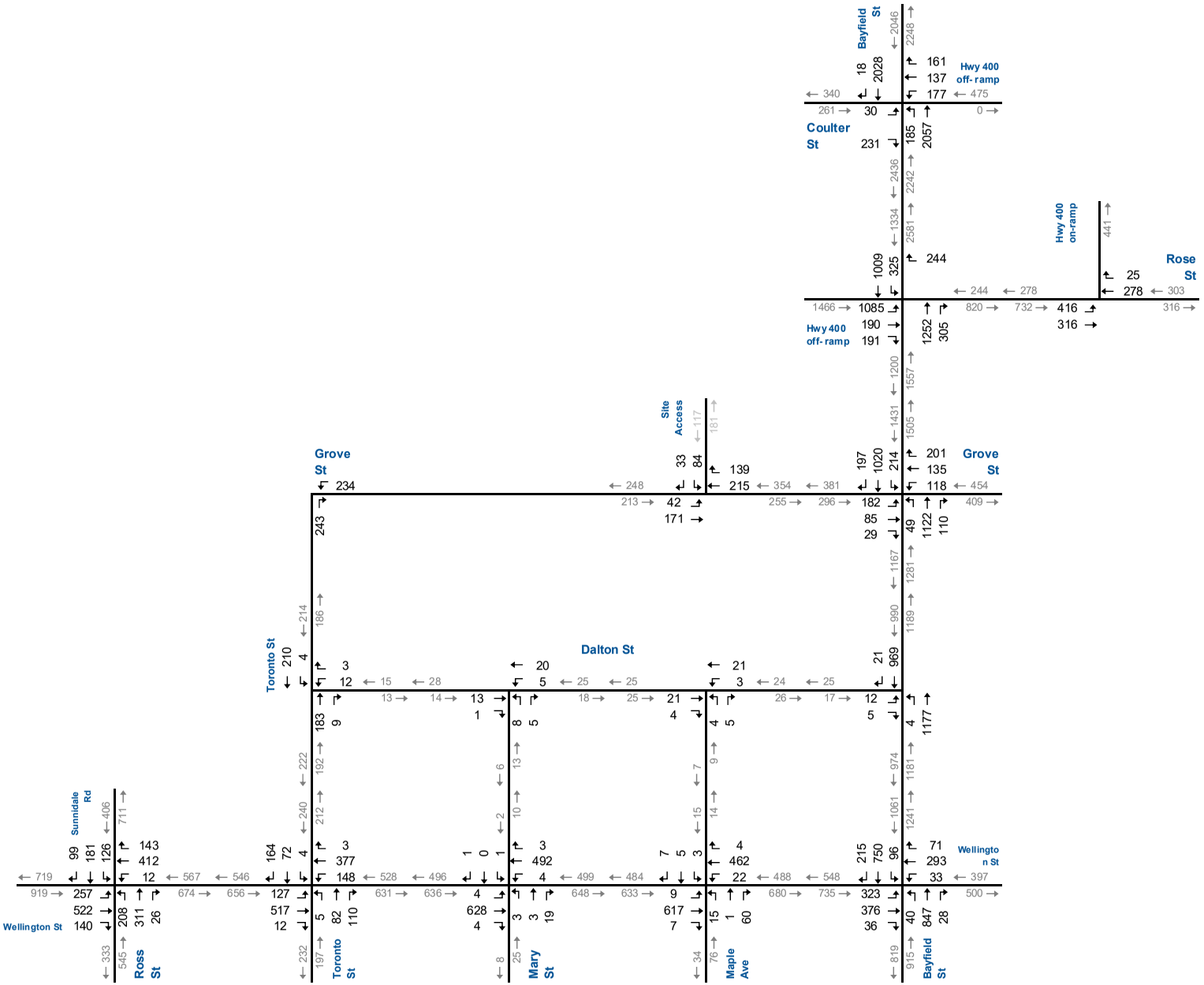
Appendix F contains the Synchro analysis outputs for reference.

The analysis of 2031 background conditions are noted to be similar to 2026 total conditions, albeit slightly exacerbated with the inclusion of background growth and Phase 1 and Phase 2 site traffic.

The site access intersection with Grove Street is reported to operate at acceptable levels of service and well within capacity.



2031 AM Peak Hour Background Traffic



2031 PM Peak Hour Background Traffic

TABLE 4.5: 2031 BACKGROUND TRAFFIC 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	1 - Bayfield St & Coulter St/Hwy 400 Westbound off-ramp	TCS	LOS	<	C	>	C	D	C	>	D	E	C		C		F	>	F	E
			Delay	<	27	>	27	52	26	>	40	66	26		29		97	>	97	58
			V/C	<	0.44	>		0.84	0.38	>		0.85	0.87				1.13	>		1.00
			Q	<	57	>		96	51	>		29	150				265	>		
			Ex	<	-	>		-	-	>		50	-				-	>		
			Avail.	<	-	>		-	-	>		21	-				-	>		
	2 - Bayfield St & Rose St/Hwy 400 Eastbound off-ramp	TCS	LOS	D	D	>	D			C	C		C	>	C	D	B		C	C
			Delay	38	37	>	38			24	24		30	>	30	39	20		25	31
			V/C	0.83	0.71	>				0.15			0.79	>		0.83	0.48			0.85
			Q	113	104	>				0			78	>		56	63			
			Ex	-	-	>				-			-	>		115	-			
			Avail.	-	-	>				-			-	>		59	-			
	3 - Rose St & Hwy 400 Eastbound on-ramp	TWSC	LOS					D		>	D		A	>	A					A
			Delay					27		>	27		0	>	0					8
			V/C					0.69		>			0.45	>						
			Q					43		>			0	>						
			Ex					-		>			-	>						
			Avail.					-		>			-	>						
	4 - Bayfield St & Grove St	TCS	LOS	C	C	>	C	C	C	>	C	C	C	>	C	B	C	>	C	C
			Delay	30	21	>	26	29	31	>	31	25	22	>	22	17	24	>	23	24
			V/C	0.58	0.19	>		0.23	0.38	>		0.20	0.55	>		0.35	0.78	>		0.75
			Q	45	29	>		24	47	>		6	69	>		16	164	>		
			Ex	20	-	>		30	-	>		30	-	>		50	-	>		
			Avail.	-25	-	>		6	-	>		24	-	>		34	-	>		
	5 - Bayfield St & Dalton St	TWSC	LOS	C		>	C					<	A		A		A	>	A	A
			Delay	16		>	16					<	0		0		0	>	0	0
			V/C	0.12		>						<	0.24				0.44	>		
			Q	3		>						<	0				0	>		
			Ex	-		>						<	-				-	>		
			Avail.	-		>						<	-				-	>		
	6 - Bayfield St & Wellington St	TCS	LOS	D	C	>	C	C	D	>	D	C	C	>	C	B	C	>	C	C
			Delay	37	25	>	30	29	38	>	37	21	22	>	22	17	22	>	21	25
			V/C	0.68	0.40	>		0.17	0.62	>		0.11	0.36	>		0.18	0.72	>		0.77
			Q	47	63	>		17	83	>		6	49	>		11	95	>		
			Ex	-	-	>		30	-	>		20	-	>		20	-	>		
			Avail.	-	-	>		13	-	>		14	-	>		9	-	>		
	7 - Toronto St & Dalton St	TWSC	LOS					B		>	B		A	>	A	<	A		A	A
			Delay					11		>	11		0	>	0	<	1		1	1
			V/C					0.04		>			0.10	>		<	0.01			
			Q					1		>			0	>		<	0			
			Ex					-		>			-	>		<	-			
			Avail.					-		>			-	>		<	-			
	8 - Toronto St & Wellington St	TCS	LOS	B	C	>	B	B	B	>	B	<	A	>	A	<	A	>	A	B
			Delay	16	20	>	19	16	18	>	18	<	9	>	9	<	9	>	9	16
			V/C	0.47	0.71	>		0.49	0.66	>		<	0.14	>		<	0.17	>		0.39
			Q	21	61	>		21	55	>		<	15	>		<	16	>		
			Ex	25	-	>		20	-	>		<	-	>		<	-	>		
			Avail.	4	-	>		-1	-	>		<	-	>		<	-	>		
	9 - Mary St & Dalton St	TWSC	LOS		A	>	A	<	A		A	<	A	>	A					A
			Delay		0	>	0	<	0		0	<	9	>	9					3
			V/C		0.02	>		<	0.00			<	0.03	>						
			Q		0	>		<	0			<	1	>						
			Ex		0	>		<	0			<	-	>						
			Avail.		-	>		<	-			<	-	>						
	10 - Mary St & Wellington St	TWSC	LOS	<	A	>	A	<	A	>	A	<	B	>	B	<	B	>	B	A
			Delay	<	0	>	0	<	0	>	0	<	11	>	11	<	13	>	13	1
			V/C	<	0.01	>		<	0.01	>		<	0.04	>		<	0.04	>		
			Q	<	0	>		<	0	>		<	1	>		<	1	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	11 - Maple St & Dalton St	TWSC	LOS		A	>	A	<	A		A	<	A	>	A					A
			Delay		0	>	0	<	2		2	<	9	>	9					2
			V/C		0.02	>		<	0.00			<	0.01	>						
			Q		0	>		<	0			<	0	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						
	12 - Maple St & Wellington St	TWSC	LOS	<	A	>	A	<	A	>	A	<	B	>	B	<	C	>	C	A
			Delay	<	1	>	0	<	3	>	1	<	12	>	12	<	19	>	19	1
			V/C	<	0.14	>		<	0.13	>		<	0.04	>		<	0.05	>		
			Q	<	0	>		<	2	>		<	1	>		<	1	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	13 - Wellington St & Ross St/Sunnidale Rd	TCS	LOS	B	C	>	C	C	C	>	C	B	B	>	B	B	C	>	C	C
			Delay	18	24	>	23	23	28	>	28	13	18	>	16	13	23	>	21	23
			V/C	0.38	0.50	>		0.11	0.57	>		0.21	0.21	>		0.18	0.56	>		0.51
			Q	25	48	>		7	45	>		15	31	>		18	82	>		
			Ex	20	-	>		30	-	>		15	-	>		25	-	>		
			Avail.	-5	-	>		23	-	>		0	-	>		7	-	>		
	14 - Grove St & Site Access	TWSC	LOS	<	A		A		A	>	A					B		>	B	A
			Delay	<	1		1		0	>	0					12		>	12	5
			V/C	<	0.01				0.11	>						0.30		>		
			Q	<	0				0	>						10		>		
			Ex	<	-				-	>						-		>		
			Avail.	<	-				-	>						-		>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds

Q - 95th Percentile Queue Length
Ex. - Existing Available Storage
Avail. - Available Storage

TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control

RBT - Roundabout

TABLE 4.6: 2031 BACKGROUND TRAFFIC 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	1 - Bayfield St & Coulter St/Hwy 400 Westbound off-ramp	TCS	LOS	<	E	>	E	F	E	>	F	F	C		D		F	>	F	E
			Delay	<	61	>	61	133	62	>	88	115	32		39		101	>	101	70
			V/C	<	0.64	>		1.04	0.74	>		0.99	0.95				1.14	>	1.14	1.09
			Q	<	80	>		118	129	>		101	362				468	>		
			Ex	<	-	>		-	-	>		50	-				-	>		
			Avail.	<	-	>		-	-	>		-51	-				-	>		
	2 - Bayfield St & Rose St/Hwy 400 Eastbound off-ramp	TCS	LOS	F	D	>	F			F	F		F	>	F	F	B		D	F
			Delay	134	54	>	113			87	87		107	>	107	125	16		43	89
			V/C	1.16	0.76	>				0.86			1.13	>		1.08	0.49			1.13
			Q	268	153	>				116			364	>		171	111			
			Ex	-	-	>				-			-	>		115	-			
			Avail.	-	-	>				-			-	>		-56	-			
	3 - Rose St & Hwy 400 Eastbound on-ramp	TWSC	LOS					D		>	D		A	>	A					A
			Delay					30		>	30		0	>	0					9
			V/C					0.71		>			0.47	>						
			Q					45		>			0	>						
			Ex					-		>			-	>						
			Avail.					-		>			-	>						
	4 - Bayfield St & Grove St	TCS	LOS	D	C	>	D	D	D	>	D	D	D	>	D	F	C	>	C	D
			Delay	52	23	>	41	38	54	>	50	37	44	>	44	83	21	>	30	39
			V/C	0.82	0.18	>		0.45	0.82	>		0.46	0.95	>		0.99	0.72	>		0.98
			Q	53	28	>		41	109	>		11	179	>		80	127	>		
			Ex	20	-	>		30	-	>		30	-	>		50	-	>		
			Avail.	-33	-	>		-11	-	>		19	-	>		-30	-	>		
	5 - Bayfield St & Dalton St	TWSC	LOS	B		>	B					<	A		A		A	>	A	A
			Delay	11		>	11					<	0		0		0	>	0	0
			V/C	0.03		>						<	0.50				0.41	>		
			Q	1		>						<	0				0	>		
			Ex	-		>						<	-				-	>		
			Avail.	-		>						<	-				-	>		
	6 - Bayfield St & Wellington St	TCS	LOS	D	C	>	C	C	D	>	D	D	D	>	D	D	C	>	C	C
			Delay	39	21	>	29	30	50	>	48	38	37	>	37	50	29	>	31	34
			V/C	0.85	0.52	>		0.15	0.82	>		0.41	0.82	>		0.70	0.74	>		0.87
			Q	90	90	>		14	123	>		19	119	>		21	93	>		
			Ex	-	-	>		30	-	>		20	-	>		20	-	>		
			Avail.	-	-	>		16	-	>		1	-	>		-1	-	>		
	7 - Toronto St & Dalton St	TWSC	LOS					B		>	B		A	>	A	<	A		A	A
			Delay					11		>	11		0	>	0	<	0		0	1
			V/C					0.03		>			0.12	>		<	0			
			Q					1		>			0	>		<	0			
			Ex					-		>			-	>		<	-			
			Avail.					-		>			-	>		<	-			
	8 - Toronto St & Wellington St	TCS	LOS	B	B	>	B	C	B	>	B	<	B	>	B	<	B	>	B	B
			Delay	12	18	>	17	34	13	>	19	<	13	>	13	<	13	>	13	16
			V/C	0.41	0.75	>		0.80	0.55	>		<	0.26	>		<	0.29	>		0.56
			Q	21	75	>		42	49	>		<	28	>		<	29	>		
			Ex	25	-	>		20	-	>		<	-	>		<	-	>		
			Avail.	4	-	>		-22	-	>		<	-	>		<	-	>		
	9 - Mary St & Dalton St	TWSC	LOS		A	>	A	<	A		A	<	A	>	A					A
			Delay		0	>	0	<	1		1	<	9	>	9					3
			V/C		0.01	>		<	0.00			<	0.01	>						
			Q		0	>		<	0			<	0	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						
	10 - Mary St & Wellington St	TWSC	LOS	<	A	>	A	<	A	>	A	<	B	>	B	<	C	>	C	A
			Delay	<	0	>	0	<	0	>	0	<	15	>	15	<	16	>	16	1
			V/C	<	0.00	>		<	0.00	>		<	0.07	>		<	0.01	>		
			Q	<	0	>		<	0	>		<	2	>		<	0	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	11 - Maple St & Dalton St	TWSC	LOS		A	>	A	<	A		A	<	A	>	A					A
			Delay		0	>	0	<	1		1	<	9	>	9					2
			V/C		0.02	>		<	0.00			<	0.01	>						
			Q		0	>		<	0			<	0	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						
	12 - Maple St & Wellington St	TWSC	LOS	<	A	>	A	<	A	>	A	<	C	>	C	<	C	>	C	A
			Delay	<	0	>	0	<	1	>	1	<	16	>	16	<	19	>	19	2
			V/C	<	0.20	>		<	0.15	>		<	0.19	>		<	0.06	>		
			Q	<	0	>		<	1	>		<	6	>		<	2	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	13 - Wellington St & Ross St/Sunnidale Rd	TCS	LOS	D	C	>	C	C	C	>	C	B	C	>	C	B	C	>	C	C
			Delay	36	24	>	27	24	31	>	31	19	32	>	27	19	30	>	27	28
			V/C	0.84	0.57	>		0.06	0.65	>		0.53	0.63	>		0.37	0.55	>		0.76
			Q	62	77	>		5	65	>		42	92	>		26	72	>		
			Ex	20	-	>		30	-	>		15	-	>		25	-	>		
			Avail.	-42	-	>		25	-	>		-27	-	>		-1	-	>		
	14 - Grove St & Site Access	TWSC	LOS	<	A		A		A	>	A					C		>	C	A
			Delay	<	2		2		0	>	0					15		>	15	3
			V/C	<	0.04				0.23	>						0.25		>		
			Q	<	1				0	>						8		>		
			Ex	<	-				-	>						-		>		
			Avail.	<	-				-	>						-		>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds

Q - 95th Percentile Queue Length
Ex. - Existing Available Storage
Avail. - Available Storage

TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control

RBT - Roundabout

4.6 2031 Future Total Traffic Operations

The 2031 background traffic forecasts were combined with the Phase 3 site traffic assignments to derive the future total traffic forecasts.

Figure 4.7 and **Figure 4.8** illustrate the future 2031 total traffic forecasts for the AM and PM peak hours, respectively.

To assess operating conditions for 2031 total conditions, an operational analysis was undertaken using the same methodology, parameters, and traffic control devices as in the analysis of background conditions.

Table 4.7 and **Table 4.8** present the operational analysis results including hour level of service (LOS), average vehicle delay in seconds, volume to capacity (v/c) ratio, and 95th percentile queues in metres for the 2031 horizon year. Critical movements are highlighted in orange, if any.

Appendix G contains the Synchro analysis outputs for reference.

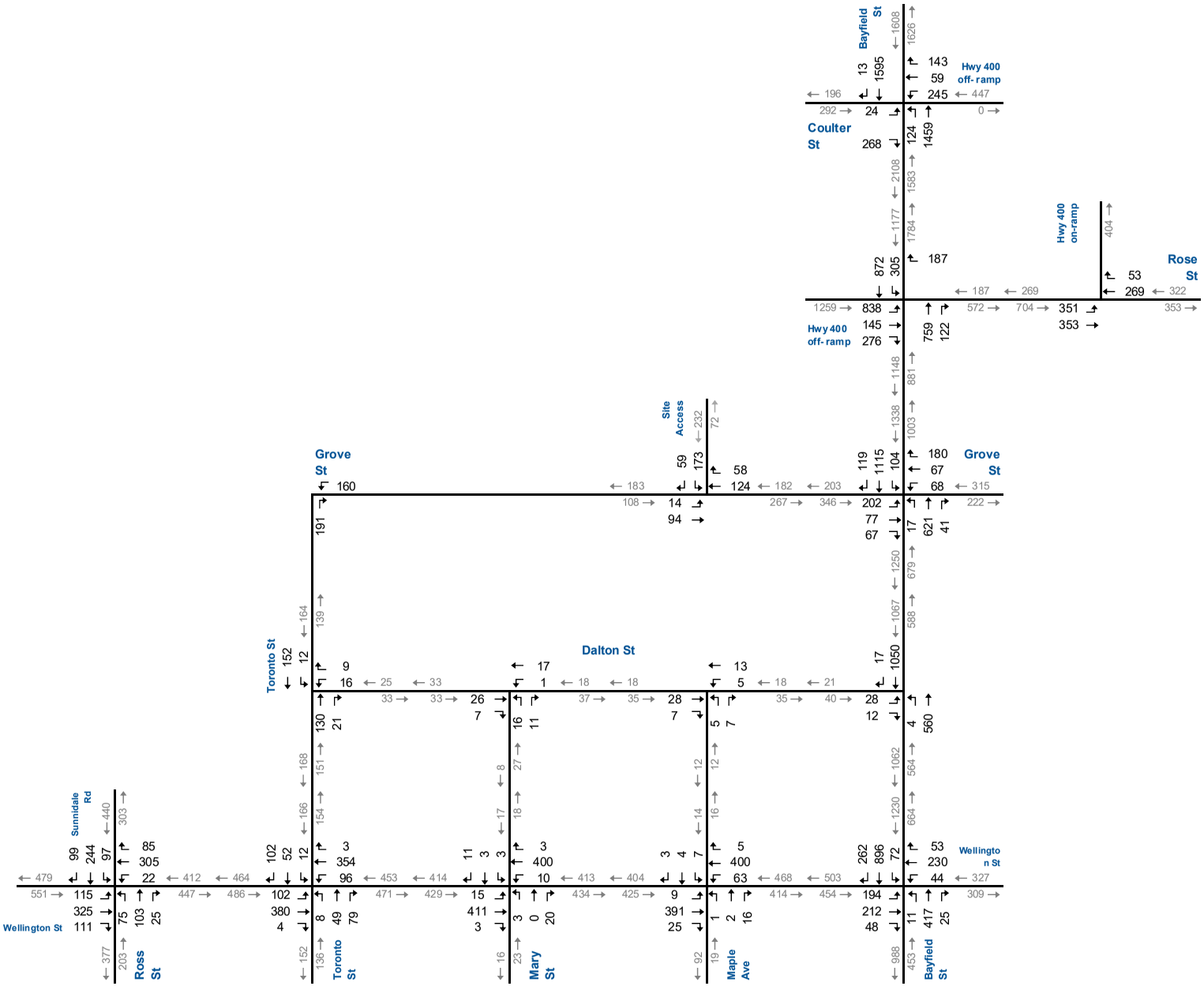
The analysis of 2031 total conditions (with full development of the site) indicate most of the study area intersections are forecast to operate at acceptable levels of service and within capacity. The exceptions would be at the following intersections:

- Bayfield Street and Highway 400 SB Off-Ramp;
- Bayfield Street and Highway 400 NB Off-Ramp; and
- Bayfield Street and Grove Street.

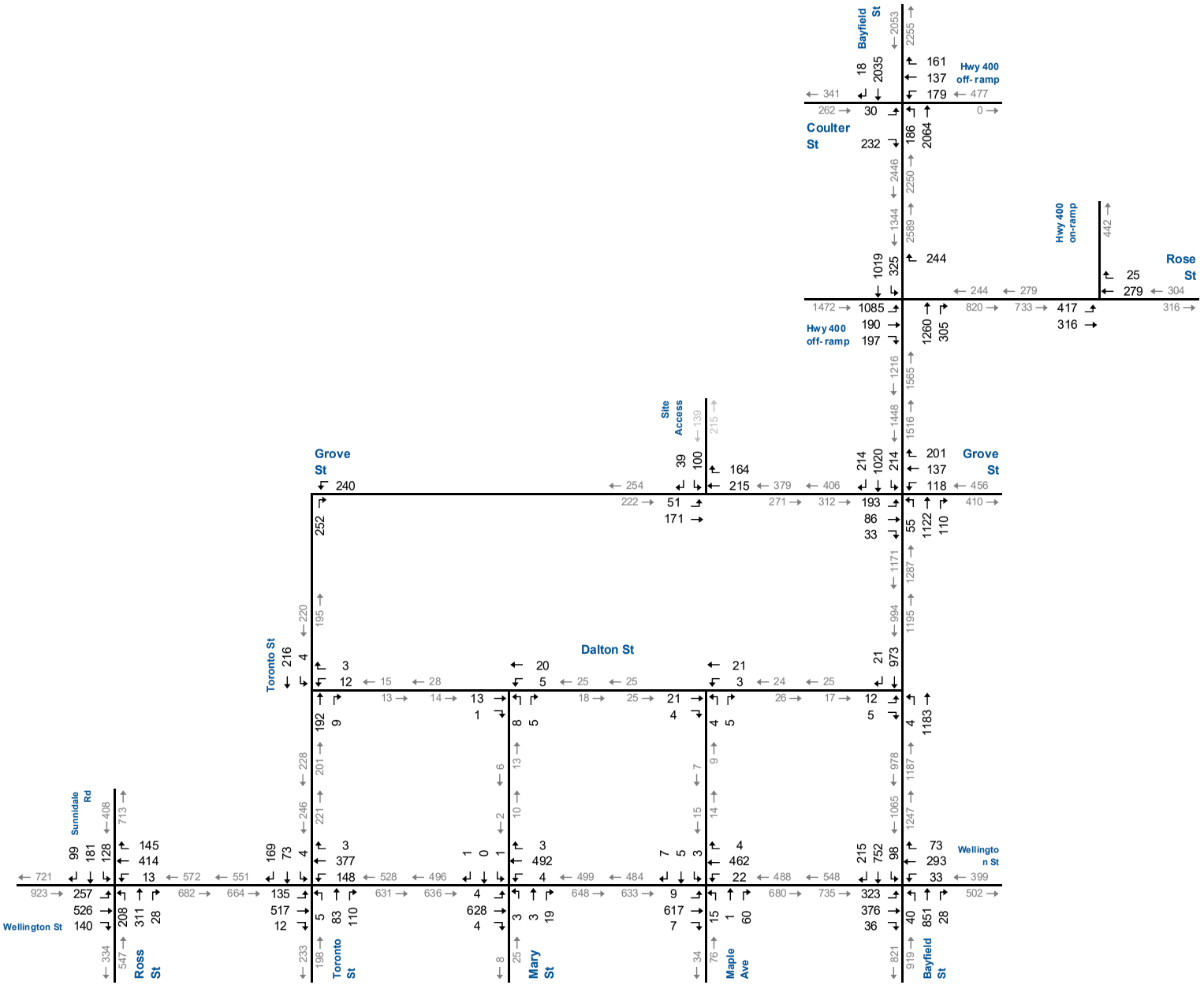
With the addition of site traffic generated under Phase 3 (i.e., full build-out) of the development, traffic operations are further exacerbated. While several movements are reported to be operating over-capacity, there are limited mitigation measures that can be implemented due to spatial constraints.

The poor operations would be an interim condition until the future Highway 400/Bayfield Street interchange improvements are implemented by the responsible road authorities.

The site access intersection with Grove Street is reported to operate at acceptable levels of service and well within capacity.



2031 AM Peak Hour Future Total Traffic



2031 PM Peak Hour Future Total Traffic

TABLE 4.7: 2031 TOTAL TRAFFIC OPERATIONS (AM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Overall
AM Peak Hour	1 - Bayfield St & Coulter St/Hwy 400 Westbound off-ramp	TCS	LOS	<	C	>	C	D	C	>	D	E	C		C		F	>	F	E
			Delay	<	27	>	27	52	26	>	40	67	26		29		98	>	98	58
			V/C	<	0.44	>		0.84	0.38	>		0.86	0.88				1.14	>		1.00
			Q	<	57	>		96	51	>		29	154				266	>		
			Ex	<	-	>		-	-	>		50	-				-	>		
			Avail.	<	-	>		-	-	>		21	-				-	>		
	2 - Bayfield St & Rose St/Hwy 400 Eastbound off-ramp	TCS	LOS	D	D	>	D			C	C		C	>	C	D	B		C	C
			Delay	38	37	>	38			24	24		31	>	31	40	20		25	31
			V/C	0.83	0.71	>				0.15			0.80	>		0.84	0.48			0.86
			Q	113	105	>				0			80	>		56	63			
			Ex	-	-	>				-			-	>		115	-			
			Avail.	-	-	>				-			-	>		59	-			
	3 - Rose St & Hwy 400 Eastbound on-ramp	TWSC	LOS					D		>	D		A	>	A					A
			Delay					27		>	27		0	>	0					9
			V/C					0.70		>			0.45	>						
			Q					44		>			0	>						
			Ex					-		>			-	>						
			Avail.					-		>			-	>						
	4 - Bayfield St & Grove St	TCS	LOS	C	C	>	C	C	C	>	C	C	C	>	C	B	C	>	C	C
			Delay	32	21	>	27	29	31	>	31	26	22	>	22	17	24	>	23	24
			V/C	0.62	0.20	>		0.23	0.38	>		0.23	0.55	>		0.35	0.78	>		0.78
			Q	48	31	>		24	47	>		6	69	>		16	165	>		
			Ex	20	-	>		30	-	>		30	-	>		50	-	>		
			Avail.	-28	-	>		6	-	>		24	-	>		34	-	>		
	5 - Bayfield St & Dalton St	TWSC	LOS	C		>	C					<	A		A		A	>	A	A
			Delay	16		>	16					<	0		0		0	>	0	0
			V/C	0.12		>						<	0.24				0.45	>		
			Q	3		>						<	0				0	>		
			Ex	-		>						<	-				-	>		
			Avail.	-		>						<	-				-	>		
	6 - Bayfield St & Wellington St	TCS	LOS	D	C	>	C	C	D	>	D	C	C	>	C	B	C	>	C	C
			Delay	37	25	>	30	29	38	>	37	21	22	>	22	17	22	>	21	25
			V/C	0.69	0.40	>		0.17	0.62	>		0.11	0.36	>		0.18	0.73	>		0.77
			Q	47	63	>		17	83	>		6	49	>		12	96	>		
			Ex	-	-	>		30	-	>		20	-	>		20	-	>		
			Avail.	-	-	>		13	-	>		14	-	>		8	-	>		
	7 - Toronto St & Dalton St	TWSC	LOS					B		>	B		A	>	A	<	A		A	A
			Delay					11		>	11		0	>	0	<	1		1	1
			V/C					0.04		>			0.10	>		<	0.01			
			Q					1		>			0	>		<	0			
			Ex					-		>			-	>		<	-			
			Avail.					-		>			-	>		<	-			
	8 - Toronto St & Wellington St	TCS	LOS	B	C	>	B	B	B	>	B	<	A	>	A	<	A	>	A	B
			Delay	16	20	>	19	16	18	>	18	<	9	>	9	<	9	>	9	16
			V/C	0.48	0.71	>		0.49	0.66	>		<	0.14	>		<	0.18	>		0.40
			Q	21	61	>		21	55	>		<	15	>		<	17	>		
			Ex	25	-	>		20	-	>		<	-	>		<	-	>		
			Avail.	4	-	>		-1	-	>		<	-	>		<	-	>		
	9 - Mary St & Dalton St	TWSC	LOS		A	>	A	<	A		A	<	A	>	A					A
			Delay		0	>	0	<	0		0	<	9	>	9					3
			V/C		0.02	>		<	0.00			<	0.03	>						
			Q		0	>		<	0			<	1	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						
	10 - Mary St & Wellington St	TWSC	LOS	<	A	>	A	<	A	>	A	<	B	>	B	<	B	>	B	A
			Delay	<	0	>	0	<	0	>	0	<	11	>	11	<	13	>	13	1
			V/C	<	0.01	>		<	0.01	>		<	0.04	>		<	0.04	>		
			Q	<	0	>		<	0	>		<	1	>		<	1	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	11 - Maple St & Dalton St	TWSC	LOS		A	>	A	<	A		A	<	A	>	A					A
			Delay		0	>	0	<	2		2	<	9	>	9					2
			V/C		0.02	>		<	0.00			<	0.01	>						
			Q		0	>		<	0			<	0	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						
	12 - Maple St & Wellington St	TWSC	LOS	<	A	>	A	<	A	>	A	<	B	>	B	<	C	>	C	A
			Delay	<	1	>	0	<	3	>	1	<	12	>	12	<	20	>	20	1
			V/C	<	0.14	>		<	0.13	>		<	0.04	>		<	0.06	>		
			Q	<	0	>		<	2	>		<	1	>		<	2	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	13 - Wellington St & Ross St/Sunnidale Rd	TCS	LOS	B	C	>	C	C	C	>	C	B	B	>	B	B	C	>	C	C
			Delay	18	24	>	23	23	28	>	28	13	18	>	16	13	23	>	21	23
			V/C	0.39	0.49	>		0.12	0.57	>		0.21	0.21	>		0.18	0.56	>		0.51
			Q	25	48	>		7	46	>		15	31	>		18	83	>		
			Ex	20	-	>		30	-	>		15	-	>		25	-	>		
			Avail.	-5	-	>		23	-	>		0	-	>		7	-	>		
	14 - Grove St & Site Access	TWSC	LOS	<	A		A		A	>	A					B		>	B	A
			Delay	<	1		1		0	>	0					13		>	13	6
			V/C	<	0.01				0.12	>						0.35		>		
			Q	<	0				0	>						13		>		
			Ex	<	-				-	>						-		>		
			Avail.	<	-				-	>						-		>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds

Q - 95th Percentile Queue Length
Ex. - Existing Available Storage
Avail. - Available Storage

TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control

RBT - Roundabout

TABLE 4.8: 2031 TOTAL TRAFFIC OPERATIONS (PM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	1 - Bayfield St & Coulter St/Hwy 400 Westbound off-ramp	TCS	LOS	<	E	>	E	F	E	>	F	F	C		D		F	>	F	E
			Delay	<	62	>	62	141	63	>	92	116	33		40		103	>	103	71
			V/C	<	0.65	>		1.07	0.74	>		1.00	0.95				1.14	>		1.10
			Q	<	81	>		120	130	>		102	368				471	>		
			Ex	<	-	>		-	-	>		50	-				-	>		
			Avail.	<	-	>		-	-	>		-52	-				-	>		
	2 - Bayfield St & Rose St/Hwy 400 Eastbound off-ramp	TCS	LOS	F	E	>	F			F	F		F	>	F	F	B		D	F
			Delay	134	55	>	113			87	87		109	>	109	125	16		43	90
			V/C	1.16	0.77	>				0.86			1.13	>		1.08	0.50			1.13
			Q	268	155	>				116			367	>		171	112			
			Ex	-	-	>				-			-	>		115	-			
			Avail.	-	-	>				-			-	>		-56	-			
	3 - Rose St & Hwy 400 Eastbound on-ramp	TWSC	LOS					D		>	D		A	>	A					A
			Delay					30		>	30		0	>	0					9
			V/C					0.72		>			0.47	>						
			Q					45		>			0	>						
			Ex					-		>			-	>						
			Avail.					-		>			-	>						
	4 - Bayfield St & Grove St	TCS	LOS	D	C	>	D	D	D	>	D	D	D	>	D	F	C	>	C	D
			Delay	49	23	>	39	38	55	>	51	45	50	>	50	83	22	>	31	41
			V/C	0.82	0.18	>		0.45	0.83	>		0.58	0.98	>		0.99	0.75	>		0.98
			Q	56	28	>		41	110	>		13	183	>		80	133	>		
			Ex	20	-	>		30	-	>		30	-	>		50	-	>		
			Avail.	-36	-	>		-11	-	>		17	-	>		-30	-	>		
	5 - Bayfield St & Dalton St	TWSC	LOS	B		>	B					<	A		A		A	>	A	A
			Delay	11		>	11					<	0		0		0	>	0	0
			V/C	0.03		>						<	0.50				0.41	>		
			Q	1		>						<	0				0	>		
			Ex	-		>						<	-				-	>		
			Avail.	-		>						<	-				-	>		
	6 - Bayfield St & Wellington St	TCS	LOS	D	C	>	C	C	D	>	D	D	D	>	D	D	C	>	C	D
			Delay	40	21	>	29	30	50	>	48	38	40	>	40	46	30	>	32	36
			V/C	0.85	0.52	>		0.15	0.83	>		0.41	0.85	>		0.64	0.74	>		0.89
			Q	90	90	>		14	125	>		19	122	>		21	97	>		
			Ex	-	-	>		30	-	>		20	-	>		20	-	>		
			Avail.	-	-	>		16	-	>		1	-	>		-1	-	>		
	7 - Toronto St & Dalton St	TWSC	LOS					B		>	B		A	>	A	<	A		A	A
			Delay					11		>	11		0	>	0	<	0		0	1
			V/C					0.03		>			0.13	>		<	0.00			
			Q					1		>			0	>		<	0			
			Ex					-		>			-	>		<	-			
			Avail.					-		>			-	>		<	-			
	8 - Toronto St & Wellington St	TCS	LOS	B	B	>	B	C	B	>	B	<	B	>	B	<	B	>	B	B
			Delay	12	18	>	17	34	13	>	19	<	13	>	13	<	13	>	13	16
			V/C	0.44	0.75	>		0.80	0.55	>		<	0.27	>		<	0.30	>		0.56
			Q	22	75	>		42	49	>		<	28	>		<	30	>		
			Ex	25	-	>		20	-	>		<	-	>		<	-	>		
			Avail.	3	-	>		-22	-	>		<	-	>		<	-	>		
	9 - Mary St & Dalton St	TWSC	LOS		A	>	A	<	A		A	<	A	>	A					A
			Delay		0	>	0	<	1		1	<	9	>	9					3
			V/C		0.01	>		<	0.00			<	0.01	>						
			Q		0	>		<	0			<	0	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						
	10 - Mary St & Wellington St	TWSC	LOS	<	A	>	A	<	A	>	A	<	B	>	B	<	C	>	C	A
			Delay	<	0	>	0	<	0	>	0	<	15	>	15	<	16	>	16	1
			V/C	<	0.00	>		<	0.00	>		<	0.07	>		<	0.01	>		
			Q	<	0	>		<	0	>		<	2	>		<	0	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	11 - Maple St & Dalton St	TWSC	LOS		A	>	A	<	A		A	<	A	>	A					A
			Delay		0	>	0	<	1		1	<	9	>	9					2
			V/C		0.02	>		<	0.00			<	0.01	>						
			Q		0	>		<	0			<	0	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						
	12 - Maple St & Wellington St	TWSC	LOS	<	A	>	A	<	A	>	A	<	C	>	C	<	C	>	C	A
			Delay	<	0	>	0	<	1	>	1	<	16	>	16	<	19	>	19	2
			V/C	<	0.20	>		<	0.15	>		<	0.19	>		<	0.06	>		
			Q	<	0	>		<	1	>		<	6	>		<	2	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	13 - Wellington St & Ross St/Sunnidale Rd	TCS	LOS	D	C	>	C	C	C	>	C	B	C	>	C	B	C	>	C	C
			Delay	36	24	>	27	24	31	>	31	19	32	>	27	19	31	>	27	28
			V/C	0.84	0.57	>		0.07	0.65	>		0.53	0.64	>		0.37	0.55	>		0.76
			Q	61	77	>		5	65	>		43	95	>		27	74	>		
			Ex	20	-	>		30	-	>		15	-	>		25	-	>		
			Avail.	-41	-	>		25	-	>		-28	-	>		-2	-	>		
	14 - Grove St & Site Access	TWSC	LOS	<	A		A		A	>	A					C		>	C	A
			Delay	<	2		2		0	>	0					16		>	16	4
			V/C	<	0.05				0.24	>						0.32		>		
			Q	<	1				0	>						11		>		
			Ex	<	-				-	>						-		>		
			Avail.	<	-				-	>						-		>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds

Q - 95th Percentile Queue Length
Ex. - Existing Available Storage
Avail. - Available Storage

TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control

RBT - Roundabout

4.7 Future Road Network Improvements

After consultation with MTO staff, the analysis has accounted for the planned Bayfield Street improvements under the 2036 horizon. Namely, within the study area the section of Bayfield Street and its intersections with the Highway 400 ramp terminals will be improved. Drawings provided by MTO, as extracted from Appendix A of the associated Transportation Environmental Study Report (TESR) Addendum, illustrate the following:

- From just north of Grove Street to Coulter Street, Bayfield Street will provide a six-lane cross-section (three travel lanes in each direction); and
- The Highway 400 NB On-Ramp will no longer provide a connection to Rose Street. At its previously connection, Rose Street will terminate in a cul-de-sac.

Appendix H contains the improvement plan drawing for reference.

Figure 4.9 illustrates the future transportation network under the 2036 horizon.

4.8 2036 Background Traffic Volumes

As outlined in Section 2.4, growth rates were applied to the existing traffic volumes to derive 2036 background traffic volumes. The forecasts include the Phase 1 and Phase 2 site-generated traffic.

To account for the future network changes, specifically the removal of the Rose Street connection with Bayfield Street, traffic volumes were reassigned accordingly to the Bayfield Street/Grove Street intersection.

Figure 4.10 and **Figure 4.11** illustrate the 2036 AM and PM peak hour background traffic forecasts.

4.9 2036 Background Traffic Operations

To assess operating conditions for 2036 background conditions, an operational analysis was undertaken using the same methodology, parameters, and traffic control devices as in the preceding analyses. The exceptions would be the optimization of signal timing splits and the provision of advance left turn phases to provide the best operations for all movements, and accounting for the future transportation road network under the 2036 horizon.

Table 4.9 and **Table 4.10** present the operational analysis results including level of service (LOS), average vehicle delay in seconds,

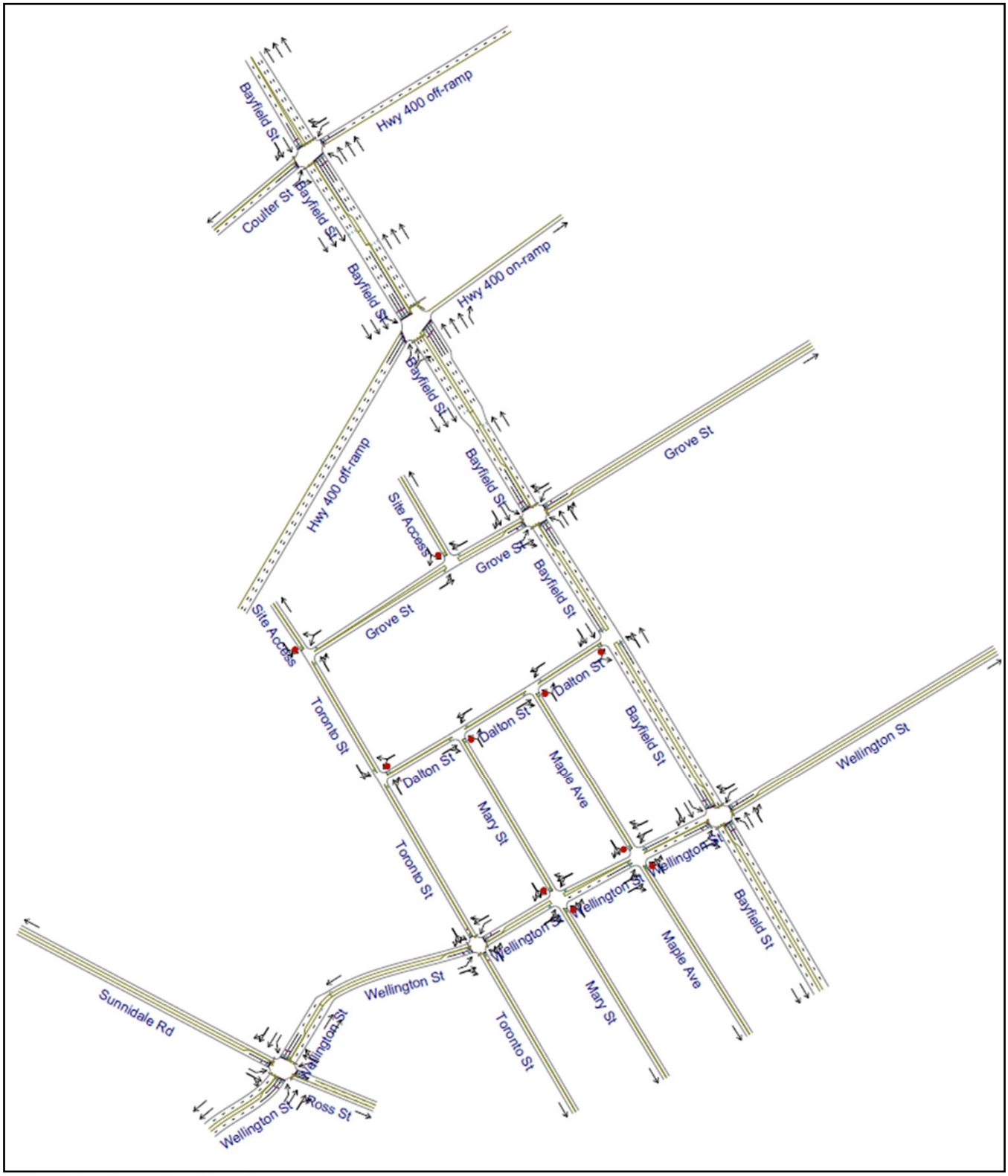
volume to capacity (v/c) ratio, and 95th percentile queue lengths in metres for the 2036 horizon. Critical movements are highlighted in orange, if any.

Appendix I contains the Synchro analysis outputs for reference.

The analysis of 2036 background conditions are similar to the 2031 background conditions, albeit slightly exacerbated with the inclusion of background growth and site-generated traffic.

Accounting for the future network improvements by the responsible road authorities, the traffic operations at the intersections of Bayfield Street and the Highway 400 ramp terminals would improve slightly; however, several critical movements are reported.

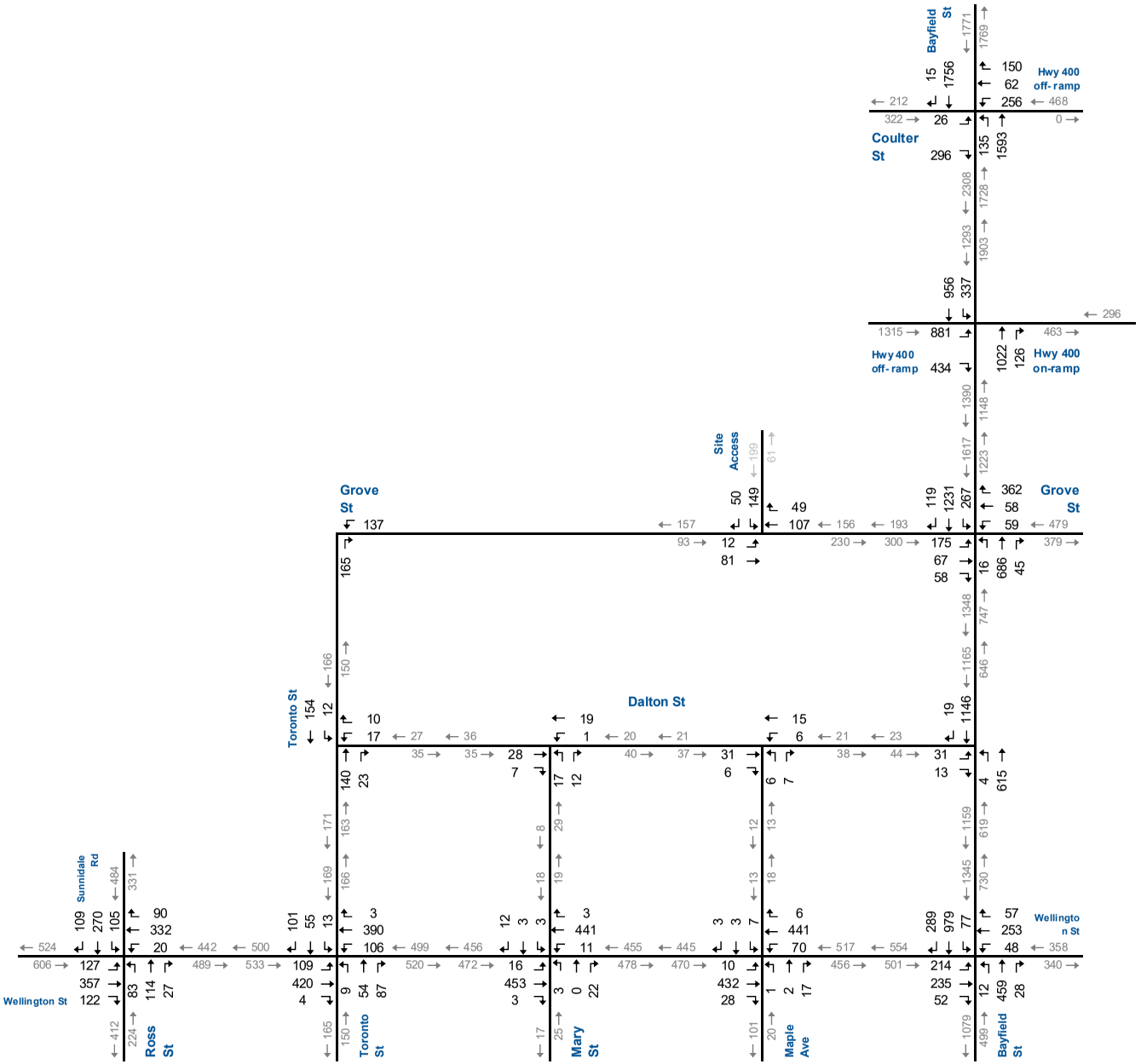
The site access intersection with Grove Street is reported to operate at acceptable levels of service and well within capacity.



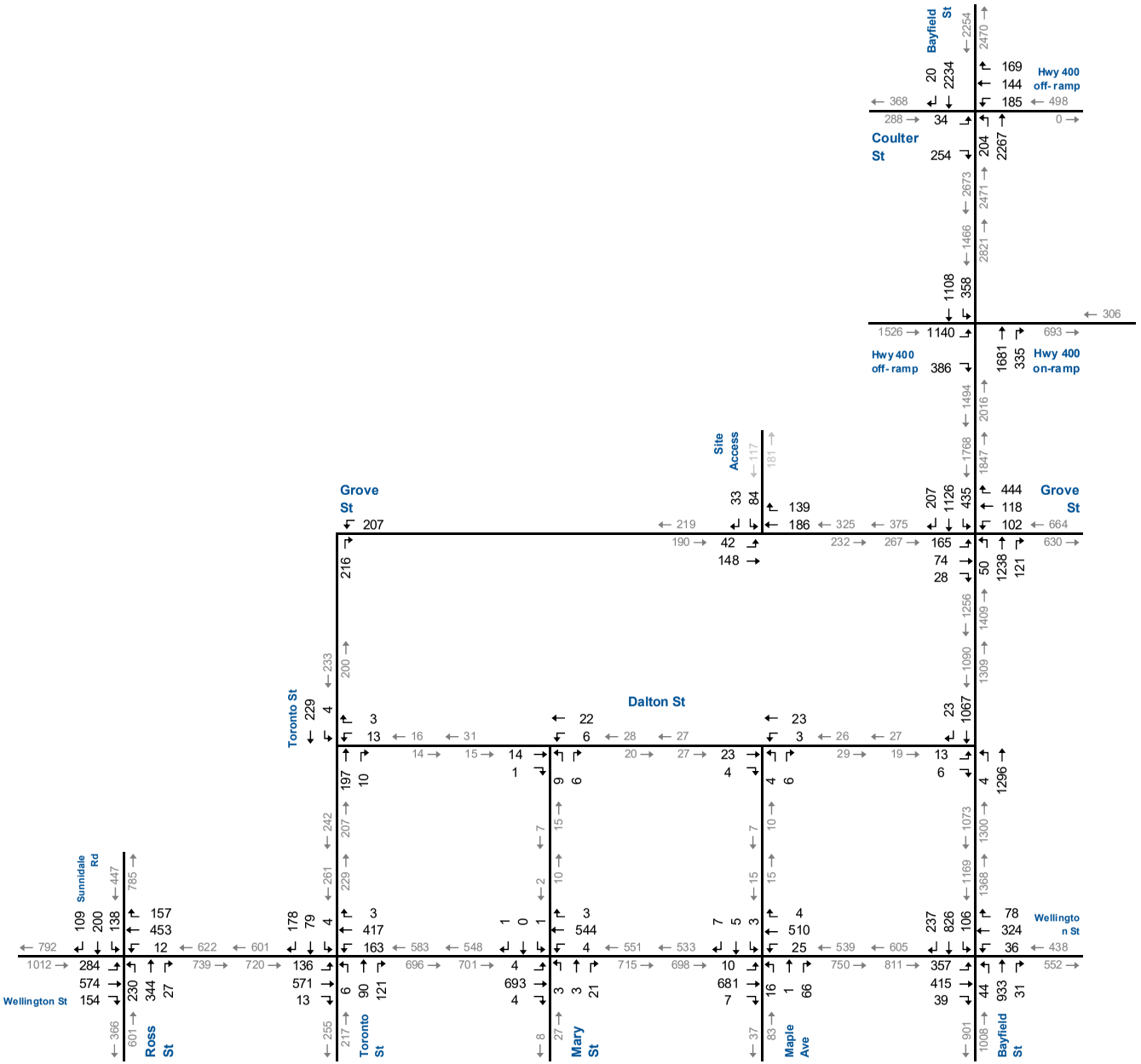
2036 Future Road Network Configuration

200669
10-24 Grove Street Transportation Impact Study

Figure 4.9



2036 AM Peak Hour Background Traffic



2036 PM Peak Hour Background Traffic

TABLE 4.9: 2036 BACKGROUND TRAFFIC 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	1 - Bayfield St & Coulter St/Hwy 400 Westbound off-ramp	TCS	LOS	D	-	E	D	E	D	>	E	E	A		B		C	>	C	C
			Delay	37	-	56	54	60	50	>	56	65	9		13		31	>	31	28
			V/C	0.18	-	0.76		0.83	0.69	>		0.78	0.49				0.95	>		0.91
			Q	13	-	87		99	71	>		29	55				249	>		
			Ex	-	-	-		-	-	>		50	-				-	>		
			Avail.	-	-	-		-	-	>		21	-				-	>		
	2 - Bayfield St & Hwy 400 Eastbound off/on-ramp	TCS	LOS	D	-	D	D						D	E	D	C	B		C	D
			Delay	37	-	41	38						46	55	47	34	19		23	36
			V/C	0.83	-	0.78							0.80	0.16		0.80	0.36			0.86
			Q	118	-	123							90	19		68	58			
			Ex	-	-	-							-	30		90	-			
			Avail.	-	-	-							-	11		22	-			
	4 - Bayfield St & Grove St	TCS	LOS	E	C	>	D	C	D	>	D	D	D	>	D	C	C	>	C	C
			Delay	75	22	>	53	31	39	>	38	37	35	>	35	32	25	>	26	33
			V/C	0.94	0.18	>		0.22	0.58	>		0.25	0.73	>		0.78	0.82	>		0.95
			Q	65	28	>		22	67	>		7	89	>		50	187	>		
			Ex	20	-	>		30	-	>		30	-	>		50	-	>		
			Avail.	-45	-	>		8	-	>		23	-	>		0	-	>		
	5 - Bayfield St & Dalton St	TWSC	LOS	C		>	C					<	A		A		A	>	A	A
			Delay	17		>	17					<	0		0		0	>	0	0
			V/C	0.13		>						<	0.26				0.49	>		
			Q	4		>						<	0				0	>		
			Ex	-		>						<	-				-	>		
			Avail.	-		>						<	-				-	>		
	6 - Bayfield St & Wellington St	TCS	LOS	D	C	>	D	C	D	>	D	C	C	>	C	B	C	>	C	C
			Delay	49	25	>	36	30	40	>	39	24	23	>	23	16	20	>	20	26
			V/C	0.82	0.45	>		0.18	0.69	>		0.16	0.40	>		0.21	0.80	>		0.87
			Q	64	70	>		19	92	>		7	54	>		11	95	>		
			Ex	-	-	>		30	-	>		20	-	>		20	-	>		
			Avail.	-	-	>		12	-	>		13	-	>		9	-	>		
	7 - Toronto St & Dalton St	TWSC	LOS					B		>	B		A	>	A	<	A		A	A
			Delay					11		>	11		0	>	0	<	1		1	1
			V/C					0.05		>			0.10	>		<	0.01			
			Q					1		>			0	>		<	0			
			Ex					-		>			-	>		<	-			
			Avail.					-		>			-	>		<	-			
	8 - Toronto St & Wellington St	TCS	LOS	B	C	>	B	B	B	>	B	<	A	>	A	<	B	>	B	B
			Delay	17	20	>	20	18	18	>	18	<	10	>	10	<	10	>	10	17
			V/C	0.52	0.73	>		0.56	0.67	>		<	0.16	>		<	0.19	>		0.43
			Q	23	68	>		24	62	>		<	17	>		<	19	>		
			Ex	25	-	>		20	-	>		<	-	>		<	-	>		
			Avail.	2	-	>		-4	-	>		<	-	>		<	-	>		
	9 - Mary St & Dalton St	TWSC	LOS		A	>	A	<	A		A	<	A	>	A					A
			Delay		0	>	0	<	0		0	<	9	>	9					3
			V/C		0.02	>		<	0.00			<	0.03	>						
			Q		0	>		<	0			<	1	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						
	10 - Mary St & Wellington St	TWSC	LOS	<	A	>	A	<	A	>	A	<	B	>	B	<	B	>	B	A
			Delay	<	1	>	1	<	0	>	0	<	12	>	12	<	14	>	14	1
			V/C	<	0.02	>		<	0.01	>		<	0.05	>		<	0.04	>		
			Q	<	0	>		<	0	>		<	1	>		<	1	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	11 - Maple St & Dalton St	TWSC	LOS		A	>	A	<	A		A	<	A	>	A					A
			Delay		0	>	0	<	2		2	<	9	>	9					2
			V/C		0.02	>		<	0.00			<	0.02	>						
			Q		0	>		<	0			<	0	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						
	12 - Maple St & Wellington St	TWSC	LOS	<	A	>	A	<	A	>	A	<	B	>	B	<	C	>	C	A
			Delay	<	1	>	0	<	3	>	2	<	12	>	12	<	22	>	22	1
			V/C	<	0.16	>		<	0.14	>		<	0.04	>		<	0.06	>		
			Q	<	0	>		<	2	>		<	1	>		<	2	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	13 - Wellington St & Ross St/Sunnidale Rd	TCS	LOS	B	C	>	C	C	C	>	C	B	C	>	B	B	C	>	C	C
			Delay	17	23	>	22	23	29	>	29	16	21	>	19	15	29	>	26	24
			V/C	0.38	0.48	>		0.11	0.58	>		0.28	0.25	>		0.21	0.67	>		0.56
			Q	27	54	>		7	50	>		16	35	>		20	99	>		
			Ex	20	-	>		30	-	>		15	-	>		25	-	>		
			Avail.	-7	-	>		23	-	>		-1	-	>		5	-	>		
	14 - Grove St & Site Access	TWSC	LOS	<	A		A		A	>	A					B		>	B	A
			Delay	<	1		1		0	>	0					12		>	12	5
			V/C	<	0.01				0.10	>						0.29		>		
			Q	<	0				0	>						10		>		
			Ex	<	-				-	>						-		>		
			Avail.	<	-				-	>						-		>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds

Q - 95th Percentile Queue Length
Ex. - Existing Available Storage
Avail. - Available Storage

TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control

RBT - Roundabout

TABLE 4.10: 2036 BACKGROUND TRAFFIC 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	1 - Bayfield St & Coulter St/Hwy 400 Westbound off-ramp	TCS	LOS	E	-	D	D	D	E	>	E	F	B		C		F	>	F	F
			Delay	59	-	51	52	54	75	>	67	83	16		21		172	>	172	89
			V/C	0.37	-	0.35		0.49	0.85	>		0.87	0.71				1.30	>		1.12
			Q	23	-	52		82	155	>		100	175				556	>		
			Ex	-	-	-		-	-	>		50	-				-	>		
			Avail.	-	-	-		-	-	>		-50	-				-	>		
	2 - Bayfield St & Hwy 400 Eastbound off/on-ramp	TCS	LOS	D	-	D	D						E	D	E	F	C		E	E
			Delay	53	-	39	50						71	45	67	169	21		57	59
			V/C	0.93	-	0.63							1.01	0.62		1.21	0.43			1.12
			Q	215	-	129							259	115		203	98			
			Ex	-	-	-							-	30		90	-			
			Avail.	-	-	-							-	-85		-113	-			
	4 - Bayfield St & Grove St	TCS	LOS	E	C	>	D	C	F	>	F	E	F	>	F	F	C	>	F	F
			Delay	65	21	>	48	33	130	>	115	68	174	>	171	251	25	>	81	115
			V/C	0.89	0.15	>		0.34	1.15	>		0.72	1.28	>		1.46	0.82	>		1.36
			Q	58	24	>		35	183	>		13	220	>		179	156	>		
			Ex	20	-	>		30	-	>		30	-	>		50	-	>		
			Avail.	-38	-	>		-5	-	>		17	-	>		-129	-	>		
	5 - Bayfield St & Dalton St	TWSC	LOS	B		>	B					<	A		A		A	>	A	A
			Delay	11		>	11					<	0		0		0	>	0	0
			V/C	0.03		>						<	0.55				0.45	>		
			Q	1		>						<	0				0	>		
			Ex	-		>						<	-				-	>		
			Avail.	-		>						<	-				-	>		
	6 - Bayfield St & Wellington St	TCS	LOS	E	C	>	D	C	E	>	E	E	D	>	D	D	C	>	C	D
			Delay	63	32	>	46	27	72	>	69	63	48	>	48	48	29	>	31	44
			V/C	0.96	0.70	>		0.14	0.97	>		0.63	0.93	>		0.69	0.82	>		0.99
			Q	119	122	>		10	150	>		28	150	>		21	95	>		
			Ex	-	-	>		30	-	>		20	-	>		20	-	>		
			Avail.	-	-	>		20	-	>		-8	-	>		-1	-	>		
	7 - Toronto St & Dalton St	TWSC	LOS					B		>	B		A	>	A	<	A		A	A
			Delay					11		>	11		0	>	0	<	0		0	0
			V/C					0.03		>			0.13	>		<	0.00			
			Q					1		>			0	>		<	0			
			Ex					-		>			-	>		<	-			
			Avail.					-		>			-	>		<	-			
	8 - Toronto St & Wellington St	TCS	LOS	B	C	>	C	C	B	>	B	<	C	>	C	<	C	>	C	B
			Delay	15	25	>	23	27	11	>	15	<	21	>	21	<	21	>	21	20
			V/C	0.38	0.82	>		0.77	0.46	>		<	0.36	>		<	0.39	>		0.66
			Q	26	110	>		27	54	>		<	43	>		<	45	>		
			Ex	25	-	>		20	-	>		<	-	>		<	-	>		
			Avail.	-1	-	>		-7	-	>		<	-	>		<	-	>		
	9 - Mary St & Dalton St	TWSC	LOS		A	>	A	<	A		A	<	A	>	A					A
			Delay		0	>	0	<	2		2	<	9	>	9					3
			V/C		0.01	>		<	0.00			<	0.02	>						
			Q		0	>		<	0			<	0	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						
	10 - Mary St & Wellington St	TWSC	LOS	<	A	>	A	<	A	>	A	<	C	>	C	<	C	>	C	A
			Delay	<	0	>	0	<	0	>	0	<	16	>	16	<	18	>	18	1
			V/C	<	0.00	>		<	0.01	>		<	0.08	>		<	0.01	>		
			Q	<	0	>		<	0	>		<	2	>		<	0	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	11 - Maple St & Dalton St	TWSC	LOS		A	>	A	<	A		A	<	A	>	A					A
			Delay		0	>	0	<	1		1	<	9	>	9					2
			V/C		0.02	>		<	0.00			<	0.01	>						
			Q		0	>		<	0			<	0	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						
	12 - Maple St & Wellington St	TWSC	LOS	<	A	>	A	<	A	>	A	<	C	>	C	<	C	>	C	A
			Delay	<	0	>	0	<	1	>	1	<	17	>	17	<	22	>	22	2
			V/C	<	0.22	>		<	0.17	>		<	0.24	>		<	0.07	>		
			Q	<	0	>		<	1	>		<	7	>		<	2	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	13 - Wellington St & Ross St/Sunnidale Rd	TCS	LOS	C	C	>	C	C	C	>	C	C	D	>	D	C	D	>	D	C
			Delay	32	22	>	25	24	32	>	32	25	41	>	35	24	43	>	37	31
			V/C	0.83	0.56	>		0.06	0.69	>		0.69	0.77	>		0.51	0.74	>		0.85
			Q	72	82	>		4	73	>		52	122	>		32	100	>		
			Ex	20	-	>		30	-	>		15	-	>		25	-	>		
			Avail.	-52	-	>		26	-	>		-37	-	>		-7	-	>		
	14 - Grove St & Site Access	TWSC	LOS	<	A		A		A	>	A					B		>	B	A
			Delay	<	2		2		0	>	0					14		>	14	3
			V/C	<	0.04				0.21	>						0.24		>		
			Q	<	1				0	>						7		>		
			Ex	<	-				-	>						-		>		
			Avail.	<	-				-	>						-		>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds

Q - 95th Percentile Queue Length
Ex. - Existing Available Storage
Avail. - Available Storage

TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control

RBT - Roundabout

4.10 2036 Future Total Traffic Operations

The 2036 background traffic forecasts were combined with the Phase 3 site traffic assignments to derive the future total traffic forecasts.

Figure 4.12 and **Figure 4.13** illustrate the future 2036 total traffic forecasts for the AM and PM peak hours, respectively.

To assess operating conditions for 2036 total conditions, an operational analysis was undertaken using the same methodology, parameters, and traffic control devices as in the analysis of 2036 background conditions.

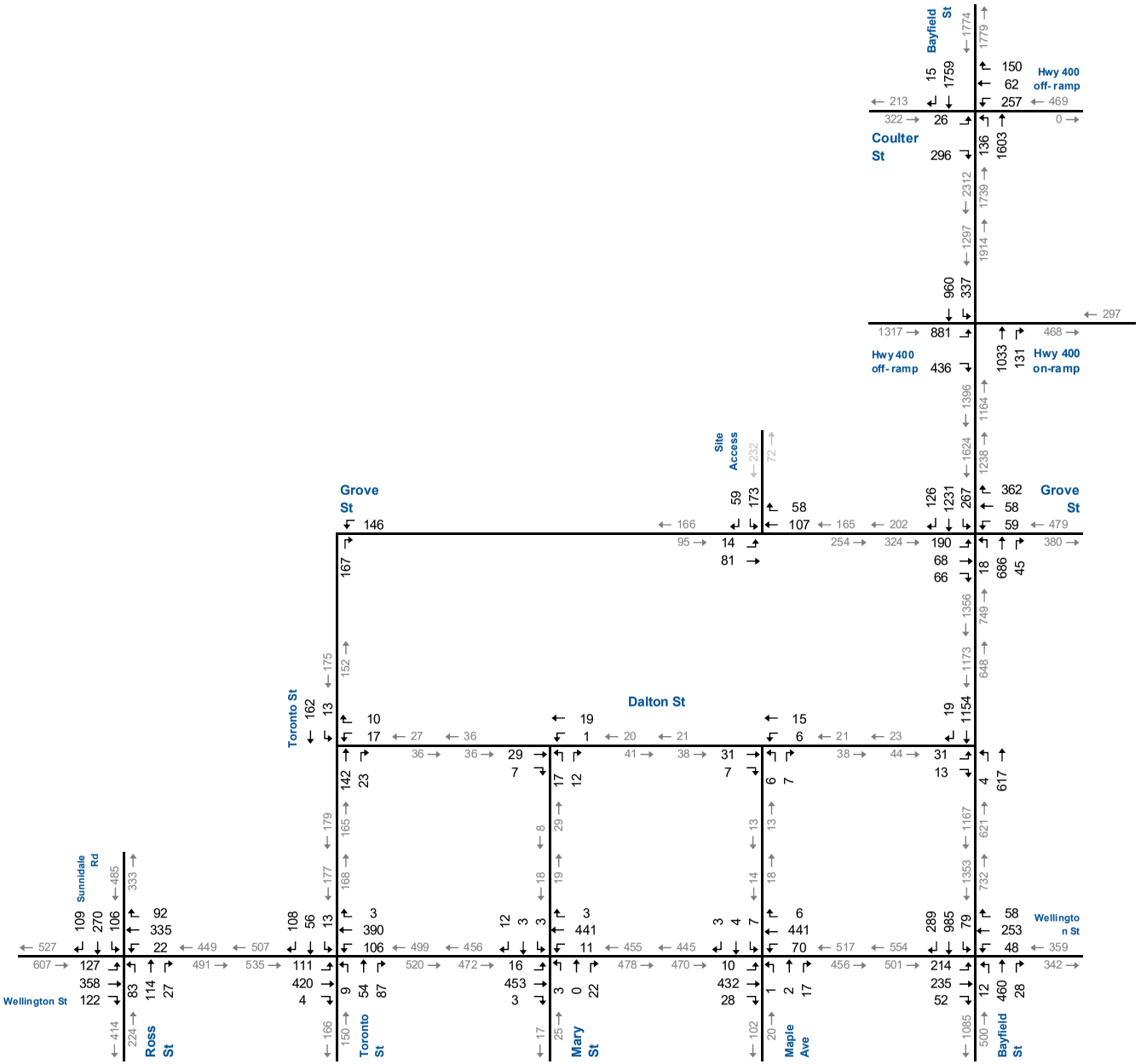
Table 4.11 and **Table 4.12** present the operational analysis results including hour level of service (LOS), average vehicle delay in seconds, volume to capacity (v/c) ratio, and 95th percentile queues in metres for the 2036 horizon. Critical movements are highlighted in orange, if any.

Appendix J contains the Synchro analysis outputs for reference.

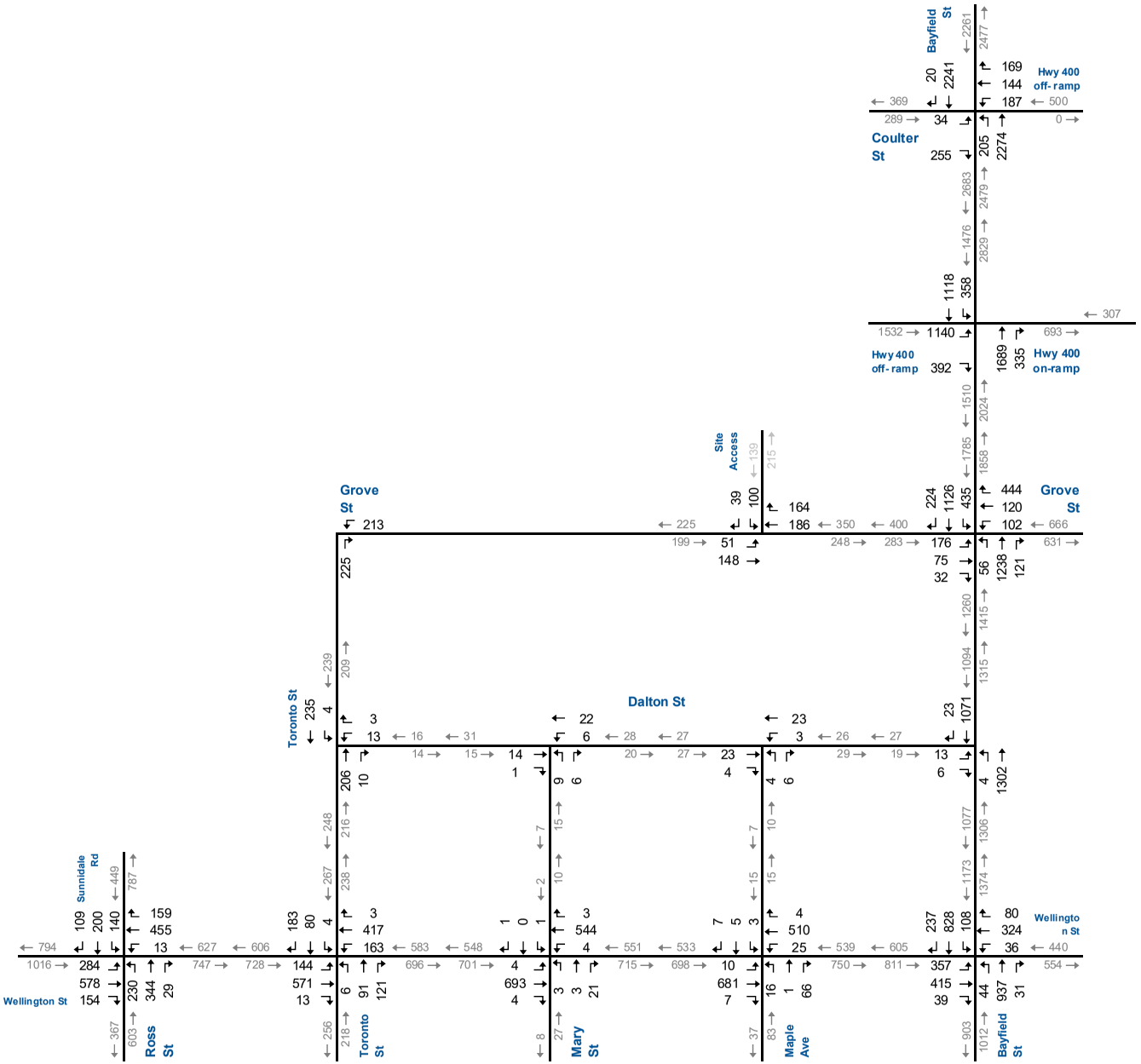
The analysis of 2036 total conditions (will full development of the site) indicates most of the study area intersections are forecast to operate at acceptable levels of service and within capacity.

Accounting for the future network improvements by the responsible road authorities, the traffic operations at the intersections of Bayfield Street and the Highway 400 ramp terminals would improve slightly; however, several critical movements are still reported.

The site access intersection with Grove Street is reported to operate at acceptable levels of service and well within capacity.



2036 AM Peak Hour Future Total Traffic



2036 PM Peak Hour Future Total Traffic

TABLE 4.11: 2036 FUTURE TOTAL TRAFFIC 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	1 - Bayfield St & Coulter St/Hwy 400 Westbound off-ramp	TCS	LOS	D	-	E	D	E	D	>	E	E	A		B		C	>	C	C
			Delay	37	-	56	54	60	51	>	56	65	9		13		31	>	31	28
			V/C	0.18	-	0.76		0.84	0.69	>		0.78	0.50				0.95	>		0.91
			Q	13	-	87		100	72	>		29	57				250	>		
			Ex	-	-	-		-	-	>		50	-				-	>		
			Avail.	-	-	-		-	-	>		21	-				-	>		
	2 - Bayfield St & Hwy 400 Eastbound off/on-ramp	TCS	LOS	D	-	D	D						D	D	D	D	B		C	C
			Delay	37	-	41	39						39	44	40	37	18		23	34
			V/C	0.83	-	0.78							0.78	0.17		0.84	0.37			0.88
			Q	118	-	125							83	17		69	58			
			Ex	-	-	-							-	30		90	-			
			Avail.	-	-	-							-	13		21	-			
	4 - Bayfield St & Grove St	TCS	LOS	D	C	>	D	C	D	>	D	D	D	>	D	D	C	>	C	C
			Delay	53	22	>	40	33	41	>	40	46	45	>	45	38	25	>	27	34
			V/C	0.84	0.20	>		0.23	0.60	>		0.29	0.75	>		0.78	0.85	>		0.91
			Q	63	30	>		23	70	>		9	101	>		59	191	>		
			Ex	20	-	>		30	-	>		30	-	>		50	-	>		
			Avail.	-43	-	>		7	-	>		21	-	>		-9	-	>		
	5 - Bayfield St & Dalton St	TWSC	LOS	C		>	C					<	A		A		A	>	A	A
			Delay	16		>	16					<	0		0		0	>	0	0
			V/C	0.13		>						<	0.26				0.49	>		
			Q	4		>						<	0				0	>		
			Ex	-		>						<	-				-	>		
			Avail.	-		>						<	-				-	>		
	6 - Bayfield St & Wellington St	TCS	LOS	D	C	>	D	C	D	>	D	C	C	>	C	B	B	>	B	C
			Delay	49	25	>	36	30	41	>	39	24	23	>	23	14	18	>	18	25
			V/C	0.82	0.45	>		0.18	0.69	>		0.16	0.40	>		0.21	0.80	>		0.88
			Q	65	70	>		19	92	>		7	54	>		10	86	>		
			Ex	-	-	>		30	-	>		20	-	>		20	-	>		
			Avail.	-	-	>		12	-	>		13	-	>		10	-	>		
	7 - Toronto St & Dalton St	TWSC	LOS					B		>	B		A	>	A	<	A		A	A
			Delay					11		>	11		0	>	0	<	1		1	1
			V/C					0.05		>			0.11	>		<	0.01			
			Q					1		>			0	>		<	0			
			Ex					-		>			-	>		<	-			
			Avail.					-		>			-	>		<	-			
	8 - Toronto St & Wellington St	TCS	LOS	B	C	>	B	B	B	>	B	<	A	>	A	<	B	>	B	B
			Delay	17	20	>	20	18	18	>	18	<	10	>	10	<	10	>	10	17
			V/C	0.54	0.73	>		0.56	0.67	>		<	0.16	>		<	0.20	>		0.44
			Q	24	68	>		24	62	>		<	17	>		<	20	>		
			Ex	25	-	>		20	-	>		<	-	>		<	-	>		
			Avail.	1	-	>		-4	-	>		<	-	>		<	-	>		
	9 - Mary St & Dalton St	TWSC	LOS		A	>	A	<	A		A	<	A	>	A					A
			Delay		0	>	0	<	0		0	<	9	>	9					3
			V/C		0.02	>		<	0.00			<	0.03	>						
			Q		0	>		<	0			<	1	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						
	10 - Mary St & Wellington St	TWSC	LOS	<	A	>	A	<	A	>	A	<	B	>	B	<	B	>	B	A
			Delay	<	1	>	1	<	0	>	0	<	12	>	12	<	14	>	14	1
			V/C	<	0.02	>		<	0.01	>		<	0.05	>		<	0.04	>		
			Q	<	0	>		<	0	>		<	1	>		<	1	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	11 - Maple St & Dalton St	TWSC	LOS		A	>	A	<	A		A	<	A	>	A					A
			Delay		0	>	0	<	2		2	<	9	>	9					2
			V/C		0.02	>		<	0.00			<	0.02	>						
			Q		0	>		<	0			<	0	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						
	12 - Maple St & Wellington St	TWSC	LOS	<	A	>	A	<	A	>	A	<	B	>	B	<	C	>	C	A
			Delay	<	1	>	0	<	3	>	2	<	12	>	12	<	22	>	22	1
			V/C	<	0.16	>		<	0.14	>		<	0.04	>		<	0.07	>		
			Q	<	0	>		<	2	>		<	1	>		<	2	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	13 - Wellington St & Ross St/Sunnidale Rd	TCS	LOS	B	C	>	C	C	C	>	C	B	C	>	B	B	C	>	C	C
			Delay	17	23	>	22	23	29	>	29	16	21	>	19	15	29	>	26	24
			V/C	0.38	0.48	>		0.12	0.58	>		0.28	0.25	>		0.21	0.67	>		0.56
			Q	27	54	>		7	50	>		16	35	>		20	99	>		
			Ex	20	-	>		30	-	>		15	-	>		25	-	>		
			Avail.	-7	-	>		23	-	>		-1	-	>		5	-	>		
	14 - Grove St & Site Access	TWSC	LOS	<	A		A		A	>	A					B		>	B	A
			Delay	<	1		1		0	>	0					12		>	12	6
			V/C	<	0.01				0.11	>						0.34		>		
			Q	<	0				0	>						12		>		
			Ex	<	-				-	>						-		>		
			Avail.	<	-				-	>						-		>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds

Q - 95th Percentile Queue Length
Ex. - Existing Available Storage
Avail. - Available Storage

TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control

RBT - Roundabout

TABLE 4.12: 2036 FUTURE TOTAL TRAFFIC OPERATIONS (PM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																	
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	1 - Bayfield St & Coulter St/Hwy 400 Westbound off-ramp	TCS	LOS	E	-	D	D	D	E	>	E	F	B		C		F	>	F	F
			Delay	59	-	51	52	54	75	>	67	83	16		21		174	>	174	90
			V/C	0.37	-	0.35		0.49	0.85	>		0.87	0.71				1.30	>		1.13
			Q	23	-	52		83	155	>		100	176				559	>		
			Ex	-	-	-		-	-	>		50	-				-	>		
			Avail.	-	-	-		-	-	>		-50	-				-	>		
	2 - Bayfield St & Hwy 400 Eastbound off/on-ramp	TCS	LOS	D	-	D	D						F	D	F	F	C		D	E
			Delay	50	-	37	47						93	47	82	137	21		49	63
			V/C	0.93	-	0.63							1.01	0.62		1.21	0.43			1.07
			Q	207	-	127							277	121		200	104			
			Ex	-	-	-							-	30		90	-			
			Avail.	-	-	-							-	-91		-110	-			
	4 - Bayfield St & Grove St	TCS	LOS	E	C	>	E	C	F	>	F	F	F	>	F	F	C	>	F	F
			Delay	78	22	>	56	33	134	>	118	81	174	>	170	251	26	>	81	116
			V/C	0.95	0.15	>		0.34	1.16	>		0.81	1.28	>		1.46	0.83	>		1.37
			Q	64	25	>		35	185	>		14	222	>		179	159	>		
			Ex	20	-	>		30	-	>		30	-	>		50	-	>		
			Avail.	-44	-	>		-5	-	>		16	-	>		-129	-	>		
	5 - Bayfield St & Dalton St	TWSC	LOS	B		>	B					<	A		A		A	>	A	A
			Delay	11		>	11					<	0		0		0	>	0	0
			V/C	0.03		>						<	0.55				0.46	>		
			Q	1		>						<	0				0	>		
			Ex	-		>						<	-				-	>		
			Avail.	-		>						<	-				-	>		
	6 - Bayfield St & Wellington St	TCS	LOS	E	C	>	D	C	E	>	E	E	D	>	D	E	C	>	C	D
			Delay	58	32	>	44	25	69	>	65	67	44	>	45	78	30	>	34	44
			V/C	0.94	0.70	>		0.13	0.95	>		0.66	0.91	>		0.90	0.84	>		0.99
			Q	117	122	>		9	149	>		29	147	>		22	100	>		
			Ex	-	-	>		30	-	>		20	-	>		20	-	>		
			Avail.	-	-	>		21	-	>		-9	-	>		-2	-	>		
	7 - Toronto St & Dalton St	TWSC	LOS					B		>	B		A	>	A	<	A		A	A
			Delay					12		>	12		0	>	0	<	0		0	1
			V/C					0.03		>			0.14	>		<	0.00			
			Q					1		>			0	>		<	0			
			Ex					-		>			-	>		<	-			
			Avail.					-		>			-	>		<	-			
	8 - Toronto St & Wellington St	TCS	LOS	B	C	>	C	C	B	>	B	<	C	>	C	<	C	>	C	B
			Delay	15	25	>	23	27	11	>	15	<	21	>	21	<	21	>	21	20
			V/C	0.41	0.82	>		0.77	0.46	>		<	0.36	>		<	0.40	>		0.66
			Q	28	110	>		27	54	>		<	43	>		<	46	>		
			Ex	25	-	>		20	-	>		<	-	>		<	-	>		
			Avail.	-3	-	>		-7	-	>		<	-	>		<	-	>		
	9 - Mary St & Dalton St	TWSC	LOS		A	>	A	<	A		A	<	A	>	A					A
			Delay		0	>	0	<	2		2	<	9	>	9					3
			V/C		0.01	>		<	0.00			<	0.02	>						
			Q		0	>		<	0			<	0	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						
	10 - Mary St & Wellington St	TWSC	LOS	<	A	>	A	<	A	>	A	<	C	>	C	<	C	>	C	A
			Delay	<	0	>	0	<	0	>	0	<	16	>	16	<	18	>	18	1
			V/C	<	0.00	>		<	0.01	>		<	0.08	>		<	0.01	>		
			Q	<	0	>		<	0	>		<	2	>		<	0	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	11 - Maple St & Dalton St	TWSC	LOS		A	>	A	<	A		A	<	A	>	A					A
			Delay		0	>	0	<	1		1	<	9	>	9					2
			V/C		0.02	>		<	0.00			<	0.01	>						
			Q		0	>		<	0			<	0	>						
			Ex		-	>		<	-			<	-	>						
			Avail.		-	>		<	-			<	-	>						
	12 - Maple St & Wellington St	TWSC	LOS	<	A	>	A	<	A	>	A	<	C	>	C	<	C	>	C	A
			Delay	<	0	>	0	<	1	>	1	<	17	>	17	<	22	>	22	2
			V/C	<	0.22	>		<	0.17	>		<	0.24	>		<	0.07	>		
			Q	<	0	>		<	1	>		<	7	>		<	2	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	13 - Wellington St & Ross St/Sunnidale Rd	TCS	LOS	C	C	>	C	C	C	>	C	C	D	>	D	C	D	>	D	C
			Delay	33	22	>	25	24	32	>	32	26	42	>	36	24	43	>	37	31
			V/C	0.83	0.56	>		0.07	0.69	>		0.69	0.78	>		0.52	0.74	>		0.85
			Q	73	83	>		5	74	>		53	124	>		32	101	>		
			Ex	20	-	>		30	-	>		15	-	>		25	-	>		
			Avail.	-53	-	>		26	-	>		-38	-	>		-7	-	>		
	14 - Grove St & Site Access	TWSC	LOS	<	A		A		A	>	A					B		>	B	A
			Delay	<	2		2		0	>	0					15		>	15	4
			V/C	<	0.05				0.22	>						0.29		>		
			Q	<	1				0	>						10		>		
			Ex	<	-				-	>						-		>		
			Avail.	<	-				-	>						-		>		

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LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds

Q - 95th Percentile Queue Length
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Avail. - Available Storage

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TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control

RBT - Roundabout

5 Remedial Measures

5.1 Base Year, 2026, and 2031 Horizon Years

5.1.1 Bayfield Street and Highway 400 Ramp Terminal Intersections

Under base year traffic conditions, the Bayfield Street intersections with the Highway 400 ramp terminals were identified as operating poorly.

The analysis of 2026 traffic forecasts indicate with background growth and Phase 1 and Phase 2 site generated traffic, the Bayfield Street intersections with the Highway 400 ramp terminals would continue to operate poorly. However, with signal timing split adjustments operations would be acceptable with several movements reported operating over-capacity under the PM peak hour only. It is noted these movements would only be slightly over-capacity.

The analysis of 2031 traffic forecasts indicate with background growth and full-development site generated traffic, the operations of the Bayfield Street intersections with the Highway 400 ramp terminals would be further exacerbated.

Mitigation measures for the Highway 400 ramp terminal intersections were not investigated recognizing that future improvements are planned for implementation. It is recommended that traffic conditions be monitored as this may inform whether interim improvements may be necessary prior to the implementation of the planned improvements by the responsible road authorities. Furthermore, monitoring may indicate whether the forecast background growth is realized.

5.1.2 Bayfield Street and Grove Street

The analysis of 2031 traffic forecasts report the overall intersection of Bayfield Street and Grove Street is forecast to be approaching capacity under the PM peak hour under total traffic conditions.

Mitigation measures for the Bayfield Street and Grove Street intersection were investigated. Namely the provision of dual left turn lanes and auxiliary right turn lanes.

The Highway Capacity Manual and the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads both recommend the consideration of dual left turn lanes at intersections where left turning volumes exceed 300 vehicles per hour.

The 2031 traffic forecasts indicate the eastbound and southbound left turn volumes to be approximately 202 and 193, respectively, noting they are below the suggested threshold for the consideration. Regardless, due to spatial constraints it does not appear the provision of dual left turn lanes are feasible for implementation.

The TAC Guide recommends the consideration of right turn lanes at signalized intersections where the volume of right turning vehicles is 10 to 20 percent of the through volume, subject to a minimum of 60 vehicles per hour in the design hour. Based upon this guidance, right turn lanes are identified to be provided for the westbound, southbound, and northbound right turn movements. Similar rationale is noted, due to spatial constraints it does not appear the provision of auxiliary right turn lanes are feasible.

Recognizing the potential constraint for provision of intersection geometric capacity improvements, successful implementation of developed Transportation Demand Management (TDM) plan should assist in reducing site generated vehicle trips and parking demands.

5.2 2036 Horizon

5.2.1 Bayfield Street and Highway 400 Ramp Terminal Intersections

Accounting for the planned improvements, the 2036 traffic forecasts report the ramp terminal intersections will operate at acceptable levels of service and within capacity under the AM peak hour.

Under the PM peak hour, the overall intersection and several movements are forecast to operate over-capacity. The over-capacity movements reported are:

- Bayfield Street and Coulter Street/Highway 400 SB Off-Ramp
  - Overall intersection reports a v/c ratio of 1.13; and
  - Southbound through movement reports a LOS F and v/c ratio of 1.30.
- Bayfield Street and Highway 400 NB Off/On-Ramp
  - Overall intersection reports a v/c ratio of 1.07;
  - Northbound through movement reports a LOS F and v/c ratio of 1.01; and
  - Southbound left turn movement reports a LOS F and v/c ratio of 1.21.

At the Coulter Street/Highway 400 SB Off-Ramp intersection, it is noted the southbound approach was analyzed with two through lanes per the improvement plan drawings. We note that if the southbound approach is widened to provide three lanes this would mitigate the reported over-capacity issues. The overall intersection would operate within capacity (v/c = 0.89), the southbound through/right movement would operate within capacity (v/c = 0.91), and all other movements would be within capacity. This improvement should be considered for implementation considering there will be three receiving lanes.

At the Highway 400 NB Off/On-Ramp intersection it is determined the provision of dual southbound left turn lanes would mitigate the operational issues. The southbound left turn volume is 358, satisfying guidance criteria for the consideration of dual left turn lanes.

With the provision of southbound dual left turn lanes, the overall intersection would operate within capacity (v/c = 0.94), the northbound through movement would operate within capacity (v/c = 0.91), and the southbound left turn movement would be within capacity (v/c = 0.90). This improvement should be considered for implementation based upon the forecast volume of left turning vehicles under the design period hour. Feasibility for this additional mitigation measure should be investigated further.

5.2.2 Bayfield Street and Grove Street

Under the future roadway network, the connection between Bayfield Street and Rose Street will no longer be provided. This will result in the likely redistribution of traffic to the Bayfield Street and Grove Street intersection.

As a result, increased volumes are forecast for the southbound left and westbound right turn movements. These movements are forecast to have volumes of 435 and 444 under the 2036 PM peak hour, respectively.

As previously discussed, the implementation of dual left turn lanes and auxiliary right turn lanes may not be feasible at this location due to spatial constraints.

Recognizing the potential constraint for provision of intersection geometric capacity improvements, successful implementation of developed TDM plan should assist in reducing site generated vehicle trips and parking demands.

5.2.3 Bayfield Street and Wellington Street

The analysis of 2036 traffic forecasts report the overall intersection of Bayfield Street and Wellington Street is forecast to be approaching capacity; however, the overall intersection along with the identified critical movements are noted to be within capacity under the PM peak hour. These critical movements trigger the investigation of potential mitigation measures.

The eastbound left turn volume is forecast to be 357 under the PM peak hour and would satisfy guidance criteria for the consideration of dual left turn lanes. However, the implementation of an additional turn lane may not be feasible due to spatial constraints. Aforementioned, the identified critical movements are forecast to be within capacity.

It is noted the implementation of auxiliary right lanes may not be feasible due to spatial constraints.

Recognizing the potential constraint for provision of intersection geometric capacity improvements, successful implementation of developed TDM plan should assist in reducing site generated vehicle trips and parking demands.

It should be reiterated that, without mitigative measures implemented at this intersection, the intersection is still forecast to operate acceptably during the peak hours with the overall intersection and movements operating within capacity.

6 Vehicle Manoeuvring Plans

AutoTURN software was used to review and confirm that the design of the site access, internal circulation, and loading areas will accommodate the types of vehicles expected on-site. This involved the following tasks:

- Showing how a fire truck would access the designated fire route and circulate;
- Showing how a large truck (waste collection/delivery) would enter the site, access the loading spaces, and exit the site;
- Showing how a shuttle bus would enter the site, traverse and circulate through the site, and exit the site; and
- Showing how a passenger car would enter the site, traverse and circulate through the site, and exit the site.

Each of the manoeuvres described above are accommodated by the design of the site access and internal site layout without conflict or issue.

Appendix K contains the vehicle manoeuvring diagrams for reference.

7 Parking Review

7.1 Vehicle Parking

The parking requirements for the subject site have been verified against the City of Barrie Zoning By-law 2009-141. The subject site is zoned as RA2-2 (Residential Apartment Dwelling Second Density – 2) and is subject to Special Provision, SP-553.

Per Section 13.1.223, Item j, a minimum of one (1) parking space per residential unit shall be provided (By-law 2018-031).

Table 7.1 summarizes the required parking for the proposed development in comparison to the proposed parking supply.

TABLE 7.1: VEHICLE PARKING REQUIREMENTS VERSUS PROPOSED PARKING SUPPLY

# of Units	By-law Requirement	Spaces Required	Spaces Proposed	Surplus/ Deficit
Building 1 251 Units	1.0 space/unit	251	963	+165
Building 2 258 Units		258		
Building 3 289 Units		289		
Building 4 130 Units		130	156	+26
Overall Development 928 Units		***928***	***1,119***	***+191***
Barrier Free Parking: Over 100 Required Spaces = 1.0 space plus 3% of required parking spaces		33	38	+5

As shown above, the proposed vehicle parking supply rate of 1.2 spaces per dwelling unit exceeds the minimum requirements. It is noted that barrier free parking requirements are also satisfied.

7.2 Bicycle Parking

For the subject site there are no bicycle parking requirements per the City's ZBL. However, it is noted a total of 20 short-term bicycle parking spaces will be provided on-site at-grade and it is anticipated that long-term bicycle parking will be provided internally for residents.

8 Conclusions and Recommendations

8.1 Conclusions

Based on the investigations carried out, the following is concluded:

- **Existing Traffic Operations:** Most study area intersections are operating at acceptable levels of service and within capacity. The exception would be the Bayfield Street and Highway 400 ramp terminal intersections where poor operations are reported.
- **Site Generated Traffic:** The site is conservatively forecast to generate a total of 306 vehicle trips during the AM peak hour and 355 vehicle trips during the PM peak hour.
- **2026 Traffic Operations:** Most study area intersections are forecast to continue operating at acceptable levels of service and within capacity under background and total traffic conditions. The exceptions would be the Bayfield Street and Highway 400 ramp terminal intersections with operations further exacerbated due to background growth and the addition of Phase 1 site traffic (i.e., Building 1 and Building 2).
- **2031 Traffic Operations:** Similar to 2026 traffic operations, the majority of study area intersections are forecast to continue operating at acceptable levels of service and within capacity. The exceptions would be at the Bayfield Street intersections with the Highway 400 ramp terminals, and Grove Street intersections. The previously identified traffic operational concerns are forecast to be further exacerbated due to background growth and the addition of site traffic generated.
- **2036 Traffic Operations:** The analysis accounts for future planned road network improvements to be implemented by the City of Barrie. Specifically, improvements at the Bayfield Street and Highway 400 ramp terminal intersections.

  Most study area intersections are forecast to continue operating at acceptable levels of service and within capacity. The exception would be the intersections of Bayfield Street and Highway 400 ramp terminals and Grove Street, and Wellington Street.

  While it was anticipated the future roadway network improvements by the responsible road authorities would mitigate the Highway 400 ramp terminal intersection operations, poor traffic operations are still forecast.
- **Remedial Measures:** No interim improvements have been accounted for in the base year, 2026, and 2031 horizons

recognizing that planned improvements by the City of Barrie are forthcoming as related to the Bayfield Street and Highway 400 ramp terminal intersections. As we understand, these improvements would be in place by the 2036 horizon. Investigation for feasible remedial measures above and beyond the planned improvements were investigated for the 2036 horizon.

Investigations were undertaken to determine appropriate remedial measures to mitigate identified critical movements reported under the future horizons for Bayfield Street with Grove Street and Wellington Street.

At the Bayfield Street and Highway 400 SB Off-Ramp terminal intersection, the analysis determined the provision of three through lanes on the southbound intersection approach would mitigate the poor operations. It is noted there are three receiving lanes per the improvement plan drawings.

At the Bayfield Street and Highway 400 NB Off/On-Ramp terminal intersection, the analysis determined the provision of dual southbound left turn lanes would mitigate the poor operations.

At the intersections of Bayfield Street with Grove Street and Wellington Street, it was determined that geometric intersection improvements to provide additional capacity may be not feasible for implementation due to spatial constraints. Recognizing this constraint, successful implementation of a TDM plan should assist in reducing site generated vehicle trips and parking demands.

No remedial measures were determined to be required at the proposed site access intersection with Grove Street. Upon full build-out of the development, it was determined that auxiliary left or right turn lanes would not be required from an operational standpoint on Grove Street at the site access.

8.2 Recommendations

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

- The City of Barrie and Ministry of Transportation, Ontario recognize the conclusions drawn above;
- Responsible jurisdictions should monitor traffic volumes and modify signal timing plans at the study area intersections as required in response to higher traffic volumes in the future as well as anticipated changes in traffic patterns, and road cross-sections as planned network improvements by the City of Barrie

are implemented. Additionally, the feasibility of providing identified mitigation measures should be investigated further;

- A TDM Plan should be developed identifying applicable mitigation measures to assist in reducing vehicle trips and parking demands; and
- From a transportation perspective, the required planning applications to allow the proposed development should be approved.

Appendix A

Pre-Study Consultation Materials

From: Dorton, Peter (MTO)
To: Jill Juhlke
Cc: Janke, Aaron (MTO)
Subject: FW: (200669) 10-24 Grove Street Pre-Study Consultation
Date: July 23, 2021 4:04:42 PM
Attachments: image001.png
Data Sharing Agreement.pdf

Hi Jill.

Please note that Noor is now on vacation. Please return the signed agreement to me and I can then get you the dwgs requested.

In terms of horizon years for the TIS, we are fine with what you are proposing below.

Thanks,
Peter Dorton
Senior Project Manager
Ministry of Transportation
Central Operations, Highway Corridor Management Section
159 Sir William Hearst Avenue, 7th Floor
Toronto, ON M3M 0B7
Cell: (437) 833 - 9396
E-Mail: peter.dorton@ontario.ca
Web: www.mto.gov.on.ca/english/engineering/management/corridor

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From: Salim, Noorulain (MTO) <Noorulain.Salim@ontario.ca>
Sent: July 23, 2021 8:55 AM
To: jjuhlke@ptsl.com
Cc: Dorton, Peter (MTO) <Peter.Dorton@ontario.ca>
Subject: RE: (200669) 10-24 Grove Street Pre-Study Consultation

Hi Jill,

I can provide a CAD file for your use. Can you please sign the attached data licence agreement prior to us sending the file?

Thanks!
Noor

Noorulain Salim, P.Eng
Project Engineer, York West - Simcoe
Project Delivery | Ontario Ministry of Transportation

(437) 770-3912 | noorulain.salim@ontario.ca

From: Jill Juhlke <jjuhlke@ptsl.com>
Sent: July 19, 2021 5:14 PM
To: Dorton, Peter (MTO) <Peter.Dorton@ontario.ca>
Subject: RE: (200669) 10-24 Grove Street Pre-Study Consultation

Hi Peter,

Thank you for the response and the data. With regards to horizon years, if we add opening year (full buildout/2027), will you accept four and nine years beyond buildout (2031 and 2036 respectively) as the “five” and “ten” year horizons? I ask because the City wants the 2031 and 2036 horizons analyzed as it corresponds to their modelling/long range planning horizons. Given that there is only a one year difference between the City and MTO horizon years I am hoping you will agree since the ultimate requirements should not change.

Also, would it be possible for you to provide a CAD version of the attached?

Thanks again,

Jill Juhlke, C.E.T.
Senior Project Manager

Paradigm Transportation Solutions Limited
5A-150 Pinebush Road, Cambridge ON N1R 8J8
p: 905.381.2229 x301
e: jjuhlke@ptsl.com
w: www.ptsl.com

From: Dorton, Peter (MTO) <Peter.Dorton@ontario.ca>
Sent: July 9, 2021 1:37 PM
To: Jill Juhlke <jjuhlke@ptsl.com>
Cc: Jordan Lambie <Jordan.Lambie@barrie.ca>; Janke, Aaron (MTO) <Aaron.Janke@ontario.ca>; Djokic, Zoran (MTO) <Zoran.Djokic@ontario.ca>; Blaney, Cameron (MTO) <Cameron.Blaney@ontario.ca>; Hajjar, Alexander (MTO) <Alexander.Hajjar@ontario.ca>
Subject: FW: (200669) 10-24 Grove Street Pre-Study Consultation

Hi Jill:

Our only comment on your proposal is that you should also forecast and analyze traffic for the opening day of the development, and 5 and 10 years beyond the opening date.

Please find attached the latest available traffic data, as requested.

Other than the Hwy 400 / Bayfield plans that you mention, we are not aware of any other works planned for in the immediate area.

Thanks,
Peter Dorton
Senior Project Manager
Ministry of Transportation
Central Operations, Highway Corridor Management Section
159 Sir William Hearst Avenue, 7th Floor
Toronto, ON M3M 0B7
Cell: (437) 833 - 9396
E-Mail: peter.dorton@ontario.ca
Web: www.mto.gov.on.ca/english/engineering/management/corridor

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From: Jill Juhlke <jjuhlke@ptsl.com>
Sent: June 28, 2021 3:16 PM
To: Dorton, Peter (MTO) <Peter.Dorton@ontario.ca>
Subject: (200669) 10-24 Grove Street Pre-Study Consultation

Hi Peter,

Paradigm has been retained to conduct the required transportation studies for the planned redevelopment of 10-24 Grove Street in Barrie. I am contacting you for approval of our study area and work plan that is required to satisfy MTO requirements.

Development Proposal

The site is currently occupied by a YMCA facility. The applicant proposes to redevelop the site to include a total of 963 residential units in four towers ranging in height from 22 to 25 stories. The site will be developed in three phases over two years:

- Phase 1 – Towers 1 and 2, completion May 2025
- Phase 2- Tower 3, May 2026
- Phase 3- Tower 4, May 2027

Access is proposed via one all-turns access to Grove Street. Preliminary site plan is attached.

Work Plan

The Transportation Impact Study will follow the MTO Traffic Impact Study Guidelines (2021). The following items supplement these guidelines:

1. The following study area intersections:

   MTO Intersections

   - Bayfield Street and Highway 400 southbound off-ramp/Coulter Street
   - Bayfield Street and Highway 400 northbound off-ramp/Rose Street
   - Rose Street and Highway 400 northbound on-ramp

   Municipal Intersections

   - Bayfield Street and Grove Street, Dalton Street and Wellington Street
   - Dalton Street and Maple Avenue, Mary Street and Toronto Street
   - Wellington Street and Maple Avenue, Mary Street, Toronto Street and Ross Street/Sunnidale Road
   - Site driveway connection to Grove Street
2. We will utilize the most recent count data available for all study area intersections. If older than 18 months, the counts will be factored to existing conditions using a conservative 1% growth rate as requested by City of Barrie staff.
3. Traffic forecasts will be completed for two analysis periods (AM and PM peak hours) and three planning horizons as approved by City of Barrie:
   - 2026 - midway through development
   - 2031 - four years post-development
   - 2036 - nine years post-development
4. Trip generation will be based on ITE 10th Edition rates using land use code (LUC) 222 Multifamily Housing (High-Rise).
5. Trip distribution will be based on the existing travel patterns within the study area and will be informed by the City of Barrie data. The trips will be assigned based on the most logical routes to/from the site. Any assumptions regarding the distribution of trips to the site accesses will be outlined within the report.
6. A general background growth rate of 1% will be used for forecasting (as requested by City staff). Note that this growth rate is higher the MTO AADT traffic volumes at Bayfield Street interchange with Highway 400.
7. Traffic growth from nearby developments will be accounted for including the mixed-use development planned for 113 Bayfield Street.
8. All traffic analyses will be undertaken using Synchro 10 with HCM 2010 procedures and SimTraffic. Where timing and/or phasing modifications are required, the analysis results will be presented separately.

9. All analyses results, assumptions and supporting documentation will be included within the report appendices

Are there any planned roadway improvements that should be considered as part of our analyses or is there any other pertinent information relevant to the study area? Note that we are aware of the planned Bayfield Road improvements.

By way of this email, I am requesting the MTO provide the most recent counts for the study area Highway 400 intersections.

Please provide feedback at your earliest convenience.

Thank you,

Jill Juhlke, C.E.T.
Senior Project Manager

Paradigm Transportation Solutions Limited
5A-150 Pinebush Road, Cambridge ON N1R 8J8
p: 905.381.2229 x301
e: jjuhlke@ptsl.com
w: www.ptsl.com

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Appendix B

Traffic Count Data

Ministry of Transportation
Ministère des Transports
2019

Intersection Layout Sheet

Version: 1.0 Feb 1, 2016

Contract # 9015-E-00 09
Work Order # 197

Date: Aug 22/ Day: Thur / Hrs: 7 - 9 + 11 - 14 + 15 - 18

Location: HWY400 @ Bayfield st - Hwy 26 IC Ramps Ramps: ERT /

Reg/Mun: CR Town/City: Barrie Area:

File Name: 3469000000 Device (Gretch) / Jamar Unit # 9 / Interval 1: (AM) / NN / PM

Observer: Marina Usik Weather: Clear / Clear Road Condition: Dry / Dry

LHRS & O/S: 46900 0.00

GPS: G-Star IV

Datum: WGS 84 (Y) / N

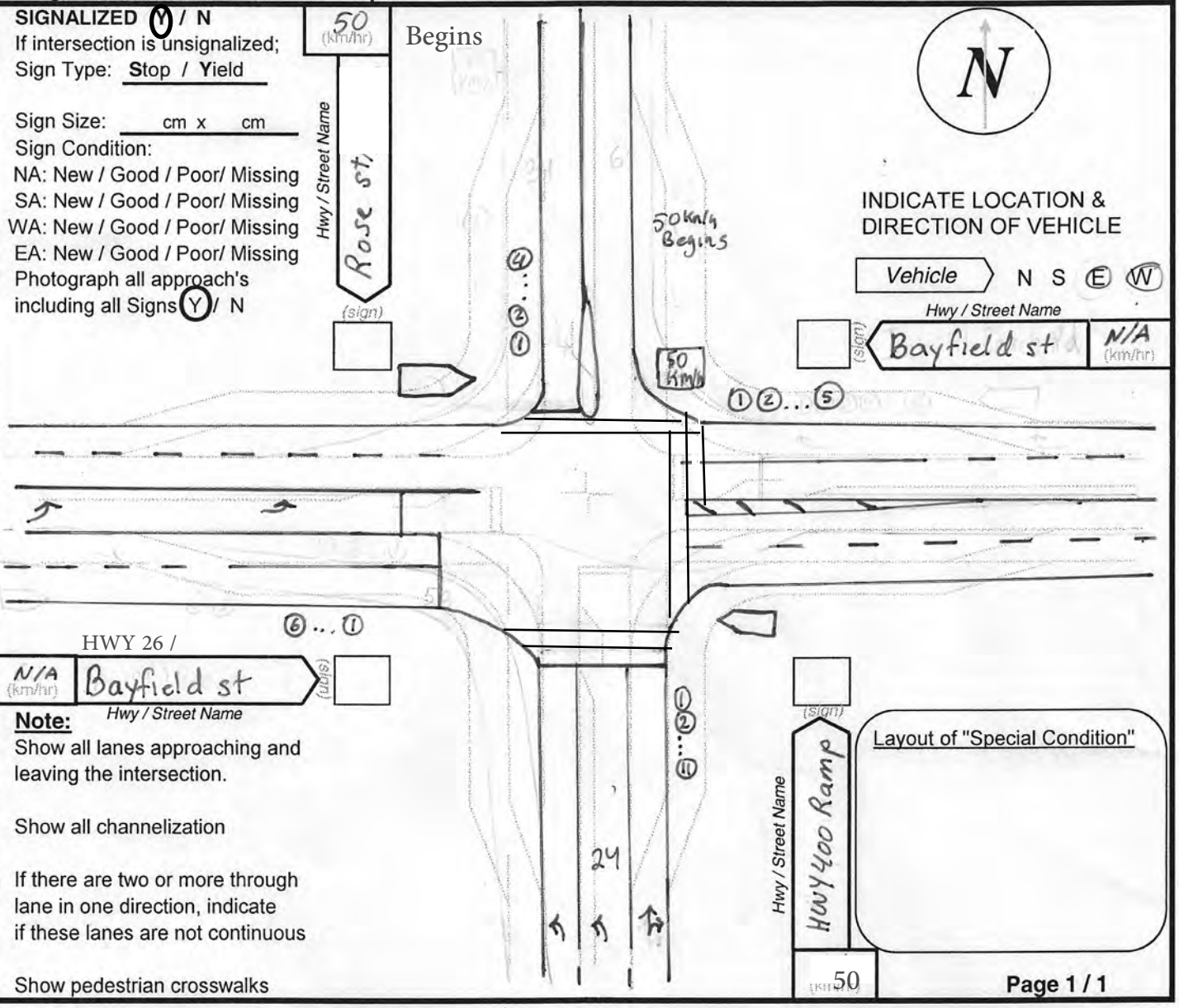
Lat: 44.398669-

Long: 79.698134

Comments:

SIGNALIZED (Y) / N
If intersection is unsignalized;
Sign Type: **S**top / **Y**ield

Sign Size: cm x cm
Sign Condition:
NA: New / Good / Poor/ Missing
SA: New / Good / Poor/ Missing
WA: New / Good / Poor/ Missing
EA: New / Good / Poor/ Missing
Photograph all approach's including all Signs (Y) / N



Note:
Show all lanes approaching and leaving the intersection.

Show all channelization

If there are two or more through lane in one direction, indicate if these lanes are not continuous

Show pedestrian crosswalks

Layout of "Special Condition"

Ontario

Ministry of Transportation

TVIS II - Traffic Volume Information System

AdHoc Turning Movement Total Count and Peak Summary Report

Description: HWY 400 @ HWY 26 - BAYFIELD STREET (ERT)

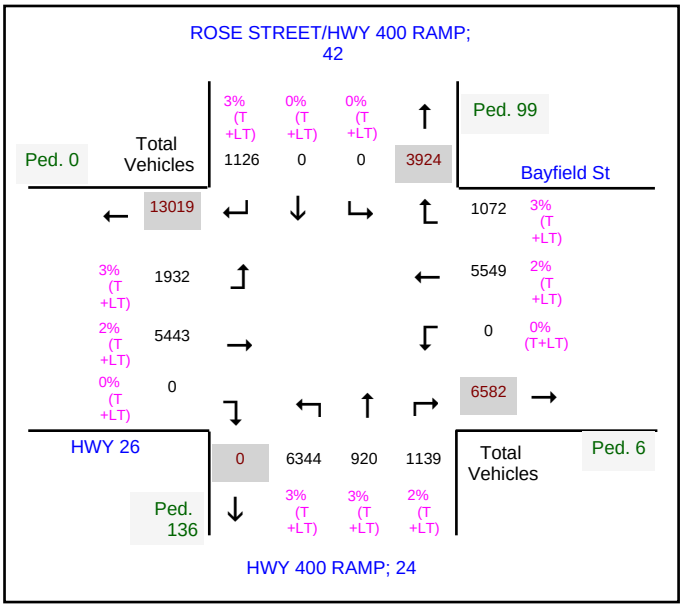
Region: CENTRAL | **Survey Type:** TM – Interchange | **Hwy:** 400

Start Date: 22-Aug-2019 (Thu) | **I/C Side:** E | **LHRS:** 46900

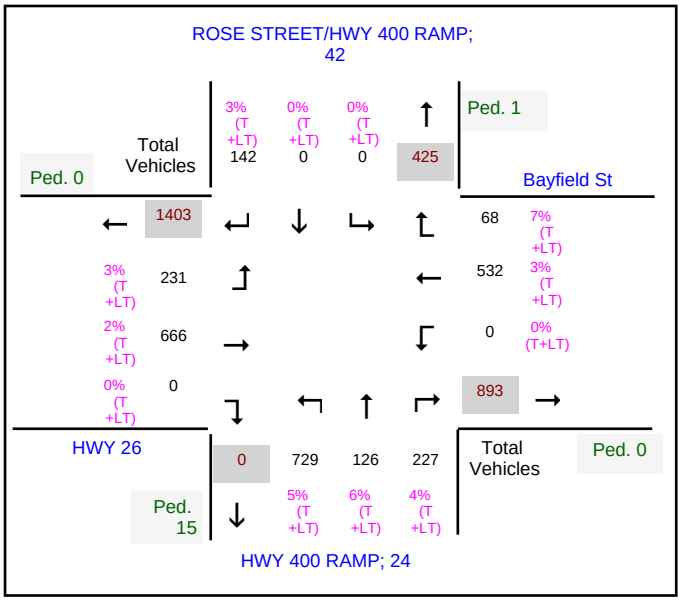
End Date: 22-Aug-2019 (Thu) | **Int. Type:** Four Leg | **Offset:** 0

Schedule Summary: TUES-THURS, 07:00-09:00, 11:00-14:00, 15:00-18:00

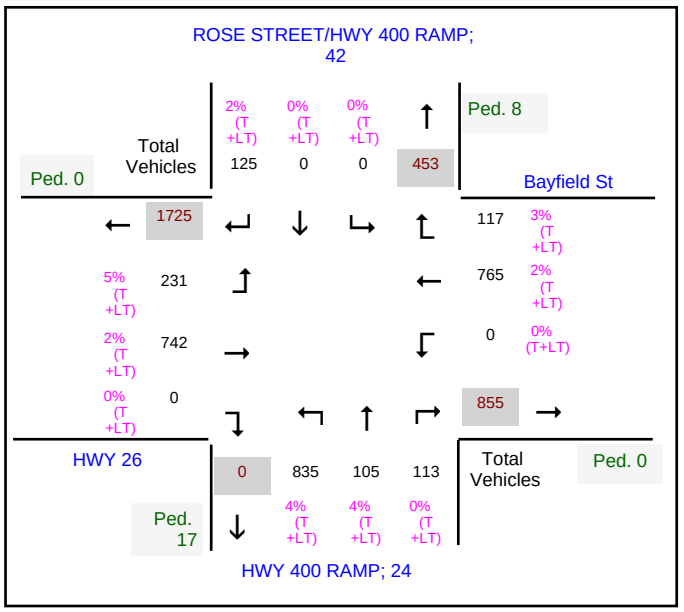
Total Count — Number of hours: 8



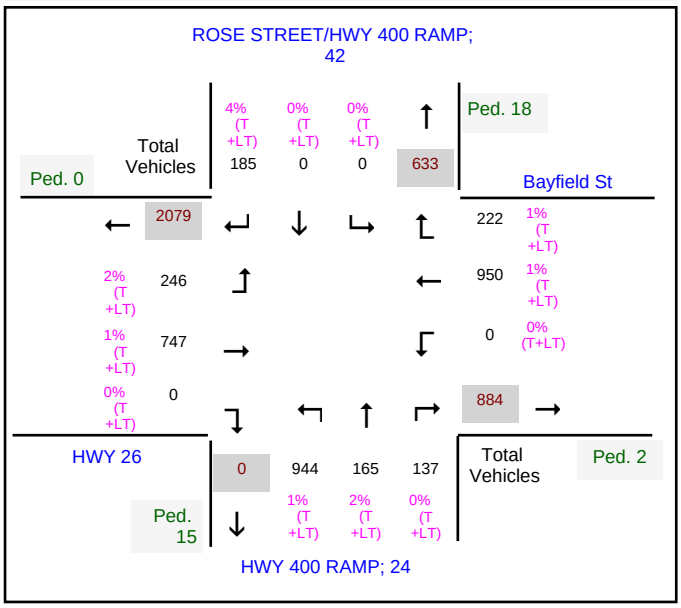
AM Peak Hour Report — Start Time: 08:00



Midday Peak Hour Report — Start Time: 11:45



PM Peak Hour Report — Start Time: 16:30



Ontario

Ministry of Transportation

TVIS II - Traffic Volume Information System

Turning Movement 15 Minute Report

Description: HWY 400 @ HWY 26 - BAYFIELD STREET (ERT)
Region: CENTRAL | **Survey Type:** TM – Interchange | **Hwy:** 400
Start Date: 22-Aug-2019 (Thu) | **I/C Side:** E | **LHRS:** 46900
End Date: 22-Aug-2019 (Thu) | **Int. Type:** Four Leg | **Offset:** 0
Schedule Summary: TUES-THURS, 07:00-09:00, 11:00-14:00, 15:00-18:00

	Major Road Approaches																				Minor Road Approaches																				
	East Bayfield St										West HWY 26										North ROSE STREET/HWY 400 RAMP: Ramp(s): 42										South HWY 400 RAMP: Ramp(s): 24										
Start Time	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Total Veh.
	←	↑	→	←	↑	→	←	↑	→		←	↑	→	←	↑	→	←	↑	→		←	↑	→	←	↑	→	←	↑	→		←	↑	→	←	↑	→	←	↑	→		
Period 1																																										
07:00	0	77	14	0	1	0	0	0	2	0	46	85	0	1	1	0	0	1	0	0	0	0	29	0	0	0	0	0	0	0	63	22	18	4	0	1	6	0	0	5	**371**
07:15	0	84	21	0	1	0	0	2	1	1	51	90	0	1	3	0	1	1	0	0	0	0	33	0	0	1	0	0	0	5	72	14	23	1	0	0	6	0	0	0	**406**
07:30	0	124	24	0	0	0	0	1	0	0	69	118	0	3	0	0	0	2	0	0	0	0	36	0	0	0	0	0	0	3	89	11	28	5	0	2	1	0	0	2	**513**
07:45	0	128	26	0	1	2	0	2	0	0	70	129	0	1	2	0	0	1	0	0	0	0	32	0	0	2	0	0	0	0	143	24	32	3	1	0	2	2	0	1	**603**
08:00	0	119	13	0	2	1	0	1	0	0	61	146	0	1	1	0	1	4	0	0	0	0	32	0	0	1	0	0	0	0	136	35	38	6	1	1	5	0	1	3	**606**
08:15	0	124	18	0	2	0	0	1	2	0	62	154	0	1	2	0	1	2	0	0	0	0	41	0	0	0	0	0	0	1	202	27	67	3	1	2	6	0	1	1	**719**
08:30	0	115	21	0	3	0	0	1	0	0	48	160	0	1	2	0	2	1	0	0	0	0	37	0	0	1	0	0	0	0	163	29	57	10	3	0	4	0	1	7	**659**
08:45	0	160	11	0	2	1	0	2	1	0	52	190	0	1	3	0	0	1	0	0	0	0	28	0	0	2	0	0	0	0	188	28	57	4	2	1	2	0	1	4	**737**
Period 2																																										
11:00	0	172	35	0	4	0	0	1	0	0	59	138	0	2	4	0	1	2	0	0	0	0	21	0	0	0	0	0	0	1	168	26	25	1	1	1	3	0	0	2	**664**
11:15	0	155	28	0	2	0	0	1	1	0	62	149	0	1	1	0	0	2	0	0	0	0	26	0	0	2	0	0	0	6	195	27	36	4	2	0	3	0	0	3	**697**
11:30	0	174	19	0	3	2	0	1	1	0	56	175	0	2	2	0	1	2	0	0	0	0	33	0	0	1	0	0	0	1	192	13	22	0	0	1	4	0	0	3	**704**
11:45	0	178	27	0	2	0	0	2	0	0	51	208	0	3	2	0	1	1	0	0	0	0	37	0	0	0	0	0	0	1	218	21	34	5	1	0	4	1	0	2	**796**
12:00	0	206	31	0	2	2	0	1	0	0	43	163	0	4	3	0	0	1	0	0	0	0	22	0	0	0	0	0	0	0	201	23	34	4	0	0	1	0	0	3	**741**
12:15	0	200	29	0	0	0	0	2	0	0	70	176	0	3	5	0	1	2	0	0	0	0	28	0	0	0	0	0	0	4	204	28	28	7	2	0	4	0	0	5	**789**
12:30	0	169	27	0	3	1	0	0	0	0	55	178	0	0	1	0	0	2	0	0	0	0	36	0	0	2	0	0	0	3	181	29	17	5	0	0	1	0	0	7	**707**
12:45	0	174	32	0	1	1	0	2	1	0	62	181	0	0	3	0	0	2	0	0	0	0	37	0	0	2	0	0	0	3	201	21	35	5	1	0	2	0	0	4	**763**
13:00	0	155	19	0	4	0	0	0	0	0	58	175	0	0	1	0	0	1	0	0	0	0	23	0	0	1	0	0	0	7	224	24	36	1	2	1	3	0	1	5	**729**
13:15	0	168	37	0	1	1	0	3	0	0	53	185	0	3	3	0	0	1	0	0	0	0	38	0	0	0	0	0	0	3	237	23	30	3	0	1	0	1	0	5	**788**
13:30	0	145	29	0	1	0	0	0	1	0	59	160	0	1	1	0	0	3	0	0	0	0	24	0	0	0	0	0	1	5	195	25	28	5	0	0	4	0	0	3	**682**
13:45	0	167	31	0	3	2	0	2	0	0	57	174	0	2	0	0	0	0	0	0	0	0	20	0	0	1	0	0	0	3	194	21	26	2	0	0	6	1	0	8	**709**

Ontario

Ministry of Transportation

TVIS II - Traffic Volume Information System

Turning Movement 15 Minute Report

Description: HWY 400 @ HWY 26 - BAYFIELD STREET (ERT)
Region: CENTRAL | **Survey Type:** TM – Interchange | **Hwy:** 400
Start Date: 22-Aug-2019 (Thu) | **I/C Side:** E | **LHRS:** 46900
End Date: 22-Aug-2019 (Thu) | **Int. Type:** Four Leg | **Offset:** 0
Schedule Summary: TUES-THURS, 07:00-09:00, 11:00-14:00, 15:00-18:00

	Major Road Approaches																				Minor Road Approaches																				
	East Bayfield St										West HWY 26										North ROSE STREET/HWY 400 RAMP: Ramp(s): 42										South HWY 400 RAMP: Ramp(s): 24										
	Cars			Trucks			Long Trucks				Cars			Trucks			Long Trucks				Cars			Trucks			Long Trucks				Cars			Trucks			Long Trucks				
Start Time	←	↑	→	←	↑	→	←	↑	→	Ped	←	↑	→	←	↑	→	←	↑	→	Ped	←	↑	→	←	↑	→	←	↑	→	Ped	←	↑	→	←	↑	→	←	↑	→	Ped	Total Veh.
Period 3																																									
15:00	0	157	33	0	0	0	0	0	0	0	59	187	0	2	1	0	2	2	0	0	0	0	37	0	0	1	0	0	0	4	222	28	29	0	0	0	3	0	0	5	**763**
15:15	0	178	46	0	1	0	0	2	0	0	57	177	0	3	1	0	0	0	0	0	0	0	37	0	0	1	0	0	0	7	237	39	30	1	0	0	2	0	0	4	**812**
15:30	0	182	34	0	1	3	0	1	1	0	70	158	0	0	1	0	0	1	0	0	0	0	37	0	0	2	0	0	0	2	231	25	43	2	1	2	2	0	0	5	**797**
15:45	0	191	45	0	3	0	0	2	0	0	59	182	0	1	1	0	2	2	0	0	0	0	36	0	0	0	0	0	0	6	222	34	45	1	0	0	2	0	0	7	**828**
16:00	0	213	46	0	2	1	0	0	0	0	61	179	0	2	0	0	1	3	0	0	0	0	46	0	0	1	0	0	0	6	199	38	36	2	0	0	3	0	0	5	**833**
16:15	0	209	54	0	0	0	0	2	0	2	64	197	0	1	1	0	0	2	0	0	0	0	46	0	0	0	0	0	0	3	201	32	40	5	0	1	1	0	0	7	**856**
16:30	0	216	52	0	2	0	0	3	1	2	69	183	0	1	0	0	0	0	0	0	0	0	49	0	0	3	0	0	1	2	231	36	32	2	1	0	2	0	0	7	**884**
16:45	0	255	49	0	1	1	0	1	0	0	56	179	0	2	2	0	0	2	0	0	0	0	42	0	0	2	0	0	0	7	220	51	36	1	0	0	0	1	0	3	**901**
17:00	0	235	60	0	1	0	0	2	1	0	50	173	0	1	2	0	0	1	0	0	0	0	46	0	0	1	0	0	0	5	227	45	36	2	0	0	1	1	0	3	**885**
17:15	0	232	58	0	1	0	0	1	0	0	67	203	0	0	1	0	0	1	0	0	0	0	41	0	0	0	0	0	0	4	256	30	33	1	0	0	1	0	0	2	**926**
17:30	0	218	40	0	4	0	0	1	0	0	52	200	0	2	0	0	0	1	0	0	0	0	42	0	0	1	0	0	0	4	215	26	32	0	0	1	2	0	0	4	**837**
17:45	0	173	32	0	1	0	0	1	0	1	63	189	0	1	4	0	0	1	0	0	0	0	24	0	0	0	0	0	0	3	231	38	56	2	1	0	3	0	0	11	**820**

Ministry of Transportation
Ministère des Transports
2019

Intersection Layout Sheet

Version: 1.0 Feb 1, 2016

Contract # 9015-E-00 09
Work Order # 198

Date: Aug 22/ Day: Thur / Hrs: 7 - 9 + 11 - 14 + 15 - 18

Location: HWY 400 @ Bayfield st - HWY 26 LC W Ramp-venture INN Ramps: WRT /

Reg/Mun: CR Town/City: Barrie Area:

File Name: 4469000000 Device: (Gretch) / Jamar Unit # 9 / Interval 1: (AM) / NN / PM

Observer: Marina Usik Weather: Clear / Clear Road Condition: Dry / Dry

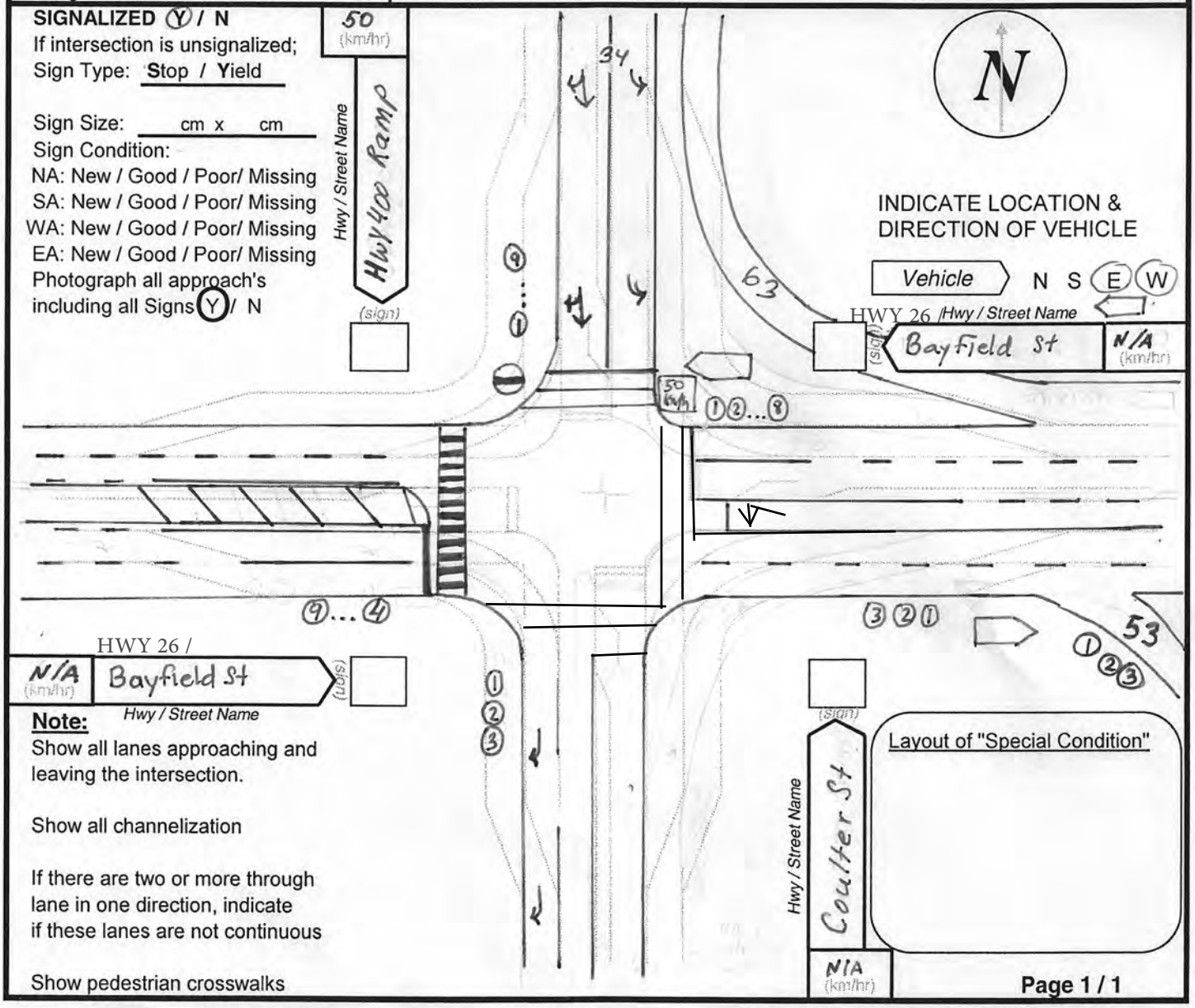
LHRS & O/S: 46900 0.00

GPS: G-Star IV
Datum: WGS 84 (Y) / N
Lat: 44.400335 -
Long: 79.699652

Comments:

SIGNALIZED (Y) / N
If intersection is unsignalized;
Sign Type: Stop / Yield

Sign Size: cm x cm
Sign Condition:
NA: New / Good / Poor/ Missing
SA: New / Good / Poor/ Missing
WA: New / Good / Poor/ Missing
EA: New / Good / Poor/ Missing
Photograph all approach's including all Signs (Y) / N



Note:
Show all lanes approaching and leaving the intersection.

Show all channelization

If there are two or more through lane in one direction, indicate if these lanes are not continuous

Show pedestrian crosswalks

Layout of "Special Condition"

Ontario

Ministry of Transportation

TVIS II - Traffic Volume Information System

AdHoc Turning Movement Total Count and Peak Summary Report

Description: HWY 400 @ HWY 26 - BAYFIELD STREET (WRT)

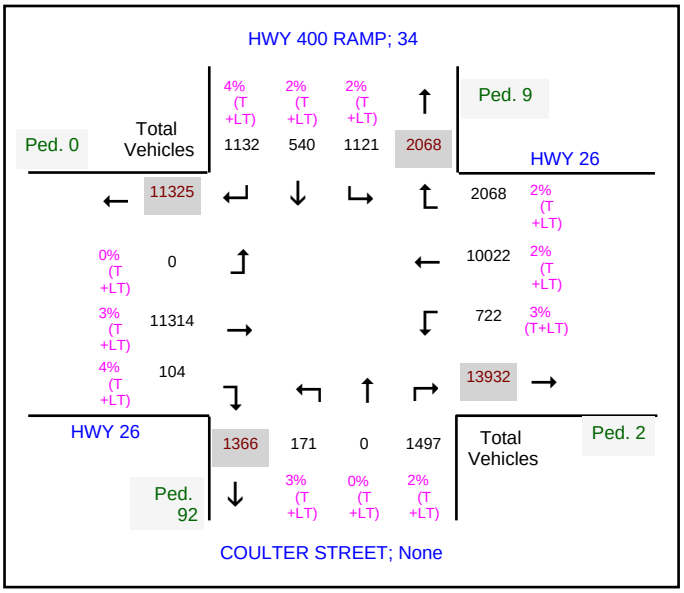
Region: CENTRAL | **Survey Type:** TM – Interchange | **Hwy:** 400

Start Date: 22-Aug-2019 (Thu) | **I/C Side:** W | **LHRS:** 46900

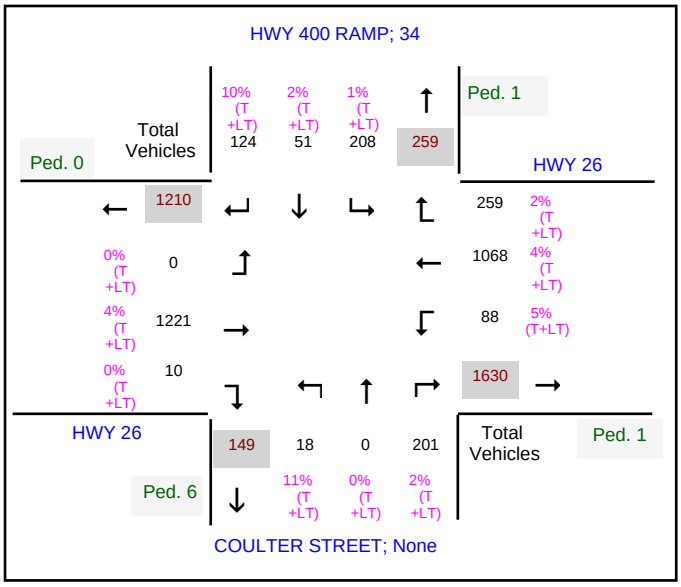
End Date: 22-Aug-2019 (Thu) | **Int. Type:** Four Leg | **Offset:** 0

Schedule Summary: TUES-THURS, 07:00-09:00, 11:00-14:00, 15:00-18:00

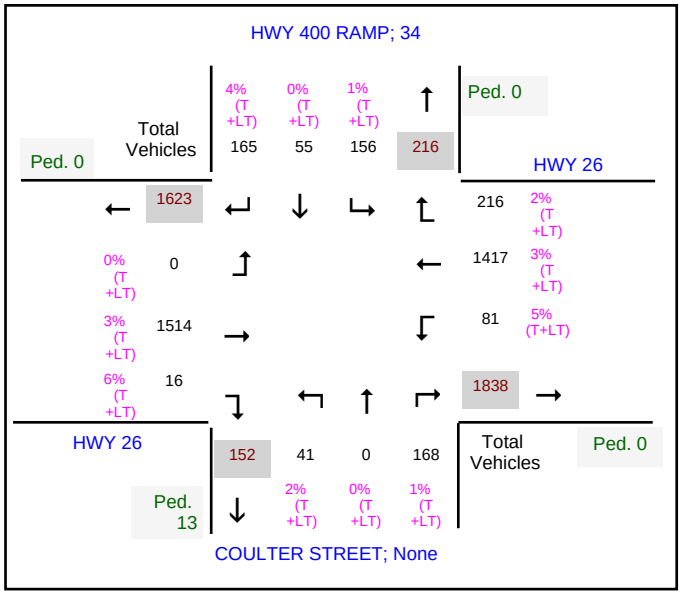
Total Count — Number of hours: 8



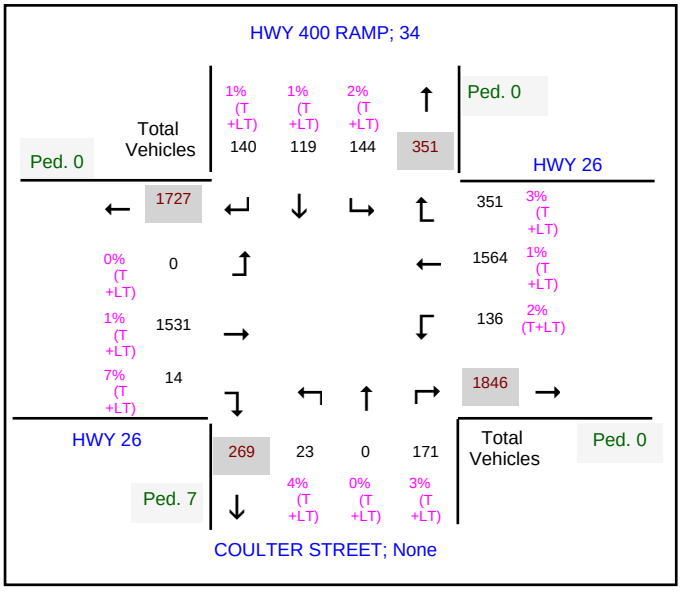
AM Peak Hour Report — Start Time: 08:00



Midday Peak Hour Report — Start Time: 11:30



PM Peak Hour Report — Start Time: 16:30



Ontario

Ministry of Transportation

TVIS II - Traffic Volume Information System

Turning Movement 15 Minute Report

Description: HWY 400 @ HWY 26 - BAYFIELD STREET (WRT)
Region: CENTRAL | **Survey Type:** TM – Interchange | **Hwy:** 400
Start Date: 22-Aug-2019 (Thu) | **I/C Side:** W | **LHRS:** 46900
End Date: 22-Aug-2019 (Thu) | **Int. Type:** Four Leg | **Offset:** 0
Schedule Summary: TUES-THURS, 07:00-09:00, 11:00-14:00, 15:00-18:00

	Major Road Approaches																		Minor Road Approaches																
	East HWY 26									West HWY 26									North HWY 400 RAMP: Ramp(s): 34									South COULTER STREET: Ramp(s): None									
Start Time	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Total Veh.
	←	↑	→	←	↑	→	←	↑	→		←	↑	→	←	↑	→	←	↑	→		←	↑	→	←	↑	→	←	↑	→		←	↑	→	←	↑	→	←	↑	→		
Period 1																																								
07:00	6	99	59	0	4	1	1	5	0	0	0	245	0	0	3	0	0	4	0	0	24	6	13	0	1	0	0	0	1	0	3	0	22	0	0	0	0	0	0	5	**497**
07:15	8	117	57	0	3	1	0	6	0	0	0	258	1	0	6	1	0	3	0	0	30	5	19	0	0	0	0	0	4	0	1	0	43	0	0	2	0	0	0	0	**565**
07:30	11	143	82	0	4	0	1	4	0	0	0	334	2	0	6	0	0	7	0	0	43	9	21	2	0	0	0	1	0	0	0	0	51	0	0	0	0	0	0	2	**721**
07:45	12	208	76	0	6	0	0	3	1	0	0	270	2	0	8	0	0	2	0	0	50	12	23	1	0	0	1	0	2	0	0	0	53	0	0	0	0	0	0	0	**730**
08:00	15	204	66	0	8	0	1	5	0	1	0	279	3	0	3	0	0	5	0	0	49	9	14	1	0	1	0	0	0	0	3	0	49	0	0	1	0	0	1	0	**717**
08:15	27	280	60	0	3	1	0	7	0	0	0	281	3	0	8	0	0	5	0	0	50	13	35	0	0	4	0	0	2	0	4	0	44	2	0	0	0	0	1	0	**830**
08:30	21	233	68	0	12	3	0	4	0	0	0	298	3	0	3	0	0	4	0	0	58	11	28	1	0	1	0	0	3	0	3	0	66	0	0	1	0	0	0	4	**821**
08:45	21	303	61	2	4	0	1	5	0	0	0	320	1	0	8	0	0	7	0	0	48	17	34	1	1	1	0	0	1	1	6	0	38	0	0	0	0	0	0	2	**880**
Period 2																																								
11:00	18	286	44	0	5	1	1	3	0	0	0	311	3	0	11	0	0	3	0	0	16	9	35	1	0	3	2	0	0	1	10	0	46	1	0	1	0	0	0	2	**810**
11:15	16	307	45	0	5	1	0	4	0	1	0	302	7	0	4	0	0	3	1	0	20	11	31	0	0	0	1	0	1	6	4	0	47	0	0	4	0	0	1	3	**815**
11:30	14	332	54	0	1	2	2	3	0	0	0	354	2	0	9	0	0	5	0	0	39	16	53	0	0	1	0	0	1	0	11	0	52	0	0	0	0	0	1	0	**952**
11:45	24	362	44	1	7	0	0	6	0	0	0	383	6	0	7	0	0	7	1	0	50	11	42	0	0	0	0	0	1	0	11	0	37	0	0	0	0	0	0	2	**1000**
12:00	22	338	59	0	5	1	0	3	1	0	0	341	3	0	6	0	0	1	0	0	39	15	27	1	0	1	0	0	2	0	6	0	44	0	0	0	0	0	0	4	**915**
12:15	17	347	55	0	7	0	1	6	0	0	0	384	4	0	9	0	0	8	0	0	27	13	37	0	0	0	0	0	0	0	12	0	33	0	0	1	1	0	0	7	**962**
12:30	9	306	63	0	7	3	0	1	0	0	0	373	3	0	5	0	0	2	0	0	33	7	34	1	0	1	0	0	1	0	5	0	36	0	0	0	0	0	0	5	**890**
12:45	18	329	55	0	6	2	1	2	0	0	0	395	5	0	3	0	0	2	0	0	33	16	30	1	0	2	0	0	1	0	7	0	53	0	0	0	0	0	1	6	**962**
13:00	26	329	51	0	4	3	0	1	0	0	0	381	1	0	5	0	0	2	0	0	25	10	39	0	0	1	0	0	1	0	4	0	47	0	0	1	0	0	0	1	**931**
13:15	19	354	58	1	2	1	1	1	0	0	0	358	1	0	13	0	0	3	0	0	27	16	47	0	0	0	0	0	0	0	2	0	44	0	0	1	0	0	0	3	**949**
13:30	28	290	44	0	7	0	0	3	0	0	0	370	3	0	5	0	0	4	0	0	24	13	44	0	0	0	1	0	1	0	6	0	42	0	0	0	0	0	0	5	**885**
13:45	18	295	49	0	4	3	0	8	1	0	0	347	6	0	8	0	0	3	0	0	25	17	42	0	0	1	0	0	1	0	4	0	52	0	0	1	0	0	0	3	**885**

Ontario

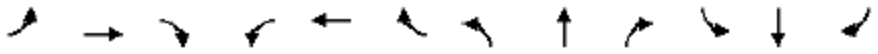
Ministry of Transportation

TVIS II - Traffic Volume Information System

Turning Movement 15 Minute Report

Description: HWY 400 @ HWY 26 - BAYFIELD STREET (WRT)
Region: CENTRAL | **Survey Type:** TM – Interchange | **Hwy:** 400
Start Date: 22-Aug-2019 (Thu) | **I/C Side:** W | **LHRS:** 46900
End Date: 22-Aug-2019 (Thu) | **Int. Type:** Four Leg | **Offset:** 0
Schedule Summary: TUES-THURS, 07:00-09:00, 11:00-14:00, 15:00-18:00

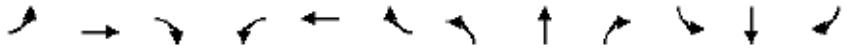
	Major Road Approaches																					Minor Road Approaches																					
	East HWY 26										West HWY 26										North HWY 400 RAMP: Ramp(s): 34										South COULTER STREET: Ramp(s): None										
Start Time	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Total Veh.
	←	↑	→	←	↑	→	←	↑	→		←	↑	→	←	↑	→	←	↑	→		←	↑	→	←	↑	→	←	↑	→		←	↑	→	←	↑	→	←	↑	→		
Period 3																																											
15:00	24	315	57	0	1	0	0	2	0	0	0	356	2	0	8	0	0	6	0	0	25	14	35	0	1	0	0	1	1	0	1	0	41	0	0	0	0	0	0	5	**890**
15:15	23	374	56	0	3	2	1	1	0	0	0	370	6	0	7	0	0	3	0	0	28	17	35	0	1	0	0	0	0	0	8	0	42	0	0	0	0	0	0	5	**977**
15:30	35	340	66	0	3	0	0	2	0	0	0	344	5	0	2	0	0	2	0	0	27	29	39	0	0	1	0	0	0	0	4	0	47	0	0	1	0	0	0	2	**947**
15:45	19	354	74	0	1	2	1	3	1	0	0	355	2	0	2	0	0	6	0	0	35	25	39	0	0	0	1	0	0	0	7	0	46	0	0	1	0	0	0	4	**974**
16:00	33	355	64	0	4	1	0	2	2	0	0	382	1	0	6	0	0	3	0	0	28	27	46	0	0	0	1	0	0	0	7	0	42	0	0	0	0	0	0	2	**1004**
16:15	26	345	85	0	4	0	1	2	0	0	0	391	3	0	4	0	0	3	0	0	35	22	41	2	0	0	0	1	2	0	3	0	65	0	0	1	0	0	0	5	**1036**
16:30	36	365	79	1	3	4	1	2	2	0	0	388	4	0	1	0	0	5	0	0	29	35	31	0	0	0	0	0	0	0	6	0	49	0	0	0	0	0	0	4	**1041**
16:45	34	395	85	0	2	0	0	2	1	0	0	410	4	0	5	0	0	3	0	0	33	28	43	1	0	0	0	0	0	0	4	0	26	1	0	2	0	0	0	1	**1079**
17:00	35	381	86	0	4	0	1	2	2	0	0	331	5	0	3	0	0	0	0	0	34	24	39	0	0	1	1	1	0	0	4	0	49	0	0	1	0	0	0	0	**1004**
17:15	28	405	91	0	2	1	0	1	0	0	0	380	0	0	2	0	0	3	1	0	45	31	26	1	0	0	0	0	0	0	8	0	42	0	0	1	0	0	1	2	**1069**
17:30	30	364	72	1	3	1	1	3	0	0	0	365	4	0	5	0	0	2	0	0	35	29	45	0	1	0	0	0	0	0	7	0	55	0	0	0	0	0	0	3	**1023**
17:45	27	325	57	0	2	1	0	4	0	0	0	361	5	0	5	0	0	1	0	0	33	13	18	2	1	1	0	0	1	1	5	0	66	0	0	1	0	0	1	5	**930**



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	55	10	45	62	119	10	471	31	79	845	81
Future Volume (vph)	76	55	10	45	62	119	10	471	31	79	845	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.90		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1712	1798		1656	1630		1609	3298		1762	3397	
Flt Permitted	0.48	1.00		0.71	1.00		0.22	1.00		0.32	1.00	
Satd. Flow (perm)	864	1798		1234	1630		373	3298		596	3397	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	88	64	12	52	72	138	12	548	36	92	983	94
RTOR Reduction (vph)	0	7	0	0	69	0	0	5	0	0	7	0
Lane Group Flow (vph)	88	69	0	52	141	0	12	579	0	92	1070	0
Confl. Peds. (#/hr)	7		7	7		7	21		14	14		21
Heavy Vehicles (%)	4%	2%	0%	7%	2%	1%	10%	4%	20%	1%	2%	1%
Bus Blockages (#/hr)	0	0	0	0	3	3	0	9	9	0	6	6
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	39.0	39.0		28.0	28.0		38.0	38.0		49.0	49.0	
Effective Green, g (s)	39.0	39.0		28.0	28.0		38.0	38.0		49.0	49.0	
Actuated g/C Ratio	0.39	0.39		0.28	0.28		0.38	0.38		0.49	0.49	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	396	701		345	456		141	1253		373	1664	
v/s Ratio Prot	c0.02	0.04			c0.09			0.18		0.02	c0.31	
v/s Ratio Perm	0.07			0.04			0.03			0.10		
v/c Ratio	0.22	0.10		0.15	0.31		0.09	0.46		0.25	0.64	
Uniform Delay, d1	19.9	19.4		27.1	28.4		19.9	23.3		14.4	19.0	
Progression Factor	1.00	1.00		1.00	1.00		0.88	0.80		1.20	1.25	
Incremental Delay, d2	1.3	0.3		0.9	1.8		1.1	1.2		1.5	1.9	
Delay (s)	21.2	19.6		28.0	30.1		18.7	19.9		18.8	25.6	
Level of Service	C	B		C	C		B	B		B	C	
Approach Delay (s)		20.5			29.7			19.8			25.0	
Approach LOS		C			C			B			C	

Intersection Summary				
HCM 2000 Control Delay	23.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.52			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	96.9%	ICU Level of Service	F	
Analysis Period (min)	15			

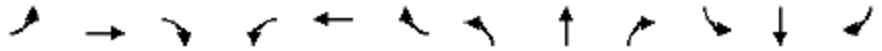
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	147	161	36	33	174	37	8	316	19	45	650	198
Future Volume (vph)	147	161	36	33	174	37	8	316	19	45	650	198
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		0.99	1.00	
Frt	1.00	0.97		1.00	0.97		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1712	1769		1727	1743		1775	3269		1736	3292	
Flt Permitted	0.42	1.00		0.62	1.00		0.27	1.00		0.45	1.00	
Satd. Flow (perm)	758	1769		1119	1743		498	3269		824	3292	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	171	187	42	38	202	43	9	367	22	52	756	230
RTOR Reduction (vph)	0	8	0	0	7	0	0	4	0	0	29	0
Lane Group Flow (vph)	171	221	0	38	238	0	9	385	0	52	958	0
Confl. Peds. (#/hr)	9		4	4		9	18		16	18		16
Heavy Vehicles (%)	4%	3%	3%	3%	4%	0%	0%	6%	6%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	3	0	0	9	9	0	9	9
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	38.0	38.0		27.0	27.0		39.0	39.0		50.0	50.0	
Effective Green, g (s)	38.0	38.0		27.0	27.0		39.0	39.0		50.0	50.0	
Actuated g/C Ratio	0.38	0.38		0.27	0.27		0.39	0.39		0.50	0.50	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	354	672		302	470		194	1274		475	1646	
v/s Ratio Prot	c0.03	0.12			0.14			0.12		0.01	c0.29	
v/s Ratio Perm	c0.15			0.03			0.02			0.05		
v/c Ratio	0.48	0.33		0.13	0.51		0.05	0.30		0.11	0.58	
Uniform Delay, d1	21.9	22.0		27.6	30.9		18.9	21.1		13.1	17.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.97	0.78	
Incremental Delay, d2	4.7	1.3		0.9	3.9		0.5	0.6		0.4	1.3	
Delay (s)	26.5	23.3		28.4	34.7		19.4	21.7		13.0	15.1	
Level of Service	C	C		C	C		B	C		B	B	
Approach Delay (s)		24.7			33.9			21.6			15.0	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		

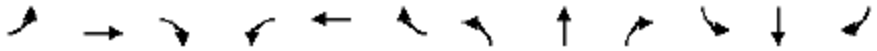
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	288	3	72	268	3	6	52	60	12	45	56
Future Volume (vph)	95	288	3	72	268	3	6	52	60	12	45	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.95	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.93			0.93	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1667	1804		1702	1821			1649			1560	
Flt Permitted	0.52	1.00		0.49	1.00			0.98			0.96	
Satd. Flow (perm)	905	1804		884	1821			1628			1508	
Peak-hour factor, PHF	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Adj. Flow (vph)	123	374	4	94	348	4	8	68	78	16	58	73
RTOR Reduction (vph)	0	0	0	0	0	0	0	46	0	0	44	0
Lane Group Flow (vph)	123	378	0	94	352	0	0	108	0	0	103	0
Confl. Peds. (#/hr)	1		16	16		1	39		3	3		39
Heavy Vehicles (%)	7%	4%	0%	4%	3%	0%	0%	6%	3%	0%	11%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	44.0	44.0		44.0	44.0			24.0			24.0	
Effective Green, g (s)	44.0	44.0		44.0	44.0			24.0			24.0	
Actuated g/C Ratio	0.55	0.55		0.55	0.55			0.30			0.30	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	497	992		486	1001			488			452	
v/s Ratio Prot		c0.21			0.19							
v/s Ratio Perm	0.14			0.11				0.07			c0.07	
v/c Ratio	0.25	0.38		0.19	0.35			0.22			0.23	
Uniform Delay, d1	9.4	10.2		9.1	10.0			21.0			21.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.2	1.1		0.9	1.0			1.0			1.2	
Delay (s)	10.6	11.4		10.0	11.0			22.0			22.2	
Level of Service	B	B		A	B			C			C	
Approach Delay (s)		11.2			10.8			22.0			22.2	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	105.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	263	84	5	228	57	57	78	18	75	185	75
Future Volume (vph)	87	263	84	5	228	57	57	78	18	75	185	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	0.99		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.99	1.00		0.94	1.00	
Frt	1.00	0.96		1.00	0.97		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1733	3298		1472	3322		1659	1710		1666	1763	
Flt Permitted	0.54	1.00		0.48	1.00		0.38	1.00		0.69	1.00	
Satd. Flow (perm)	980	3298		737	3322		670	1710		1202	1763	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	100	302	97	6	262	66	66	90	21	86	213	86
RTOR Reduction (vph)	0	31	0	0	22	0	0	8	0	0	15	0
Lane Group Flow (vph)	100	368	0	6	306	0	66	103	0	86	284	0
Confl. Peds. (#/hr)	20		29	29		20	18		34	34		18
Heavy Vehicles (%)	2%	2%	5%	20%	4%	0%	7%	4%	6%	1%	1%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	44.0	34.0		44.0	34.0		34.0	26.0		34.0	26.0	
Effective Green, g (s)	44.0	34.0		44.0	34.0		34.0	26.0		34.0	26.0	
Actuated g/C Ratio	0.44	0.34		0.44	0.34		0.34	0.26		0.34	0.26	
Clearance Time (s)	4.0	6.0		4.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	506	1121		397	1129		306	444		445	458	
v/s Ratio Prot	c0.02	c0.11		0.00	0.09		c0.02	0.06		0.02	c0.16	
v/s Ratio Perm	0.07			0.01			0.06			0.05		
v/c Ratio	0.20	0.33		0.02	0.27		0.22	0.23		0.19	0.62	
Uniform Delay, d1	16.6	24.5		15.8	24.0		23.1	29.1		23.0	32.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	0.8		0.1	0.6		1.6	1.2		1.0	6.2	
Delay (s)	17.5	25.3		15.9	24.6		24.7	30.4		23.9	38.8	
Level of Service	B	C		B	C		C	C		C	D	
Approach Delay (s)		23.7			24.4			28.2			35.5	
Approach LOS		C			C			C			D	

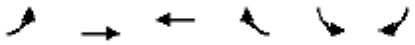
Intersection Summary			
HCM 2000 Control Delay	27.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	201	46	289	257	0	0
Future Volume (Veh/h)	201	46	289	257	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	239	55	344	306	0	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)			240			
pX, platoon unblocked	0.97	0.97			0.97	
vC, conflicting volume	497	497			650	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	469	469			626	
tC, single (s)	6.4	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.2	
p0 queue free %	56	90			100	
cM capacity (veh/h)	538	564			934	

Direction, Lane #	WB 1	NB 1
Volume Total	294	650
Volume Left	239	0
Volume Right	55	306
cSH	543	1700
Volume to Capacity	0.54	0.38
Queue Length 95th (m)	24.4	0.0
Control Delay (s)	19.2	0.0
Lane LOS	C	
Approach Delay (s)	19.2	0.0
Approach LOS	C	

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	62	82	54	29	10
Future Volume (Veh/h)	13	62	82	54	29	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	16	78	104	68	37	13
Pedestrians		2			5	
Lane Width (m)		3.5			3.5	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			101			
pX, platoon unblocked						
vC, conflicting volume	177				253	145
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	177				253	145
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				95	99
cM capacity (veh/h)	1406				729	902

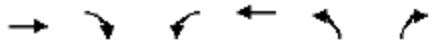
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	94	172	50
Volume Left	16	0	37
Volume Right	0	68	13
cSH	1406	1700	767
Volume to Capacity	0.01	0.10	0.07
Queue Length 95th (m)	0.3	0.0	1.6
Control Delay (s)	1.4	0.0	10.0
Lane LOS	A		B
Approach Delay (s)	1.4	0.0	10.0
Approach LOS			B

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	25.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	21	9	3	421	756	13
Future Volume (Veh/h)	21	9	3	421	756	13
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	26	11	4	513	922	16
Pedestrians	8				1	
Lane Width (m)	3.5				3.5	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	1				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				235	153	
pX, platoon unblocked	0.80	0.79	0.79			
vC, conflicting volume	1204	477	946			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	613	0	394			
tC, single (s)	6.8	6.9	4.8			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.5			
p0 queue free %	92	99	99			
cM capacity (veh/h)	339	849	758			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	37	175	342	615	323
Volume Left	26	4	0	0	0
Volume Right	11	0	0	0	16
cSH	413	758	1700	1700	1700
Volume to Capacity	0.09	0.01	0.20	0.36	0.19
Queue Length 95th (m)	2.2	0.1	0.0	0.0	0.0
Control Delay (s)	14.6	0.3	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	14.6	0.1		0.0	
Approach LOS	B				

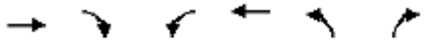
Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	31.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	21	2	4	10	4	5
Future Volume (Veh/h)	21	2	4	10	4	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68
Hourly flow rate (vph)	31	3	6	15	6	7
Pedestrians				1	3	
Lane Width (m)				3.5	3.5	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			37		62	36
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			37		62	36
tC, single (s)			4.1		6.4	6.4
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.5
p0 queue free %			100		99	99
cM capacity (veh/h)			1583		943	983

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	34	21	13
Volume Left	0	6	6
Volume Right	3	0	7
cSH	1700	1583	964
Volume to Capacity	0.02	0.00	0.01
Queue Length 95th (m)	0.0	0.1	0.3
Control Delay (s)	0.0	2.1	8.8
Lane LOS		A	A
Approach Delay (s)	0.0	2.1	8.8
Approach LOS			A

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	14.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	17	5	1	13	12	8
Future Volume (Veh/h)	17	5	1	13	12	8
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.56	0.56	0.56	0.56	0.56	0.87
Hourly flow rate (vph)	30	9	2	23	21	9
Pedestrians					37	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					3	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			76		98	72
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			76		98	72
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			100		98	99
cM capacity (veh/h)			1490		877	932

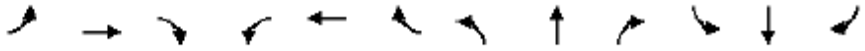
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	39	25	30
Volume Left	0	2	21
Volume Right	9	0	9
cSH	1700	1490	893
Volume to Capacity	0.02	0.00	0.03
Queue Length 95th (m)	0.0	0.0	0.8
Control Delay (s)	0.0	0.6	9.2
Lane LOS		A	A
Approach Delay (s)	0.0	0.6	9.2
Approach LOS			A

Intersection Summary			
Average Delay		3.1	
Intersection Capacity Utilization		20.4%	ICU Level of Service A
Analysis Period (min)		15	

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	12	7	132	16	6	102
Future Volume (Veh/h)	12	7	132	16	6	102
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.67	0.67	0.67	0.67	0.67	0.67
Hourly flow rate (vph)	18	10	197	24	9	152
Pedestrians			78			5
Lane Width (m)			3.5			3.5
Walking Speed (m/s)			1.2			1.2
Percent Blockage			6			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			216			
pX, platoon unblocked						
vC, conflicting volume	457	214			221	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	457	214			221	
tC, single (s)	6.7	6.2			4.3	
tC, 2 stage (s)						
tF (s)	3.8	3.3			2.4	
p0 queue free %	96	99			99	
cM capacity (veh/h)	473	828			1264	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	28	221	161
Volume Left	18	0	9
Volume Right	10	24	0
cSH	558	1700	1264
Volume to Capacity	0.05	0.13	0.01
Queue Length 95th (m)	1.2	0.0	0.2
Control Delay (s)	11.8	0.0	0.5
Lane LOS	B		A
Approach Delay (s)	11.8	0.0	0.5
Approach LOS	B		

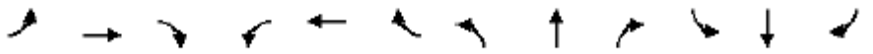
Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	21.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	299	19	48	303	4	1	5	12	5	2	2
Future Volume (Veh/h)	7	299	19	48	303	4	1	5	12	5	2	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	8	332	21	53	337	4	1	6	13	6	2	2
Pedestrians					6						8	
Lane Width (m)					3.5						3.5	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					0						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		206			103							
pX, platoon unblocked												
vC, conflicting volume	349			353			636	814	182	657	822	178
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	349			353			636	814	182	657	822	178
tC, single (s)	4.1			4.2			9.5	7.3	7.2	8.3	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			4.5	4.4	3.5	3.9	4.0	3.3
p0 queue free %	99			96			100	97	98	98	99	100
cM capacity (veh/h)	1213			1188			205	234	780	259	293	831

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	174	187	222	172	20	10
Volume Left	8	0	53	0	1	6
Volume Right	0	21	0	4	13	2
cSH	1213	1700	1188	1700	424	308
Volume to Capacity	0.01	0.11	0.04	0.10	0.05	0.03
Queue Length 95th (m)	0.2	0.0	1.1	0.0	1.1	0.8
Control Delay (s)	0.4	0.0	2.3	0.0	13.9	17.1
Lane LOS	A		A		B	C
Approach Delay (s)	0.2		1.3		13.9	17.1
Approach LOS					B	C

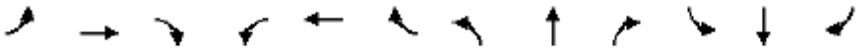
Intersection Summary				
Average Delay	1.3			
Intersection Capacity Utilization	34.9%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	314	2	7	303	2	2	0	15	2	2	8
Future Volume (Veh/h)	11	314	2	7	303	2	2	0	15	2	2	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	13	374	2	8	361	2	2	0	18	2	2	10
Pedestrians		4			2						7	
Lane Width (m)		3.5			3.5						3.5	
Walking Speed (m/s)		1.2			1.2						1.2	
Percent Blockage		0			0						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		106			203							
pX, platoon unblocked				0.91			0.91	0.91	0.91	0.91	0.91	
vC, conflicting volume	370			376			794	787	377	806	787	373
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	370			261			722	714	262	735	714	373
tC, single (s)	4.1			4.1			7.1	6.7	6.2	7.1	7.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.2	3.3	3.5	4.9	3.3
p0 queue free %	99			99			99	100	97	99	99	99
cM capacity (veh/h)	1193			1193			300	297	708	291	230	672

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	389	371	20	14
Volume Left	13	8	2	2
Volume Right	2	2	18	10
cSH	1193	1193	623	460
Volume to Capacity	0.01	0.01	0.03	0.03
Queue Length 95th (m)	0.3	0.2	0.8	0.7
Control Delay (s)	0.4	0.2	11.0	13.1
Lane LOS	A	A	B	B
Approach Delay (s)	0.4	0.2	11.0	13.1
Approach LOS			B	B

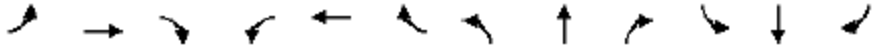
Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	33.3%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	72	8	78	112	133	18	850	83	162	773	101
Future Volume (vph)	116	72	8	78	112	133	18	850	83	162	773	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.92		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1778	1831		1716	1644		1760	3398		1766	3375	
Flt Permitted	0.41	1.00		0.70	1.00		0.31	1.00		0.15	1.00	
Satd. Flow (perm)	769	1831		1271	1644		572	3398		272	3375	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	120	74	8	80	115	137	19	876	86	167	797	104
RTOR Reduction (vph)	0	4	0	0	43	0	0	7	0	0	10	0
Lane Group Flow (vph)	120	78	0	80	209	0	19	955	0	167	891	0
Confl. Peds. (#/hr)	15		10	10		15	24		18	18		24
Heavy Vehicles (%)	0%	1%	0%	3%	1%	3%	0%	1%	4%	1%	2%	1%
Bus Blockages (#/hr)	0	0	0	0	3	3	0	9	9	0	6	6
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	38.0	38.0		27.0	27.0		39.0	39.0		50.0	50.0	
Effective Green, g (s)	38.0	38.0		27.0	27.0		39.0	39.0		50.0	50.0	
Actuated g/C Ratio	0.38	0.38		0.27	0.27		0.39	0.39		0.50	0.50	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	362	695		343	443		223	1325		240	1687	
v/s Ratio Prot	c0.02	0.04			c0.13			0.28		c0.05	0.26	
v/s Ratio Perm	0.10			0.06			0.03			c0.30		
v/c Ratio	0.33	0.11		0.23	0.47		0.09	0.72		0.70	0.53	
Uniform Delay, d1	21.2	20.1		28.4	30.5		19.2	25.9		17.2	17.0	
Progression Factor	1.00	1.00		1.00	1.00		1.22	1.00		1.00	1.00	
Incremental Delay, d2	2.4	0.3		1.6	3.6		0.6	2.9		15.4	1.2	
Delay (s)	23.6	20.4		30.0	34.1		24.2	28.7		32.7	18.2	
Level of Service	C	C		C	C		C	C		C	B	
Approach Delay (s)		22.3			33.1			28.6			20.4	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	95.7%	ICU Level of Service	F
Analysis Period (min)	15		

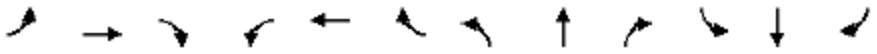
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	242	285	27	25	223	48	30	632	21	67	561	163
Future Volume (vph)	242	285	27	25	223	48	30	632	21	67	561	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1758	1815		1785	1779		1720	3414		1778	3279	
Flt Permitted	0.35	1.00		0.57	1.00		0.37	1.00		0.27	1.00	
Satd. Flow (perm)	647	1815		1063	1779		667	3414		497	3279	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	249	294	28	26	230	49	31	652	22	69	578	168
RTOR Reduction (vph)	0	4	0	0	8	0	0	3	0	0	27	0
Lane Group Flow (vph)	249	318	0	26	272	0	31	671	0	69	719	0
Confl. Peds. (#/hr)	27					27	17		28	28		17
Heavy Vehicles (%)	1%	2%	4%	0%	1%	0%	3%	2%	0%	0%	3%	1%
Bus Blockages (#/hr)	0	0	0	0	3	0	0	9	9	0	9	9
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	40.0	40.0		25.0	25.0		37.0	37.0		48.0	48.0	
Effective Green, g (s)	40.0	40.0		25.0	25.0		37.0	37.0		48.0	48.0	
Actuated g/C Ratio	0.40	0.40		0.25	0.25		0.37	0.37		0.48	0.48	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	381	726		265	444		246	1263		328	1573	
v/s Ratio Prot	c0.07	0.18			0.15			c0.20		0.01	c0.22	
v/s Ratio Perm	c0.19			0.02			0.05			0.09		
v/c Ratio	0.65	0.44		0.10	0.61		0.13	0.53		0.21	0.46	
Uniform Delay, d1	21.9	21.8		28.8	33.2		20.8	24.7		15.1	17.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.82	0.75	
Incremental Delay, d2	8.5	1.9		0.7	6.2		1.1	1.6		1.3	0.9	
Delay (s)	30.3	23.8		29.6	39.4		21.9	26.3		13.6	13.8	
Level of Service	C	C		C	D		C	C		B	B	
Approach Delay (s)		26.6			38.5			26.1			13.8	
Approach LOS		C			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	93.7%	ICU Level of Service	F
Analysis Period (min)	15		

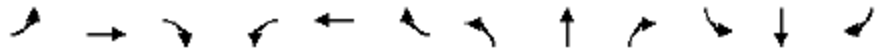
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	392	9	112	286	3	4	73	83	3	59	119
Future Volume (vph)	83	392	9	112	286	3	4	73	83	3	59	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.93			0.91	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1784	1872		1783	1857			1721			1655	
Flt Permitted	0.56	1.00		0.46	1.00			0.99			1.00	
Satd. Flow (perm)	1047	1872		858	1857			1712			1650	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	87	413	9	118	301	3	4	77	87	3	62	125
RTOR Reduction (vph)	0	1	0	0	0	0	0	48	0	0	87	0
Lane Group Flow (vph)	87	421	0	118	304	0	0	120	0	0	103	0
Confl. Peds. (#/hr)	1		2	2		1	10		3	3		10
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	44.0	44.0		44.0	44.0			24.0			24.0	
Effective Green, g (s)	44.0	44.0		44.0	44.0			24.0			24.0	
Actuated g/C Ratio	0.55	0.55		0.55	0.55			0.30			0.30	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	575	1029		471	1021			513			495	
v/s Ratio Prot		c0.22			0.16							
v/s Ratio Perm	0.08			0.14				c0.07			0.06	
v/c Ratio	0.15	0.41		0.25	0.30			0.23			0.21	
Uniform Delay, d1	8.8	10.5		9.4	9.7			21.1			20.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.6	1.2		1.3	0.7			1.1			1.0	
Delay (s)	9.4	11.7		10.7	10.4			22.1			21.9	
Level of Service	A	B		B	B			C			C	
Approach Delay (s)		11.3			10.5			22.1			21.9	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	105.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	195	394	106	5	315	104	158	236	11	92	137	75
Future Volume (vph)	195	394	106	5	315	104	158	236	11	92	137	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		0.99	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	0.99		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1762	3399		1780	3375		1732	1863		1754	1741	
Flt Permitted	0.45	1.00		0.38	1.00		0.52	1.00		0.46	1.00	
Satd. Flow (perm)	832	3399		720	3375		951	1863		848	1741	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	201	406	109	5	325	107	163	243	11	95	141	77
RTOR Reduction (vph)	0	24	0	0	32	0	0	1	0	0	20	0
Lane Group Flow (vph)	201	491	0	5	400	0	163	253	0	95	198	0
Confl. Peds. (#/hr)	9		13	13		9	18		10	10		18
Heavy Vehicles (%)	1%	0%	4%	0%	1%	1%	2%	0%	0%	1%	1%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	44.0	34.0		44.0	34.0		34.0	26.0		34.0	26.0	
Effective Green, g (s)	44.0	34.0		44.0	34.0		34.0	26.0		34.0	26.0	
Actuated g/C Ratio	0.44	0.34		0.44	0.34		0.34	0.26		0.34	0.26	
Clearance Time (s)	4.0	6.0		4.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	459	1155		422	1147		385	484		360	452	
v/s Ratio Prot	c0.04	0.14		0.00	0.12		c0.03	c0.14		0.02	0.11	
v/s Ratio Perm	c0.15			0.00			0.11			0.07		
v/c Ratio	0.44	0.42		0.01	0.35		0.42	0.52		0.26	0.44	
Uniform Delay, d1	17.8	25.5		15.9	24.7		24.1	31.7		23.2	30.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.0	1.1		0.1	0.8		3.4	4.0		1.8	3.1	
Delay (s)	20.8	26.6		15.9	25.5		27.5	35.7		25.0	34.0	
Level of Service	C	C		B	C		C	D		C	C	
Approach Delay (s)		25.0			25.4			32.5			31.3	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	27.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.46			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0	
Intersection Capacity Utilization	80.4%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	206	22	355	236	0	0
Future Volume (Veh/h)	206	22	355	236	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	222	24	382	254	0	0
Pedestrians						1
Lane Width (m)						0.0
Walking Speed (m/s)						1.2
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			240			
pX, platoon unblocked	0.93	0.93			0.93	
vC, conflicting volume	509	510			636	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	439	440			575	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	59	96			100	
cM capacity (veh/h)	541	580			942	

Direction, Lane #	WB 1	NB 1
Volume Total	246	636
Volume Left	222	0
Volume Right	24	254
cSH	544	1700
Volume to Capacity	0.45	0.37
Queue Length 95th (m)	17.7	0.0
Control Delay (s)	16.9	0.0
Lane LOS	C	
Approach Delay (s)	16.9	0.0
Approach LOS	C	

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	113	142	66	63	10
Future Volume (Veh/h)	7	113	142	66	63	10
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)	8	126	158	73	70	11
Pedestrians		1				
Lane Width (m)		3.5				
Walking Speed (m/s)		1.2				
Percent Blockage		0				
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			101			
pX, platoon unblocked						
vC, conflicting volume	231				336	196
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	231				336	196
tC, single (s)	4.1				6.4	6.3
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	99				89	99
cM capacity (veh/h)	1349				659	825

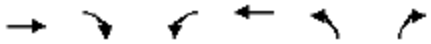
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	134	231	81
Volume Left	8	0	70
Volume Right	0	73	11
cSH	1349	1700	678
Volume to Capacity	0.01	0.14	0.12
Queue Length 95th (m)	0.1	0.0	3.1
Control Delay (s)	0.5	0.0	11.0
Lane LOS	A		B
Approach Delay (s)	0.5	0.0	11.0
Approach LOS			B

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	22.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	4	3	873	721	16
Future Volume (Veh/h)	9	4	3	873	721	16
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	10	4	3	929	767	17
Pedestrians	9					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				235	153	
pX, platoon unblocked	0.92	0.85	0.85			
vC, conflicting volume	1255	401	793			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	433	0	408			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	100	100			
cM capacity (veh/h)	507	922	982			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	14	313	619	511	273
Volume Left	10	3	0	0	0
Volume Right	4	0	0	0	17
cSH	582	982	1700	1700	1700
Volume to Capacity	0.02	0.00	0.36	0.30	0.16
Queue Length 95th (m)	0.6	0.1	0.0	0.0	0.0
Control Delay (s)	11.3	0.1	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	11.3	0.0		0.0	
Approach LOS	B				

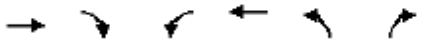
Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	36.2%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	16	2	2	16	3	4
Future Volume (Veh/h)	16	2	2	16	3	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	21	3	3	21	4	5
Pedestrians					9	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			33		58	32
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			33		58	32
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)			1580		945	1041

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	24	24	9
Volume Left	0	3	4
Volume Right	3	0	5
cSH	1700	1580	996
Volume to Capacity	0.01	0.00	0.01
Queue Length 95th (m)	0.0	0.0	0.2
Control Delay (s)	0.0	0.9	8.6
Lane LOS		A	A
Approach Delay (s)	0.0	0.9	8.6
Approach LOS			A

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	15.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	9	1	4	15	6	4
Future Volume (Veh/h)	9	1	4	15	6	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	13	1	6	21	9	6
Pedestrians					1	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			15		48	14
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			15		48	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	99
cM capacity (veh/h)			1615		963	1070

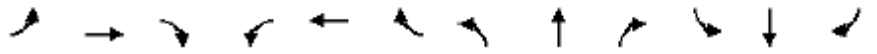
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	14	27	15
Volume Left	0	6	9
Volume Right	1	0	6
cSH	1700	1615	1003
Volume to Capacity	0.01	0.00	0.01
Queue Length 95th (m)	0.0	0.1	0.3
Control Delay (s)	0.0	1.6	8.6
Lane LOS		A	A
Approach Delay (s)	0.0	1.6	8.6
Approach LOS			A

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	14.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	9	2	137	7	2	158
Future Volume (Veh/h)	9	2	137	7	2	158
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	10	2	159	8	2	184
Pedestrians			3			2
Lane Width (m)			3.5			3.5
Walking Speed (m/s)			1.2			1.2
Percent Blockage			0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			216			
pX, platoon unblocked						
vC, conflicting volume	354	165			167	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	354	165			167	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	100			100	
cM capacity (veh/h)	645	883			1423	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	12	167	186
Volume Left	10	0	2
Volume Right	2	8	0
cSH	676	1700	1423
Volume to Capacity	0.02	0.10	0.00
Queue Length 95th (m)	0.4	0.0	0.0
Control Delay (s)	10.4	0.0	0.1
Lane LOS	B		A
Approach Delay (s)	10.4	0.0	0.1
Approach LOS	B		

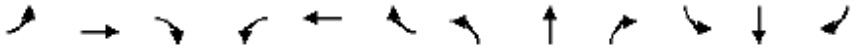
Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	20.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	466	5	17	351	3	11	1	44	2	3	5
Future Volume (Veh/h)	7	466	5	17	351	3	11	1	44	2	3	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	8	512	5	19	386	3	12	1	48	2	3	5
Pedestrians					5						2	
Lane Width (m)					3.5						3.5	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		206			103							
pX, platoon unblocked												
vC, conflicting volume	391			517			768	960	264	753	960	196
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	391			517			768	960	264	753	960	196
tC, single (s)	4.1			4.3			7.5	6.5	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			96	100	93	99	99	99
cM capacity (veh/h)	1177			978			284	252	723	274	251	817

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	264	261	212	196	61	10
Volume Left	8	0	19	0	12	2
Volume Right	0	5	0	3	48	5
cSH	1177	1700	978	1700	542	394
Volume to Capacity	0.01	0.15	0.02	0.12	0.11	0.03
Queue Length 95th (m)	0.2	0.0	0.5	0.0	2.9	0.6
Control Delay (s)	0.3	0.0	1.0	0.0	12.5	14.4
Lane LOS	A		A		B	B
Approach Delay (s)	0.2		0.5		12.5	14.4
Approach LOS					B	B

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	35.2%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	3	476	3	3	374	2	2	2	13	1	0	1
Future Volume (Veh/h)	3	476	3	3	374	2	2	2	13	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	3	529	3	3	416	2	2	2	14	1	0	1
Pedestrians		1			1						3	
Lane Width (m)		3.5			3.5						3.5	
Walking Speed (m/s)		1.2			1.2						1.2	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		106			203							
pX, platoon unblocked	0.92			0.87			0.91	0.91	0.87	0.91	0.91	0.92
vC, conflicting volume	421			532			962	964	532	978	964	421
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	333			384			717	719	383	736	720	333
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	99	98	100	100	100
cM capacity (veh/h)	1142			1028			312	320	579	294	320	658

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	535	421	18	2
Volume Left	3	3	2	1
Volume Right	3	2	14	1
cSH	1142	1028	489	406
Volume to Capacity	0.00	0.00	0.04	0.00
Queue Length 95th (m)	0.1	0.1	0.9	0.1
Control Delay (s)	0.1	0.1	12.6	13.9
Lane LOS	A	A	B	B
Approach Delay (s)	0.1	0.1	12.6	13.9
Approach LOS			B	B

Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	37.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	AM Total Entering Volume					PM Total Entering Volume				
	2017*	2021^	2021 count	Difference in 2021 data sets	% Difference	2017*	2021^	2021 count	Difference in 2021 data sets	% Difference
Bayfield St & Coulter St/Hwy 400 SB Off Ramp	2989	3175	3219	44	101%	3842	4076	4142	66	102%
Bayfield St and Rose St/Hwy 400 NB off-ramp	2721	2856	2901	45	102%	3596	3774	3840	66	102%
Rose St and Hwy 400 EB on-ramp	793	844	793	-51	94%	819	871	819	-52	94%
Bayfield St and Grove St	1884	1928	1235	-693	64%	2506	2677	2132	-545	80%
Bayfield St and Dalton St	1223	1318	1026	-292	78%	1626	1752	1656	-96	95%
Bayfield St and Wellington St	1824	1968	1313	-655	67%	2324	2507	2148	-359	86%
Toronto St and Dalton St	275	219	101	-118	46%	315	283	244	-39	86%
Toronto St and Wellington St	960	960	626	-334	65%	1226	1269	1236	-33	97%
Mary St and Dalton St	56	61	18	-43	30%	39	42	37	-5	88%
Mary St and Wellington St	668	719	523	-196	73%	880	952	998	46	105%
Maple St and Dalton St	46	50	24	-26	48%	43	47	46	-1	99%
Maple St and Wellington St	707	755	555	-200	73%	915	989	1031	42	104%
Ross St/Wellington St and Sunnidale Rd	1212	1330	1117	-213	84%	1828	1923	2261	338	118%
Network		16184	13451	-2733	83%		21162	20590	-572	97%

*2017 data as taken directly from previous report (all data was factored up to 2017 using 1% growth rate)
^2021 factored - all data was factored up to 2021 by applying City growth factors to 2017 data
2021 count - count conducted by Paradigm in August 2021

Appendix C

Existing Traffic Operations Reports

Queues
1: Coulter St./Highway 400 off-ramp & Bayfield St.

Exsiting AM
(200669)-10-24 Grove

Lane Group	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	258	235	198	103	1239	1419
v/c Ratio	0.50	1.54	0.51	0.34	0.53	0.80
Control Delay	9.8	301.8	24.5	12.7	13.5	24.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.8	301.8	24.5	12.7	13.5	24.4
Queue Length 50th (m)	3.5	~67.6	19.6	10.8	85.0	120.0
Queue Length 95th (m)	25.4	#115.4	42.4	m16.2	100.1	150.3
Internal Link Dist (m)	111.7		232.7		189.4	97.3
Turn Bay Length (m)		60.0		50.0		
Base Capacity (vph)	511	153	392	301	2325	1783
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.50	1.54	0.51	0.34	0.53	0.80

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
1: Coulter St./Highway 400 off-ramp & Bayfield St.

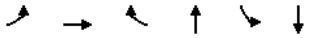
Exsiting AM
(200669)-10-24 Grove

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	0	218	216	53	129	95	1140	0	0	1294	11
Future Volume (vph)	19	0	218	216	53	129	95	1140	0	0	1294	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		3.0	6.0			6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95			0.95	
Frpb, ped/bikes		0.98		1.00	0.99		1.00	1.00			1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00			1.00	
Frt		0.88		1.00	0.89		1.00	1.00			1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)		1599		1764	1547		1703	3471			3495	
Flt Permitted		0.96		0.39	1.00		0.08	1.00			1.00	
Satd. Flow (perm)		1542		729	1547		139	3471			3495	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	0	237	235	58	140	103	1239	0	0	1407	12
RTOR Reduction (vph)	0	187	0	0	68	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	71	0	235	130	0	103	1239	0	0	1419	0
Confl. Peds. (#/hr)	5		4	4		5	27		20	20		27
Heavy Vehicles (%)	0%	0%	2%	2%	4%	10%	6%	4%	0%	0%	3%	13%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA			NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2					
Actuated Green, G (s)		21.0		21.0	21.0		67.0	67.0			51.0	
Effective Green, g (s)		21.0		21.0	21.0		67.0	67.0			51.0	
Actuated g/C Ratio		0.21		0.21	0.21		0.67	0.67			0.51	
Clearance Time (s)		6.0		6.0	6.0		3.0	6.0			6.0	
Lane Grp Cap (vph)		323		153	324		296	2325			1782	
v/s Ratio Prot					0.08		0.05	c0.36			c0.41	
v/s Ratio Perm		0.05		c0.32			0.19					
v/c Ratio		0.22		1.54	0.40		0.35	0.53			0.80	
Uniform Delay, d1		32.7		39.5	34.1		13.0	8.5			20.2	
Progression Factor		1.00		1.00	1.00		1.35	1.49			1.00	
Incremental Delay, d2		1.6		271.2	3.7		2.4	0.7			3.8	
Delay (s)		34.3		310.7	37.8		20.0	13.3			24.0	
Level of Service		C		F	D		B	B			C	
Approach Delay (s)		34.3			185.9			13.8			24.0	
Approach LOS		C			F			B			C	

Intersection Summary

HCM 2000 Control Delay	41.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	89.7%	ICU Level of Service	E
Analysis Period (min)	15		

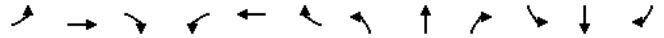
c Critical Lane Group



Lane Group	EBL	EBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	825	399	167	689	272	753
v/c Ratio	0.85	0.73	0.23	0.52	0.51	0.35
Control Delay	43.6	33.0	5.8	23.3	14.5	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.6	33.0	5.8	23.3	14.5	13.2
Queue Length 50th (m)	81.7	56.6	5.2	40.0	22.6	38.5
Queue Length 95th (m)	#112.9	92.6	16.7	49.2	m35.5	m56.8
Internal Link Dist (m)		345.6		232.0		189.4
Turn Bay Length (m)					115.0	
Base Capacity (vph)	967	550	730	1330	538	2129
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.73	0.23	0.52	0.51	0.35

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	759	131	236	0	0	154	0	560	74	250	693	0
Future Volume (vph)	759	131	236	0	0	154	0	560	74	250	693	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0				6.0		6.0		3.0	6.0	
Lane Util. Factor	0.97	1.00				1.00		0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99				1.00		0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00				1.00		1.00		1.00	1.00	
Frt	1.00	0.90				0.86		0.98		1.00	1.00	
Flt Protected	0.95	1.00				1.00		1.00		0.95	1.00	
Satd. Flow (prot)	3335	1674				1370		3384		1798	3610	
Flt Permitted	0.95	1.00				1.00		1.00		0.27	1.00	
Satd. Flow (perm)	3335	1674				1370		3384		520	3610	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	825	142	257	0	0	167	0	609	80	272	753	0
RTOR Reduction (vph)	0	65	0	0	0	56	0	10	0	0	0	0
Lane Group Flow (vph)	825	334	0	0	0	111	0	679	0	272	753	0
Confl. Peds. (#/hr)			3	3			29		24	24		29
Heavy Vehicles (%)	5%	4%	0%	0%	4%	20%	8%	4%	2%	0%	0%	1%
Turn Type	Perm	NA				Perm		NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4					8 1				6		
Actuated Green, G (s)	29.0	29.0				52.0		39.0		59.0	59.0	
Effective Green, g (s)	29.0	29.0				52.0		39.0		59.0	59.0	
Actuated g/C Ratio	0.29	0.29				0.52		0.39		0.59	0.59	
Clearance Time (s)	6.0	6.0						6.0		3.0	6.0	
Lane Grp Cap (vph)	967	485				712		1319		524	2129	
v/s Ratio Prot		0.20						0.20		c0.09	0.21	
v/s Ratio Perm	c0.25					0.08				c0.22		
v/c Ratio	0.85	0.69				0.16		0.51		0.52	0.35	
Uniform Delay, d1	33.5	31.5				12.5		23.3		11.1	10.6	
Progression Factor	1.00	1.00				1.00		0.96		1.48	1.20	
Incremental Delay, d2	9.5	7.8				0.5		1.3		1.8	0.2	
Delay (s)	43.0	39.2				13.0		23.7		18.2	13.0	
Level of Service	D	D				B		C		B	B	
Approach Delay (s)		41.7			13.0			23.7			14.4	
Approach LOS		D			B			C			B	

Intersection Summary

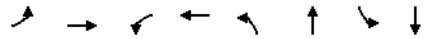
HCM 2000 Control Delay	27.2	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.65				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)		15.0	
Intersection Capacity Utilization	66.9%	ICU Level of Service		C	
Analysis Period (min)	15				

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	218	48	301	278	0	0
Future Volume (Veh/h)	218	48	301	278	0	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)	237	52	327	302	0	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)			245			
pX, platoon unblocked	0.95	0.95			0.95	
vC, conflicting volume	478	478			629	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	426	426			585	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	57	91			100	
cM capacity (veh/h)	557	598			942	

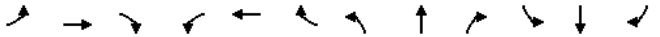
Direction, Lane #	WB 1	NB 1
Volume Total	289	629
Volume Left	237	0
Volume Right	52	302
cSH	564	1700
Volume to Capacity	0.51	0.37
Queue Length 95th (m)	23.3	0.0
Control Delay (s)	17.9	0.0
Lane LOS	C	
Approach Delay (s)	17.9	0.0
Approach LOS	C	

Intersection Summary				
Average Delay	5.6			
Intersection Capacity Utilization	54.5%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	57	48	55	193	8	591	93	1054
v/c Ratio	0.13	0.07	0.15	0.34	0.05	0.46	0.24	0.61
Control Delay	18.9	17.0	28.6	10.3	18.6	19.7	15.1	22.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.9	17.0	28.6	10.3	18.6	19.7	15.1	22.9
Queue Length 50th (m)	6.9	5.0	8.4	7.1	0.9	37.2	9.6	106.5
Queue Length 95th (m)	15.1	12.4	18.5	24.7	m3.1	51.8	m14.5	131.2
Internal Link Dist (m)		81.6		331.6		133.3		232.0
Turn Bay Length (m)	20.0		30.0		30.0		50.0	
Base Capacity (vph)	432	712	357	562	149	1295	384	1718
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.07	0.15	0.34	0.05	0.46	0.24	0.61

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	37	7	51	43	134	7	510	34	86	915	54
Future Volume (vph)	52	37	7	51	43	134	7	510	34	86	915	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.89		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1730	1815		1669	1634		1622	3393		1781	3496	
Flt Permitted	0.50	1.00		0.73	1.00		0.23	1.00		0.32	1.00	
Satd. Flow (perm)	918	1815		1275	1634		394	3393		594	3496	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	40	8	55	47	146	8	554	37	93	995	59
RTOR Reduction (vph)	0	5	0	0	105	0	0	5	0	0	4	0
Lane Group Flow (vph)	57	43	0	55	88	0	8	586	0	93	1050	0
Confl. Peds. (#/hr)	7		7	7		7	21		14	14		21
Heavy Vehicles (%)	4%	2%	0%	7%	2%	1%	10%	4%	20%	1%	2%	1%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	39.0	39.0		28.0	28.0		38.0	38.0		49.0	49.0	
Effective Green, g (s)	39.0	39.0		28.0	28.0		38.0	38.0		49.0	49.0	
Actuated g/C Ratio	0.39	0.39		0.28	0.28		0.38	0.38		0.49	0.49	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	414	707		357	457		149	1289		374	1713	
v/s Ratio Prot	c0.01	0.02			c0.05			0.17		0.02	c0.30	
v/s Ratio Perm	0.04			0.04			0.02			0.10		
v/c Ratio	0.14	0.06		0.15	0.19		0.05	0.45		0.25	0.61	
Uniform Delay, d1	19.5	19.1		27.1	27.4		19.6	23.2		14.4	18.6	
Progression Factor	1.00	1.00		1.00	1.00		0.88	0.80		1.06	1.14	
Incremental Delay, d2	0.7	0.2		0.9	0.9		0.7	1.1		1.5	1.5	
Delay (s)	20.2	19.2		28.0	28.3		17.9	19.8		16.8	22.7	
Level of Service	C	B		C	C		B	B		B	C	
Approach Delay (s)		19.7			28.3			19.7			22.3	
Approach LOS		B			C			B			C	

Intersection Summary				
HCM 2000 Control Delay	22.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.46			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	70.5%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	23	10	3	452	816	14
Future Volume (Veh/h)	23	10	3	452	816	14
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)	25	11	3	491	887	15
Pedestrians	8				1	
Lane Width (m)	3.6				3.6	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	1				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				229	157	
pX, platoon unblocked	0.81	0.80	0.80			
vC, conflicting volume	1155	459	910			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	624	0	401			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	99	100			
cM capacity (veh/h)	336	866	922			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	36	167	327	591	311
Volume Left	25	3	0	0	0
Volume Right	11	0	0	0	15
cSH	413	922	1700	1700	1700
Volume to Capacity	0.09	0.00	0.19	0.35	0.18
Queue Length 95th (m)	2.3	0.1	0.0	0.0	0.0
Control Delay (s)	14.5	0.2	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	14.5	0.1		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	33.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	173	231	39	247	10	390	53	996
v/c Ratio	0.47	0.34	0.13	0.51	0.05	0.30	0.11	0.58
Control Delay	24.9	22.4	29.1	33.9	20.1	21.4	11.0	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.9	22.4	29.1	33.9	20.1	21.4	11.0	13.2
Queue Length 50th (m)	23.0	30.9	6.0	40.8	1.2	27.7	2.8	34.8
Queue Length 95th (m)	38.9	50.6	14.7	65.6	4.9	39.5	m7.3	58.9
Internal Link Dist (m)		76.2		327.8		194.7		204.9
Turn Bay Length (m)			30.0		20.0		20.0	
Base Capacity (vph)	371	687	304	488	192	1315	492	1721
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.34	0.13	0.51	0.05	0.30	0.11	0.58

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	159	174	39	36	188	40	9	338	21	49	702	214
Future Volume (vph)	159	174	39	36	188	40	9	338	21	49	702	214
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		0.99	1.00	
Frt	1.00	0.97		1.00	0.97		1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1730	1788		1744	1783		1793	3363		1751	3385	
Flt Permitted	0.42	1.00		0.61	1.00		0.26	1.00		0.45	1.00	
Satd. Flow (perm)	761	1788		1128	1783		494	3363		830	3385	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	173	189	42	39	204	43	10	367	23	53	763	233
RTOR Reduction (vph)	0	8	0	0	7	0	0	4	0	0	29	0
Lane Group Flow (vph)	173	223	0	39	240	0	10	386	0	53	967	0
Confl. Peds. (#/hr)	9		4	4		9	18		16	18		16
Heavy Vehicles (%)	4%	3%	3%	3%	4%	0%	0%	6%	6%	2%	2%	2%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	38.0	38.0		27.0	27.0		39.0	39.0		50.0	50.0	
Effective Green, g (s)	38.0	38.0		27.0	27.0		39.0	39.0		50.0	50.0	
Actuated g/C Ratio	0.38	0.38		0.27	0.27		0.39	0.39		0.50	0.50	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	357	679		304	481		192	1311		479	1692	
v/s Ratio Prot	c0.03	0.12			0.13			0.11		0.01	c0.29	
v/s Ratio Perm	c0.15			0.03			0.02			0.05		
v/c Ratio	0.48	0.33		0.13	0.50		0.05	0.29		0.11	0.57	
Uniform Delay, d1	21.9	22.0		27.6	30.8		19.0	21.0		13.1	17.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.88	0.72	
Incremental Delay, d2	4.6	1.3		0.9	3.7		0.5	0.6		0.4	1.2	
Delay (s)	26.6	23.3		28.5	34.4		19.5	21.6		12.0	13.8	
Level of Service	C	C		C	C		B	C		B	B	
Approach Delay (s)		24.7			33.6			21.5			13.7	
Approach LOS		C			C			C			B	

Intersection Summary

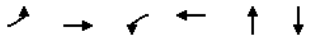
HCM 2000 Control Delay	19.9	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.58				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)		20.0	
Intersection Capacity Utilization	72.9%	ICU Level of Service		C	
Analysis Period (min)	15				

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	8	95	17	6	79
Future Volume (Veh/h)	13	8	95	17	6	79
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)	14	9	103	18	7	86
Pedestrians			78			5
Lane Width (m)			3.6			3.6
Walking Speed (m/s)			1.2			1.2
Percent Blockage			7			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			212			
pX, platoon unblocked						
vC, conflicting volume	290	117			121	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	290	117			121	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	99			100	
cM capacity (veh/h)	652	931			1467	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	23	121	93
Volume Left	14	0	7
Volume Right	9	18	0
cSH	739	1700	1467
Volume to Capacity	0.03	0.07	0.00
Queue Length 95th (m)	0.8	0.0	0.1
Control Delay (s)	10.0	0.0	0.6
Lane LOS	B		A
Approach Delay (s)	10.0	0.0	0.6
Approach LOS	B		

Intersection Summary				
Average Delay		1.2		
Intersection Capacity Utilization		20.6%	ICU Level of Service	A
Analysis Period (min)		15		



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	79	342	85	318	120	100
v/c Ratio	0.31	0.66	0.36	0.61	0.15	0.13
Control Delay	17.5	22.3	18.9	20.7	5.1	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.5	22.3	18.9	20.7	5.1	5.8
Queue Length 50th (m)	5.8	27.9	6.3	25.5	2.3	2.4
Queue Length 95th (m)	14.6	49.3	16.1	45.5	10.8	10.3
Internal Link Dist (m)		153.7		76.4	185.8	188.3
Turn Bay Length (m)	25.0		20.0			
Base Capacity (vph)	774	1596	719	1611	813	758
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.21	0.12	0.20	0.15	0.13

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	312	3	78	290	3	6	39	65	10	37	45
Future Volume (vph)	73	312	3	78	290	3	6	39	65	10	37	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.96	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.92			0.93	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1685	1824		1713	1842			1650			1599	
Flt Permitted	0.50	1.00		0.46	1.00			0.99			0.97	
Satd. Flow (perm)	885	1824		830	1842			1633			1562	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	79	339	3	85	315	3	7	42	71	11	40	49
RTOR Reduction (vph)	0	1	0	0	1	0	0	37	0	0	26	0
Lane Group Flow (vph)	79	341	0	85	317	0	0	83	0	0	74	0
Confl. Peds. (#/hr)	1		16	16		1	39		3	3		39
Heavy Vehicles (%)	7%	4%	0%	4%	3%	0%	0%	6%	3%	0%	11%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	14.4	14.4		14.4	14.4			24.1			24.1	
Effective Green, g (s)	14.4	14.4		14.4	14.4			24.1			24.1	
Actuated g/C Ratio	0.29	0.29		0.29	0.29			0.48			0.48	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	252	520		236	525			779			745	
v/s Ratio Prot		c0.19			0.17							
v/s Ratio Perm	0.09			0.10				c0.05			0.05	
v/c Ratio	0.31	0.66		0.36	0.60			0.11			0.10	
Uniform Delay, d1	14.2	15.9		14.4	15.6			7.3			7.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.7	3.0		0.9	2.0			0.3			0.3	
Delay (s)	14.9	18.9		15.3	17.6			7.5			7.5	
Level of Service	B	B		B	B			A			A	
Approach Delay (s)		18.1			17.1			7.5			7.5	
Approach LOS		B			B			A			A	

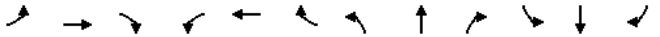
Intersection Summary				
HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.31			
Actuated Cycle Length (s)	50.5	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	50.9%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	18	5	1	14	13	9
Future Volume (Veh/h)	18	5	1	14	13	9
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)	20	5	1	15	14	10
Pedestrians					37	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					3	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			62		76	60
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			62		76	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		98	99
cM capacity (veh/h)			1493		897	975

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	25	16	24
Volume Left	0	1	14
Volume Right	5	0	10
cSH	1700	1493	928
Volume to Capacity	0.01	0.00	0.03
Queue Length 95th (m)	0.0	0.0	0.6
Control Delay (s)	0.0	0.5	9.0
Lane LOS		A	A
Approach Delay (s)	0.0	0.5	9.0
Approach LOS			A

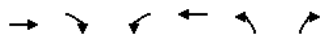
Intersection Summary				
Average Delay	3.4			
Intersection Capacity Utilization	13.3%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	337	2	8	327	2	2	0	16	2	2	9
Future Volume (Veh/h)	12	337	2	8	327	2	2	0	16	2	2	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	366	2	9	355	2	2	0	17	2	2	10
Pedestrians		4			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		100			199							
pX, platoon unblocked	0.97			0.85			0.87	0.87	0.85	0.87	0.87	0.97
vC, conflicting volume	357			368			782	768	369	786	768	360
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	318			171			587	571	173	592	571	321
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			99	100	98	99	99	99
cM capacity (veh/h)	1201			1198			353	367	741	349	367	694

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	381	366	19	14
Volume Left	13	9	2	2
Volume Right	2	2	17	10
cSH	1201	1198	664	547
Volume to Capacity	0.01	0.01	0.03	0.03
Queue Length 95th (m)	0.3	0.2	0.7	0.6
Control Delay (s)	0.4	0.3	10.6	11.8
Lane LOS	A	A	B	B
Approach Delay (s)	0.4	0.3	10.6	11.8
Approach LOS			B	B

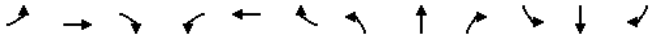
Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	34.9%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	23	2	4	11	4	5
Future Volume (Veh/h)	23	2	4	11	4	5
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)	25	2	4	12	4	5
Pedestrians				1	3	
Lane Width (m)				3.6	3.6	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			30		49	30
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			30		49	30
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)			1579		955	1041

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	27	16	9
Volume Left	0	4	4
Volume Right	2	0	5
cSH	1700	1579	1001
Volume to Capacity	0.02	0.00	0.01
Queue Length 95th (m)	0.0	0.1	0.2
Control Delay (s)	0.0	1.8	8.6
Lane LOS		A	A
Approach Delay (s)	0.0	1.8	8.6
Approach LOS			A

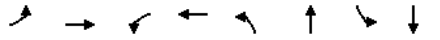
Intersection Summary				
Average Delay	2.1			
Intersection Capacity Utilization	14.6%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	321	21	52	327	4	1	1	13	5	0	2
Future Volume (Veh/h)	8	321	21	52	327	4	1	1	13	5	0	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	349	23	57	355	4	1	1	14	5	0	2
Pedestrians					6						8	
Lane Width (m)					3.6						3.6	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					1						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		199			100							
pX, platoon unblocked												
vC, conflicting volume	367			372			672	860	192	692	869	188
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	367			372			672	860	192	692	869	188
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			95			100	100	98	98	100	100
cM capacity (veh/h)	1180			1183			325	274	813	305	271	817

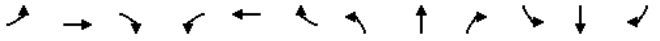
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	184	198	234	182	16	7
Volume Left	9	0	57	0	1	5
Volume Right	0	23	0	4	14	2
cSH	1180	1700	1183	1700	668	371
Volume to Capacity	0.01	0.12	0.05	0.11	0.02	0.02
Queue Length 95th (m)	0.2	0.0	1.2	0.0	0.6	0.5
Control Delay (s)	0.5	0.0	2.3	0.0	10.5	14.9
Lane LOS	A		A		B	B
Approach Delay (s)	0.2		1.3		10.5	14.9
Approach LOS					B	B

Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization			36.2%	ICU Level of Service		A
Analysis Period (min)			15			



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	102	395	5	318	78	127	82	338
v/c Ratio	0.27	0.41	0.02	0.54	0.16	0.18	0.12	0.48
Control Delay	18.0	19.1	15.8	29.0	10.3	17.8	10.0	21.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	19.1	15.8	29.0	10.3	17.8	10.0	21.4
Queue Length 50th (m)	9.9	18.7	0.5	20.4	5.2	11.6	5.5	36.6
Queue Length 95th (m)	20.7	37.8	2.7	34.2	12.9	26.4	13.3	69.4
Internal Link Dist (m)		80.3		65.0		84.7		300.6
Turn Bay Length (m)	30.0		30.0		15.0		25.0	
Base Capacity (vph)	410	1694	345	1717	554	689	722	708
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.23	0.01	0.19	0.14	0.18	0.11	0.48

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	262	101	5	234	59	72	96	21	75	230	81
Future Volume (vph)	94	262	101	5	234	59	72	96	21	75	230	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		0.98	1.00		0.99	1.00		0.98	1.00	
Frt	1.00	0.96		1.00	0.97		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1753	3291		1479	3352		1678	1754		1746	1797	
Flt Permitted	0.43	1.00		0.52	1.00		0.46	1.00		0.68	1.00	
Satd. Flow (perm)	795	3291		808	3352		810	1754		1242	1797	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	102	285	110	5	254	64	78	104	23	82	250	88
RTOR Reduction (vph)	0	45	0	0	28	0	0	7	0	0	11	0
Lane Group Flow (vph)	102	350	0	5	290	0	78	120	0	82	327	0
Confl. Peds. (#/hr)	20		29	29		20	18		34	34		18
Heavy Vehicles (%)	2%	2%	5%	20%	4%	0%	7%	4%	6%	1%	1%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	24.7	19.6		15.0	13.9		32.9	27.2		32.7	27.1	
Effective Green, g (s)	24.7	19.6		15.0	13.9		32.9	27.2		32.7	27.1	
Actuated g/C Ratio	0.34	0.27		0.20	0.19		0.45	0.37		0.44	0.37	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	355	877		174	633		429	649		590	662	
v/s Ratio Prot	c0.03	c0.11		0.00	0.09		c0.01	0.07		0.01	c0.18	
v/s Ratio Perm	0.07			0.01			0.07			0.05		
v/c Ratio	0.29	0.40		0.03	0.46		0.18	0.19		0.14	0.49	
Uniform Delay, d1	17.3	22.1		23.4	26.5		11.9	15.7		11.9	17.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.3		0.1	0.5		0.2	0.6		0.1	2.6	
Delay (s)	17.8	22.4		23.4	27.0		12.1	16.3		12.0	20.5	
Level of Service	B	C		C	C		B	B		B	C	
Approach Delay (s)		21.5			26.9			14.7			18.9	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	21.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	73.5	Sum of lost time (s)	20.0
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	228	163	294	160	1800	1786
v/c Ratio	0.75	1.37	0.89	0.54	0.69	0.88
Control Delay	26.9	254.9	80.4	39.0	12.0	33.4
Queue Delay	0.0	0.0	0.0	0.0	3.5	0.0
Total Delay	26.9	254.9	80.4	39.0	15.5	33.4
Queue Length 50th (m)	7.3	~67.1	81.6	29.5	141.3	243.2
Queue Length 95th (m)	#51.0	#116.5	#136.1	54.9	163.5	281.8
Internal Link Dist (m)	111.7		232.7		189.4	97.3
Turn Bay Length (m)				50.0		
Base Capacity (vph)	303	119	332	298	2618	2029
Starvation Cap Reductn	0	0	0	0	706	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.75	1.37	0.89	0.54	0.94	0.88

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	0	185	150	124	146	147	1656	0	0	1628	15
Future Volume (vph)	25	0	185	150	124	146	147	1656	0	0	1628	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		3.0	6.0			6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95			0.95	
Frpb, ped/bikes		0.99		1.00	0.98		1.00	1.00			1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00			1.00	
Frt		0.88		1.00	0.92		1.00	1.00			1.00	
Flt Protected		0.99		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)		1614		1768	1695		1770	3539			3497	
Flt Permitted		0.48		0.36	1.00		0.04	1.00			1.00	
Satd. Flow (perm)		772		663	1695		83	3539			3497	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	0	201	163	135	159	160	1800	0	0	1770	16
RTOR Reduction (vph)	0	165	0	0	27	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	63	0	163	267	0	160	1800	0	0	1786	0
Confl. Peds. (#/hr)	9		1	1		9	27		56	56		27
Heavy Vehicles (%)	0%	0%	2%	2%	0%	2%	2%	2%	0%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA			NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2					
Actuated Green, G (s)		27.0		27.0	27.0		111.0	111.0			87.0	
Effective Green, g (s)		27.0		27.0	27.0		111.0	111.0			87.0	
Actuated g/C Ratio		0.18		0.18	0.18		0.74	0.74			0.58	
Clearance Time (s)		6.0		6.0	6.0		3.0	6.0			6.0	
Lane Grp Cap (vph)		138		119	305		297	2618			2028	
v/s Ratio Prot					0.16		0.08	c0.51			c0.51	
v/s Ratio Perm		0.08		c0.25			0.32					
v/c Ratio		0.46		1.37	0.88		0.54	0.69			0.88	
Uniform Delay, d1		55.0		61.5	59.9		41.9	10.3			27.0	
Progression Factor		1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2		10.6		210.6	27.7		6.9	1.5			5.9	
Delay (s)		65.5		272.1	87.6		48.7	11.8			32.9	
Level of Service		E		F	F		D	B			C	
Approach Delay (s)		65.5			153.4			14.8			32.9	
Approach LOS		E			F			B			C	

Intersection Summary

HCM 2000 Control Delay	39.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	103.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	1067	342	217	1338	289	848
v/c Ratio	0.93	0.56	0.86	0.90	1.06	0.40
Control Delay	61.8	40.4	75.2	47.6	113.2	17.9
Queue Delay	0.0	0.0	0.0	0.8	0.0	0.0
Total Delay	61.8	40.4	75.2	48.5	113.2	17.9
Queue Length 50th (m)	163.9	78.9	48.3	202.1	~82.6	75.2
Queue Length 95th (m)	#203.2	112.5	#96.7	#240.2	#144.4	90.6
Internal Link Dist (m)		345.6		232.0		189.4
Turn Bay Length (m)					115.0	
Base Capacity (vph)	1195	631	251	1484	273	2099
Starvation Cap Reductn	0	0	0	33	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.54	0.86	0.92	1.06	0.40

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	982	172	143	0	0	200	0	991	240	266	780	0
Future Volume (vph)	982	172	143	0	0	200	0	991	240	266	780	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0				3.0		6.0		3.0	6.0	
Lane Util. Factor	0.97	1.00				1.00		0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99				1.00		0.97		1.00	1.00	
Flpb, ped/bikes	1.00	1.00				1.00		1.00		1.00	1.00	
Frt	1.00	0.93				0.86		0.97		1.00	1.00	
Flt Protected	0.95	1.00				1.00		1.00		0.95	1.00	
Satd. Flow (prot)	3400	1740				1596		3344		1805	3610	
Flt Permitted	0.95	1.00				1.00		1.00		0.06	1.00	
Satd. Flow (perm)	3400	1740				1596		3344		112	3610	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1067	187	155	0	0	217	0	1077	261	289	848	0
RTOR Reduction (vph)	0	20	0	0	0	57	0	14	0	0	0	0
Lane Group Flow (vph)	1067	322	0	0	0	160	0	1324	0	289	848	0
Confl. Peds. (#/hr)			1	1			24		29	29		24
Heavy Vehicles (%)	3%	2%	0%	0%	2%	3%	3%	2%	2%	0%	0%	2%
Turn Type	Perm	NA				Over		NA		pm+pt	NA	
Protected Phases		4				1		2		1	6	
Permitted Phases	4									6		
Actuated Green, G (s)	49.9	49.9				18.0		65.1		86.1	86.1	
Effective Green, g (s)	49.9	49.9				18.0		65.1		86.1	86.1	
Actuated g/C Ratio	0.34	0.34				0.12		0.44		0.58	0.58	
Clearance Time (s)	6.0	6.0				3.0		6.0		3.0	6.0	
Vehicle Extension (s)	3.0	3.0				3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	1146	586				194		1470		271	2100	
v/s Ratio Prot		0.19				0.10		0.40		c0.13	0.23	
v/s Ratio Perm	c0.31									c0.49		
v/c Ratio	0.93	0.55				0.82		0.90		1.07	0.40	
Uniform Delay, d1	47.4	39.9				63.5		38.5		49.9	16.9	
Progression Factor	1.00	1.00				1.00		1.00		1.00	1.00	
Incremental Delay, d2	13.2	1.1				23.8		9.2		73.3	0.6	
Delay (s)	60.6	41.0				87.3		47.7		123.2	17.5	
Level of Service	E	D				F		D		F	B	
Approach Delay (s)		55.8			87.3			47.7			44.4	
Approach LOS		E			F			D			D	

Intersection Summary

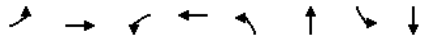
HCM 2000 Control Delay	51.7	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	1.04				
Actuated Cycle Length (s)	148.0	Sum of lost time (s)		15.0	
Intersection Capacity Utilization	91.7%	ICU Level of Service		F	
Analysis Period (min)	15				

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	223	23	369	255	0	0
Future Volume (Veh/h)	223	23	369	255	0	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)	242	25	401	277	0	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)			239			
pX, platoon unblocked	0.94	0.94			0.94	
vC, conflicting volume	540	540			678	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	474	474			622	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	53	95			100	
cM capacity (veh/h)	514	553			898	

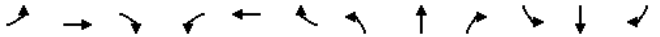
Direction, Lane #	WB 1	NB 1
Volume Total	267	678
Volume Left	242	0
Volume Right	25	277
cSH	517	1700
Volume to Capacity	0.52	0.40
Queue Length 95th (m)	23.4	0.0
Control Delay (s)	19.1	0.0
Lane LOS	C	
Approach Delay (s)	19.1	0.0
Approach LOS	C	

Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	126	87	96	284	17	1098	190	1013
v/c Ratio	0.36	0.12	0.28	0.57	0.09	0.80	0.92	0.58
Control Delay	22.5	19.4	31.6	29.1	26.9	32.2	64.7	19.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.5	19.4	31.6	29.1	26.9	32.2	64.7	19.0
Queue Length 50th (m)	16.3	10.5	15.5	38.1	2.2	83.4	20.5	72.3
Queue Length 95th (m)	29.0	21.0	30.0	65.6	m3.9	109.0	#63.1	92.3
Internal Link Dist (m)		81.6		331.6		133.3		232.0
Turn Bay Length (m)	20.0		30.0		30.0		50.0	
Base Capacity (vph)	352	707	343	497	185	1371	207	1738
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.12	0.28	0.57	0.09	0.80	0.92	0.58

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



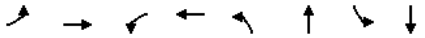
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	73	7	88	111	150	16	920	90	175	837	95
Future Volume (vph)	116	73	7	88	111	150	16	920	90	175	837	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.91		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1798	1852		1727	1664		1779	3495		1787	3458	
Flt Permitted	0.37	1.00		0.70	1.00		0.25	1.00		0.10	1.00	
Satd. Flow (perm)	691	1852		1273	1664		475	3495		184	3458	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	126	79	8	96	121	163	17	1000	98	190	910	103
RTOR Reduction (vph)	0	4	0	0	48	0	0	7	0	0	9	0
Lane Group Flow (vph)	126	83	0	96	236	0	17	1091	0	190	1005	0
Confl. Peds. (#/hr)	15		10	10		15	24		18	18		24
Heavy Vehicles (%)	0%	1%	0%	3%	1%	3%	0%	1%	4%	1%	2%	1%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	38.0	38.0		27.0	27.0		39.0	39.0		50.0	50.0	
Effective Green, g (s)	38.0	38.0		27.0	27.0		39.0	39.0		50.0	50.0	
Actuated g/C Ratio	0.38	0.38		0.27	0.27		0.39	0.39		0.50	0.50	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	340	703		343	449		185	1363		204	1729	
v/s Ratio Prot	c0.03	0.04			c0.14			0.31		c0.07	0.29	
v/s Ratio Perm	0.11			0.08			0.04			c0.40		
v/c Ratio	0.37	0.12		0.28	0.53		0.09	0.80		0.93	0.58	
Uniform Delay, d1	21.4	20.1		28.8	31.0		19.3	27.0		20.7	17.6	
Progression Factor	1.00	1.00		1.00	1.00		1.30	1.03		1.00	1.00	
Incremental Delay, d2	3.1	0.3		2.0	4.3		0.8	4.1		47.3	1.4	
Delay (s)	24.5	20.5		30.9	35.4		25.8	32.1		68.0	19.1	
Level of Service	C	C		C	D		C	C		E	B	
Approach Delay (s)		22.9			34.2			32.0			26.8	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	29.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.78			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	77.1%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	4	3	940	777	17
Future Volume (Veh/h)	10	4	3	940	777	17
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)	11	4	3	1022	845	18
Pedestrians	9					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				229	157	
pX, platoon unblocked	0.91	0.83	0.83			
vC, conflicting volume	1380	440	872			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	424	0	426			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	100	100			
cM capacity (veh/h)	501	890	927			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	15	344	681	563	300
Volume Left	11	3	0	0	0
Volume Right	4	0	0	0	18
cSH	567	927	1700	1700	1700
Volume to Capacity	0.03	0.00	0.40	0.33	0.18
Queue Length 95th (m)	0.7	0.1	0.0	0.0	0.0
Control Delay (s)	11.5	0.1	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	11.5	0.0		0.0	
Approach LOS	B				

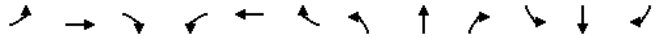
Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	38.1%	ICU Level of Service	A	
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	285	367	29	318	35	763	79	848
v/c Ratio	0.79	0.50	0.11	0.69	0.16	0.59	0.26	0.52
Control Delay	37.9	25.0	30.4	41.8	23.5	27.4	13.7	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.9	25.0	30.4	41.8	23.5	27.4	13.7	14.7
Queue Length 50th (m)	39.3	54.1	4.6	57.1	4.7	64.6	5.0	33.6
Queue Length 95th (m)	#72.0	81.5	12.2	88.3	12.4	84.2	m11.4	55.8
Internal Link Dist (m)		76.2		327.8		194.7		204.9
Turn Bay Length (m)			30.0		20.0		20.0	
Base Capacity (vph)	363	737	258	461	224	1302	303	1644
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.50	0.11	0.69	0.16	0.59	0.26	0.52

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	262	308	29	27	240	52	32	679	23	73	604	176
Future Volume (vph)	262	308	29	27	240	52	32	679	23	73	604	176
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1779	1835		1805	1815		1737	3513		1800	3371	
Flt Permitted	0.29	1.00		0.54	1.00		0.33	1.00		0.22	1.00	
Satd. Flow (perm)	546	1835		1031	1815		607	3513		417	3371	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	285	335	32	29	261	57	35	738	25	79	657	191
RTOR Reduction (vph)	0	4	0	0	8	0	0	3	0	0	27	0
Lane Group Flow (vph)	285	363	0	29	311	0	35	760	0	79	821	0
Confl. Peds. (#/hr)	27					27	17		28	28		17
Heavy Vehicles (%)	1%	2%	4%	0%	1%	0%	3%	2%	0%	0%	3%	1%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	40.0	40.0		25.0	25.0		37.0	37.0		48.0	48.0	
Effective Green, g (s)	40.0	40.0		25.0	25.0		37.0	37.0		48.0	48.0	
Actuated g/C Ratio	0.40	0.40		0.25	0.25		0.37	0.37		0.48	0.48	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	354	734		257	453		224	1299		296	1618	
v/s Ratio Prot	c0.09	0.20			0.17			c0.22		0.02	c0.24	
v/s Ratio Perm	c0.23			0.03			0.06			0.11		
v/c Ratio	0.81	0.50		0.11	0.69		0.16	0.59		0.27	0.51	
Uniform Delay, d1	23.2	22.4		28.9	33.9		21.1	25.3		15.6	17.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.89	0.81	
Incremental Delay, d2	17.5	2.4		0.9	8.2		1.5	1.9		1.9	1.0	
Delay (s)	40.8	24.8		29.8	42.1		22.5	27.3		15.8	15.5	
Level of Service	D	C		C	D		C	C		B	B	
Approach Delay (s)		31.8			41.1			27.1			15.5	
Approach LOS		C			D			C			B	

Intersection Summary

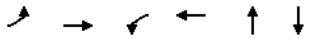
HCM 2000 Control Delay	26.0	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.72				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)		20.0	
Intersection Capacity Utilization	75.9%	ICU Level of Service		D	
Analysis Period (min)	15				

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	10	2	115	8	2	146
Future Volume (Veh/h)	10	2	115	8	2	146
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)	11	2	125	9	2	159
Pedestrians			3			2
Lane Width (m)			3.6			3.6
Walking Speed (m/s)			1.2			1.2
Percent Blockage			0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			212			
pX, platoon unblocked						
vC, conflicting volume	296	132			134	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	296	132			134	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	100			100	
cM capacity (veh/h)	693	916			1451	

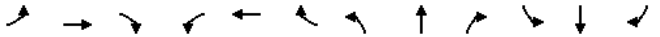
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	13	134	161
Volume Left	11	0	2
Volume Right	2	9	0
cSH	720	1700	1451
Volume to Capacity	0.02	0.08	0.00
Queue Length 95th (m)	0.4	0.0	0.0
Control Delay (s)	10.1	0.0	0.1
Lane LOS	B		A
Approach Delay (s)	10.1	0.0	0.1
Approach LOS	B		

Intersection Summary				
Average Delay		0.5		
Intersection Capacity Utilization		19.9%	ICU Level of Service	A
Analysis Period (min)		15		



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	79	472	132	340	172	186
v/c Ratio	0.26	0.74	0.67	0.54	0.21	0.23
Control Delay	14.8	23.3	32.7	17.6	7.1	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.8	23.3	32.7	17.6	7.1	5.7
Queue Length 50th (m)	5.8	41.7	11.4	27.6	5.0	3.6
Queue Length 95th (m)	14.0	68.6	28.6	46.9	18.2	16.4
Internal Link Dist (m)		153.7		76.4	185.8	188.3
Turn Bay Length (m)	25.0		20.0			
Base Capacity (vph)	742	1532	476	1521	805	803
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.31	0.28	0.22	0.21	0.23

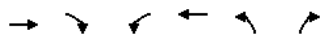
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	424	10	121	310	3	4	64	90	3	56	112
Future Volume (vph)	73	424	10	121	310	3	4	64	90	3	56	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.92			0.91	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1803	1892		1803	1879			1727			1680	
Flt Permitted	0.48	1.00		0.31	1.00			0.99			1.00	
Satd. Flow (perm)	917	1892		588	1879			1719			1675	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	79	461	11	132	337	3	4	70	98	3	61	122
RTOR Reduction (vph)	0	1	0	0	1	0	0	47	0	0	68	0
Lane Group Flow (vph)	79	471	0	132	339	0	0	125	0	0	118	0
Confl. Peds. (#/hr)	1		2	2		1	10		3	3		10
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	18.5	18.5		18.5	18.5			24.2			24.2	
Effective Green, g (s)	18.5	18.5		18.5	18.5			24.2			24.2	
Actuated g/C Ratio	0.34	0.34		0.34	0.34			0.44			0.44	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	310	639		198	635			760			741	
v/s Ratio Prot		c0.25			0.18							
v/s Ratio Perm	0.09			0.22				c0.07			0.07	
v/c Ratio	0.25	0.74		0.67	0.53			0.16			0.16	
Uniform Delay, d1	13.1	16.0		15.5	14.6			9.2			9.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.4	4.4		8.2	0.9			0.5			0.5	
Delay (s)	13.5	20.4		23.7	15.5			9.6			9.6	
Level of Service	B	C		C	B			A			A	
Approach Delay (s)		19.4			17.8			9.6			9.6	
Approach LOS		B			B			A			A	

Intersection Summary				
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.41			
Actuated Cycle Length (s)	54.7	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	59.6%	ICU Level of Service	B	
Analysis Period (min)	15			

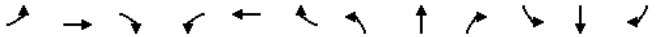
c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	10	1	4	16	6	4
Future Volume (Veh/h)	10	1	4	16	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)	11	1	4	17	7	4
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			13		38	12
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			13		38	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		99	100
cM capacity (veh/h)			1604		972	1067

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	12	21	11
Volume Left	0	4	7
Volume Right	1	0	4
cSH	1700	1604	1004
Volume to Capacity	0.01	0.00	0.01
Queue Length 95th (m)	0.0	0.1	0.3
Control Delay (s)	0.0	1.4	8.6
Lane LOS		A	A
Approach Delay (s)	0.0	1.4	8.6
Approach LOS			A

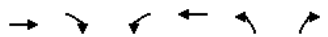
Intersection Summary				
Average Delay	2.8			
Intersection Capacity Utilization	14.3%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	515	3	3	404	2	2	2	14	1	0	1
Future Volume (Veh/h)	3	515	3	3	404	2	2	2	14	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	560	3	3	439	2	2	2	15	1	0	1
Pedestrians		1			1						3	
Lane Width (m)		3.6			3.6						3.6	
Walking Speed (m/s)		1.2			1.2						1.2	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		100			199							
pX, platoon unblocked	0.90			0.77			0.82	0.82	0.77	0.82	0.82	0.90
vC, conflicting volume	444			563			1016	1018	562	1034	1018	444
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	328			288			641	643	287	663	644	328
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	99	97	100	100	100
cM capacity (veh/h)	1107			985			316	319	581	296	319	641

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	566	444	19	2
Volume Left	3	3	2	1
Volume Right	3	2	15	1
cSH	1107	985	495	405
Volume to Capacity	0.00	0.00	0.04	0.00
Queue Length 95th (m)	0.1	0.1	1.0	0.1
Control Delay (s)	0.1	0.1	12.6	13.9
Lane LOS	A	A	B	B
Approach Delay (s)	0.1	0.1	12.6	13.9
Approach LOS			B	B

Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	39.6%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	17	2	2	17	3	4
Future Volume (Veh/h)	17	2	2	17	3	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)	18	2	2	18	3	4
Pedestrians					9	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			29		50	28
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			29		50	28
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)			1572		951	1039

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	20	20	7
Volume Left	0	2	3
Volume Right	2	0	4
cSH	1700	1572	999
Volume to Capacity	0.01	0.00	0.01
Queue Length 95th (m)	0.0	0.0	0.2
Control Delay (s)	0.0	0.7	8.6
Lane LOS		A	A
Approach Delay (s)	0.0	0.7	8.6
Approach LOS			A

Intersection Summary				
Average Delay	1.6			
Intersection Capacity Utilization	15.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	504	5	18	379	3	12	1	48	2	3	5
Future Volume (Veh/h)	8	504	5	18	379	3	12	1	48	2	3	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	548	5	20	412	3	13	1	52	2	3	5
Pedestrians					5						2	
Lane Width (m)					3.6						3.6	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		199			100							
pX, platoon unblocked												
vC, conflicting volume	417			553			821	1026	282	805	1026	210
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	417			553			821	1026	282	805	1026	210
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			95	100	93	99	99	99
cM capacity (veh/h)	1137			1013			256	227	713	246	226	795

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	283	279	226	209	66	10
Volume Left	9	0	20	0	13	2
Volume Right	0	5	0	3	52	5
cSH	1137	1700	1013	1700	515	361
Volume to Capacity	0.01	0.16	0.02	0.12	0.13	0.03
Queue Length 95th (m)	0.2	0.0	0.5	0.0	3.5	0.7
Control Delay (s)	0.3	0.0	0.9	0.0	13.0	15.2
Lane LOS	A		A		B	C
Approach Delay (s)	0.2		0.5		13.0	15.2
Approach LOS					B	C

Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization			37.1%	ICU Level of Service		A
Analysis Period (min)			15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	229	570	5	475	179	282	105	243
v/c Ratio	0.63	0.48	0.02	0.69	0.33	0.41	0.20	0.41
Control Delay	25.7	21.8	15.4	32.8	13.3	23.3	12.2	22.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.7	21.8	15.4	32.8	13.3	23.3	12.2	22.3
Queue Length 50th (m)	25.7	34.1	0.5	34.3	14.8	34.5	8.3	27.0
Queue Length 95th (m)	42.8	58.7	2.6	50.2	29.3	63.6	18.4	51.3
Internal Link Dist (m)		80.3		65.0		84.7		300.6
Turn Bay Length (m)	20.0		30.0		15.0		25.0	
Base Capacity (vph)	367	1468	401	1467	548	692	579	587
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.39	0.01	0.32	0.33	0.41	0.18	0.41

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	211	412	112	5	328	109	165	247	13	97	143	81
Future Volume (vph)	211	412	112	5	328	109	165	247	13	97	143	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	0.99		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1783	3427		1795	3406		1757	1883		1779	1762	
Flt Permitted	0.30	1.00		0.44	1.00		0.49	1.00		0.55	1.00	
Satd. Flow (perm)	556	3427		827	3406		911	1883		1032	1762	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	229	448	122	5	357	118	179	268	14	105	155	88
RTOR Reduction (vph)	0	25	0	0	38	0	0	2	0	0	19	0
Lane Group Flow (vph)	229	545	0	5	437	0	179	280	0	105	224	0
Confl. Peds. (#/hr)	9		13	13		9	18		10	10		18
Heavy Vehicles (%)	1%	0%	4%	0%	1%	1%	2%	0%	0%	1%	1%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	32.5	27.4		19.7	18.6		38.8	29.6		33.6	27.0	
Effective Green, g (s)	32.5	27.4		19.7	18.6		38.8	29.6		33.6	27.0	
Actuated g/C Ratio	0.38	0.32		0.23	0.22		0.46	0.35		0.40	0.32	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	356	1108		204	747		509	658		467	561	
v/s Ratio Prot	c0.08	0.16		0.00	0.13		c0.04	c0.15		0.02	0.13	
v/s Ratio Perm	c0.17			0.01			0.12			0.07		
v/c Ratio	0.64	0.49		0.02	0.58		0.35	0.43		0.22	0.40	
Uniform Delay, d1	19.0	23.0		25.0	29.6		14.1	21.1		16.4	22.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.0	0.3		0.0	1.2		0.4	2.0		0.2	2.1	
Delay (s)	23.0	23.4		25.1	30.8		14.5	23.1		16.6	24.6	
Level of Service	C	C		C	C		B	C		B	C	
Approach Delay (s)		23.3			30.7			19.7			22.2	
Approach LOS		C			C			B			C	

Intersection Summary				
HCM 2000 Control Delay	24.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.56			
Actuated Cycle Length (s)	84.7	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	65.9%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	127	160	0	0	0
Future Volume (Veh/h)	0	127	160	0	0	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)	0	138	174	0	0	0
Pedestrians		2			5	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			105			
pX, platoon unblocked						
vC, conflicting volume	179				317	181
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	179				317	181
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)	1391				673	857

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	138	174	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1391	1700	1700
Volume to Capacity	0.00	0.10	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	19.8%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix D

2026 Background Traffic Operations Reports

Lane Group	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	285	247	209	114	1368	1565
v/c Ratio	0.51	0.87	0.40	0.79	0.70	0.91
Control Delay	21.8	63.2	24.4	47.7	20.5	33.3
Queue Delay	0.0	0.0	0.0	0.0	0.1	0.0
Total Delay	21.8	63.2	24.4	47.7	20.6	33.3
Queue Length 50th (m)	30.8	47.2	26.9	13.9	92.2	149.2
Queue Length 95th (m)	56.9	#94.0	47.9	m#24.3	107.7	#203.1
Internal Link Dist (m)	111.7		232.7		189.4	97.3
Turn Bay Length (m)				50.0		
Base Capacity (vph)	558	283	520	144	1943	1713
Starvation Cap Reductn	0	0	0	0	81	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.87	0.40	0.79	0.73	0.91

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	0	240	227	56	136	105	1259	0	0	1428	12
Future Volume (vph)	22	0	240	227	56	136	105	1259	0	0	1428	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		3.0	6.0			6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95			0.95	
Frpb, ped/bikes		0.98		1.00	0.99		1.00	1.00			1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00			1.00	
Frt		0.88		1.00	0.89		1.00	1.00			1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)		1600		1764	1546		1703	3471			3495	
Flt Permitted		0.96		0.48	1.00		0.08	1.00			1.00	
Satd. Flow (perm)		1545		888	1546		138	3471			3495	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	0	261	247	61	148	114	1368	0	0	1552	13
RTOR Reduction (vph)	0	64	0	0	25	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	221	0	247	184	0	114	1368	0	0	1564	0
Confl. Peds. (#/hr)	5		4	4		5	27		20	20		27
Heavy Vehicles (%)	0%	0%	2%	2%	4%	10%	6%	4%	0%	0%	3%	13%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA			NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2					
Actuated Green, G (s)		32.0		32.0	32.0		56.0	56.0			49.0	
Effective Green, g (s)		32.0		32.0	32.0		56.0	56.0			49.0	
Actuated g/C Ratio		0.32		0.32	0.32		0.56	0.56			0.49	
Clearance Time (s)		6.0		6.0	6.0		3.0	6.0			6.0	
Lane Grp Cap (vph)		494		284	494		139	1943			1712	
v/s Ratio Prot					0.12		c0.03	0.39			c0.45	
v/s Ratio Perm		0.14		c0.28			0.42					
v/c Ratio		0.45		0.87	0.37		0.82	0.70			0.91	
Uniform Delay, d1		27.0		32.0	26.2		20.3	16.0			23.6	
Progression Factor		1.00		1.00	1.00		1.70	1.16			1.00	
Incremental Delay, d2		2.9		28.5	2.1		30.8	1.6			9.0	
Delay (s)		29.9		60.5	28.4		65.2	20.1			32.6	
Level of Service		C		E	C		E	C			C	
Approach Delay (s)		29.9			45.8			23.5			32.6	
Approach LOS		C			D			C			C	

Intersection Summary

HCM 2000 Control Delay	30.4	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.89				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)		15.0	
Intersection Capacity Utilization	95.5%	ICU Level of Service		F	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	866	420	185	760	300	832
v/c Ratio	0.84	0.72	0.26	0.60	0.61	0.40
Control Delay	40.9	31.6	0.9	24.8	21.3	16.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.9	31.6	0.9	24.8	21.3	16.6
Queue Length 50th (m)	84.4	59.3	0.0	47.1	37.3	53.8
Queue Length 95th (m)	#110.0	96.2	0.0	54.5	m45.0	m64.2
Internal Link Dist (m)		345.6		232.0		189.4
Turn Bay Length (m)					115.0	
Base Capacity (vph)	1033	584	700	1262	489	2057
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.72	0.26	0.60	0.61	0.40

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	797	138	248	0	0	170	0	618	81	276	765	0
Future Volume (vph)	797	138	248	0	0	170	0	618	81	276	765	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0				6.0		6.0		3.0	6.0	
Lane Util. Factor	0.97	1.00				1.00		0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99				1.00		0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00				1.00		1.00		1.00	1.00	
Frt	1.00	0.90				0.86		0.98		1.00	1.00	
Flt Protected	0.95	1.00				1.00		1.00		0.95	1.00	
Satd. Flow (prot)	3335	1674				1370		3385		1800	3610	
Flt Permitted	0.95	1.00				1.00		1.00		0.23	1.00	
Satd. Flow (perm)	3335	1674				1370		3385		430	3610	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	866	150	270	0	0	185	0	672	88	300	832	0
RTOR Reduction (vph)	0	65	0	0	0	128	0	10	0	0	0	0
Lane Group Flow (vph)	866	355	0	0	0	57	0	750	0	300	832	0
Confl. Peds. (#/hr)			3	3			29		24	24		29
Heavy Vehicles (%)	5%	4%	0%	0%	4%	20%	8%	4%	2%	0%	0%	1%
Turn Type	Perm	NA				Perm		NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4					8				6		
Actuated Green, G (s)	31.0	31.0				31.0		37.0		57.0	57.0	
Effective Green, g (s)	31.0	31.0				31.0		37.0		57.0	57.0	
Actuated g/C Ratio	0.31	0.31				0.31		0.37		0.57	0.57	
Clearance Time (s)	6.0	6.0				6.0		6.0		3.0	6.0	
Lane Grp Cap (vph)	1033	518				424		1252		478	2057	
v/s Ratio Prot		0.21						0.22		c0.11	0.23	
v/s Ratio Perm	c0.26					0.04				c0.25		
v/c Ratio	0.84	0.69				0.14		0.60		0.63	0.40	
Uniform Delay, d1	32.2	30.2				24.8		25.5		13.1	12.0	
Progression Factor	1.00	1.00				1.00		0.90		1.86	1.34	
Incremental Delay, d2	8.1	7.2				0.7		1.9		3.0	0.3	
Delay (s)	40.3	37.4				25.5		25.0		27.3	16.4	
Level of Service	D	D				C		C		C	B	
Approach Delay (s)		39.4			25.5			25.0			19.3	
Approach LOS		D			C			C			B	

Intersection Summary

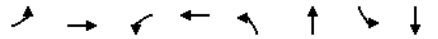
HCM 2000 Control Delay	28.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	240	50	316	307	0	0
Future Volume (Veh/h)	240	50	316	307	0	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)	261	54	343	334	0	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)			245			
pX, platoon unblocked	0.93	0.93			0.93	
vC, conflicting volume	510	510			677	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	439	439			618	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	51	91			100	
cM capacity (veh/h)	537	577			898	

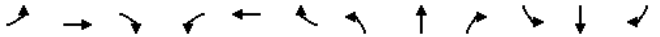
Direction, Lane #	WB 1	NB 1
Volume Total	315	677
Volume Left	261	0
Volume Right	54	334
cSH	543	1700
Volume to Capacity	0.58	0.40
Queue Length 95th (m)	29.3	0.0
Control Delay (s)	20.4	0.0
Lane LOS	C	
Approach Delay (s)	20.4	0.0
Approach LOS	C	

Intersection Summary			
Average Delay	6.5		
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	88	76	64	228	9	652	102	1170
v/c Ratio	0.22	0.11	0.18	0.41	0.08	0.50	0.29	0.68
Control Delay	19.9	17.2	29.2	14.0	20.0	20.7	14.2	22.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.9	17.2	29.2	14.0	20.0	20.7	14.2	22.0
Queue Length 50th (m)	10.9	8.2	9.9	13.6	1.1	41.5	9.4	120.5
Queue Length 95th (m)	21.2	17.8	21.1	34.5	m3.2	60.1	m14.8	144.4
Internal Link Dist (m)		81.6		331.6		133.3		232.0
Turn Bay Length (m)	20.0		30.0		30.0		50.0	
Base Capacity (vph)	401	715	348	559	117	1295	356	1716
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.11	0.18	0.41	0.08	0.50	0.29	0.68

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	59	11	59	55	155	8	563	37	94	1010	66
Future Volume (vph)	81	59	11	59	55	155	8	563	37	94	1010	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.89		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1731	1818		1669	1640		1627	3395		1783	3492	
Flt Permitted	0.45	1.00		0.71	1.00		0.18	1.00		0.28	1.00	
Satd. Flow (perm)	827	1818		1243	1640		310	3395		531	3492	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	88	64	12	64	60	168	9	612	40	102	1098	72
RTOR Reduction (vph)	0	7	0	0	101	0	0	5	0	0	5	0
Lane Group Flow (vph)	88	69	0	64	127	0	9	647	0	102	1165	0
Confl. Peds. (#/hr)	7		7	7		7	21		14	14		21
Heavy Vehicles (%)	4%	2%	0%	7%	2%	1%	10%	4%	20%	1%	2%	1%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	39.0	39.0		28.0	28.0		38.0	38.0		49.0	49.0	
Effective Green, g (s)	39.0	39.0		28.0	28.0		38.0	38.0		49.0	49.0	
Actuated g/C Ratio	0.39	0.39		0.28	0.28		0.38	0.38		0.49	0.49	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	385	709		348	459		117	1290		347	1711	
v/s Ratio Prot	c0.02	0.04			c0.08			0.19		0.02	c0.33	
v/s Ratio Perm	0.07			0.05			0.03			0.12		
v/c Ratio	0.23	0.10		0.18	0.28		0.08	0.50		0.29	0.68	
Uniform Delay, d1	20.0	19.3		27.3	28.1		19.8	23.7		14.7	19.5	
Progression Factor	1.00	1.00		1.00	1.00		0.90	0.82		0.96	1.01	
Incremental Delay, d2	1.4	0.3		1.2	1.5		1.2	1.3		2.0	2.1	
Delay (s)	21.4	19.6		28.5	29.6		19.1	20.7		16.0	21.8	
Level of Service	C	B		C	C		B	C		B	C	
Approach Delay (s)		20.6			29.4			20.7			21.3	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	22.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	73.5%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	25	11	4	499	901	16
Future Volume (Veh/h)	25	11	4	499	901	16
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)	27	12	4	542	979	17
Pedestrians	8				1	
Lane Width (m)	3.6				3.6	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	1				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				229	157	
pX, platoon unblocked	0.78	0.77	0.77			
vC, conflicting volume	1276	506	1004			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	617	0	400			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	92	99	100			
cM capacity (veh/h)	327	827	881			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	39	185	361	653	343
Volume Left	27	4	0	0	0
Volume Right	12	0	0	0	17
cSH	401	881	1700	1700	1700
Volume to Capacity	0.10	0.00	0.21	0.38	0.20
Queue Length 95th (m)	2.6	0.1	0.0	0.0	0.0
Control Delay (s)	14.9	0.2	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	14.9	0.1		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	35.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	191	256	42	274	11	430	59	1100
v/c Ratio	0.55	0.37	0.14	0.56	0.07	0.33	0.13	0.64
Control Delay	27.4	23.1	29.4	35.4	20.8	21.8	13.3	16.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.4	23.1	29.4	35.4	20.8	21.8	13.3	16.2
Queue Length 50th (m)	25.8	35.1	6.5	46.3	1.4	31.1	3.9	47.4
Queue Length 95th (m)	42.5	56.4	15.5	73.0	5.4	43.7	m8.4	72.5
Internal Link Dist (m)		76.2		327.8		194.7		204.9
Turn Bay Length (m)			30.0		20.0		20.0	
Base Capacity (vph)	348	687	297	488	158	1315	470	1721
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.37	0.14	0.56	0.07	0.33	0.13	0.64

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	176	192	43	39	208	44	10	373	23	54	775	237
Future Volume (vph)	176	192	43	39	208	44	10	373	23	54	775	237
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		0.99	1.00	
Frt	1.00	0.97		1.00	0.97		1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1731	1788		1744	1783		1795	3363		1754	3384	
Flt Permitted	0.38	1.00		0.60	1.00		0.21	1.00		0.42	1.00	
Satd. Flow (perm)	691	1788		1103	1783		406	3363		780	3384	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	191	209	47	42	226	48	11	405	25	59	842	258
RTOR Reduction (vph)	0	8	0	0	7	0	0	4	0	0	29	0
Lane Group Flow (vph)	191	248	0	42	267	0	11	426	0	59	1071	0
Confl. Peds. (#/hr)	9		4	4		9	18		16	18		16
Heavy Vehicles (%)	4%	3%	3%	3%	4%	0%	0%	6%	6%	2%	2%	2%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	38.0	38.0		27.0	27.0		39.0	39.0		50.0	50.0	
Effective Green, g (s)	38.0	38.0		27.0	27.0		39.0	39.0		50.0	50.0	
Actuated g/C Ratio	0.38	0.38		0.27	0.27		0.39	0.39		0.50	0.50	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	335	679		297	481		158	1311		458	1692	
v/s Ratio Prot	c0.04	0.14			0.15			0.13		0.01	c0.32	
v/s Ratio Perm	c0.18			0.04			0.03			0.06		
v/c Ratio	0.57	0.37		0.14	0.55		0.07	0.32		0.13	0.63	
Uniform Delay, d1	23.1	22.3		27.7	31.3		19.1	21.3		13.2	18.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.06	0.84	
Incremental Delay, d2	6.9	1.5		1.0	4.6		0.9	0.7		0.5	1.5	
Delay (s)	30.0	23.8		28.7	35.9		20.0	22.0		14.4	16.8	
Level of Service	C	C		C	D		B	C		B	B	
Approach Delay (s)		26.5			34.9			21.9			16.7	
Approach LOS		C			C			C			B	

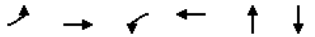
Intersection Summary					
HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.66				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0		
Intersection Capacity Utilization	76.6%	ICU Level of Service	D		
Analysis Period (min)	15				

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	14	8	105	19	7	88
Future Volume (Veh/h)	14	8	105	19	7	88
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)	15	9	114	21	8	96
Pedestrians			78			5
Lane Width (m)			3.6			3.6
Walking Speed (m/s)			1.2			1.2
Percent Blockage			7			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			212			
pX, platoon unblocked						
vC, conflicting volume	314	130			135	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	314	130			135	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	99			99	
cM capacity (veh/h)	631	916			1449	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	24	135	104
Volume Left	15	0	8
Volume Right	9	21	0
cSH	714	1700	1449
Volume to Capacity	0.03	0.08	0.01
Queue Length 95th (m)	0.8	0.0	0.1
Control Delay (s)	10.2	0.0	0.6
Lane LOS	B		A
Approach Delay (s)	10.2	0.0	0.6
Approach LOS	B		

Intersection Summary				
Average Delay		1.2		
Intersection Capacity Utilization		21.9%	ICU Level of Service	A
Analysis Period (min)		15		



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	87	378	93	350	133	110
v/c Ratio	0.36	0.68	0.41	0.63	0.17	0.15
Control Delay	18.1	22.5	20.1	20.7	5.6	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.1	22.5	20.1	20.7	5.6	6.5
Queue Length 50th (m)	6.5	31.6	7.1	28.7	2.7	2.8
Queue Length 95th (m)	16.1	54.5	17.7	49.8	12.6	12.1
Internal Link Dist (m)		153.7		76.4	185.8	188.3
Turn Bay Length (m)	25.0		20.0			
Base Capacity (vph)	689	1552	631	1569	798	741
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.24	0.15	0.22	0.17	0.15

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	344	4	86	320	2	7	43	72	11	41	49
Future Volume (vph)	80	344	4	86	320	2	7	43	72	11	41	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.96	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.92			0.93	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1686	1824		1714	1843			1650			1599	
Flt Permitted	0.46	1.00		0.41	1.00			0.99			0.97	
Satd. Flow (perm)	809	1824		747	1843			1632			1560	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	374	4	93	348	2	8	47	78	12	45	53
RTOR Reduction (vph)	0	1	0	0	1	0	0	42	0	0	28	0
Lane Group Flow (vph)	87	377	0	93	349	0	0	91	0	0	82	0
Confl. Peds. (#/hr)	1		16	16		1	39		3	3		39
Heavy Vehicles (%)	7%	4%	0%	4%	3%	0%	0%	6%	3%	0%	11%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	15.8	15.8		15.8	15.8			24.2			24.2	
Effective Green, g (s)	15.8	15.8		15.8	15.8			24.2			24.2	
Actuated g/C Ratio	0.30	0.30		0.30	0.30			0.47			0.47	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	245	554		226	559			759			726	
v/s Ratio Prot		c0.21			0.19							
v/s Ratio Perm	0.11			0.12				c0.06			0.05	
v/c Ratio	0.36	0.68		0.41	0.62			0.12			0.11	
Uniform Delay, d1	14.1	15.9		14.4	15.6			7.9			7.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.9	3.4		1.2	2.2			0.3			0.3	
Delay (s)	15.0	19.3		15.6	17.7			8.2			8.2	
Level of Service	B	B		B	B			A			A	
Approach Delay (s)		18.5			17.3			8.2			8.2	
Approach LOS		B			B			A			A	

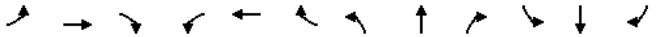
Intersection Summary				
HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.34			
Actuated Cycle Length (s)	52.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	53.1%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	20	6	1	16	14	10
Future Volume (Veh/h)	20	6	1	16	14	10
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)	22	7	1	17	15	11
Pedestrians					37	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					3	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			66		82	62
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			66		82	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		98	99
cM capacity (veh/h)			1488		892	971

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	29	18	26
Volume Left	0	1	15
Volume Right	7	0	11
cSH	1700	1488	924
Volume to Capacity	0.02	0.00	0.03
Queue Length 95th (m)	0.0	0.0	0.7
Control Delay (s)	0.0	0.4	9.0
Lane LOS		A	A
Approach Delay (s)	0.0	0.4	9.0
Approach LOS			A

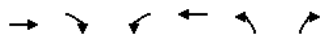
Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	372	2	8	361	2	2	0	18	2	2	10
Future Volume (Veh/h)	13	372	2	8	361	2	2	0	18	2	2	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	404	2	9	392	2	2	0	20	2	2	11
Pedestrians		4			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		100			199							
pX, platoon unblocked	0.95			0.83			0.86	0.86	0.83	0.86	0.86	0.95
vC, conflicting volume	394			406			860	845	407	866	845	397
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	338			186			626	608	188	633	608	341
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			99	100	97	99	99	98
cM capacity (veh/h)	1162			1156			327	344	710	321	344	665

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	420	403	22	15
Volume Left	14	9	2	2
Volume Right	2	2	20	11
cSH	1162	1156	642	525
Volume to Capacity	0.01	0.01	0.03	0.03
Queue Length 95th (m)	0.3	0.2	0.9	0.7
Control Delay (s)	0.4	0.3	10.8	12.1
Lane LOS	A	A	B	B
Approach Delay (s)	0.4	0.3	10.8	12.1
Approach LOS			B	B

Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	37.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	25	2	5	12	5	6
Future Volume (Veh/h)	25	2	5	12	5	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)	27	2	5	13	5	7
Pedestrians				1	3	
Lane Width (m)				3.6	3.6	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			32		54	32
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			32		54	32
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)			1576		949	1038

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	29	18	12
Volume Left	0	5	5
Volume Right	2	0	7
cSH	1700	1576	999
Volume to Capacity	0.02	0.00	0.01
Queue Length 95th (m)	0.0	0.1	0.3
Control Delay (s)	0.0	2.0	8.6
Lane LOS		A	A
Approach Delay (s)	0.0	2.0	8.6
Approach LOS			A

Intersection Summary				
Average Delay	2.4			
Intersection Capacity Utilization	15.4%	ICU Level of Service	A	
Analysis Period (min)	15			

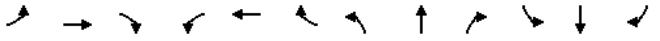
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	354	23	57	361	5	1	2	14	6	0	2
Future Volume (Veh/h)	8	354	23	57	361	5	1	2	14	6	0	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	385	25	62	392	5	1	2	15	7	0	2
Pedestrians					6						8	
Lane Width (m)					3.6						3.6	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					1						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		199			100							
pX, platoon unblocked												
vC, conflicting volume	405			410			738	944	211	759	954	206
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	405			410			738	944	211	759	954	206
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			95			100	99	98	97	100	100
cM capacity (veh/h)	1143			1145			290	243	791	270	240	794

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	202	218	258	201	18	9
Volume Left	9	0	62	0	1	7
Volume Right	0	25	0	5	15	2
cSH	1143	1700	1145	1700	587	316
Volume to Capacity	0.01	0.13	0.05	0.12	0.03	0.03
Queue Length 95th (m)	0.2	0.0	1.4	0.0	0.8	0.7
Control Delay (s)	0.4	0.0	2.4	0.0	11.3	16.7
Lane LOS	A		A		B	C
Approach Delay (s)	0.2		1.3		11.3	16.7
Approach LOS					B	C

Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization			38.1%	ICU Level of Service		A
Analysis Period (min)			15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	113	423	7	351	74	123	90	338
v/c Ratio	0.35	0.47	0.03	0.57	0.14	0.16	0.13	0.44
Control Delay	21.6	22.4	17.5	30.0	9.4	16.3	9.2	19.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.6	22.4	17.5	30.0	9.4	16.3	9.2	19.1
Queue Length 50th (m)	12.1	23.0	0.7	23.8	4.7	10.9	5.8	35.0
Queue Length 95th (m)	24.1	44.1	3.4	38.0	12.1	25.2	14.1	67.2
Internal Link Dist (m)		80.3		65.0		84.7		300.6
Turn Bay Length (m)	20.0		30.0		15.0		25.0	
Base Capacity (vph)	324	1608	283	1624	562	748	733	770
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.26	0.02	0.22	0.13	0.16	0.12	0.44

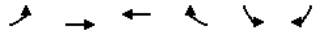
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	289	100	6	258	65	68	93	20	83	221	90
Future Volume (vph)	104	289	100	6	258	65	68	93	20	83	221	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		0.98	1.00		0.99	1.00		0.98	1.00	
Frt	1.00	0.96		1.00	0.97		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1755	3307		1479	3350		1677	1754		1744	1786	
Flt Permitted	0.40	1.00		0.51	1.00		0.48	1.00		0.68	1.00	
Satd. Flow (perm)	734	3307		786	3350		841	1754		1241	1786	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	113	314	109	7	280	71	74	101	22	90	240	98
RTOR Reduction (vph)	0	39	0	0	27	0	0	7	0	0	13	0
Lane Group Flow (vph)	113	384	0	7	324	0	74	116	0	90	325	0
Confl. Peds. (#/hr)	20		29	29		20	18		34	34		18
Heavy Vehicles (%)	2%	2%	5%	20%	4%	0%	7%	4%	6%	1%	1%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	24.3	19.2		16.2	15.1		36.6	31.0		36.8	31.1	
Effective Green, g (s)	24.3	19.2		16.2	15.1		36.6	31.0		36.8	31.1	
Actuated g/C Ratio	0.32	0.25		0.21	0.20		0.48	0.40		0.48	0.40	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	300	824		175	656		460	706		630	721	
v/s Ratio Prot	c0.03	c0.12		0.00	0.10		c0.01	0.07		0.01	c0.18	
v/s Ratio Perm	0.09			0.01			0.06			0.06		
v/c Ratio	0.38	0.47		0.04	0.49		0.16	0.16		0.14	0.45	
Uniform Delay, d1	19.5	24.5		24.1	27.5		11.2	14.7		11.1	16.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.4		0.1	0.6		0.2	0.5		0.1	2.0	
Delay (s)	20.3	25.0		24.2	28.1		11.4	15.2		11.2	18.8	
Level of Service	C	C		C	C		B	B		B	B	
Approach Delay (s)		24.0			28.1			13.8			17.2	
Approach LOS		C			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.44			
Actuated Cycle Length (s)	77.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	56.4%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	81	107	0	0	0
Future Volume (Veh/h)	0	81	107	0	0	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)	0	88	116	0	0	0
Pedestrians		2			5	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			105			
pX, platoon unblocked						
vC, conflicting volume	121				209	123
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	121				209	123
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)	1460				776	923

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	88	116	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1460	1700	1700
Volume to Capacity	0.00	0.07	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	17.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	251	171	307	177	1987	1972
v/c Ratio	0.61	0.84	0.70	0.86	0.84	1.01
Control Delay	25.8	86.3	57.8	73.8	23.4	54.7
Queue Delay	0.0	0.0	0.0	0.0	37.9	0.0
Total Delay	25.8	86.3	57.8	73.8	61.3	54.7
Queue Length 50th (m)	26.8	51.2	83.8	38.1	233.4	~322.6
Queue Length 95th (m)	59.7	#95.1	119.6	#82.9	269.4	#382.2
Internal Link Dist (m)	111.7		232.7		189.4	97.3
Turn Bay Length (m)				50.0		
Base Capacity (vph)	410	203	440	205	2359	1959
Starvation Cap Reductn	0	0	0	0	517	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.84	0.70	0.86	1.08	1.01

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	0	204	157	130	153	163	1828	0	0	1798	17
Future Volume (vph)	27	0	204	157	130	153	163	1828	0	0	1798	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		3.0	6.0			6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95			0.95	
Frpb, ped/bikes		0.99		1.00	0.98		1.00	1.00			1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00			1.00	
Frt		0.88		1.00	0.92		1.00	1.00			1.00	
Flt Protected		0.99		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)		1612		1768	1695		1770	3539			3497	
Flt Permitted		0.72		0.43	1.00		0.05	1.00			1.00	
Satd. Flow (perm)		1170		803	1695		86	3539			3497	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	0	222	171	141	166	177	1987	0	0	1954	18
RTOR Reduction (vph)	0	114	0	0	11	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	137	0	171	296	0	177	1987	0	0	1972	0
Confl. Peds. (#/hr)	9		1	1		9	27		56	56		27
Heavy Vehicles (%)	0%	0%	2%	2%	0%	2%	2%	2%	0%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA			NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2					
Actuated Green, G (s)		38.0		38.0	38.0		100.0	100.0			84.0	
Effective Green, g (s)		38.0		38.0	38.0		100.0	100.0			84.0	
Actuated g/C Ratio		0.25		0.25	0.25		0.67	0.67			0.56	
Clearance Time (s)		6.0		6.0	6.0		3.0	6.0			6.0	
Lane Grp Cap (vph)		296		203	429		203	2359			1958	
v/s Ratio Prot					0.17		0.08	c0.56			c0.56	
v/s Ratio Perm		0.12		c0.21			0.51					
v/c Ratio		0.46		0.84	0.69		0.87	0.84			1.01	
Uniform Delay, d1		47.4		53.2	50.7		51.3	19.0			33.0	
Progression Factor		1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2		5.1		32.5	8.8		36.8	3.9			22.0	
Delay (s)		52.5		85.7	59.4		88.1	22.9			55.0	
Level of Service		D		F	E		F	C			E	
Approach Delay (s)		52.5			68.8			28.2			55.0	
Approach LOS		D			E			C			E	

Intersection Summary

HCM 2000 Control Delay	44.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	109.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	1122	359	240	1477	320	936
v/c Ratio	0.96	0.58	0.93	1.02	1.13	0.45
Control Delay	66.1	40.9	86.3	70.3	135.7	19.1
Queue Delay	0.0	0.0	0.0	4.5	0.0	0.6
Total Delay	66.1	40.9	86.3	74.8	135.7	19.7
Queue Length 50th (m)	176.5	84.0	56.3	~256.1	~98.9	85.7
Queue Length 95th (m)	#222.0	119.0	#111.2	#301.4	#163.3	102.4
Internal Link Dist (m)		345.6		232.0		189.4
Turn Bay Length (m)					115.0	
Base Capacity (vph)	1183	625	259	1447	282	2077
Starvation Cap Reductn	0	0	0	19	0	698
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.95	0.57	0.93	1.03	1.13	0.68

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1032	180	150	0	0	221	0	1094	265	294	861	0
Future Volume (vph)	1032	180	150	0	0	221	0	1094	265	294	861	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0				3.0		6.0		3.0	6.0	
Lane Util. Factor	0.97	1.00				1.00		0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99				1.00		0.97		1.00	1.00	
Flpb, ped/bikes	1.00	1.00				1.00		1.00		1.00	1.00	
Frt	1.00	0.93				0.86		0.97		1.00	1.00	
Flt Protected	0.95	1.00				1.00		1.00		0.95	1.00	
Satd. Flow (prot)	3400	1740				1596		3343		1805	3610	
Flt Permitted	0.95	1.00				1.00		1.00		0.06	1.00	
Satd. Flow (perm)	3400	1740				1596		3343		113	3610	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1122	196	163	0	0	240	0	1189	288	320	936	0
RTOR Reduction (vph)	0	20	0	0	0	57	0	14	0	0	0	0
Lane Group Flow (vph)	1122	339	0	0	0	183	0	1463	0	320	936	0
Confl. Peds. (#/hr)			1	1			24		29	29		24
Heavy Vehicles (%)	3%	2%	0%	0%	2%	3%	3%	2%	2%	0%	0%	2%
Turn Type	Perm	NA				Over		NA		pm+pt	NA	
Protected Phases		4				1		2		1	6	
Permitted Phases	4									6		
Actuated Green, G (s)	51.4	51.4				19.0		64.0		86.0	86.0	
Effective Green, g (s)	51.4	51.4				19.0		64.0		86.0	86.0	
Actuated g/C Ratio	0.34	0.34				0.13		0.43		0.58	0.58	
Clearance Time (s)	6.0	6.0				3.0		6.0		3.0	6.0	
Vehicle Extension (s)	3.0	3.0				3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	1169	598				202		1432		280	2078	
v/s Ratio Prot		0.19				0.11		0.44		c0.15	0.26	
v/s Ratio Perm	c0.33									c0.51		
v/c Ratio	0.96	0.57				0.91		1.02		1.14	0.45	
Uniform Delay, d1	48.0	39.9				64.3		42.7		51.5	18.2	
Progression Factor	1.00	1.00				1.00		1.00		1.00	1.00	
Incremental Delay, d2	17.3	1.2				38.2		29.3		98.0	0.7	
Delay (s)	65.3	41.2				102.6		72.0		149.5	18.9	
Level of Service	E	D				F		E		F	B	
Approach Delay (s)		59.4			102.6			72.0			52.1	
Approach LOS		E			F			E			D	

Intersection Summary

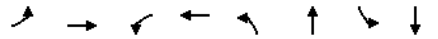
HCM 2000 Control Delay	63.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	149.4	Sum of lost time (s)	15.0
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	246	24	388	282	0	0
Future Volume (Veh/h)	246	24	388	282	0	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)	267	26	422	307	0	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)			239			
pX, platoon unblocked	0.92	0.92			0.92	
vC, conflicting volume	576	576			729	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	499	499			665	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	46	95			100	
cM capacity (veh/h)	491	528			853	

Direction, Lane #	WB 1	NB 1
Volume Total	293	729
Volume Left	267	0
Volume Right	26	307
cSH	494	1700
Volume to Capacity	0.59	0.43
Queue Length 95th (m)	30.4	0.0
Control Delay (s)	22.4	0.0
Lane LOS	C	
Approach Delay (s)	22.4	0.0
Approach LOS	C	

Intersection Summary			
Average Delay	6.4		
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	117	81	111	307	17	1212	211	1101
v/c Ratio	0.47	0.14	0.40	0.73	0.09	0.82	0.82	0.56
Control Delay	30.4	23.2	38.3	38.8	24.1	29.2	45.6	15.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.4	23.2	38.3	38.8	24.1	29.2	45.6	15.3
Queue Length 50th (m)	16.7	10.8	19.5	44.6	1.9	85.0	24.8	70.4
Queue Length 95th (m)	30.4	22.0	36.6	#81.9	m3.3	111.9	#64.3	89.4
Internal Link Dist (m)		81.6		331.6		133.3		232.0
Turn Bay Length (m)	20.0		30.0		30.0		50.0	
Base Capacity (vph)	247	596	281	420	199	1476	257	1950
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.14	0.40	0.73	0.09	0.82	0.82	0.56

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	108	67	7	102	109	174	16	1016	99	194	924	89
Future Volume (vph)	108	67	7	102	109	174	16	1016	99	194	924	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.91		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1801	1850		1726	1649		1780	3496		1787	3469	
Flt Permitted	0.26	1.00		0.70	1.00		0.25	1.00		0.09	1.00	
Satd. Flow (perm)	500	1850		1280	1649		475	3496		164	3469	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	117	73	8	111	118	189	17	1104	108	211	1004	97
RTOR Reduction (vph)	0	4	0	0	58	0	0	8	0	0	7	0
Lane Group Flow (vph)	117	77	0	111	249	0	17	1204	0	211	1094	0
Confl. Peds. (#/hr)	15		10	10		15	24		18	18		24
Heavy Vehicles (%)	0%	1%	0%	3%	1%	3%	0%	1%	4%	1%	2%	1%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	32.0	32.0		22.0	22.0		42.0	42.0		56.0	56.0	
Effective Green, g (s)	32.0	32.0		22.0	22.0		42.0	42.0		56.0	56.0	
Actuated g/C Ratio	0.32	0.32		0.22	0.22		0.42	0.42		0.56	0.56	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	238	592		281	362		199	1468		254	1942	
v/s Ratio Prot	c0.03	0.04			c0.15			0.34		c0.08	0.32	
v/s Ratio Perm	0.13			0.09			0.04			c0.38		
v/c Ratio	0.49	0.13		0.40	0.69		0.09	0.82		0.83	0.56	
Uniform Delay, d1	25.8	24.1		33.3	35.9		17.4	25.7		23.9	14.1	
Progression Factor	1.00	1.00		1.00	1.00		1.29	0.98		1.00	1.00	
Incremental Delay, d2	7.1	0.5		4.1	10.2		0.6	3.9		25.9	1.2	
Delay (s)	32.9	24.6		37.4	46.1		23.2	29.1		49.8	15.3	
Level of Service	C	C		D	D		C	C		D	B	
Approach Delay (s)		29.5			43.8			29.0			20.9	
Approach LOS		C			D			C			C	

Intersection Summary				
HCM 2000 Control Delay	27.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.80			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	82.1%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	11	5	4	1038	858	19
Future Volume (Veh/h)	11	5	4	1038	858	19
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)	12	5	4	1128	933	21
Pedestrians	9					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				229	157	
pX, platoon unblocked	0.89	0.83	0.83			
vC, conflicting volume	1524	486	963			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	470	0	534			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	99	100			
cM capacity (veh/h)	461	889	844			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	17	380	752	622	332
Volume Left	12	4	0	0	0
Volume Right	5	0	0	0	21
cSH	537	844	1700	1700	1700
Volume to Capacity	0.03	0.00	0.44	0.37	0.20
Queue Length 95th (m)	0.8	0.1	0.0	0.0	0.0
Control Delay (s)	11.9	0.2	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	11.9	0.1		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	41.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	314	406	33	350	39	842	87	937
v/c Ratio	0.81	0.51	0.13	0.76	0.23	0.70	0.35	0.61
Control Delay	36.4	23.4	30.9	45.8	28.2	32.3	18.1	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.4	23.4	30.9	45.8	28.2	32.3	18.1	17.7
Queue Length 50th (m)	41.5	58.1	5.2	64.5	5.6	77.3	6.2	44.0
Queue Length 95th (m)	#73.0	86.9	13.5	#105.8	14.9	99.8	m15.5	66.8
Internal Link Dist (m)		76.2		327.8		194.7		204.9
Turn Bay Length (m)			30.0		20.0		20.0	
Base Capacity (vph)	390	792	249	461	168	1197	250	1543
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.51	0.13	0.76	0.23	0.70	0.35	0.61

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	289	341	32	30	265	57	36	750	25	80	667	195
Future Volume (vph)	289	341	32	30	265	57	36	750	25	80	667	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1782	1836		1805	1816		1740	3514		1805	3370	
Flt Permitted	0.25	1.00		0.52	1.00		0.27	1.00		0.16	1.00	
Satd. Flow (perm)	460	1836		995	1816		497	3514		309	3370	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	314	371	35	33	288	62	39	815	27	87	725	212
RTOR Reduction (vph)	0	3	0	0	8	0	0	3	0	0	27	0
Lane Group Flow (vph)	314	403	0	33	343	0	39	839	0	87	910	0
Confl. Peds. (#/hr)	27					27	17		28	28		17
Heavy Vehicles (%)	1%	2%	4%	0%	1%	0%	3%	2%	0%	0%	3%	1%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	43.0	43.0		25.0	25.0		34.0	34.0		45.0	45.0	
Effective Green, g (s)	43.0	43.0		25.0	25.0		34.0	34.0		45.0	45.0	
Actuated g/C Ratio	0.43	0.43		0.25	0.25		0.34	0.34		0.45	0.45	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	382	789		248	454		168	1194		243	1516	
v/s Ratio Prot	c0.11	0.22			0.19			c0.24		0.02	c0.27	
v/s Ratio Perm	c0.24			0.03			0.08			0.14		
v/c Ratio	0.82	0.51		0.13	0.75		0.23	0.70		0.36	0.60	
Uniform Delay, d1	21.6	20.8		29.1	34.7		23.6	28.6		18.1	20.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.98	0.81	
Incremental Delay, d2	17.8	2.4		1.1	11.1		3.2	3.5		3.6	1.6	
Delay (s)	39.4	23.2		30.2	45.7		26.9	32.1		21.4	18.3	
Level of Service	D	C		C	D		C	C		C	B	
Approach Delay (s)		30.2			44.4			31.9			18.6	
Approach LOS		C			D			C			B	

Intersection Summary

HCM 2000 Control Delay	28.5	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.79				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0		
Intersection Capacity Utilization	81.4%	ICU Level of Service	D		
Analysis Period (min)	15				

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	11	2	127	8	2	161
Future Volume (Veh/h)	11	2	127	8	2	161
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)	12	2	138	9	2	175
Pedestrians			3			2
Lane Width (m)			3.6			3.6
Walking Speed (m/s)			1.2			1.2
Percent Blockage			0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			212			
pX, platoon unblocked						
vC, conflicting volume	324	144			147	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	324	144			147	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	100			100	
cM capacity (veh/h)	667	901			1435	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	14	147	177
Volume Left	12	0	2
Volume Right	2	9	0
cSH	693	1700	1435
Volume to Capacity	0.02	0.09	0.00
Queue Length 95th (m)	0.5	0.0	0.0
Control Delay (s)	10.3	0.0	0.1
Lane LOS	B		A
Approach Delay (s)	10.3	0.0	0.1
Approach LOS	B		

Intersection Summary			
Average Delay		0.5	
Intersection Capacity Utilization		20.7%	ICU Level of Service
Analysis Period (min)		15	

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	87	521	146	374	190	205
v/c Ratio	0.28	0.76	0.79	0.55	0.24	0.26
Control Delay	14.9	23.6	46.4	17.4	8.3	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.9	23.6	46.4	17.4	8.3	6.9
Queue Length 50th (m)	6.5	47.8	13.6	31.1	6.5	5.1
Queue Length 95th (m)	15.2	77.1	#40.6	51.5	21.9	20.2
Internal Link Dist (m)		153.7		76.4	185.8	188.3
Turn Bay Length (m)	25.0		20.0			
Base Capacity (vph)	663	1477	401	1466	778	778
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.35	0.36	0.26	0.24	0.26

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	468	11	134	342	2	5	71	99	4	62	123
Future Volume (vph)	80	468	11	134	342	2	5	71	99	4	62	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.92			0.91	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1803	1892		1803	1880			1727			1679	
Flt Permitted	0.45	1.00		0.27	1.00			0.99			0.99	
Satd. Flow (perm)	850	1892		514	1880			1716			1673	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	509	12	146	372	2	5	77	108	4	67	134
RTOR Reduction (vph)	0	1	0	0	1	0	0	49	0	0	69	0
Lane Group Flow (vph)	87	520	0	146	373	0	0	141	0	0	136	0
Confl. Peds. (#/hr)	1		2	2		1	10		3	3		10
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	20.6	20.6		20.6	20.6			24.2			24.2	
Effective Green, g (s)	20.6	20.6		20.6	20.6			24.2			24.2	
Actuated g/C Ratio	0.36	0.36		0.36	0.36			0.43			0.43	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	308	686		186	681			731			712	
v/s Ratio Prot		0.27			0.20							
v/s Ratio Perm	0.10			c0.28				c0.08			0.08	
v/c Ratio	0.28	0.76		0.78	0.55			0.19			0.19	
Uniform Delay, d1	12.9	15.9		16.1	14.4			10.2			10.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.5	4.8		19.2	0.9			0.6			0.6	
Delay (s)	13.4	20.7		35.3	15.3			10.8			10.8	
Level of Service	B	C		D	B			B			B	
Approach Delay (s)		19.6			20.9			10.8			10.8	
Approach LOS		B			C			B			B	

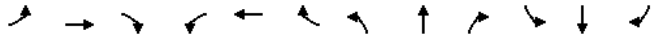
Intersection Summary				
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.46			
Actuated Cycle Length (s)	56.8	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	62.7%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	11	1	5	18	7	5
Future Volume (Veh/h)	11	1	5	18	7	5
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)	12	1	5	20	8	5
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			14		44	14
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			14		44	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)			1603		963	1066

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	13	25	13
Volume Left	0	5	8
Volume Right	1	0	5
cSH	1700	1603	1000
Volume to Capacity	0.01	0.00	0.01
Queue Length 95th (m)	0.0	0.1	0.3
Control Delay (s)	0.0	1.5	8.6
Lane LOS		A	A
Approach Delay (s)	0.0	1.5	8.6
Approach LOS			A

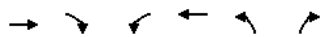
Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	15.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	569	4	4	446	2	2	2	16	1	0	1
Future Volume (Veh/h)	4	569	4	4	446	2	2	2	16	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	618	4	4	485	2	2	2	17	1	0	1
Pedestrians		1			1						3	
Lane Width (m)		3.6			3.6						3.6	
Walking Speed (m/s)		1.2			1.2						1.2	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		100			199							
pX, platoon unblocked	0.88			0.75			0.81	0.81	0.75	0.81	0.81	0.88
vC, conflicting volume	490			622			1124	1126	621	1144	1127	490
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	354			327			703	705	325	728	707	354
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	99	97	100	100	100
cM capacity (veh/h)	1059			923			282	288	535	261	288	606

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	626	491	21	2
Volume Left	4	4	2	1
Volume Right	4	2	17	1
cSH	1059	923	458	365
Volume to Capacity	0.00	0.00	0.05	0.01
Queue Length 95th (m)	0.1	0.1	1.1	0.1
Control Delay (s)	0.1	0.1	13.2	14.9
Lane LOS	A	A	B	B
Approach Delay (s)	0.1	0.1	13.2	14.9
Approach LOS			B	B

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	43.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	19	2	2	19	4	5
Future Volume (Veh/h)	19	2	2	19	4	5
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)	21	2	2	21	4	5
Pedestrians					9	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			32		56	31
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			32		56	31
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)			1568		943	1035

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	23	23	9
Volume Left	0	2	4
Volume Right	2	0	5
cSH	1700	1568	992
Volume to Capacity	0.01	0.00	0.01
Queue Length 95th (m)	0.0	0.0	0.2
Control Delay (s)	0.0	0.6	8.7
Lane LOS		A	A
Approach Delay (s)	0.0	0.6	8.7
Approach LOS			A

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	15.9%	ICU Level of Service	A	
Analysis Period (min)	15			

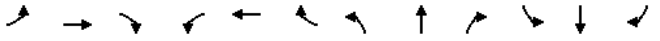
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	557	6	20	418	4	13	1	53	2	4	6
Future Volume (Veh/h)	8	557	6	20	418	4	13	1	53	2	4	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	605	7	22	454	4	14	1	58	2	4	7
Pedestrians					5						2	
Lane Width (m)					3.6						3.6	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		199			100							
pX, platoon unblocked												
vC, conflicting volume	460			612			906	1130	311	886	1132	231
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	460			612			906	1130	311	886	1132	231
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			94	99	91	99	98	99
cM capacity (veh/h)	1096			963			220	196	682	211	195	770

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	312	310	249	231	73	13
Volume Left	9	0	22	0	14	2
Volume Right	0	7	0	4	58	7
cSH	1096	1700	963	1700	474	333
Volume to Capacity	0.01	0.18	0.02	0.14	0.15	0.04
Queue Length 95th (m)	0.2	0.0	0.6	0.0	4.3	1.0
Control Delay (s)	0.3	0.0	1.0	0.0	14.0	16.3
Lane LOS	A		A		B	C
Approach Delay (s)	0.2		0.5		14.0	16.3
Approach LOS					B	C

Intersection Summary						
Average Delay			1.3			
Intersection Capacity Utilization			40.4%		ICU Level of Service	A
Analysis Period (min)			15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	253	633	7	523	205	321	116	276
v/c Ratio	0.71	0.52	0.02	0.71	0.41	0.47	0.24	0.48
Control Delay	30.2	22.2	15.2	33.4	15.2	25.6	13.3	24.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.2	22.2	15.2	33.4	15.2	25.6	13.3	24.8
Queue Length 50th (m)	28.8	38.8	0.7	38.8	17.9	41.9	9.6	32.9
Queue Length 95th (m)	#50.2	65.6	3.2	55.5	35.5	76.2	21.2	61.6
Internal Link Dist (m)		80.3		65.0		84.7		300.6
Turn Bay Length (m)	20.0		30.0		15.0		25.0	
Base Capacity (vph)	355	1434	396	1434	501	677	528	574
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.44	0.02	0.36	0.41	0.47	0.22	0.48

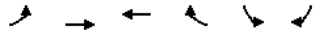
Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	233	455	127	6	362	120	189	282	13	107	164	90
Future Volume (vph)	233	455	127	6	362	120	189	282	13	107	164	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	0.99		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1784	3424		1796	3406		1760	1885		1780	1764	
Flt Permitted	0.27	1.00		0.41	1.00		0.44	1.00		0.49	1.00	
Satd. Flow (perm)	505	3424		778	3406		811	1885		919	1764	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	253	495	138	7	393	130	205	307	14	116	178	98
RTOR Reduction (vph)	0	26	0	0	38	0	0	1	0	0	19	0
Lane Group Flow (vph)	253	607	0	7	485	0	205	320	0	116	257	0
Confl. Peds. (#/hr)	9		13	13		9	18		10	10		18
Heavy Vehicles (%)	1%	0%	4%	0%	1%	1%	2%	0%	0%	1%	1%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	34.2	29.0		21.4	20.2		39.2	29.6		33.6	26.8	
Effective Green, g (s)	34.2	29.0		21.4	20.2		39.2	29.6		33.6	26.8	
Actuated g/C Ratio	0.39	0.33		0.25	0.23		0.45	0.34		0.39	0.31	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	347	1146		206	794		472	644		424	545	
v/s Ratio Prot	c0.08	0.18		0.00	0.14		c0.05	c0.17		0.02	0.15	
v/s Ratio Perm	c0.20			0.01			0.15			0.08		
v/c Ratio	0.73	0.53		0.03	0.61		0.43	0.50		0.27	0.47	
Uniform Delay, d1	19.3	23.3		24.6	29.7		15.1	22.6		17.4	24.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.5	0.4		0.1	1.4		0.6	2.7		0.4	2.9	
Delay (s)	26.8	23.7		24.7	31.1		15.7	25.3		17.8	27.1	
Level of Service	C	C		C	C		B	C		B	C	
Approach Delay (s)		24.6			31.0			21.6			24.3	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.64			
Actuated Cycle Length (s)	86.6	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	69.4%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	147	185	0	0	0
Future Volume (Veh/h)	0	147	185	0	0	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)	0	160	201	0	0	0
Pedestrians		2			5	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			105			
pX, platoon unblocked						
vC, conflicting volume	206				366	208
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	206				366	208
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)	1360				631	828

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	160	201	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1360	1700	1700
Volume to Capacity	0.00	0.12	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	20.9%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix E

2026 Future Total Traffic Operations Reports

Lane Group	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	288	252	209	122	1421	1581
v/c Ratio	0.52	0.89	0.41	0.85	0.73	0.92
Control Delay	22.2	66.7	25.1	55.1	19.9	34.3
Queue Delay	0.0	0.0	0.0	0.0	0.2	0.0
Total Delay	22.2	66.7	25.1	55.1	20.0	34.3
Queue Length 50th (m)	31.5	48.6	27.7	15.4	92.2	151.8
Queue Length 95th (m)	57.8	#96.9	48.9	m#24.0	107.1	#206.7
Internal Link Dist (m)	111.7		232.7		189.4	97.3
Turn Bay Length (m)				50.0		
Base Capacity (vph)	557	282	516	144	1943	1713
Starvation Cap Reductn	0	0	0	0	87	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.89	0.41	0.85	0.77	0.92

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	0	243	232	56	136	112	1307	0	0	1443	12
Future Volume (vph)	22	0	243	232	56	136	112	1307	0	0	1443	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		3.0	6.0			6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95			0.95	
Frpb, ped/bikes		0.98		1.00	0.99		1.00	1.00			1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00			1.00	
Frt		0.88		1.00	0.89		1.00	1.00			1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)		1600		1764	1546		1703	3471			3495	
Flt Permitted		0.96		0.47	1.00		0.08	1.00			1.00	
Satd. Flow (perm)		1546		881	1546		138	3471			3495	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	0	264	252	61	148	122	1421	0	0	1568	13
RTOR Reduction (vph)	0	63	0	0	22	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	225	0	252	187	0	122	1421	0	0	1580	0
Confl. Peds. (#/hr)	5		4	4		5	27		20	20		27
Heavy Vehicles (%)	0%	0%	2%	2%	4%	10%	6%	4%	0%	0%	3%	13%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA			NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2					
Actuated Green, G (s)		32.0		32.0	32.0		56.0	56.0			49.0	
Effective Green, g (s)		32.0		32.0	32.0		56.0	56.0			49.0	
Actuated g/C Ratio		0.32		0.32	0.32		0.56	0.56			0.49	
Clearance Time (s)		6.0		6.0	6.0		3.0	6.0			6.0	
Lane Grp Cap (vph)		494		281	494		139	1943			1712	
v/s Ratio Prot					0.12		c0.03	0.41			c0.45	
v/s Ratio Perm		0.15		c0.29			0.45					
v/c Ratio		0.45		0.90	0.38		0.88	0.73			0.92	
Uniform Delay, d1		27.1		32.4	26.3		20.7	16.4			23.7	
Progression Factor		1.00		1.00	1.00		1.77	1.08			1.00	
Incremental Delay, d2		3.0		32.7	2.2		37.7	1.7			9.8	
Delay (s)		30.1		65.1	28.5		74.5	19.5			33.6	
Level of Service		C		E	C		E	B			C	
Approach Delay (s)		30.1			48.5			23.8			33.6	
Approach LOS		C			D			C			C	

Intersection Summary

HCM 2000 Control Delay	31.2	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.91				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)		15.0	
Intersection Capacity Utilization	96.5%	ICU Level of Service		F	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	866	434	185	860	300	857
v/c Ratio	0.84	0.74	0.27	0.68	0.66	0.42
Control Delay	40.9	32.4	0.9	27.1	25.7	16.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.9	32.4	0.9	27.1	25.7	16.8
Queue Length 50th (m)	84.4	61.5	0.0	58.7	42.0	55.8
Queue Length 95th (m)	#110.0	100.0	0.0	67.2	m49.6	m65.4
Internal Link Dist (m)		345.6		232.0		189.4
Turn Bay Length (m)					115.0	
Base Capacity (vph)	1033	586	691	1259	453	2057
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.74	0.27	0.68	0.66	0.42

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	797	138	261	0	0	170	0	684	108	276	788	0
Future Volume (vph)	797	138	261	0	0	170	0	684	108	276	788	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0				6.0		6.0		3.0	6.0	
Lane Util. Factor	0.97	1.00				1.00		0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99				1.00		0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00				1.00		1.00		1.00	1.00	
Frt	1.00	0.90				0.86		0.98		1.00	1.00	
Flt Protected	0.95	1.00				1.00		1.00		0.95	1.00	
Satd. Flow (prot)	3335	1671				1370		3370		1805	3610	
Flt Permitted	0.95	1.00				1.00		1.00		0.18	1.00	
Satd. Flow (perm)	3335	1671				1370		3370		342	3610	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	866	150	284	0	0	185	0	743	117	300	857	0
RTOR Reduction (vph)	0	68	0	0	0	128	0	13	0	0	0	0
Lane Group Flow (vph)	866	366	0	0	0	57	0	847	0	300	857	0
Confl. Peds. (#/hr)			3	3			29		24	24		29
Heavy Vehicles (%)	5%	4%	0%	0%	4%	20%	8%	4%	2%	0%	0%	1%
Turn Type	Perm	NA				Perm		NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4					8				6		
Actuated Green, G (s)	31.0	31.0				31.0		37.0		57.0	57.0	
Effective Green, g (s)	31.0	31.0				31.0		37.0		57.0	57.0	
Actuated g/C Ratio	0.31	0.31				0.31		0.37		0.57	0.57	
Clearance Time (s)	6.0	6.0				6.0		6.0		3.0	6.0	
Lane Grp Cap (vph)	1033	518				424		1246		443	2057	
v/s Ratio Prot		0.22						0.25		c0.11	0.24	
v/s Ratio Perm	c0.26					0.04				c0.27		
v/c Ratio	0.84	0.71				0.14		0.68		0.68	0.42	
Uniform Delay, d1	32.2	30.5				24.8		26.5		14.3	12.1	
Progression Factor	1.00	1.00				1.00		0.93		1.84	1.35	
Incremental Delay, d2	8.1	7.9				0.7		2.7		3.9	0.3	
Delay (s)	40.3	38.3				25.5		27.4		30.1	16.6	
Level of Service	D	D				C		C		C	B	
Approach Delay (s)		39.6			25.5			27.4			20.1	
Approach LOS		D			C			C			C	

Intersection Summary

HCM 2000 Control Delay	29.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	243	50	332	319	0	0
Future Volume (Veh/h)	243	50	332	319	0	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)	264	54	361	347	0	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)			245			
pX, platoon unblocked	0.93	0.93			0.93	
vC, conflicting volume	534	534			708	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	465	465			651	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	49	90			100	
cM capacity (veh/h)	518	557			872	

Direction, Lane #	WB 1	NB 1
Volume Total	318	708
Volume Left	264	0
Volume Right	54	347
cSH	525	1700
Volume to Capacity	0.61	0.42
Queue Length 95th (m)	32.0	0.0
Control Delay (s)	21.9	0.0
Lane LOS	C	
Approach Delay (s)	21.9	0.0
Approach LOS	C	

Intersection Summary			
Average Delay	6.8		
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	190	136	64	231	16	652	102	1212
v/c Ratio	0.48	0.19	0.19	0.42	0.15	0.50	0.29	0.71
Control Delay	24.4	13.7	29.4	15.1	22.2	20.8	14.1	22.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.4	13.7	29.4	15.1	22.2	20.8	14.1	22.5
Queue Length 50th (m)	25.2	11.3	10.0	15.3	1.8	41.4	9.2	125.4
Queue Length 95th (m)	41.5	24.3	21.3	36.7	m5.8	60.2	m14.8	150.1
Internal Link Dist (m)		81.6		331.6		133.3		232.0
Turn Bay Length (m)	20.0		30.0		30.0		50.0	
Base Capacity (vph)	398	704	329	555	107	1295	356	1706
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.19	0.19	0.42	0.15	0.50	0.29	0.71

Intersection Summary

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

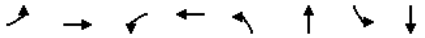
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	67	58	59	58	155	15	563	37	94	1010	105
Future Volume (vph)	175	67	58	59	58	155	15	563	37	94	1010	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	0.89		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1731	1730		1671	1643		1629	3395		1783	3467	
Flt Permitted	0.45	1.00		0.67	1.00		0.16	1.00		0.28	1.00	
Satd. Flow (perm)	819	1730		1178	1643		283	3395		531	3467	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	190	73	63	64	63	168	16	612	40	102	1098	114
RTOR Reduction (vph)	0	29	0	0	96	0	0	5	0	0	8	0
Lane Group Flow (vph)	190	107	0	64	135	0	16	647	0	102	1204	0
Confl. Peds. (#/hr)	7		7	7		7	21		14	14		21
Heavy Vehicles (%)	4%	2%	0%	7%	2%	1%	10%	4%	20%	1%	2%	1%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	39.0	39.0		28.0	28.0		38.0	38.0		49.0	49.0	
Effective Green, g (s)	39.0	39.0		28.0	28.0		38.0	38.0		49.0	49.0	
Actuated g/C Ratio	0.39	0.39		0.28	0.28		0.38	0.38		0.49	0.49	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	383	674		329	460		107	1290		347	1698	
v/s Ratio Prot	c0.03	0.06			0.08			0.19		0.02	c0.35	
v/s Ratio Perm	c0.16			0.05			0.06			0.12		
v/c Ratio	0.50	0.16		0.19	0.29		0.15	0.50		0.29	0.71	
Uniform Delay, d1	21.8	19.8		27.4	28.2		20.4	23.7		14.7	19.9	
Progression Factor	1.00	1.00		1.00	1.00		0.88	0.82		0.95	1.01	
Incremental Delay, d2	4.5	0.5		1.3	1.6		2.8	1.3		2.0	2.3	
Delay (s)	26.3	20.3		28.7	29.9		20.8	20.8		15.9	22.4	
Level of Service	C	C		C	C		C	C		B	C	
Approach Delay (s)		23.8			29.6			20.8			21.9	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	22.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.67			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	78.6%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	25	11	4	506	948	16
Future Volume (Veh/h)	25	11	4	506	948	16
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)	27	12	4	550	1030	17
Pedestrians	8				1	
Lane Width (m)	3.6				3.6	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	1				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				229	157	
pX, platoon unblocked	0.77	0.76	0.76			
vC, conflicting volume	1330	532	1055			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	642	0	426			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	91	99	100			
cM capacity (veh/h)	310	814	848			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	39	187	367	687	360
Volume Left	27	4	0	0	0
Volume Right	12	0	0	0	17
cSH	383	848	1700	1700	1700
Volume to Capacity	0.10	0.00	0.22	0.40	0.21
Queue Length 95th (m)	2.7	0.1	0.0	0.0	0.0
Control Delay (s)	15.5	0.2	0.0	0.0	0.0
Lane LOS	C	A			
Approach Delay (s)	15.5	0.1		0.0	
Approach LOS	C				

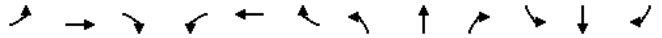
Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	36.7%	ICU Level of Service	A	
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	191	256	42	277	11	435	71	1139
v/c Ratio	0.55	0.37	0.14	0.57	0.08	0.33	0.15	0.66
Control Delay	27.6	23.1	29.4	35.5	21.1	21.9	14.0	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.6	23.1	29.4	35.5	21.1	21.9	14.0	17.7
Queue Length 50th (m)	25.8	35.1	6.5	46.8	1.4	31.5	5.4	54.7
Queue Length 95th (m)	42.5	56.4	15.5	73.8	5.5	44.2	m10.6	80.4
Internal Link Dist (m)		76.2		327.8		194.7		204.9
Turn Bay Length (m)			30.0		20.0		20.0	
Base Capacity (vph)	345	687	297	488	146	1315	467	1722
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.37	0.14	0.57	0.08	0.33	0.15	0.66

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	176	192	43	39	208	47	10	377	23	65	810	238
Future Volume (vph)	176	192	43	39	208	47	10	377	23	65	810	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.97		1.00	0.97		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1731	1788		1744	1780		1796	3364		1754	3389	
Flt Permitted	0.37	1.00		0.60	1.00		0.20	1.00		0.42	1.00	
Satd. Flow (perm)	683	1788		1103	1780		375	3364		774	3389	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	191	209	47	42	226	51	11	410	25	71	880	259
RTOR Reduction (vph)	0	8	0	0	8	0	0	4	0	0	28	0
Lane Group Flow (vph)	191	248	0	42	269	0	11	431	0	71	1112	0
Confl. Peds. (#/hr)	9		4	4		9	18		16	18		16
Heavy Vehicles (%)	4%	3%	3%	3%	4%	0%	0%	6%	6%	2%	2%	2%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	38.0	38.0		27.0	27.0		39.0	39.0		50.0	50.0	
Effective Green, g (s)	38.0	38.0		27.0	27.0		39.0	39.0		50.0	50.0	
Actuated g/C Ratio	0.38	0.38		0.27	0.27		0.39	0.39		0.50	0.50	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	332	679		297	480		146	1311		455	1694	
v/s Ratio Prot	c0.04	0.14			0.15			0.13		0.01	c0.33	
v/s Ratio Perm	c0.18			0.04			0.03			0.07		
v/c Ratio	0.58	0.37		0.14	0.56		0.08	0.33		0.16	0.66	
Uniform Delay, d1	23.2	22.3		27.7	31.4		19.2	21.3		13.3	18.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.10	0.89	
Incremental Delay, d2	7.1	1.5		1.0	4.7		1.0	0.7		0.6	1.7	
Delay (s)	30.2	23.8		28.7	36.1		20.2	22.0		15.2	18.3	
Level of Service	C	C		C	D		C	C		B	B	
Approach Delay (s)		26.6			35.1			22.0			18.1	
Approach LOS		C			D			C			B	

Intersection Summary

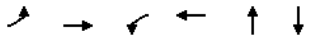
HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	77.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	14	8	117	19	10	135
Future Volume (Veh/h)	14	8	117	19	10	135
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)	15	9	127	21	11	147
Pedestrians			78			5
Lane Width (m)			3.6			3.6
Walking Speed (m/s)			1.2			1.2
Percent Blockage			7			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			212			
pX, platoon unblocked						
vC, conflicting volume	384	142			148	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	384	142			148	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	99			99	
cM capacity (veh/h)	574	901			1434	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	24	148	158
Volume Left	15	0	11
Volume Right	9	21	0
cSH	664	1700	1434
Volume to Capacity	0.04	0.09	0.01
Queue Length 95th (m)	0.9	0.0	0.2
Control Delay (s)	10.6	0.0	0.6
Lane LOS	B		A
Approach Delay (s)	10.6	0.0	0.6
Approach LOS	B		

Intersection Summary				
Average Delay		1.1		
Intersection Capacity Utilization		26.9%	ICU Level of Service	A
Analysis Period (min)		15		



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	99	378	95	352	134	161
v/c Ratio	0.41	0.68	0.42	0.63	0.17	0.21
Control Delay	19.5	22.5	20.4	20.8	5.6	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.5	22.5	20.4	20.8	5.6	5.5
Queue Length 50th (m)	7.6	31.6	7.3	28.9	2.8	3.1
Queue Length 95th (m)	18.2	54.5	18.0	50.1	12.7	14.3
Internal Link Dist (m)		153.7		76.4	185.8	188.3
Turn Bay Length (m)	25.0		20.0			
Base Capacity (vph)	683	1552	631	1568	796	753
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.24	0.15	0.22	0.17	0.21

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	91	344	4	87	320	4	7	44	72	11	47	90
Future Volume (vph)	91	344	4	87	320	4	7	44	72	11	47	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.95	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.92			0.92	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1686	1824		1714	1842			1652			1565	
Flt Permitted	0.45	1.00		0.41	1.00			0.98			0.98	
Satd. Flow (perm)	803	1824		747	1842			1630			1538	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	99	374	4	95	348	4	8	48	78	12	51	98
RTOR Reduction (vph)	0	1	0	0	1	0	0	42	0	0	52	0
Lane Group Flow (vph)	99	377	0	95	351	0	0	92	0	0	109	0
Confl. Peds. (#/hr)	1		16	16		1	39		3	3		39
Heavy Vehicles (%)	7%	4%	0%	4%	3%	0%	0%	6%	3%	0%	11%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	15.8	15.8		15.8	15.8			24.2			24.2	
Effective Green, g (s)	15.8	15.8		15.8	15.8			24.2			24.2	
Actuated g/C Ratio	0.30	0.30		0.30	0.30			0.47			0.47	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	243	554		226	559			758			715	
v/s Ratio Prot		c0.21			0.19							
v/s Ratio Perm	0.12			0.13				0.06			c0.07	
v/c Ratio	0.41	0.68		0.42	0.63			0.12			0.15	
Uniform Delay, d1	14.4	15.9		14.4	15.6			7.9			8.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.1	3.4		1.3	2.2			0.3			0.5	
Delay (s)	15.5	19.3		15.7	17.8			8.2			8.4	
Level of Service	B	B		B	B			A			A	
Approach Delay (s)		18.5			17.3			8.2			8.4	
Approach LOS		B			B			A			A	

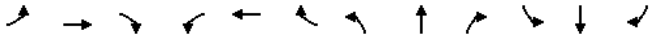
Intersection Summary				
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.36			
Actuated Cycle Length (s)	52.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	53.2%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	23	6	1	16	14	10
Future Volume (Veh/h)	23	6	1	16	14	10
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)	25	7	1	17	15	11
Pedestrians					37	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					3	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			69		84	66
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			69		84	66
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)			1485		888	968

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	32	18	26
Volume Left	0	1	15
Volume Right	7	0	11
cSH	1700	1485	920
Volume to Capacity	0.02	0.00	0.03
Queue Length 95th (m)	0.0	0.0	0.7
Control Delay (s)	0.0	0.4	9.0
Lane LOS		A	A
Approach Delay (s)	0.0	0.4	9.0
Approach LOS			A

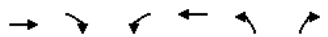
Intersection Summary				
Average Delay	3.2			
Intersection Capacity Utilization	13.3%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	372	2	9	362	2	2	0	18	2	2	10
Future Volume (Veh/h)	13	372	2	9	362	2	2	0	18	2	2	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	404	2	10	393	2	2	0	20	2	2	11
Pedestrians		4			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		100			199							
pX, platoon unblocked				0.83			0.83	0.83	0.83	0.83	0.83	
vC, conflicting volume	395			406			863	848	407	869	848	398
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	395			186			735	717	188	742	717	398
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			99	100	97	99	99	98
cM capacity (veh/h)	1164			1156			268	290	710	264	290	649

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	420	405	22	15
Volume Left	14	10	2	2
Volume Right	2	2	20	11
cSH	1164	1156	618	477
Volume to Capacity	0.01	0.01	0.04	0.03
Queue Length 95th (m)	0.3	0.2	0.9	0.8
Control Delay (s)	0.4	0.3	11.0	12.8
Lane LOS	A	A	B	B
Approach Delay (s)	0.4	0.3	11.0	12.8
Approach LOS			B	B

Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	37.1%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	25	5	5	12	5	6
Future Volume (Veh/h)	25	5	5	12	5	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)	27	5	5	13	5	7
Pedestrians				1	3	
Lane Width (m)				3.6	3.6	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			35		56	34
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			35		56	34
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)			1572		947	1036

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	32	18	12
Volume Left	0	5	5
Volume Right	5	0	7
cSH	1700	1572	997
Volume to Capacity	0.02	0.00	0.01
Queue Length 95th (m)	0.0	0.1	0.3
Control Delay (s)	0.0	2.0	8.7
Lane LOS		A	A
Approach Delay (s)	0.0	2.0	8.7
Approach LOS			A

Intersection Summary				
Average Delay	2.3			
Intersection Capacity Utilization	15.4%	ICU Level of Service	A	
Analysis Period (min)	15			

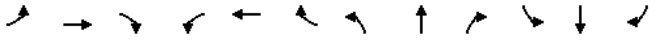
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	354	23	57	261	5	1	2	14	6	3	2
Future Volume (Veh/h)	8	354	23	57	261	5	1	2	14	6	3	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	385	25	62	284	5	1	2	15	7	3	2
Pedestrians					6						8	
Lane Width (m)					3.6						3.6	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					1						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		199			100							
pX, platoon unblocked												
vC, conflicting volume	297			410			685	836	211	651	846	152
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	297			410			685	836	211	651	846	152
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			95			100	99	98	98	99	100
cM capacity (veh/h)	1253			1145			314	281	791	324	277	861

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	202	218	204	147	18	12
Volume Left	9	0	62	0	1	7
Volume Right	0	25	0	5	15	2
cSH	1253	1700	1145	1700	615	345
Volume to Capacity	0.01	0.13	0.05	0.09	0.03	0.03
Queue Length 95th (m)	0.2	0.0	1.4	0.0	0.7	0.9
Control Delay (s)	0.4	0.0	2.9	0.0	11.0	15.8
Lane LOS	A		A		B	C
Approach Delay (s)	0.2		1.7		11.0	15.8
Approach LOS					B	C

Intersection Summary						
Average Delay			1.3			
Intersection Capacity Utilization			35.9%	ICU Level of Service		A
Analysis Period (min)			15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	113	429	21	382	74	125	95	338
v/c Ratio	0.31	0.47	0.08	0.60	0.15	0.19	0.14	0.49
Control Delay	18.4	22.3	16.1	29.8	11.0	18.8	10.8	22.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.4	22.3	16.1	29.8	11.0	18.8	10.8	22.2
Queue Length 50th (m)	11.2	21.7	2.0	25.6	5.3	12.0	6.9	38.2
Queue Length 95th (m)	22.6	43.3	6.5	41.0	13.0	27.1	15.8	71.2
Internal Link Dist (m)		80.3		65.0		84.7		300.6
Turn Bay Length (m)	20.0		30.0		15.0		25.0	
Base Capacity (vph)	391	1660	348	1671	542	669	704	696
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.26	0.06	0.23	0.14	0.19	0.13	0.49

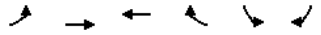
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	294	100	19	275	76	68	93	22	87	221	90
Future Volume (vph)	104	294	100	19	275	76	68	93	22	87	221	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		0.98	1.00		0.99	1.00		0.98	1.00	
Frt	1.00	0.96		1.00	0.97		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1757	3311		1480	3342		1678	1750		1746	1787	
Flt Permitted	0.37	1.00		0.50	1.00		0.46	1.00		0.67	1.00	
Satd. Flow (perm)	683	3311		782	3342		817	1750		1230	1787	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	113	320	109	21	299	83	74	101	24	95	240	98
RTOR Reduction (vph)	0	38	0	0	31	0	0	8	0	0	13	0
Lane Group Flow (vph)	113	391	0	21	351	0	74	117	0	95	325	0
Confl. Peds. (#/hr)	20		29	29		20	18		34	34		18
Heavy Vehicles (%)	2%	2%	5%	20%	4%	0%	7%	4%	6%	1%	1%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	25.7	19.2		17.2	14.7		32.8	27.2		33.4	27.5	
Effective Green, g (s)	25.7	19.2		17.2	14.7		32.8	27.2		33.4	27.5	
Actuated g/C Ratio	0.34	0.26		0.23	0.20		0.44	0.36		0.45	0.37	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	335	849		203	656		422	636		589	656	
v/s Ratio Prot	c0.03	c0.12		0.00	0.11		c0.01	0.07		0.01	c0.18	
v/s Ratio Perm	0.08			0.02			0.06			0.06		
v/c Ratio	0.34	0.46		0.10	0.54		0.18	0.18		0.16	0.50	
Uniform Delay, d1	17.5	23.4		22.5	27.0		12.5	16.2		12.1	18.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.4		0.2	0.8		0.2	0.6		0.1	2.7	
Delay (s)	18.1	23.8		22.7	27.8		12.7	16.9		12.2	21.0	
Level of Service	B	C		C	C		B	B		B	C	
Approach Delay (s)		22.6			27.6			15.3			19.0	
Approach LOS		C			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.46			
Actuated Cycle Length (s)	74.8	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	56.9%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	81	107	49	149	50
Future Volume (Veh/h)	12	81	107	49	149	50
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)	13	88	116	53	162	54
Pedestrians		2			5	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			105			
pX, platoon unblocked						
vC, conflicting volume	174				262	150
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	174				262	150
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				77	94
cM capacity (veh/h)	1397				718	892

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	101	169	216
Volume Left	13	0	162
Volume Right	0	53	54
cSH	1397	1700	754
Volume to Capacity	0.01	0.10	0.29
Queue Length 95th (m)	0.2	0.0	9.5
Control Delay (s)	1.0	0.0	11.7
Lane LOS	A		B
Approach Delay (s)	1.0	0.0	11.7
Approach LOS			B

Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	32.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	256	183	307	184	2028	2019
v/c Ratio	0.61	0.92	0.70	0.85	0.86	1.04
Control Delay	24.5	99.1	58.3	70.5	24.5	65.6
Queue Delay	0.0	0.0	0.0	0.0	43.3	0.0
Total Delay	24.5	99.1	58.3	70.5	67.7	65.6
Queue Length 50th (m)	25.2	56.1	84.4	39.9	244.6	~359.3
Queue Length 95th (m)	58.5	#105.7	120.2	#83.8	282.5	#402.3
Internal Link Dist (m)	111.7		232.7		189.4	97.3
Turn Bay Length (m)				50.0		
Base Capacity (vph)	418	200	439	217	2359	1936
Starvation Cap Reductn	0	0	0	0	502	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.92	0.70	0.85	1.09	1.04

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	0	209	168	130	153	169	1866	0	0	1841	17
Future Volume (vph)	27	0	209	168	130	153	169	1866	0	0	1841	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		3.0	6.0			6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95			0.95	
Frpb, ped/bikes		0.99		1.00	0.98		1.00	1.00			1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00			1.00	
Frt		0.88		1.00	0.92		1.00	1.00			1.00	
Flt Protected		0.99		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)		1612		1768	1695		1770	3539			3497	
Flt Permitted		0.72		0.42	1.00		0.05	1.00			1.00	
Satd. Flow (perm)		1171		790	1695		87	3539			3497	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	0	227	183	141	166	184	2028	0	0	2001	18
RTOR Reduction (vph)	0	122	0	0	10	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	134	0	183	297	0	184	2028	0	0	2019	0
Confl. Peds. (#/hr)	9		1	1		9	27		56	56		27
Heavy Vehicles (%)	0%	0%	2%	2%	0%	2%	2%	2%	0%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA			NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2					
Actuated Green, G (s)		38.0		38.0	38.0		100.0	100.0			83.0	
Effective Green, g (s)		38.0		38.0	38.0		100.0	100.0			83.0	
Actuated g/C Ratio		0.25		0.25	0.25		0.67	0.67			0.55	
Clearance Time (s)		6.0		6.0	6.0		3.0	6.0			6.0	
Lane Grp Cap (vph)		296		200	429		215	2359			1935	
v/s Ratio Prot					0.18		0.08	c0.57			c0.58	
v/s Ratio Perm		0.11		c0.23			0.49					
v/c Ratio		0.45		0.92	0.69		0.86	0.86			1.04	
Uniform Delay, d1		47.2		54.4	50.7		51.1	19.5			33.5	
Progression Factor		1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2		5.0		44.7	8.9		33.0	4.4			32.8	
Delay (s)		52.2		99.1	59.6		84.1	23.9			66.3	
Level of Service		D		F	E		F	C			E	
Approach Delay (s)		52.2			74.4			28.9			66.3	
Approach LOS		D			E			C			E	

Intersection Summary

HCM 2000 Control Delay	49.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	110.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	1122	396	240	1538	320	1000
v/c Ratio	0.96	0.64	0.93	1.06	1.13	0.48
Control Delay	66.1	42.7	86.3	83.0	135.7	19.7
Queue Delay	0.0	0.0	0.0	5.1	0.0	0.7
Total Delay	66.1	42.7	86.3	88.1	135.7	20.4
Queue Length 50th (m)	176.5	94.6	56.3	~277.2	~98.9	93.8
Queue Length 95th (m)	#222.0	132.7	#111.2	#322.6	#163.3	111.6
Internal Link Dist (m)		345.6		232.0		189.4
Turn Bay Length (m)					85.0	
Base Capacity (vph)	1183	624	259	1446	282	2077
Starvation Cap Reductn	0	0	0	17	0	680
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.95	0.63	0.93	1.08	1.13	0.72

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1032	180	184	0	0	221	0	1138	277	294	920	0
Future Volume (vph)	1032	180	184	0	0	221	0	1138	277	294	920	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0				3.0		6.0		3.0	6.0	
Lane Util. Factor	0.97	1.00				1.00		0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99				1.00		0.97		1.00	1.00	
Flpb, ped/bikes	1.00	1.00				1.00		1.00		1.00	1.00	
Frt	1.00	0.92				0.86		0.97		1.00	1.00	
Flt Protected	0.95	1.00				1.00		1.00		0.95	1.00	
Satd. Flow (prot)	3400	1726				1596		3343		1805	3610	
Flt Permitted	0.95	1.00				1.00		1.00		0.06	1.00	
Satd. Flow (perm)	3400	1726				1596		3343		113	3610	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1122	196	200	0	0	240	0	1237	301	320	1000	0
RTOR Reduction (vph)	0	24	0	0	0	57	0	14	0	0	0	0
Lane Group Flow (vph)	1122	372	0	0	0	183	0	1524	0	320	1000	0
Confl. Peds. (#/hr)			1	1			24		29	29		24
Heavy Vehicles (%)	3%	2%	0%	0%	2%	3%	3%	2%	2%	0%	0%	2%
Turn Type	Perm	NA				Over		NA		pm+pt	NA	
Protected Phases		4				1		2		1	6	
Permitted Phases	4									6		
Actuated Green, G (s)	51.4	51.4				19.0		64.0		86.0	86.0	
Effective Green, g (s)	51.4	51.4				19.0		64.0		86.0	86.0	
Actuated g/C Ratio	0.34	0.34				0.13		0.43		0.58	0.58	
Clearance Time (s)	6.0	6.0				3.0		6.0		3.0	6.0	
Vehicle Extension (s)	3.0	3.0				3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	1169	593				202		1432		280	2078	
v/s Ratio Prot		0.22				0.11		0.46		c0.15	0.28	
v/s Ratio Perm	c0.33									c0.51		
v/c Ratio	0.96	0.63				0.91		1.06		1.14	0.48	
Uniform Delay, d1	48.0	41.0				64.3		42.7		51.6	18.6	
Progression Factor	1.00	1.00				1.00		1.00		1.00	1.00	
Incremental Delay, d2	17.3	2.1				38.2		42.9		98.0	0.8	
Delay (s)	65.3	43.1				102.6		85.6		149.6	19.4	
Level of Service	E	D				F		F		F	B	
Approach Delay (s)		59.5			102.6			85.6			51.0	
Approach LOS		E			F			F			D	

Intersection Summary

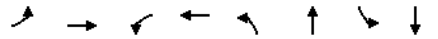
HCM 2000 Control Delay	68.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	149.4	Sum of lost time (s)	15.0
Intersection Capacity Utilization	99.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	252	24	396	287	0	0
Future Volume (Veh/h)	252	24	396	287	0	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)	274	26	430	312	0	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)			239			
pX, platoon unblocked	0.92	0.92			0.92	
vC, conflicting volume	586	586			742	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	510	510			679	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	43	95			100	
cM capacity (veh/h)	483	520			843	

Direction, Lane #	WB 1	NB 1
Volume Total	300	742
Volume Left	274	0
Volume Right	26	312
cSH	486	1700
Volume to Capacity	0.62	0.44
Queue Length 95th (m)	32.9	0.0
Control Delay (s)	23.6	0.0
Lane LOS	C	
Approach Delay (s)	23.6	0.0
Approach LOS	C	

Intersection Summary				
Average Delay		6.8		
Intersection Capacity Utilization		60.5%	ICU Level of Service	B
Analysis Period (min)		15		



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	178	110	111	317	51	1212	211	1208
v/c Ratio	0.65	0.18	0.41	0.76	0.34	0.86	0.82	0.65
Control Delay	35.4	19.8	38.7	41.7	33.2	35.5	45.6	17.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.4	19.8	38.7	41.7	33.2	35.5	45.6	17.8
Queue Length 50th (m)	25.5	12.6	19.5	48.1	7.1	94.1	24.8	84.5
Queue Length 95th (m)	#43.5	25.6	36.8	#88.9	m11.1	120.2	#64.3	107.3
Internal Link Dist (m)		81.6		331.6		133.3		232.0
Turn Bay Length (m)	20.0		30.0		30.0		115.0	
Base Capacity (vph)	275	623	274	417	152	1406	257	1856
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.18	0.41	0.76	0.34	0.86	0.82	0.65

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	164	74	28	102	118	174	47	1016	99	194	924	188
Future Volume (vph)	164	74	28	102	118	174	47	1016	99	194	924	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.91		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1801	1795		1727	1656		1786	3496		1787	3405	
Flt Permitted	0.25	1.00		0.69	1.00		0.20	1.00		0.09	1.00	
Satd. Flow (perm)	469	1795		1247	1656		382	3496		171	3405	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	178	80	30	111	128	189	51	1104	108	211	1004	204
RTOR Reduction (vph)	0	13	0	0	53	0	0	7	0	0	17	0
Lane Group Flow (vph)	178	97	0	111	264	0	51	1205	0	211	1191	0
Confl. Peds. (#/hr)	15		10	10		15	24		18	18		24
Heavy Vehicles (%)	0%	1%	0%	3%	1%	3%	0%	1%	4%	1%	2%	1%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	34.0	34.0		22.0	22.0		40.0	40.0		54.0	54.0	
Effective Green, g (s)	34.0	34.0		22.0	22.0		40.0	40.0		54.0	54.0	
Actuated g/C Ratio	0.34	0.34		0.22	0.22		0.40	0.40		0.54	0.54	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	266	610		274	364		152	1398		253	1838	
v/s Ratio Prot	c0.05	0.05			0.16			0.34		c0.08	0.35	
v/s Ratio Perm	c0.17			0.09			0.13			c0.37		
v/c Ratio	0.67	0.16		0.41	0.73		0.34	0.86		0.83	0.65	
Uniform Delay, d1	25.5	23.0		33.4	36.2		20.8	27.5		23.7	16.3	
Progression Factor	1.00	1.00		1.00	1.00		1.27	1.09		1.00	1.00	
Incremental Delay, d2	12.6	0.6		4.4	11.9		4.2	5.3		26.4	1.8	
Delay (s)	38.1	23.6		37.8	48.1		30.7	35.3		50.1	18.1	
Level of Service	D	C		D	D		C	D		D	B	
Approach Delay (s)		32.5			45.4			35.1			22.8	
Approach LOS		C			D			D			C	

Intersection Summary				
HCM 2000 Control Delay	31.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.82			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	85.7%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	11	5	4	1069	879	19
Future Volume (Veh/h)	11	5	4	1069	879	19
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)	12	5	4	1162	955	21
Pedestrians	9					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				229	157	
pX, platoon unblocked	0.90	0.80	0.80			
vC, conflicting volume	1564	497	985			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	387	0	471			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	99	100			
cM capacity (veh/h)	522	858	859			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	17	391	775	637	339
Volume Left	12	4	0	0	0
Volume Right	5	0	0	0	21
cSH	590	859	1700	1700	1700
Volume to Capacity	0.03	0.00	0.46	0.37	0.20
Queue Length 95th (m)	0.7	0.1	0.0	0.0	0.0
Control Delay (s)	11.3	0.1	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	11.3	0.1		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	42.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	318	406	33	359	39	863	96	951
v/c Ratio	0.83	0.51	0.13	0.78	0.24	0.72	0.40	0.62
Control Delay	39.0	23.4	30.9	47.0	28.5	32.9	20.5	19.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.0	23.4	30.9	47.0	28.5	32.9	20.5	19.8
Queue Length 50th (m)	42.2	58.1	5.2	66.2	5.7	80.0	7.4	51.7
Queue Length 95th (m)	#79.0	86.9	13.5	#109.5	15.0	103.1	m15.4	74.7
Internal Link Dist (m)		76.2		327.8		194.7		204.9
Turn Bay Length (m)			30.0		20.0		20.0	
Base Capacity (vph)	383	792	249	461	164	1196	242	1544
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.51	0.13	0.78	0.24	0.72	0.40	0.62

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	293	341	32	30	265	65	36	769	25	88	680	195
Future Volume (vph)	293	341	32	30	265	65	36	769	25	88	680	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1782	1836		1805	1809		1741	3514		1805	3372	
Flt Permitted	0.23	1.00		0.52	1.00		0.26	1.00		0.15	1.00	
Satd. Flow (perm)	435	1836		995	1809		483	3514		291	3372	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	318	371	35	33	288	71	39	836	27	96	739	212
RTOR Reduction (vph)	0	3	0	0	9	0	0	2	0	0	26	0
Lane Group Flow (vph)	318	403	0	33	350	0	39	861	0	96	925	0
Confl. Peds. (#/hr)	27					27	17		28	28		17
Heavy Vehicles (%)	1%	2%	4%	0%	1%	0%	3%	2%	0%	0%	3%	1%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	43.0	43.0		25.0	25.0		34.0	34.0		45.0	45.0	
Effective Green, g (s)	43.0	43.0		25.0	25.0		34.0	34.0		45.0	45.0	
Actuated g/C Ratio	0.43	0.43		0.25	0.25		0.34	0.34		0.45	0.45	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	375	789		248	452		164	1194		236	1517	
v/s Ratio Prot	c0.12	0.22			0.19			c0.25		0.03	c0.27	
v/s Ratio Perm	c0.25			0.03			0.08			0.15		
v/c Ratio	0.85	0.51		0.13	0.77		0.24	0.72		0.41	0.61	
Uniform Delay, d1	21.8	20.8		29.1	34.9		23.7	28.9		18.4	20.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.09	0.91	
Incremental Delay, d2	20.6	2.4		1.1	12.2		3.4	3.8		4.3	1.5	
Delay (s)	42.4	23.2		30.2	47.1		27.1	32.6		24.4	20.6	
Level of Service	D	C		C	D		C	C		C	C	
Approach Delay (s)		31.6			45.7			32.4			20.9	
Approach LOS		C			D			C			C	

Intersection Summary

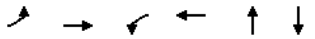
HCM 2000 Control Delay	30.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.81			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	82.5%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	11	2	169	8	3	193
Future Volume (Veh/h)	11	2	169	8	3	193
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)	12	2	184	9	3	210
Pedestrians			3			2
Lane Width (m)			3.6			3.6
Walking Speed (m/s)			1.2			1.2
Percent Blockage			0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			212			
pX, platoon unblocked						
vC, conflicting volume	408	190			193	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	408	190			193	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	100			100	
cM capacity (veh/h)	597	850			1380	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	14	193	213
Volume Left	12	0	3
Volume Right	2	9	0
cSH	623	1700	1380
Volume to Capacity	0.02	0.11	0.00
Queue Length 95th (m)	0.6	0.0	0.1
Control Delay (s)	10.9	0.0	0.1
Lane LOS	B		A
Approach Delay (s)	10.9	0.0	0.1
Approach LOS	B		

Intersection Summary			
Average Delay		0.4	
Intersection Capacity Utilization		23.2%	ICU Level of Service
Analysis Period (min)		15	



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	128	521	146	374	195	240
v/c Ratio	0.42	0.76	0.78	0.55	0.25	0.31
Control Delay	17.5	23.3	45.7	17.2	8.8	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.5	23.3	45.7	17.2	8.8	7.3
Queue Length 50th (m)	10.1	47.8	13.6	31.1	7.2	6.2
Queue Length 95th (m)	22.2	76.6	#40.4	51.3	23.8	23.8
Internal Link Dist (m)		153.7		76.4	185.8	188.3
Turn Bay Length (m)	25.0		20.0			
Base Capacity (vph)	661	1473	400	1463	775	783
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.35	0.36	0.26	0.25	0.31

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	118	468	11	134	342	2	5	75	99	4	66	151
Future Volume (vph)	118	468	11	134	342	2	5	75	99	4	66	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.93			0.91	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1803	1892		1803	1880			1731			1670	
Flt Permitted	0.45	1.00		0.27	1.00			0.99			1.00	
Satd. Flow (perm)	850	1892		514	1880			1720			1664	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	128	509	12	146	372	2	5	82	108	4	72	164
RTOR Reduction (vph)	0	1	0	0	1	0	0	46	0	0	80	0
Lane Group Flow (vph)	128	520	0	146	373	0	0	149	0	0	160	0
Confl. Peds. (#/hr)	1		2	2		1	10		3	3		10
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	20.7	20.7		20.7	20.7			24.3			24.3	
Effective Green, g (s)	20.7	20.7		20.7	20.7			24.3			24.3	
Actuated g/C Ratio	0.36	0.36		0.36	0.36			0.43			0.43	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	308	687		186	682			733			709	
v/s Ratio Prot		0.27			0.20							
v/s Ratio Perm	0.15			c0.28				0.09			c0.10	
v/c Ratio	0.42	0.76		0.78	0.55			0.20			0.23	
Uniform Delay, d1	13.6	15.9		16.2	14.4			10.3			10.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.9	4.8		19.2	0.9			0.6			0.7	
Delay (s)	14.5	20.7		35.4	15.3			10.9			11.1	
Level of Service	B	C		D	B			B			B	
Approach Delay (s)		19.5			21.0			10.9			11.1	
Approach LOS		B			C			B			B	

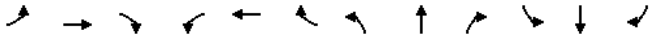
Intersection Summary				
HCM 2000 Control Delay	17.7	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.48			
Actuated Cycle Length (s)	57.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	63.1%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	12	1	5	18	7	5
Future Volume (Veh/h)	12	1	5	18	7	5
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)	13	1	5	20	8	5
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			15		44	14
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			15		44	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)			1602		962	1064

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	14	25	13
Volume Left	0	5	8
Volume Right	1	0	5
cSH	1700	1602	999
Volume to Capacity	0.01	0.00	0.01
Queue Length 95th (m)	0.0	0.1	0.3
Control Delay (s)	0.0	1.5	8.7
Lane LOS		A	A
Approach Delay (s)	0.0	1.5	8.7
Approach LOS			A

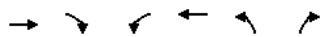
Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	15.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	569	4	4	446	2	2	2	18	1	0	1
Future Volume (Veh/h)	4	569	4	4	446	2	2	2	18	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	618	4	4	485	2	2	2	20	1	0	1
Pedestrians		1			1						3	
Lane Width (m)		3.6			3.6						3.6	
Walking Speed (m/s)		1.2			1.2						1.2	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		100			199							
pX, platoon unblocked	0.88			0.75			0.81	0.81	0.75	0.81	0.81	0.88
vC, conflicting volume	490			622			1124	1126	621	1147	1127	490
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	354			327			704	707	326	733	708	354
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	99	96	100	100	100
cM capacity (veh/h)	1059			923			281	288	535	257	287	606

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	626	491	24	2
Volume Left	4	4	2	1
Volume Right	4	2	20	1
cSH	1059	923	467	361
Volume to Capacity	0.00	0.00	0.05	0.01
Queue Length 95th (m)	0.1	0.1	1.3	0.1
Control Delay (s)	0.1	0.1	13.1	15.0
Lane LOS	A	A	B	C
Approach Delay (s)	0.1	0.1	13.1	15.0
Approach LOS			B	C

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	43.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	19	3	2	19	4	5
Future Volume (Veh/h)	19	3	2	19	4	5
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)	21	3	2	21	4	5
Pedestrians					9	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			33		56	32
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			33		56	32
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)			1567		943	1035

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	24	23	9
Volume Left	0	2	4
Volume Right	3	0	5
cSH	1700	1567	992
Volume to Capacity	0.01	0.00	0.01
Queue Length 95th (m)	0.0	0.0	0.2
Control Delay (s)	0.0	0.6	8.7
Lane LOS		A	A
Approach Delay (s)	0.0	0.6	8.7
Approach LOS			A

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	15.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	559	6	20	418	4	13	1	55	2	5	6
Future Volume (Veh/h)	8	559	6	20	418	4	13	1	55	2	5	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	608	7	22	454	4	14	1	60	2	5	7
Pedestrians					5						2	
Lane Width (m)					3.6						3.6	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		199			100							
pX, platoon unblocked												
vC, conflicting volume	460			615			910	1134	312	890	1135	231
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	460			615			910	1134	312	890	1135	231
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			94	99	91	99	97	99
cM capacity (veh/h)	1096			961			218	195	680	209	194	770

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	313	311	249	231	75	14
Volume Left	9	0	22	0	14	2
Volume Right	0	7	0	4	60	7
cSH	1096	1700	961	1700	476	316
Volume to Capacity	0.01	0.18	0.02	0.14	0.16	0.04
Queue Length 95th (m)	0.2	0.0	0.6	0.0	4.4	1.1
Control Delay (s)	0.3	0.0	1.0	0.0	14.0	16.9
Lane LOS	A		A		B	C
Approach Delay (s)	0.2		0.5		14.0	16.9
Approach LOS					B	C

Intersection Summary						
Average Delay			1.4			
Intersection Capacity Utilization			40.6%	ICU Level of Service		A
Analysis Period (min)			15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	253	653	12	549	205	333	125	276
v/c Ratio	0.72	0.53	0.04	0.73	0.41	0.54	0.28	0.48
Control Delay	30.9	22.3	15.1	33.4	15.5	27.9	14.0	25.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.9	22.3	15.1	33.4	15.5	27.9	14.0	25.1
Queue Length 50th (m)	28.8	40.6	1.2	41.1	18.3	44.4	10.6	33.3
Queue Length 95th (m)	#51.7	68.6	4.3	58.2	36.2	80.1	23.0	62.4
Internal Link Dist (m)		80.3		65.0		84.7		300.6
Turn Bay Length (m)	20.0		30.0		15.0		25.0	
Base Capacity (vph)	350	1427	396	1424	509	614	481	571
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.46	0.03	0.39	0.40	0.54	0.26	0.48

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
13: Ross St/Sunnidale Rd & Wellington St

2026 Total PM Peak
(200669) - 10-24 Grove

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	233	474	127	11	374	131	189	282	24	115	164	90
Future Volume (vph)	233	474	127	11	374	131	189	282	24	115	164	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	0.99		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1784	3429		1797	3399		1758	1874		1782	1764	
Flt Permitted	0.26	1.00		0.40	1.00		0.46	1.00		0.42	1.00	
Satd. Flow (perm)	483	3429		763	3399		854	1874		791	1764	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	253	515	138	12	407	142	205	307	26	125	178	98
RTOR Reduction (vph)	0	24	0	0	40	0	0	3	0	0	19	0
Lane Group Flow (vph)	253	629	0	12	509	0	205	330	0	125	257	0
Confl. Peds. (#/hr)	9		13	13		9	18		10	10		18
Heavy Vehicles (%)	1%	0%	4%	0%	1%	1%	2%	0%	0%	1%	1%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	34.8	29.6		22.0	20.8		36.5	27.1		34.5	26.1	
Effective Green, g (s)	34.8	29.6		22.0	20.8		36.5	27.1		34.5	26.1	
Actuated g/C Ratio	0.40	0.34		0.25	0.24		0.42	0.31		0.40	0.30	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	345	1176		208	819		459	588		412	533	
v/s Ratio Prot	c0.08	0.18		0.00	0.15		c0.05	c0.18		0.03	0.15	
v/s Ratio Perm	c0.21			0.01			0.14			0.09		
v/c Ratio	0.73	0.53		0.06	0.62		0.45	0.56		0.30	0.48	
Uniform Delay, d1	18.8	22.8		24.1	29.2		16.5	24.7		17.0	24.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.8	0.5		0.1	1.5		0.7	3.8		0.4	3.1	
Delay (s)	26.7	23.3		24.2	30.7		17.2	28.5		17.4	27.7	
Level of Service	C	C		C	C		B	C		B	C	
Approach Delay (s)		24.2			30.6			24.2			24.5	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	25.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.66			
Actuated Cycle Length (s)	86.3	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	69.9%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
14: Grove St & Site Access

2026 Total PM Peak
(200669) - 10-24 Grove

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	42	147	185	139	84	33
Future Volume (Veh/h)	42	147	185	139	84	33
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)	46	160	201	151	91	36
Pedestrians		2			5	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			105			
pX, platoon unblocked						
vC, conflicting volume	357				534	284
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	357				534	284
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				81	95
cM capacity (veh/h)	1197				486	751

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	206	352	127
Volume Left	46	0	91
Volume Right	0	151	36
cSH	1197	1700	540
Volume to Capacity	0.04	0.21	0.24
Queue Length 95th (m)	1.0	0.0	7.3
Control Delay (s)	2.1	0.0	13.7
Lane LOS	A		B
Approach Delay (s)	2.1	0.0	13.7
Approach LOS			B

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix F

2031 Background Traffic Operations Reports

Lane Group	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	317	265	219	134	1575	1744
v/c Ratio	0.50	0.84	0.39	0.83	0.87	1.13
Control Delay	18.7	54.0	24.4	50.2	26.1	97.1
Queue Delay	0.0	0.0	0.0	0.0	0.5	0.0
Total Delay	18.7	54.0	24.4	50.2	26.6	97.1
Queue Length 50th (m)	30.9	48.9	30.2	18.2	107.1	~219.8
Queue Length 95th (m)	57.4	#95.9	51.0	m#29.1	149.7	#264.7
Internal Link Dist (m)	111.7		232.7		189.4	97.3
Turn Bay Length (m)				50.0		
Base Capacity (vph)	629	316	567	161	1804	1538
Starvation Cap Reductn	0	0	0	0	41	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.84	0.39	0.83	0.89	1.13

Intersection Summary

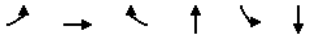
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	0	268	244	59	143	123	1449	0	0	1592	13
Future Volume (vph)	24	0	268	244	59	143	123	1449	0	0	1592	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		3.0	6.0			6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95			0.95	
Frpb, ped/bikes		0.98		1.00	0.99		1.00	1.00			1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00			1.00	
Frt		0.88		1.00	0.89		1.00	1.00			1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)		1599		1764	1547		1703	3471			3495	
Flt Permitted		0.96		0.47	1.00		0.09	1.00			1.00	
Satd. Flow (perm)		1545		879	1547		153	3471			3495	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	26	0	291	265	64	155	134	1575	0	0	1730	14
RTOR Reduction (vph)	0	74	0	0	10	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	243	0	265	209	0	134	1575	0	0	1743	0
Confl. Peds. (#/hr)	5		4	4		5	27		20	20		27
Heavy Vehicles (%)	0%	0%	2%	2%	4%	10%	6%	4%	0%	0%	3%	13%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA			NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2					
Actuated Green, G (s)		36.0		36.0	36.0		52.0	52.0			44.0	
Effective Green, g (s)		36.0		36.0	36.0		52.0	52.0			44.0	
Actuated g/C Ratio		0.36		0.36	0.36		0.52	0.52			0.44	
Clearance Time (s)		6.0		6.0	6.0		3.0	6.0			6.0	
Lane Grp Cap (vph)		556		316	556		157	1804			1537	
v/s Ratio Prot					0.13		0.04	c0.45			c0.50	
v/s Ratio Perm		0.16		c0.30			0.40					
v/c Ratio		0.44		0.84	0.38		0.85	0.87			1.13	
Uniform Delay, d1		24.3		29.3	23.7		22.5	21.1			28.0	
Progression Factor		1.00		1.00	1.00		1.64	1.02			1.00	
Incremental Delay, d2		2.5		22.6	1.9		29.4	4.1			69.1	
Delay (s)		26.8		51.9	25.6		66.2	25.5			97.1	
Level of Service		C		D	C		E	C			F	
Approach Delay (s)		26.8			40.0			28.7			97.1	
Approach LOS		C			D			C			F	

Intersection Summary

HCM 2000 Control Delay	57.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	102.9%	ICU Level of Service	G
Analysis Period (min)	15		

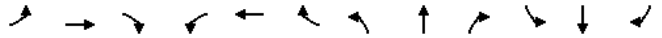
c Critical Lane Group



Lane Group	EBL	EBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	911	456	203	940	332	943
v/c Ratio	0.83	0.74	0.29	0.79	0.81	0.48
Control Delay	38.7	31.6	1.0	30.1	33.7	20.0
Queue Delay	0.0	0.0	0.0	0.5	0.0	0.0
Total Delay	38.7	31.6	1.0	30.6	33.7	20.0
Queue Length 50th (m)	87.6	65.2	0.0	65.4	57.5	67.5
Queue Length 95th (m)	112.8	104.4	0.0	77.5	m55.6	m62.9
Internal Link Dist (m)		345.6		232.0		189.4
Turn Bay Length (m)					115.0	
Base Capacity (vph)	1100	616	708	1192	408	1985
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	6	53	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.74	0.29	0.83	0.81	0.48

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	838	145	274	0	0	187	0	748	117	305	868	0
Future Volume (vph)	838	145	274	0	0	187	0	748	117	305	868	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0				6.0		6.0		3.0	6.0	
Lane Util. Factor	0.97	1.00				1.00		0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99				1.00		0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00				1.00		1.00		1.00	1.00	
Frt	1.00	0.90				0.86		0.98		1.00	1.00	
Flt Protected	0.95	1.00				1.00		1.00		0.95	1.00	
Satd. Flow (prot)	3335	1672				1370		3370		1805	3610	
Flt Permitted	0.95	1.00				1.00		1.00		0.13	1.00	
Satd. Flow (perm)	3335	1672				1370		3370		249	3610	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	911	158	298	0	0	203	0	813	127	332	943	0
RTOR Reduction (vph)	0	65	0	0	0	136	0	12	0	0	0	0
Lane Group Flow (vph)	911	391	0	0	0	67	0	928	0	332	943	0
Confl. Peds. (#/hr)			3	3			29		24	24		29
Heavy Vehicles (%)	5%	4%	0%	0%	4%	20%	8%	4%	2%	0%	0%	1%
Turn Type	Perm	NA				Perm		NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4					8				6		
Actuated Green, G (s)	33.0	33.0				33.0		35.0		55.0	55.0	
Effective Green, g (s)	33.0	33.0				33.0		35.0		55.0	55.0	
Actuated g/C Ratio	0.33	0.33				0.33		0.35		0.55	0.55	
Clearance Time (s)	6.0	6.0				6.0		6.0		3.0	6.0	
Lane Grp Cap (vph)	1100	551				452		1179		401	1985	
v/s Ratio Prot		0.23						0.28		c0.14	0.26	
v/s Ratio Perm	c0.27					0.05				c0.31		
v/c Ratio	0.83	0.71				0.15		0.79		0.83	0.48	
Uniform Delay, d1	30.9	29.3				23.6		29.2		22.6	13.7	
Progression Factor	1.00	1.00				1.00		0.88		1.64	1.43	
Incremental Delay, d2	7.2	7.5				0.7		4.6		1.9	0.1	
Delay (s)	38.1	36.9				24.3		30.3		39.1	19.7	
Level of Service	D	D				C		C		D	B	
Approach Delay (s)		37.7			24.3			30.3			24.8	
Approach LOS		D			C			C			C	

Intersection Summary

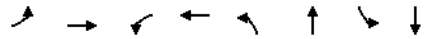
HCM 2000 Control Delay	30.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	79.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	268	53	348	351	0	0
Future Volume (Veh/h)	268	53	348	351	0	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)	291	58	378	382	0	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)			245			
pX, platoon unblocked	0.91	0.91			0.91	
vC, conflicting volume	569	569			760	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	479	479			688	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	41	89			100	
cM capacity (veh/h)	497	535			826	

Direction, Lane #	WB 1	NB 1
Volume Total	349	760
Volume Left	291	0
Volume Right	58	382
cSH	503	1700
Volume to Capacity	0.69	0.45
Queue Length 95th (m)	42.6	0.0
Control Delay (s)	26.8	0.0
Lane LOS	D	
Approach Delay (s)	26.8	0.0
Approach LOS	D	

Intersection Summary			
Average Delay	8.4		
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	203	147	74	269	16	720	113	1334
v/c Ratio	0.56	0.21	0.23	0.48	0.20	0.56	0.35	0.78
Control Delay	26.9	16.4	30.0	17.9	26.8	22.2	14.7	23.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.9	16.4	30.0	17.9	26.8	22.2	14.7	23.8
Queue Length 50th (m)	27.1	14.8	11.6	21.6	1.9	46.4	9.8	140.6
Queue Length 95th (m)	44.5	28.7	23.9	46.5	m5.6	68.9	m15.9	164.0
Internal Link Dist (m)		81.6		331.6		133.3		232.0
Turn Bay Length (m)	20.0		30.0		30.0		50.0	
Base Capacity (vph)	365	698	326	556	79	1295	327	1706
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.21	0.23	0.48	0.20	0.56	0.35	0.78

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	187	76	59	68	67	180	15	621	41	104	1115	112
Future Volume (vph)	187	76	59	68	67	180	15	621	41	104	1115	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	0.89		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1732	1738		1671	1643		1632	3393		1784	3469	
Flt Permitted	0.40	1.00		0.66	1.00		0.12	1.00		0.25	1.00	
Satd. Flow (perm)	722	1738		1167	1643		208	3393		464	3469	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	203	83	64	74	73	196	16	675	45	113	1212	122
RTOR Reduction (vph)	0	21	0	0	96	0	0	5	0	0	8	0
Lane Group Flow (vph)	203	126	0	74	173	0	16	715	0	113	1326	0
Confl. Peds. (#/hr)	7		7	7		7	21		14	14		21
Heavy Vehicles (%)	4%	2%	0%	7%	2%	1%	10%	4%	20%	1%	2%	1%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	39.0	39.0		28.0	28.0		38.0	38.0		49.0	49.0	
Effective Green, g (s)	39.0	39.0		28.0	28.0		38.0	38.0		49.0	49.0	
Actuated g/C Ratio	0.39	0.39		0.28	0.28		0.38	0.38		0.49	0.49	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	352	677		326	460		79	1289		319	1699	
v/s Ratio Prot	c0.04	0.07			0.11			0.21		0.02	c0.38	
v/s Ratio Perm	c0.18			0.06			0.08			0.15		
v/c Ratio	0.58	0.19		0.23	0.38		0.20	0.55		0.35	0.78	
Uniform Delay, d1	22.9	20.1		27.7	29.0		20.8	24.4		15.1	21.1	
Progression Factor	1.00	1.00		1.00	1.00		0.92	0.84		0.93	0.97	
Incremental Delay, d2	6.7	0.6		1.6	2.3		5.4	1.6		2.8	3.3	
Delay (s)	29.6	20.7		29.3	31.3		24.6	22.1		16.8	23.6	
Level of Service	C	C		C	C		C	C		B	C	
Approach Delay (s)		25.9			30.9			22.2			23.1	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.75			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	82.6%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	28	12	4	558	1042	17
Future Volume (Veh/h)	28	12	4	558	1042	17
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)	30	13	4	607	1133	18
Pedestrians	8				1	
Lane Width (m)	3.6				3.6	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	1				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				229	157	
pX, platoon unblocked	0.73	0.71	0.71			
vC, conflicting volume	1462	584	1159			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	615	0	405			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	90	98	100			
cM capacity (veh/h)	306	764	811			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	43	206	405	755	396
Volume Left	30	4	0	0	0
Volume Right	13	0	0	0	18
cSH	374	811	1700	1700	1700
Volume to Capacity	0.12	0.00	0.24	0.44	0.23
Queue Length 95th (m)	3.1	0.1	0.0	0.0	0.0
Control Delay (s)	15.9	0.2	0.0	0.0	0.0
Lane LOS	C	A			
Approach Delay (s)	15.9	0.1		0.0	
Approach LOS	C				

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	39.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	211	282	48	307	12	479	76	1252
v/c Ratio	0.66	0.41	0.16	0.63	0.11	0.36	0.17	0.73
Control Delay	32.5	23.9	29.8	37.6	22.5	22.3	15.5	20.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.5	23.9	29.8	37.6	22.5	22.3	15.5	20.9
Queue Length 50th (m)	28.9	39.6	7.5	53.1	1.5	35.3	6.5	68.3
Queue Length 95th (m)	47.0	62.5	17.1	82.6	5.8	48.7	m11.4	95.0
Internal Link Dist (m)		76.2		327.8		194.7		204.9
Turn Bay Length (m)			30.0		20.0		20.0	
Base Capacity (vph)	321	687	291	488	114	1317	444	1722
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.41	0.16	0.63	0.11	0.36	0.17	0.73

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	194	212	48	44	230	52	11	416	25	70	890	262
Future Volume (vph)	194	212	48	44	230	52	11	416	25	70	890	262
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.97		1.00	0.97		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1732	1788		1745	1780		1799	3365		1757	3389	
Flt Permitted	0.33	1.00		0.59	1.00		0.15	1.00		0.39	1.00	
Satd. Flow (perm)	607	1788		1077	1780		293	3365		721	3389	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	211	230	52	48	250	57	12	452	27	76	967	285
RTOR Reduction (vph)	0	8	0	0	8	0	0	4	0	0	28	0
Lane Group Flow (vph)	211	274	0	48	299	0	12	475	0	76	1225	0
Confl. Peds. (#/hr)	9		4	4		9	18		16	18		16
Heavy Vehicles (%)	4%	3%	3%	3%	4%	0%	0%	6%	6%	2%	2%	2%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	38.0	38.0		27.0	27.0		39.0	39.0		50.0	50.0	
Effective Green, g (s)	38.0	38.0		27.0	27.0		39.0	39.0		50.0	50.0	
Actuated g/C Ratio	0.38	0.38		0.27	0.27		0.39	0.39		0.50	0.50	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	309	679		290	480		114	1312		433	1694	
v/s Ratio Prot	c0.05	0.15			0.17			0.14		0.01	c0.36	
v/s Ratio Perm	c0.21			0.04			0.04			0.08		
v/c Ratio	0.68	0.40		0.17	0.62		0.11	0.36		0.18	0.72	
Uniform Delay, d1	24.9	22.7		27.9	32.0		19.4	21.7		13.4	19.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.21	0.99	
Incremental Delay, d2	11.6	1.8		1.2	6.0		1.8	0.8		0.7	2.1	
Delay (s)	36.5	24.5		29.1	38.0		21.3	22.4		17.0	21.5	
Level of Service	D	C		C	D		C	C		B	C	
Approach Delay (s)		29.6			36.8			22.4			21.2	
Approach LOS		C			D			C			C	

Intersection Summary					
HCM 2000 Control Delay	25.1	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.77				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)		20.0	
Intersection Capacity Utilization	82.0%	ICU Level of Service		E	
Analysis Period (min)	15				

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	16	9	128	21	11	144
Future Volume (Veh/h)	16	9	128	21	11	144
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)	17	10	139	23	12	157
Pedestrians			78			5
Lane Width (m)			3.6			3.6
Walking Speed (m/s)			1.2			1.2
Percent Blockage			7			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			212			
pX, platoon unblocked						
vC, conflicting volume	410	156			162	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	410	156			162	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	99			99	
cM capacity (veh/h)	555	887			1417	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	27	162	169
Volume Left	17	0	12
Volume Right	10	23	0
cSH	644	1700	1417
Volume to Capacity	0.04	0.10	0.01
Queue Length 95th (m)	1.0	0.0	0.2
Control Delay (s)	10.8	0.0	0.6
Lane LOS	B		A
Approach Delay (s)	10.8	0.0	0.6
Approach LOS	B		

Intersection Summary				
Average Delay		1.1		
Intersection Capacity Utilization		28.2%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	109	417	104	388	148	171
v/c Ratio	0.47	0.71	0.49	0.66	0.19	0.23
Control Delay	21.4	23.1	22.8	21.0	6.0	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.4	23.1	22.8	21.0	6.0	6.3
Queue Length 50th (m)	8.6	36.0	8.2	32.7	3.3	3.9
Queue Length 95th (m)	20.7	60.7	20.5	55.4	14.5	16.3
Internal Link Dist (m)		153.7		76.4	185.8	188.3
Turn Bay Length (m)	25.0		20.0			
Base Capacity (vph)	601	1515	550	1530	782	735
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.28	0.19	0.25	0.19	0.23

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	380	4	96	354	3	8	49	79	12	51	95
Future Volume (vph)	100	380	4	96	354	3	8	49	79	12	51	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.95	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.92			0.92	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1686	1824		1716	1843			1652			1565	
Flt Permitted	0.41	1.00		0.37	1.00			0.98			0.98	
Satd. Flow (perm)	726	1824		667	1843			1628			1536	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	413	4	104	385	3	9	53	86	13	55	103
RTOR Reduction (vph)	0	1	0	0	1	0	0	47	0	0	53	0
Lane Group Flow (vph)	109	416	0	104	387	0	0	101	0	0	118	0
Confl. Peds. (#/hr)	1		16	16		1	39		3	3		39
Heavy Vehicles (%)	7%	4%	0%	4%	3%	0%	0%	6%	3%	0%	11%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	17.1	17.1		17.1	17.1			24.2			24.2	
Effective Green, g (s)	17.1	17.1		17.1	17.1			24.2			24.2	
Actuated g/C Ratio	0.32	0.32		0.32	0.32			0.45			0.45	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	232	585		213	591			739			697	
v/s Ratio Prot		c0.23			0.21							
v/s Ratio Perm	0.15			0.16				0.06			c0.08	
v/c Ratio	0.47	0.71		0.49	0.66			0.14			0.17	
Uniform Delay, d1	14.5	15.9		14.6	15.6			8.5			8.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.5	4.1		1.8	2.6			0.4			0.5	
Delay (s)	16.0	20.0		16.3	18.2			8.9			9.1	
Level of Service	B	C		B	B			A			A	
Approach Delay (s)		19.2			17.8			8.9			9.1	
Approach LOS		B			B			A			A	

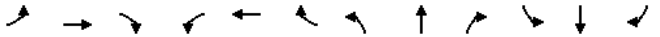
Intersection Summary				
HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.39			
Actuated Cycle Length (s)	53.3	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	55.6%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	25	7	1	17	16	11
Future Volume (Veh/h)	25	7	1	17	16	11
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)	27	8	1	18	17	12
Pedestrians					37	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					3	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			72		88	68
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			72		88	68
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)			1481		884	965

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	35	19	29
Volume Left	0	1	17
Volume Right	8	0	12
cSH	1700	1481	916
Volume to Capacity	0.02	0.00	0.03
Queue Length 95th (m)	0.0	0.0	0.8
Control Delay (s)	0.0	0.4	9.1
Lane LOS		A	A
Approach Delay (s)	0.0	0.4	9.1
Approach LOS			A

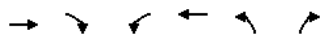
Intersection Summary					
Average Delay	3.3				
Intersection Capacity Utilization	13.3%	ICU Level of Service	A		
Analysis Period (min)	15				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	411	3	10	400	3	3	0	20	3	3	11
Future Volume (Veh/h)	15	411	3	10	400	3	3	0	20	3	3	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	447	3	11	435	3	3	0	22	3	3	12
Pedestrians		4			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		100			199							
pX, platoon unblocked	0.93			0.81			0.84	0.84	0.81	0.84	0.84	0.93
vC, conflicting volume	438			450			956	940	450	963	940	440
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	363			204			680	661	205	688	661	366
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			99	100	97	99	99	98
cM capacity (veh/h)	1117			1108			293	315	676	288	315	632

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	466	449	25	18
Volume Left	16	11	3	3
Volume Right	3	3	22	12
cSH	1117	1108	584	463
Volume to Capacity	0.01	0.01	0.04	0.04
Queue Length 95th (m)	0.3	0.2	1.1	1.0
Control Delay (s)	0.4	0.3	11.4	13.1
Lane LOS	A	A	B	B
Approach Delay (s)	0.4	0.3	11.4	13.1
Approach LOS			B	B

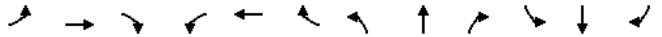
Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	40.2%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	28	6	5	13	5	7
Future Volume (Veh/h)	28	6	5	13	5	7
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)	30	7	5	14	5	8
Pedestrians				1	3	
Lane Width (m)				3.6	3.6	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			40		60	38
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			40		60	38
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)			1566		941	1031

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	37	19	13
Volume Left	0	5	5
Volume Right	7	0	8
cSH	1700	1566	994
Volume to Capacity	0.02	0.00	0.01
Queue Length 95th (m)	0.0	0.1	0.3
Control Delay (s)	0.0	1.9	8.7
Lane LOS		A	A
Approach Delay (s)	0.0	1.9	8.7
Approach LOS			A

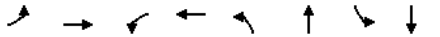
Intersection Summary				
Average Delay	2.2			
Intersection Capacity Utilization	15.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	391	25	63	400	5	1	2	16	7	3	3
Future Volume (Veh/h)	9	391	25	63	400	5	1	2	16	7	3	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	425	27	68	435	5	1	2	17	8	3	3
Pedestrians					6						8	
Lane Width (m)					3.6						3.6	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					1						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		199			100							
pX, platoon unblocked												
vC, conflicting volume	448			452			816	1042	232	838	1054	228
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	448			452			816	1042	232	838	1054	228
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			94			100	99	98	97	99	100
cM capacity (veh/h)	1101			1105			249	211	766	234	208	770

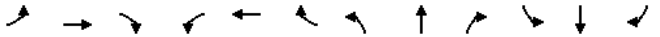
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	222	240	286	222	20	14
Volume Left	10	0	68	0	1	8
Volume Right	0	27	0	5	17	3
cSH	1101	1700	1105	1700	560	267
Volume to Capacity	0.01	0.14	0.06	0.13	0.04	0.05
Queue Length 95th (m)	0.2	0.0	1.6	0.0	0.9	1.3
Control Delay (s)	0.5	0.0	2.5	0.0	11.7	19.3
Lane LOS	A		A		B	C
Approach Delay (s)	0.2		1.4		11.7	19.3
Approach LOS					B	C

Intersection Summary						
Average Delay			1.3			
Intersection Capacity Utilization			40.1%	ICU Level of Service		A
Analysis Period (min)			15			



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	125	473	22	418	82	139	104	373
v/c Ratio	0.35	0.50	0.08	0.62	0.18	0.21	0.16	0.55
Control Delay	18.9	22.8	16.1	30.4	11.7	19.6	11.4	24.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.9	22.8	16.1	30.4	11.7	19.6	11.4	24.2
Queue Length 50th (m)	12.5	24.7	2.1	29.0	6.2	14.0	7.9	44.8
Queue Length 95th (m)	24.7	48.1	6.7	45.0	14.6	30.7	17.6	82.4
Internal Link Dist (m)		80.3		65.0		84.7		300.6
Turn Bay Length (m)	20.0		30.0		15.0		25.0	
Base Capacity (vph)	383	1633	346	1646	501	658	687	684
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.29	0.06	0.25	0.16	0.21	0.15	0.55

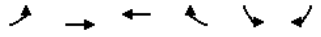
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	324	111	20	302	83	75	103	25	96	244	99
Future Volume (vph)	115	324	111	20	302	83	75	103	25	96	244	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		0.98	1.00	
Frt	1.00	0.96		1.00	0.97		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1759	3309		1482	3342		1680	1748		1746	1787	
Flt Permitted	0.34	1.00		0.48	1.00		0.41	1.00		0.66	1.00	
Satd. Flow (perm)	632	3309		751	3342		727	1748		1219	1787	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	352	121	22	328	90	82	112	27	104	265	108
RTOR Reduction (vph)	0	38	0	0	30	0	0	8	0	0	13	0
Lane Group Flow (vph)	125	435	0	22	388	0	82	131	0	104	360	0
Confl. Peds. (#/hr)	20		29	29		20	18		34	34		18
Heavy Vehicles (%)	2%	2%	5%	20%	4%	0%	7%	4%	6%	1%	1%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	26.7	20.2		18.1	15.6		33.2	27.3		33.6	27.5	
Effective Green, g (s)	26.7	20.2		18.1	15.6		33.2	27.3		33.6	27.5	
Actuated g/C Ratio	0.35	0.27		0.24	0.20		0.44	0.36		0.44	0.36	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	326	878		202	685		391	627		580	645	
v/s Ratio Prot	c0.04	c0.13		0.00	0.12		c0.02	0.08		0.01	c0.20	
v/s Ratio Perm	0.10			0.02			0.08			0.06		
v/c Ratio	0.38	0.50		0.11	0.57		0.21	0.21		0.18	0.56	
Uniform Delay, d1	17.6	23.6		22.4	27.2		13.0	16.9		12.6	19.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.4		0.2	1.1		0.3	0.8		0.1	3.5	
Delay (s)	18.3	24.1		22.7	28.3		13.3	17.7		12.8	22.9	
Level of Service	B	C		C	C		B	B		B	C	
Approach Delay (s)		22.9			28.0			16.0			20.7	
Approach LOS		C			C			B			C	

Intersection Summary				
HCM 2000 Control Delay	22.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.51			
Actuated Cycle Length (s)	76.1	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	59.7%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	94	124	49	149	50
Future Volume (Veh/h)	12	94	124	49	149	50
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)	13	102	135	53	162	54
Pedestrians		2			5	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			105			
pX, platoon unblocked						
vC, conflicting volume	193				294	168
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	193				294	168
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				76	94
cM capacity (veh/h)	1375				687	870

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	115	188	216
Volume Left	13	0	162
Volume Right	0	53	54
cSH	1375	1700	725
Volume to Capacity	0.01	0.11	0.30
Queue Length 95th (m)	0.2	0.0	10.0
Control Delay (s)	0.9	0.0	12.1
Lane LOS	A		B
Approach Delay (s)	0.9	0.0	12.1
Approach LOS			B

Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	33.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	284	192	324	201	2236	2224
v/c Ratio	0.75	1.04	0.74	0.98	0.95	1.14
Control Delay	37.0	129.8	61.7	99.8	32.9	99.6
Queue Delay	0.0	0.0	0.0	0.0	44.3	0.0
Total Delay	37.0	129.8	61.7	99.8	77.2	99.6
Queue Length 50th (m)	40.4	~64.5	91.6	46.6	312.8	~426.2
Queue Length 95th (m)	80.4	#117.8	129.4	#101.3	362.3	#467.8
Internal Link Dist (m)	111.7		232.7		189.4	97.3
Turn Bay Length (m)				50.0		
Base Capacity (vph)	380	185	436	205	2359	1959
Starvation Cap Reductn	0	0	0	0	427	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.75	1.04	0.74	0.98	1.16	1.14

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	0	231	177	137	161	185	2057	0	0	2028	18
Future Volume (vph)	30	0	231	177	137	161	185	2057	0	0	2028	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		3.0	6.0			6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95			0.95	
Frpb, ped/bikes		0.99		1.00	0.98		1.00	1.00			1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00			1.00	
Frt		0.88		1.00	0.92		1.00	1.00			1.00	
Flt Protected		0.99		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)		1614		1768	1696		1770	3539			3497	
Flt Permitted		0.65		0.39	1.00		0.05	1.00			1.00	
Satd. Flow (perm)		1060		731	1696		86	3539			3497	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	0	251	192	149	175	201	2236	0	0	2204	20
RTOR Reduction (vph)	0	112	0	0	7	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	172	0	192	317	0	201	2236	0	0	2224	0
Confl. Peds. (#/hr)	9		1	1		9	27		56	56		27
Heavy Vehicles (%)	0%	0%	2%	2%	0%	2%	2%	2%	0%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA			NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2					
Actuated Green, G (s)		38.0		38.0	38.0		100.0	100.0			84.0	
Effective Green, g (s)		38.0		38.0	38.0		100.0	100.0			84.0	
Actuated g/C Ratio		0.25		0.25	0.25		0.67	0.67			0.56	
Clearance Time (s)		6.0		6.0	6.0		3.0	6.0			6.0	
Lane Grp Cap (vph)		268		185	429		203	2359			1958	
v/s Ratio Prot					0.19		c0.09	0.63			c0.64	
v/s Ratio Perm		0.16		c0.26			0.58					
v/c Ratio		0.64		1.04	0.74		0.99	0.95			1.14	
Uniform Delay, d1		49.9		56.0	51.5		54.0	22.6			33.0	
Progression Factor		1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2		11.2		76.5	10.9		60.7	9.8			67.9	
Delay (s)		61.2		132.5	62.4		114.7	32.4			100.9	
Level of Service		E		F	E		F	C			F	
Approach Delay (s)		61.2			88.4			39.2			100.9	
Approach LOS		E			F			D			F	

Intersection Summary

HCM 2000 Control Delay	70.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	118.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	1179	415	265	1693	353	1097
v/c Ratio	1.16	0.77	0.89	1.12	1.07	0.49
Control Delay	127.6	54.3	76.3	102.9	114.4	16.5
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.8
Total Delay	127.6	54.3	76.3	103.0	114.4	17.3
Queue Length 50th (m)	~223.8	109.7	63.4	~319.2	~104.9	94.0
Queue Length 95th (m)	#267.6	152.7	#116.0	#364.2	#171.4	111.1
Internal Link Dist (m)		345.6		232.0		189.4
Turn Bay Length (m)					115.0	
Base Capacity (vph)	1020	542	299	1507	329	2238
Starvation Cap Reductn	0	0	0	46	0	767
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.16	0.77	0.89	1.16	1.07	0.75

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1085	190	191	0	0	244	0	1252	305	325	1009	0
Future Volume (vph)	1085	190	191	0	0	244	0	1252	305	325	1009	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0				3.0		6.0		3.0	6.0	
Lane Util. Factor	0.97	1.00				1.00		0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99				1.00		0.97		1.00	1.00	
Flpb, ped/bikes	1.00	1.00				1.00		1.00		1.00	1.00	
Frt	1.00	0.92				0.86		0.97		1.00	1.00	
Flt Protected	0.95	1.00				1.00		1.00		0.95	1.00	
Satd. Flow (prot)	3400	1727				1596		3342		1805	3610	
Flt Permitted	0.95	1.00				1.00		1.00		0.06	1.00	
Satd. Flow (perm)	3400	1727				1596		3342		109	3610	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1179	207	208	0	0	265	0	1361	332	353	1097	0
RTOR Reduction (vph)	0	24	0	0	0	55	0	14	0	0	0	0
Lane Group Flow (vph)	1179	391	0	0	0	210	0	1679	0	353	1097	0
Confl. Peds. (#/hr)			1	1			24		29	29		24
Heavy Vehicles (%)	3%	2%	0%	0%	2%	3%	3%	2%	2%	0%	0%	2%
Turn Type	Perm	NA				Over		NA		pm+pt	NA	
Protected Phases		4				1		2		1	6	
Permitted Phases	4									6		
Actuated Green, G (s)	45.0	45.0				23.0		67.0		93.0	93.0	
Effective Green, g (s)	45.0	45.0				23.0		67.0		93.0	93.0	
Actuated g/C Ratio	0.30	0.30				0.15		0.45		0.62	0.62	
Clearance Time (s)	6.0	6.0				3.0		6.0		3.0	6.0	
Vehicle Extension (s)	3.0	3.0				3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	1020	518				244		1492		327	2238	
v/s Ratio Prot		0.23				0.13		c0.50		c0.17	0.30	
v/s Ratio Perm	c0.35									0.50		
v/c Ratio	1.16	0.76				0.86		1.13		1.08	0.49	
Uniform Delay, d1	52.5	47.5				61.9		41.5		52.6	15.6	
Progression Factor	1.00	1.00				1.00		1.00		1.00	1.00	
Incremental Delay, d2	81.4	6.2				25.2		65.6		72.6	0.8	
Delay (s)	133.9	53.7				87.1		107.1		125.2	16.3	
Level of Service	F	D				F		F		F	B	
Approach Delay (s)		113.0			87.1			107.1			42.8	
Approach LOS		F			F			F			D	

Intersection Summary

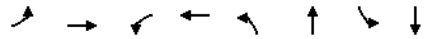
HCM 2000 Control Delay	89.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	107.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	278	25	416	316	0	0
Future Volume (Veh/h)	278	25	416	316	0	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)	302	27	452	343	0	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)			239			
pX, platoon unblocked	0.92	0.92			0.92	
vC, conflicting volume	624	624			795	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	551	551			736	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	34	95			100	
cM capacity (veh/h)	458	493			803	

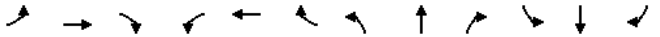
Direction, Lane #	WB 1	NB 1
Volume Total	329	795
Volume Left	302	0
Volume Right	27	343
cSH	460	1700
Volume to Capacity	0.71	0.47
Queue Length 95th (m)	44.8	0.0
Control Delay (s)	30.1	0.0
Lane LOS	D	
Approach Delay (s)	30.1	0.0
Approach LOS	D	

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	64.8%	ICU Level of Service	C
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	198	124	128	365	53	1340	233	1323
v/c Ratio	0.80	0.19	0.45	0.84	0.46	0.95	0.97	0.73
Control Delay	48.3	20.1	39.1	48.6	40.6	44.2	76.3	20.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.3	20.1	39.1	48.6	40.6	44.2	76.3	20.3
Queue Length 50th (m)	28.2	14.6	22.5	58.7	7.7	109.0	30.5	100.6
Queue Length 95th (m)	#53.3	28.2	41.3	#109.2	m11.0	#179.0	#80.1	127.3
Internal Link Dist (m)		81.6		331.6		133.3		232.0
Turn Bay Length (m)	20.0		30.0		30.0		50.0	
Base Capacity (vph)	248	642	283	433	114	1406	239	1824
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.19	0.45	0.84	0.46	0.95	0.97	0.73

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	182	85	29	118	135	201	49	1122	110	214	1020	197
Future Volume (vph)	182	85	29	118	135	201	49	1122	110	214	1020	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.91		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1803	1800		1728	1656		1792	3495		1787	3411	
Flt Permitted	0.19	1.00		0.68	1.00		0.15	1.00		0.09	1.00	
Satd. Flow (perm)	360	1800		1232	1656		287	3495		171	3411	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	198	92	32	128	147	218	53	1220	120	233	1109	214
RTOR Reduction (vph)	0	12	0	0	53	0	0	7	0	0	16	0
Lane Group Flow (vph)	198	112	0	128	312	0	53	1333	0	233	1307	0
Confl. Peds. (#/hr)	15		10	10		15	24		18	18		24
Heavy Vehicles (%)	0%	1%	0%	3%	1%	3%	0%	1%	4%	1%	2%	1%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	35.0	35.0		23.0	23.0		40.0	40.0		53.0	53.0	
Effective Green, g (s)	35.0	35.0		23.0	23.0		40.0	40.0		53.0	53.0	
Actuated g/C Ratio	0.35	0.35		0.23	0.23		0.40	0.40		0.53	0.53	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	241	630		283	380		114	1398		236	1807	
v/s Ratio Prot	c0.07	0.06			0.19			0.38		c0.09	0.38	
v/s Ratio Perm	c0.22			0.10			0.18			c0.43		
v/c Ratio	0.82	0.18		0.45	0.82		0.46	0.95		0.99	0.72	
Uniform Delay, d1	25.7	22.5		33.1	36.5		22.1	29.1		27.6	17.9	
Progression Factor	1.00	1.00		1.00	1.00		1.27	1.13		1.00	1.00	
Incremental Delay, d2	26.0	0.6		5.1	17.8		8.4	11.0		55.4	2.6	
Delay (s)	51.7	23.1		38.2	54.3		36.5	44.0		83.0	20.5	
Level of Service	D	C		D	D		D	D		F	C	
Approach Delay (s)		40.7			50.1			43.7			29.8	
Approach LOS		D			D			D			C	

Intersection Summary				
HCM 2000 Control Delay	38.6	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.98			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	93.6%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	5	4	1177	969	21
Future Volume (Veh/h)	12	5	4	1177	969	21
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)	13	5	4	1279	1053	23
Pedestrians	9					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				229	157	
pX, platoon unblocked	0.87	0.75	0.75			
vC, conflicting volume	1721	547	1085			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	297	0	447			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	99	100			
cM capacity (veh/h)	575	807	826			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	18	430	853	702	374
Volume Left	13	4	0	0	0
Volume Right	5	0	0	0	23
cSH	625	826	1700	1700	1700
Volume to Capacity	0.03	0.00	0.50	0.41	0.22
Queue Length 95th (m)	0.7	0.1	0.0	0.0	0.0
Control Delay (s)	10.9	0.1	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	10.9	0.0		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	45.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	351	448	36	395	43	951	104	1049
v/c Ratio	0.83	0.52	0.14	0.82	0.41	0.82	0.68	0.74
Control Delay	36.6	21.0	30.4	49.7	40.5	37.6	45.1	27.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.6	21.0	30.4	49.7	40.5	37.6	45.1	27.9
Queue Length 50th (m)	43.7	61.0	5.7	73.8	6.8	92.6	11.6	69.5
Queue Length 95th (m)	#89.7	90.1	14.3	#123.3	19.0	118.5	m21.3	93.3
Internal Link Dist (m)		76.2		327.8		194.7		204.9
Turn Bay Length (m)			30.0		20.0		20.0	
Base Capacity (vph)	422	865	249	479	104	1161	152	1409
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.52	0.14	0.82	0.41	0.82	0.68	0.74

Intersection Summary

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

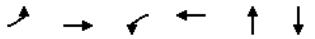
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	323	376	36	33	293	71	40	847	28	96	750	215
Future Volume (vph)	323	376	36	33	293	71	40	847	28	96	750	215
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1835		1805	1810		1745	3514		1805	3372	
Flt Permitted	0.20	1.00		0.50	1.00		0.17	1.00		0.11	1.00	
Satd. Flow (perm)	371	1835		957	1810		317	3514		205	3372	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	351	409	39	36	318	77	43	921	30	104	815	234
RTOR Reduction (vph)	0	3	0	0	9	0	0	2	0	0	27	0
Lane Group Flow (vph)	351	445	0	36	386	0	43	949	0	104	1022	0
Confl. Peds. (#/hr)	27					27	17		28	28		17
Heavy Vehicles (%)	1%	2%	4%	0%	1%	0%	3%	2%	0%	0%	3%	1%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	47.0	47.0		26.0	26.0		33.0	33.0		41.0	41.0	
Effective Green, g (s)	47.0	47.0		26.0	26.0		33.0	33.0		41.0	41.0	
Actuated g/C Ratio	0.47	0.47		0.26	0.26		0.33	0.33		0.41	0.41	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	415	862		248	470		104	1159		148	1382	
v/s Ratio Prot	c0.14	0.24			0.21			c0.27		0.03	c0.30	
v/s Ratio Perm	c0.25			0.04			0.14			0.26		
v/c Ratio	0.85	0.52		0.15	0.82		0.41	0.82		0.70	0.74	
Uniform Delay, d1	20.2	18.5		28.5	34.8		26.0	30.8		21.9	25.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.38	1.03	
Incremental Delay, d2	18.7	2.2		1.2	14.9		11.7	6.5		19.6	2.8	
Delay (s)	38.9	20.7		29.7	49.7		37.7	37.3		49.8	28.7	
Level of Service	D	C		C	D		D	D		D	C	
Approach Delay (s)		28.7			48.0			37.3			30.6	
Approach LOS		C			D			D			C	

Intersection Summary					
HCM 2000 Control Delay	34.3	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.87				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)		20.0	
Intersection Capacity Utilization	88.6%	ICU Level of Service		E	
Analysis Period (min)	15				
c Critical Lane Group					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	12	3	183	9	4	210
Future Volume (Veh/h)	12	3	183	9	4	210
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)	13	3	199	10	4	228
Pedestrians			3			2
Lane Width (m)			3.6			3.6
Walking Speed (m/s)			1.2			1.2
Percent Blockage			0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			212			
pX, platoon unblocked						
vC, conflicting volume	443	206			209	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	443	206			209	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	100			100	
cM capacity (veh/h)	569	833			1362	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	16	209	232
Volume Left	13	0	4
Volume Right	3	10	0
cSH	605	1700	1362
Volume to Capacity	0.03	0.12	0.00
Queue Length 95th (m)	0.7	0.0	0.1
Control Delay (s)	11.1	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	11.1	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	24.9%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	138	575	161	413	214	260
v/c Ratio	0.41	0.76	0.81	0.55	0.32	0.38
Control Delay	14.9	20.2	44.6	14.6	10.9	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.9	20.2	44.6	14.6	10.9	9.5
Queue Length 50th (m)	9.2	45.6	13.2	29.4	9.1	8.6
Queue Length 95th (m)	20.7	74.8	#42.0	49.0	28.1	29.3
Internal Link Dist (m)		153.7		76.4	185.8	188.3
Turn Bay Length (m)	25.0		20.0			
Base Capacity (vph)	769	1749	463	1736	677	689
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.33	0.35	0.24	0.32	0.38

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	517	12	148	377	3	5	82	110	4	72	164
Future Volume (vph)	127	517	12	148	377	3	5	82	110	4	72	164
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.92			0.91	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1804	1893		1803	1879			1730			1671	
Flt Permitted	0.44	1.00		0.26	1.00			0.99			1.00	
Satd. Flow (perm)	833	1893		500	1879			1717			1664	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	138	562	13	161	410	3	5	89	120	4	78	178
RTOR Reduction (vph)	0	2	0	0	1	0	0	47	0	0	81	0
Lane Group Flow (vph)	138	573	0	161	412	0	0	167	0	0	179	0
Confl. Peds. (#/hr)	1		2	2		1	10		3	3		10
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	21.0	21.0		21.0	21.0			19.2			19.2	
Effective Green, g (s)	21.0	21.0		21.0	21.0			19.2			19.2	
Actuated g/C Ratio	0.40	0.40		0.40	0.40			0.37			0.37	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	335	761		201	755			631			612	
v/s Ratio Prot		0.30			0.22							
v/s Ratio Perm	0.17			c0.32				0.10			c0.11	
v/c Ratio	0.41	0.75		0.80	0.55			0.26			0.29	
Uniform Delay, d1	11.2	13.4		13.8	12.0			11.6			11.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.8	4.2		20.0	0.8			1.0			1.2	
Delay (s)	12.0	17.6		33.8	12.8			12.6			12.9	
Level of Service	B	B		C	B			B			B	
Approach Delay (s)		16.5			18.7			12.6			12.9	
Approach LOS		B			B			B			B	

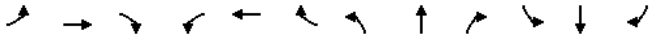
Intersection Summary				
HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.56			
Actuated Cycle Length (s)	52.2	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	67.7%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	13	1	5	20	8	5
Future Volume (Veh/h)	13	1	5	20	8	5
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)	14	1	5	22	9	5
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			16		48	16
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			16		48	16
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)			1600		958	1063

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	15	27	14
Volume Left	0	5	9
Volume Right	1	0	5
cSH	1700	1600	993
Volume to Capacity	0.01	0.00	0.01
Queue Length 95th (m)	0.0	0.1	0.3
Control Delay (s)	0.0	1.4	8.7
Lane LOS		A	A
Approach Delay (s)	0.0	1.4	8.7
Approach LOS			A

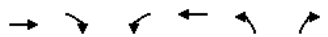
Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	15.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	628	4	4	492	3	3	3	19	1	0	1
Future Volume (Veh/h)	4	628	4	4	492	3	3	3	19	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	683	4	4	535	3	3	3	21	1	0	1
Pedestrians		1			1						3	
Lane Width (m)		3.6			3.6						3.6	
Walking Speed (m/s)		1.2			1.2						1.2	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		100			199							
pX, platoon unblocked	0.86			0.72			0.80	0.80	0.72	0.80	0.80	0.86
vC, conflicting volume	541			687			1240	1242	686	1264	1242	540
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	383			379			772	775	377	803	776	382
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	99	96	100	100	100
cM capacity (veh/h)	1007			855			249	259	485	225	259	569

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	691	542	27	2
Volume Left	4	4	3	1
Volume Right	4	3	21	1
cSH	1007	855	403	323
Volume to Capacity	0.00	0.00	0.07	0.01
Queue Length 95th (m)	0.1	0.1	1.7	0.1
Control Delay (s)	0.1	0.1	14.6	16.2
Lane LOS	A	A	B	C
Approach Delay (s)	0.1	0.1	14.6	16.2
Approach LOS			B	C

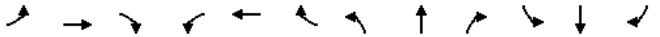
Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	46.2%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	21	4	3	21	4	5
Future Volume (Veh/h)	21	4	3	21	4	5
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)	23	4	3	23	4	5
Pedestrians					9	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			36		63	34
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			36		63	34
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)			1563		934	1031

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	27	26	9
Volume Left	0	3	4
Volume Right	4	0	5
cSH	1700	1563	986
Volume to Capacity	0.02	0.00	0.01
Queue Length 95th (m)	0.0	0.0	0.2
Control Delay (s)	0.0	0.9	8.7
Lane LOS		A	A
Approach Delay (s)	0.0	0.9	8.7
Approach LOS			A

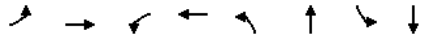
Intersection Summary				
Average Delay	1.6			
Intersection Capacity Utilization	15.9%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	617	7	22	462	4	15	1	60	3	5	7
Future Volume (Veh/h)	9	617	7	22	462	4	15	1	60	3	5	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	671	8	24	502	4	16	1	65	3	5	8
Pedestrians					5						2	
Lane Width (m)					3.6						3.6	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		199			100							
pX, platoon unblocked												
vC, conflicting volume	508			679			1004	1251	344	980	1253	255
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	508			679			1004	1251	344	980	1253	255
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			91	99	90	98	97	99
cM capacity (veh/h)	1051			909			184	165	649	177	164	743

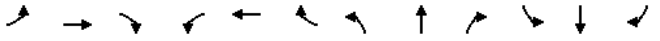
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	346	344	275	255	82	16
Volume Left	10	0	24	0	16	3
Volume Right	0	8	0	4	65	8
cSH	1051	1700	909	1700	424	275
Volume to Capacity	0.01	0.20	0.03	0.15	0.19	0.06
Queue Length 95th (m)	0.2	0.0	0.7	0.0	5.7	1.5
Control Delay (s)	0.3	0.0	1.0	0.0	15.5	18.9
Lane LOS	A		A		C	C
Approach Delay (s)	0.2		0.5		15.5	18.9
Approach LOS					C	C

Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utilization			43.4%		ICU Level of Service	A
Analysis Period (min)			15			



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	279	719	13	603	226	366	137	305
v/c Ratio	0.82	0.56	0.04	0.74	0.50	0.61	0.34	0.55
Control Delay	39.7	22.7	14.8	33.8	18.1	31.0	15.7	27.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.7	22.7	14.8	33.8	18.1	31.0	15.7	27.8
Queue Length 50th (m)	32.3	46.1	1.3	46.5	21.3	52.0	12.2	39.2
Queue Length 95th (m)	#61.5	76.6	4.5	64.7	41.8	92.2	26.1	72.4
Internal Link Dist (m)		80.3		65.0		84.7		300.6
Turn Bay Length (m)	20.0		30.0		15.0		25.0	
Base Capacity (vph)	339	1410	388	1390	465	598	433	557
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.51	0.03	0.43	0.49	0.61	0.32	0.55

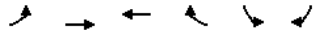
Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	257	522	140	12	412	143	208	311	26	126	181	99
Future Volume (vph)	257	522	140	12	412	143	208	311	26	126	181	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	0.99		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	3429		1798	3400		1760	1874		1783	1763	
Flt Permitted	0.23	1.00		0.37	1.00		0.41	1.00		0.36	1.00	
Satd. Flow (perm)	437	3429		705	3400		762	1874		682	1763	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	279	567	152	13	448	155	226	338	28	137	197	108
RTOR Reduction (vph)	0	24	0	0	39	0	0	3	0	0	19	0
Lane Group Flow (vph)	279	695	0	13	564	0	226	363	0	137	286	0
Confl. Peds. (#/hr)	9		13	13		9	18		10	10		18
Heavy Vehicles (%)	1%	0%	4%	0%	1%	1%	2%	0%	0%	1%	1%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	36.7	31.5		23.9	22.7		36.7	27.1		34.7	26.1	
Effective Green, g (s)	36.7	31.5		23.9	22.7		36.7	27.1		34.7	26.1	
Actuated g/C Ratio	0.42	0.36		0.27	0.26		0.42	0.31		0.39	0.30	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	333	1221		205	873		424	574		374	520	
v/s Ratio Prot	c0.09	0.20		0.00	0.17		c0.06	c0.19		0.04	0.16	
v/s Ratio Perm	c0.25			0.02			0.16			0.11		
v/c Ratio	0.84	0.57		0.06	0.65		0.53	0.63		0.37	0.55	
Uniform Delay, d1	19.2	23.0		23.7	29.3		17.8	26.4		18.2	26.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	16.6	0.6		0.1	1.7		1.3	5.2		0.6	4.1	
Delay (s)	35.8	23.6		23.8	30.9		19.1	31.6		18.8	30.4	
Level of Service	D	C		C	C		B	C		B	C	
Approach Delay (s)		27.0			30.8			26.8			26.8	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	27.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.76			
Actuated Cycle Length (s)	88.4	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	74.8%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	42	171	215	139	84	33
Future Volume (Veh/h)	42	171	215	139	84	33
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)	46	186	234	151	91	36
Pedestrians		2			5	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			105			
pX, platoon unblocked						
vC, conflicting volume	390				592	316
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	390				592	316
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				80	95
cM capacity (veh/h)	1164				448	720

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	232	385	127
Volume Left	46	0	91
Volume Right	0	151	36
cSH	1164	1700	502
Volume to Capacity	0.04	0.23	0.25
Queue Length 95th (m)	1.0	0.0	8.0
Control Delay (s)	1.9	0.0	14.6
Lane LOS	A		B
Approach Delay (s)	1.9	0.0	14.6
Approach LOS			B

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	48.5%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix G

2031 Future Total Traffic Operations Reports

Lane Group	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	317	266	219	135	1586	1748
v/c Ratio	0.50	0.84	0.39	0.84	0.88	1.14
Control Delay	18.7	54.4	24.6	50.8	26.3	98.1
Queue Delay	0.0	0.0	0.0	0.0	0.5	0.0
Total Delay	18.7	54.4	24.6	50.8	26.8	98.1
Queue Length 50th (m)	30.9	49.2	30.4	18.5	107.2	~220.7
Queue Length 95th (m)	57.4	#96.3	51.1	m#29.0	153.7	#265.9
Internal Link Dist (m)	111.7		232.7		189.4	97.3
Turn Bay Length (m)				50.0		
Base Capacity (vph)	629	316	566	161	1804	1538
Starvation Cap Reductn	0	0	0	0	42	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.84	0.39	0.84	0.90	1.14

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	0	268	245	59	143	124	1459	0	0	1595	13
Future Volume (vph)	24	0	268	245	59	143	124	1459	0	0	1595	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		3.0	6.0			6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95			0.95	
Frpb, ped/bikes		0.98		1.00	0.99		1.00	1.00			1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00			1.00	
Frt		0.88		1.00	0.89		1.00	1.00			1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)		1599		1764	1547		1703	3471			3495	
Flt Permitted		0.96		0.47	1.00		0.09	1.00			1.00	
Satd. Flow (perm)		1545		879	1547		153	3471			3495	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	26	0	291	266	64	155	135	1586	0	0	1734	14
RTOR Reduction (vph)	0	74	0	0	10	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	243	0	266	209	0	135	1586	0	0	1747	0
Confl. Peds. (#/hr)	5		4	4		5	27		20	20		27
Heavy Vehicles (%)	0%	0%	2%	2%	4%	10%	6%	4%	0%	0%	3%	13%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA			NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2					
Actuated Green, G (s)		36.0		36.0	36.0		52.0	52.0			44.0	
Effective Green, g (s)		36.0		36.0	36.0		52.0	52.0			44.0	
Actuated g/C Ratio		0.36		0.36	0.36		0.52	0.52			0.44	
Clearance Time (s)		6.0		6.0	6.0		3.0	6.0			6.0	
Lane Grp Cap (vph)		556		316	556		157	1804			1537	
v/s Ratio Prot					0.14		0.04	c0.46			c0.50	
v/s Ratio Perm		0.16		c0.30			0.41					
v/c Ratio		0.44		0.84	0.38		0.86	0.88			1.14	
Uniform Delay, d1		24.3		29.4	23.7		22.5	21.2			28.0	
Progression Factor		1.00		1.00	1.00		1.64	1.01			1.00	
Incremental Delay, d2		2.5		22.9	1.9		29.9	4.2			70.2	
Delay (s)		26.8		52.3	25.6		66.9	25.7			98.2	
Level of Service		C		D	C		E	C			F	
Approach Delay (s)		26.8			40.3			28.9			98.2	
Approach LOS		C			D			C			F	

Intersection Summary

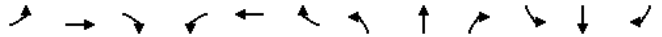
HCM 2000 Control Delay	58.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	103.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	911	458	203	958	332	948
v/c Ratio	0.83	0.74	0.29	0.80	0.82	0.48
Control Delay	38.7	31.8	1.0	30.7	34.4	20.0
Queue Delay	0.0	0.0	0.0	0.7	0.0	0.0
Total Delay	38.7	31.8	1.0	31.5	34.4	20.0
Queue Length 50th (m)	87.6	65.9	0.0	67.3	58.2	67.9
Queue Length 95th (m)	112.8	105.3	0.0	79.6	m55.9	m63.1
Internal Link Dist (m)		345.6		232.0		189.4
Turn Bay Length (m)					115.0	
Base Capacity (vph)	1100	616	708	1191	403	1985
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	6	59	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.74	0.29	0.85	0.82	0.48

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	838	145	276	0	0	187	0	759	122	305	872	0
Future Volume (vph)	838	145	276	0	0	187	0	759	122	305	872	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0				6.0		6.0		3.0	6.0	
Lane Util. Factor	0.97	1.00				1.00		0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99				1.00		0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00				1.00		1.00		1.00	1.00	
Frt	1.00	0.90				0.86		0.98		1.00	1.00	
Flt Protected	0.95	1.00				1.00		1.00		0.95	1.00	
Satd. Flow (prot)	3335	1671				1370		3368		1805	3610	
Flt Permitted	0.95	1.00				1.00		1.00		0.12	1.00	
Satd. Flow (perm)	3335	1671				1370		3368		235	3610	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	911	158	300	0	0	203	0	825	133	332	948	0
RTOR Reduction (vph)	0	64	0	0	0	136	0	13	0	0	0	0
Lane Group Flow (vph)	911	394	0	0	0	67	0	945	0	332	948	0
Confl. Peds. (#/hr)			3	3			29		24	24		29
Heavy Vehicles (%)	5%	4%	0%	0%	4%	20%	8%	4%	2%	0%	0%	1%
Turn Type	Perm	NA				Perm		NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4					8				6		
Actuated Green, G (s)	33.0	33.0				33.0		35.0		55.0	55.0	
Effective Green, g (s)	33.0	33.0				33.0		35.0		55.0	55.0	
Actuated g/C Ratio	0.33	0.33				0.33		0.35		0.55	0.55	
Clearance Time (s)	6.0	6.0				6.0		6.0		3.0	6.0	
Lane Grp Cap (vph)	1100	551				452		1178		396	1985	
v/s Ratio Prot		0.24						0.28		c0.14	0.26	
v/s Ratio Perm	c0.27					0.05				c0.32		
v/c Ratio	0.83	0.71				0.15		0.80		0.84	0.48	
Uniform Delay, d1	30.9	29.4				23.6		29.4		23.8	13.7	
Progression Factor	1.00	1.00				1.00		0.88		1.60	1.44	
Incremental Delay, d2	7.2	7.7				0.7		4.9		2.1	0.1	
Delay (s)	38.1	37.1				24.3		30.9		40.0	19.8	
Level of Service	D	D				C		C		D	B	
Approach Delay (s)		37.8			24.3			30.9			25.0	
Approach LOS		D			C			C			C	

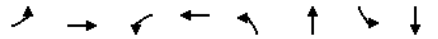
Intersection Summary					
HCM 2000 Control Delay	31.0	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.86				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0		
Intersection Capacity Utilization	80.2%	ICU Level of Service	D		
Analysis Period (min)	15				

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	269	53	351	353	0	0
Future Volume (Veh/h)	269	53	351	353	0	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)	292	58	382	384	0	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)			245			
pX, platoon unblocked	0.91	0.91			0.91	
vC, conflicting volume	574	574			766	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	484	484			695	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	41	89			100	
cM capacity (veh/h)	494	531			821	

Direction, Lane #	WB 1	NB 1
Volume Total	350	766
Volume Left	292	0
Volume Right	58	384
cSH	500	1700
Volume to Capacity	0.70	0.45
Queue Length 95th (m)	43.5	0.0
Control Delay (s)	27.4	0.0
Lane LOS	D	
Approach Delay (s)	27.4	0.0
Approach LOS	D	

Intersection Summary				
Average Delay	8.6			
Intersection Capacity Utilization	64.9%	ICU Level of Service		C
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	220	157	74	269	18	720	113	1341
v/c Ratio	0.60	0.23	0.23	0.48	0.23	0.56	0.35	0.79
Control Delay	28.6	16.8	30.1	17.9	28.4	22.2	14.7	24.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.6	16.8	30.1	17.9	28.4	22.2	14.7	24.0
Queue Length 50th (m)	29.7	16.2	11.6	21.6	2.0	46.4	9.8	141.3
Queue Length 95th (m)	47.8	30.9	24.0	46.5	m6.4	69.1	m15.8	164.7
Internal Link Dist (m)		81.6		331.6		133.3		232.0
Turn Bay Length (m)	20.0		30.0		30.0		50.0	
Base Capacity (vph)	365	695	323	556	77	1295	327	1706
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.23	0.23	0.48	0.23	0.56	0.35	0.79

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	202	77	67	68	67	180	17	621	41	104	1115	119
Future Volume (vph)	202	77	67	68	67	180	17	621	41	104	1115	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	0.89		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1732	1730		1671	1643		1633	3393		1784	3466	
Flt Permitted	0.40	1.00		0.66	1.00		0.12	1.00		0.25	1.00	
Satd. Flow (perm)	722	1730		1156	1643		204	3393		464	3466	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	220	84	73	74	73	196	18	675	45	113	1212	129
RTOR Reduction (vph)	0	21	0	0	96	0	0	5	0	0	8	0
Lane Group Flow (vph)	220	136	0	74	173	0	18	715	0	113	1333	0
Confl. Peds. (#/hr)	7		7	7		7	21		14	14		21
Heavy Vehicles (%)	4%	2%	0%	7%	2%	1%	10%	4%	20%	1%	2%	1%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	39.0	39.0		28.0	28.0		38.0	38.0		49.0	49.0	
Effective Green, g (s)	39.0	39.0		28.0	28.0		38.0	38.0		49.0	49.0	
Actuated g/C Ratio	0.39	0.39		0.28	0.28		0.38	0.38		0.49	0.49	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	352	674		323	460		77	1289		319	1698	
v/s Ratio Prot	c0.04	0.08			0.11			0.21		0.02	c0.38	
v/s Ratio Perm	c0.20			0.06			0.09			0.15		
v/c Ratio	0.62	0.20		0.23	0.38		0.23	0.55		0.35	0.78	
Uniform Delay, d1	23.8	20.2		27.7	29.0		21.1	24.4		15.1	21.1	
Progression Factor	1.00	1.00		1.00	1.00		0.92	0.84		0.93	0.97	
Incremental Delay, d2	8.1	0.7		1.6	2.3		6.6	1.6		2.8	3.4	
Delay (s)	32.0	20.9		29.3	31.3		26.0	22.2		16.8	23.8	
Level of Service	C	C		C	C		C	C		B	C	
Approach Delay (s)		27.3			30.9			22.3			23.3	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	24.4	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.78			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	83.6%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	28	12	4	560	1050	17
Future Volume (Veh/h)	28	12	4	560	1050	17
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)	30	13	4	609	1141	18
Pedestrians	8				1	
Lane Width (m)	3.6				3.6	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	1				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				229	157	
pX, platoon unblocked	0.73	0.71	0.71			
vC, conflicting volume	1472	588	1167			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	619	0	409			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	90	98	100			
cM capacity (veh/h)	304	762	806			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	43	207	406	761	398
Volume Left	30	4	0	0	0
Volume Right	13	0	0	0	18
cSH	371	806	1700	1700	1700
Volume to Capacity	0.12	0.00	0.24	0.45	0.23
Queue Length 95th (m)	3.1	0.1	0.0	0.0	0.0
Control Delay (s)	16.0	0.2	0.0	0.0	0.0
Lane LOS	C	A			
Approach Delay (s)	16.0	0.1		0.0	
Approach LOS	C				

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	39.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	211	282	48	308	12	480	78	1259
v/c Ratio	0.66	0.41	0.16	0.63	0.11	0.36	0.18	0.73
Control Delay	32.8	23.9	29.8	37.7	22.6	22.3	15.6	21.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.8	23.9	29.8	37.7	22.6	22.3	15.6	21.1
Queue Length 50th (m)	28.9	39.6	7.5	53.4	1.5	35.4	6.8	69.4
Queue Length 95th (m)	47.0	62.5	17.1	82.9	5.9	48.7	m11.8	96.2
Internal Link Dist (m)		76.2		327.8		194.7		204.9
Turn Bay Length (m)			30.0		20.0		20.0	
Base Capacity (vph)	319	687	291	488	112	1317	443	1721
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.41	0.16	0.63	0.11	0.36	0.18	0.73

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	194	212	48	44	230	53	11	417	25	72	896	262
Future Volume (vph)	194	212	48	44	230	53	11	417	25	72	896	262
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.97		1.00	0.97		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1732	1788		1745	1779		1799	3365		1757	3390	
Flt Permitted	0.33	1.00		0.59	1.00		0.15	1.00		0.39	1.00	
Satd. Flow (perm)	604	1788		1077	1779		289	3365		720	3390	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	211	230	52	48	250	58	12	453	27	78	974	285
RTOR Reduction (vph)	0	8	0	0	8	0	0	4	0	0	27	0
Lane Group Flow (vph)	211	274	0	48	300	0	12	476	0	78	1232	0
Confl. Peds. (#/hr)	9		4	4		9	18		16	18		16
Heavy Vehicles (%)	4%	3%	3%	3%	4%	0%	0%	6%	6%	2%	2%	2%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	38.0	38.0		27.0	27.0		39.0	39.0		50.0	50.0	
Effective Green, g (s)	38.0	38.0		27.0	27.0		39.0	39.0		50.0	50.0	
Actuated g/C Ratio	0.38	0.38		0.27	0.27		0.39	0.39		0.50	0.50	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	308	679		290	480		112	1312		432	1695	
v/s Ratio Prot	c0.05	0.15			0.17			0.14		0.01	c0.36	
v/s Ratio Perm	c0.21			0.04			0.04			0.08		
v/c Ratio	0.69	0.40		0.17	0.62		0.11	0.36		0.18	0.73	
Uniform Delay, d1	24.9	22.7		27.9	32.1		19.4	21.7		13.4	19.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.22	0.99	
Incremental Delay, d2	11.7	1.8		1.2	6.0		1.9	0.8		0.7	2.2	
Delay (s)	36.7	24.5		29.1	38.1		21.3	22.4		17.1	21.6	
Level of Service	D	C		C	D		C	C		B	C	
Approach Delay (s)		29.7			36.9			22.4			21.4	
Approach LOS		C			D			C			C	

Intersection Summary

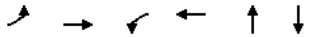
HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	82.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	16	9	130	21	12	152
Future Volume (Veh/h)	16	9	130	21	12	152
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)	17	10	141	23	13	165
Pedestrians			78			5
Lane Width (m)			3.6			3.6
Walking Speed (m/s)			1.2			1.2
Percent Blockage			7			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			212			
pX, platoon unblocked						
vC, conflicting volume	422	158			164	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	422	158			164	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	99			99	
cM capacity (veh/h)	545	884			1414	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	27	164	178
Volume Left	17	0	13
Volume Right	10	23	0
cSH	636	1700	1414
Volume to Capacity	0.04	0.10	0.01
Queue Length 95th (m)	1.1	0.0	0.2
Control Delay (s)	10.9	0.0	0.6
Lane LOS	B		A
Approach Delay (s)	10.9	0.0	0.6
Approach LOS	B		

Intersection Summary				
Average Delay		1.1		
Intersection Capacity Utilization		29.4%	ICU Level of Service	A
Analysis Period (min)		15		



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	111	417	104	388	148	181
v/c Ratio	0.48	0.71	0.49	0.66	0.19	0.25
Control Delay	21.7	23.1	22.8	21.0	6.0	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.7	23.1	22.8	21.0	6.0	6.4
Queue Length 50th (m)	8.7	36.0	8.2	32.7	3.3	4.2
Queue Length 95th (m)	21.0	60.7	20.5	55.4	14.5	17.2
Internal Link Dist (m)		153.7		76.4	185.8	188.3
Turn Bay Length (m)	25.0		20.0			
Base Capacity (vph)	601	1515	550	1530	782	737
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.28	0.19	0.25	0.19	0.25

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	380	4	96	354	3	8	49	79	12	52	102
Future Volume (vph)	102	380	4	96	354	3	8	49	79	12	52	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.95	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.92			0.92	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1686	1824		1716	1843			1652			1562	
Flt Permitted	0.41	1.00		0.37	1.00			0.98			0.98	
Satd. Flow (perm)	726	1824		667	1843			1627			1534	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	111	413	4	104	385	3	9	53	86	13	57	111
RTOR Reduction (vph)	0	1	0	0	1	0	0	47	0	0	56	0
Lane Group Flow (vph)	111	416	0	104	387	0	0	101	0	0	125	0
Confl. Peds. (#/hr)	1		16	16		1	39		3	3		39
Heavy Vehicles (%)	7%	4%	0%	4%	3%	0%	0%	6%	3%	0%	11%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	17.1	17.1		17.1	17.1			24.2			24.2	
Effective Green, g (s)	17.1	17.1		17.1	17.1			24.2			24.2	
Actuated g/C Ratio	0.32	0.32		0.32	0.32			0.45			0.45	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	232	585		213	591			738			696	
v/s Ratio Prot		c0.23			0.21							
v/s Ratio Perm	0.15			0.16				0.06			c0.08	
v/c Ratio	0.48	0.71		0.49	0.66			0.14			0.18	
Uniform Delay, d1	14.5	15.9		14.6	15.6			8.5			8.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.6	4.1		1.8	2.6			0.4			0.6	
Delay (s)	16.1	20.0		16.3	18.2			8.9			9.2	
Level of Service	B	C		B	B			A			A	
Approach Delay (s)		19.2			17.8			8.9			9.2	
Approach LOS		B			B			A			A	

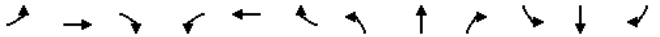
Intersection Summary				
HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.40			
Actuated Cycle Length (s)	53.3	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	55.7%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	26	7	1	17	16	11
Future Volume (Veh/h)	26	7	1	17	16	11
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)	28	8	1	18	17	12
Pedestrians					37	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					3	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			73		89	69
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			73		89	69
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)			1480		883	963

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	36	19	29
Volume Left	0	1	17
Volume Right	8	0	12
cSH	1700	1480	915
Volume to Capacity	0.02	0.00	0.03
Queue Length 95th (m)	0.0	0.0	0.8
Control Delay (s)	0.0	0.4	9.1
Lane LOS		A	A
Approach Delay (s)	0.0	0.4	9.1
Approach LOS			A

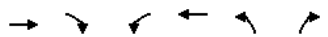
Intersection Summary				
Average Delay	3.2			
Intersection Capacity Utilization	13.3%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	411	3	10	400	3	3	0	20	3	3	11
Future Volume (Veh/h)	15	411	3	10	400	3	3	0	20	3	3	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	447	3	11	435	3	3	0	22	3	3	12
Pedestrians		4			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		100			199							
pX, platoon unblocked	0.93			0.81			0.84	0.84	0.81	0.84	0.84	0.93
vC, conflicting volume	438			450			956	940	450	963	940	440
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	364			204			681	662	205	689	662	367
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			99	100	97	99	99	98
cM capacity (veh/h)	1117			1108			293	314	676	288	314	632

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	466	449	25	18
Volume Left	16	11	3	3
Volume Right	3	3	22	12
cSH	1117	1108	584	462
Volume to Capacity	0.01	0.01	0.04	0.04
Queue Length 95th (m)	0.3	0.2	1.1	1.0
Control Delay (s)	0.4	0.3	11.4	13.1
Lane LOS	A	A	B	B
Approach Delay (s)	0.4	0.3	11.4	13.1
Approach LOS			B	B

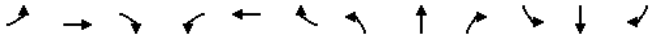
Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	40.2%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	28	7	5	13	5	7
Future Volume (Veh/h)	28	7	5	13	5	7
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)	30	8	5	14	5	8
Pedestrians				1	3	
Lane Width (m)				3.6	3.6	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			41		61	38
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			41		61	38
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)			1564		940	1030

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	38	19	13
Volume Left	0	5	5
Volume Right	8	0	8
cSH	1700	1564	994
Volume to Capacity	0.02	0.00	0.01
Queue Length 95th (m)	0.0	0.1	0.3
Control Delay (s)	0.0	1.9	8.7
Lane LOS		A	A
Approach Delay (s)	0.0	1.9	8.7
Approach LOS			A

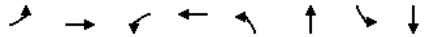
Intersection Summary				
Average Delay	2.1			
Intersection Capacity Utilization	15.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	391	25	63	400	5	1	2	16	7	4	3
Future Volume (Veh/h)	9	391	25	63	400	5	1	2	16	7	4	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	425	27	68	435	5	1	2	17	8	4	3
Pedestrians					6						8	
Lane Width (m)					3.6						3.6	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					1						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		199			100							
pX, platoon unblocked												
vC, conflicting volume	448			452			817	1042	232	838	1054	228
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	448			452			817	1042	232	838	1054	228
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			94			100	99	98	97	98	100
cM capacity (veh/h)	1101			1105			248	211	766	234	208	770

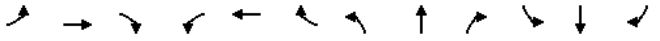
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	222	240	286	222	20	15
Volume Left	10	0	68	0	1	8
Volume Right	0	27	0	5	17	3
cSH	1101	1700	1105	1700	560	262
Volume to Capacity	0.01	0.14	0.06	0.13	0.04	0.06
Queue Length 95th (m)	0.2	0.0	1.6	0.0	0.9	1.5
Control Delay (s)	0.5	0.0	2.5	0.0	11.7	19.6
Lane LOS	A		A		B	C
Approach Delay (s)	0.2		1.4		11.7	19.6
Approach LOS					B	C

Intersection Summary						
Average Delay			1.3			
Intersection Capacity Utilization			40.1%	ICU Level of Service		A
Analysis Period (min)			15			



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	125	474	24	424	82	139	105	373
v/c Ratio	0.35	0.50	0.09	0.63	0.18	0.21	0.16	0.55
Control Delay	18.9	22.7	16.1	30.4	11.8	19.8	11.5	24.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.9	22.7	16.1	30.4	11.8	19.8	11.5	24.3
Queue Length 50th (m)	12.5	24.8	2.3	29.5	6.2	14.1	8.0	45.0
Queue Length 95th (m)	24.7	48.3	7.0	45.7	14.7	30.8	17.9	82.7
Internal Link Dist (m)		80.3		65.0		84.7		300.6
Turn Bay Length (m)	20.0		30.0		15.0		25.0	
Base Capacity (vph)	382	1630	347	1640	500	656	686	682
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.29	0.07	0.26	0.16	0.21	0.15	0.55

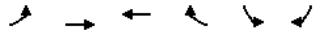
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	325	111	22	305	85	75	103	25	97	244	99
Future Volume (vph)	115	325	111	22	305	85	75	103	25	97	244	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		0.98	1.00	
Frt	1.00	0.96		1.00	0.97		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1759	3309		1482	3341		1680	1748		1746	1787	
Flt Permitted	0.34	1.00		0.48	1.00		0.41	1.00		0.66	1.00	
Satd. Flow (perm)	623	3309		750	3341		726	1748		1219	1787	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	353	121	24	332	92	82	112	27	105	265	108
RTOR Reduction (vph)	0	38	0	0	30	0	0	8	0	0	13	0
Lane Group Flow (vph)	125	436	0	24	394	0	82	131	0	105	360	0
Confl. Peds. (#/hr)	20		29	29		20	18		34	34		18
Heavy Vehicles (%)	2%	2%	5%	20%	4%	0%	7%	4%	6%	1%	1%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	26.8	20.3		18.2	15.7		33.2	27.3		33.6	27.5	
Effective Green, g (s)	26.8	20.3		18.2	15.7		33.2	27.3		33.6	27.5	
Actuated g/C Ratio	0.35	0.27		0.24	0.21		0.44	0.36		0.44	0.36	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	324	881		203	688		390	626		579	644	
v/s Ratio Prot	c0.04	c0.13		0.00	0.12		c0.02	0.08		0.01	c0.20	
v/s Ratio Perm	0.10			0.02			0.08			0.07		
v/c Ratio	0.39	0.49		0.12	0.57		0.21	0.21		0.18	0.56	
Uniform Delay, d1	17.6	23.6		22.4	27.2		13.1	17.0		12.7	19.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.4		0.3	1.2		0.3	0.8		0.2	3.5	
Delay (s)	18.3	24.1		22.7	28.4		13.3	17.7		12.8	23.0	
Level of Service	B	C		C	C		B	B		B	C	
Approach Delay (s)		22.9			28.1			16.1			20.8	
Approach LOS		C			C			B			C	

Intersection Summary				
HCM 2000 Control Delay	22.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.51			
Actuated Cycle Length (s)	76.2	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	59.8%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	14	94	124	58	173	59
Future Volume (Veh/h)	14	94	124	58	173	59
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)	15	102	135	63	188	64
Pedestrians		2			5	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			105			
pX, platoon unblocked						
vC, conflicting volume	203				304	174
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	203				304	174
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				72	93
cM capacity (veh/h)	1363				678	865

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	117	198	252
Volume Left	15	0	188
Volume Right	0	63	64
cSH	1363	1700	717
Volume to Capacity	0.01	0.12	0.35
Queue Length 95th (m)	0.3	0.0	12.7
Control Delay (s)	1.1	0.0	12.7
Lane LOS	A		B
Approach Delay (s)	1.1	0.0	12.7
Approach LOS			B

Intersection Summary			
Average Delay	5.9		
Intersection Capacity Utilization	36.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	286	195	324	202	2243	2232
v/c Ratio	0.75	1.07	0.74	0.99	0.95	1.14
Control Delay	37.5	137.0	62.0	101.1	33.3	101.3
Queue Delay	0.0	0.0	0.0	0.0	44.1	0.0
Total Delay	37.5	137.0	62.0	101.1	77.4	101.3
Queue Length 50th (m)	41.1	~66.9	91.9	47.0	315.4	~429.0
Queue Length 95th (m)	81.4	#120.1	129.6	#102.0	#368.3	#470.5
Internal Link Dist (m)	111.7		232.7		189.4	97.3
Turn Bay Length (m)				50.0		
Base Capacity (vph)	380	183	435	205	2359	1959
Starvation Cap Reductn	0	0	0	0	425	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.75	1.07	0.74	0.99	1.16	1.14

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	0	233	179	137	161	186	2064	0	0	2035	18
Future Volume (vph)	30	0	233	179	137	161	186	2064	0	0	2035	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		3.0	6.0			6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95			0.95	
Frpb, ped/bikes		0.99		1.00	0.98		1.00	1.00			1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00			1.00	
Frt		0.88		1.00	0.92		1.00	1.00			1.00	
Flt Protected		0.99		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)		1614		1768	1696		1770	3539			3497	
Flt Permitted		0.65		0.39	1.00		0.05	1.00			1.00	
Satd. Flow (perm)		1060		726	1696		86	3539			3497	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	0	253	195	149	175	202	2243	0	0	2212	20
RTOR Reduction (vph)	0	112	0	0	6	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	174	0	195	318	0	202	2243	0	0	2232	0
Confl. Peds. (#/hr)	9		1	1		9	27		56	56		27
Heavy Vehicles (%)	0%	0%	2%	2%	0%	2%	2%	2%	0%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA			NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2					
Actuated Green, G (s)		38.0		38.0	38.0		100.0	100.0			84.0	
Effective Green, g (s)		38.0		38.0	38.0		100.0	100.0			84.0	
Actuated g/C Ratio		0.25		0.25	0.25		0.67	0.67			0.56	
Clearance Time (s)		6.0		6.0	6.0		3.0	6.0			6.0	
Lane Grp Cap (vph)		268		183	429		203	2359			1958	
v/s Ratio Prot					0.19		c0.09	0.63			c0.64	
v/s Ratio Perm		0.16		c0.27			0.58					
v/c Ratio		0.65		1.07	0.74		1.00	0.95			1.14	
Uniform Delay, d1		50.0		56.0	51.5		54.1	22.8			33.0	
Progression Factor		1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2		11.6		85.0	11.0		61.9	10.1			69.6	
Delay (s)		61.6		141.0	62.5		116.0	32.9			102.6	
Level of Service		E		F	E		F	C			F	
Approach Delay (s)		61.6			92.0			39.8			102.6	
Approach LOS		E			F			D			F	

Intersection Summary

HCM 2000 Control Delay	71.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	119.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	1179	421	265	1702	353	1108
v/c Ratio	1.16	0.78	0.89	1.13	1.07	0.50
Control Delay	127.6	54.9	76.3	104.9	114.4	16.6
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.9
Total Delay	127.6	54.9	76.3	105.0	114.4	17.4
Queue Length 50th (m)	~223.8	111.7	63.4	~322.2	~104.9	95.4
Queue Length 95th (m)	#267.6	155.2	#116.0	#366.8	#171.4	112.4
Internal Link Dist (m)		345.6		232.0		189.4
Turn Bay Length (m)					115.0	
Base Capacity (vph)	1020	542	299	1508	329	2238
Starvation Cap Reductn	0	0	0	47	0	764
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.16	0.78	0.89	1.16	1.07	0.75

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1085	190	197	0	0	244	0	1260	305	325	1019	0
Future Volume (vph)	1085	190	197	0	0	244	0	1260	305	325	1019	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0				3.0		6.0		3.0	6.0	
Lane Util. Factor	0.97	1.00				1.00		0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99				1.00		0.97		1.00	1.00	
Flpb, ped/bikes	1.00	1.00				1.00		1.00		1.00	1.00	
Frt	1.00	0.92				0.86		0.97		1.00	1.00	
Flt Protected	0.95	1.00				1.00		1.00		0.95	1.00	
Satd. Flow (prot)	3400	1725				1596		3343		1805	3610	
Flt Permitted	0.95	1.00				1.00		1.00		0.06	1.00	
Satd. Flow (perm)	3400	1725				1596		3343		109	3610	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1179	207	214	0	0	265	0	1370	332	353	1108	0
RTOR Reduction (vph)	0	25	0	0	0	55	0	14	0	0	0	0
Lane Group Flow (vph)	1179	397	0	0	0	210	0	1688	0	353	1108	0
Confl. Peds. (#/hr)			1	1			24		29	29		24
Heavy Vehicles (%)	3%	2%	0%	0%	2%	3%	3%	2%	2%	0%	0%	2%
Turn Type	Perm	NA				Over		NA		pm+pt	NA	
Protected Phases		4				1		2		1	6	
Permitted Phases	4									6		
Actuated Green, G (s)	45.0	45.0				23.0		67.0		93.0	93.0	
Effective Green, g (s)	45.0	45.0				23.0		67.0		93.0	93.0	
Actuated g/C Ratio	0.30	0.30				0.15		0.45		0.62	0.62	
Clearance Time (s)	6.0	6.0				3.0		6.0		3.0	6.0	
Vehicle Extension (s)	3.0	3.0				3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	1020	517				244		1493		327	2238	
v/s Ratio Prot		0.23				0.13		c0.50		c0.17	0.31	
v/s Ratio Perm	c0.35									0.50		
v/c Ratio	1.16	0.77				0.86		1.13		1.08	0.50	
Uniform Delay, d1	52.5	47.7				61.9		41.5		52.6	15.6	
Progression Factor	1.00	1.00				1.00		1.00		1.00	1.00	
Incremental Delay, d2	81.4	6.7				25.2		67.7		72.6	0.8	
Delay (s)	133.9	54.5				87.1		109.2		125.2	16.4	
Level of Service	F	D				F		F		F	B	
Approach Delay (s)		113.0			87.1			109.2			42.7	
Approach LOS		F			F			F			D	

Intersection Summary

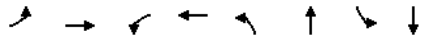
HCM 2000 Control Delay	89.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	107.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	279	25	417	316	0	0
Future Volume (Veh/h)	279	25	417	316	0	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)	303	27	453	343	0	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)			239			
pX, platoon unblocked	0.92	0.92			0.92	
vC, conflicting volume	624	624			796	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	552	552			737	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	34	95			100	
cM capacity (veh/h)	457	493			802	

Direction, Lane #	WB 1	NB 1
Volume Total	330	796
Volume Left	303	0
Volume Right	27	343
cSH	460	1700
Volume to Capacity	0.72	0.47
Queue Length 95th (m)	45.3	0.0
Control Delay (s)	30.3	0.0
Lane LOS	D	
Approach Delay (s)	30.3	0.0
Approach LOS	D	

Intersection Summary				
Average Delay		8.9		
Intersection Capacity Utilization		64.9%	ICU Level of Service	C
Analysis Period (min)		15		



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	210	129	128	367	60	1340	233	1342
v/c Ratio	0.80	0.20	0.46	0.85	0.58	0.98	0.97	0.75
Control Delay	45.9	19.1	39.3	49.2	49.8	50.0	76.2	21.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.9	19.1	39.3	49.2	49.8	50.0	76.2	21.7
Queue Length 50th (m)	29.6	14.7	22.5	59.5	9.4	113.2	30.5	105.5
Queue Length 95th (m)	#56.4	28.3	41.4	#109.9	m12.7	#182.9	#80.0	133.4
Internal Link Dist (m)		81.6		331.6		133.3		232.0
Turn Bay Length (m)	20.0		30.0		30.0		50.0	
Base Capacity (vph)	264	659	281	433	103	1371	239	1786
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.20	0.46	0.85	0.58	0.98	0.97	0.75

Intersection Summary

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

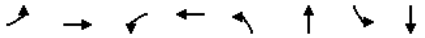
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	193	86	33	118	137	201	55	1122	110	214	1020	214
Future Volume (vph)	193	86	33	118	137	201	55	1122	110	214	1020	214
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.91		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1803	1793		1728	1657		1793	3495		1787	3402	
Flt Permitted	0.19	1.00		0.67	1.00		0.14	1.00		0.09	1.00	
Satd. Flow (perm)	354	1793		1227	1657		266	3495		175	3402	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	210	93	36	128	149	218	60	1220	120	233	1109	233
RTOR Reduction (vph)	0	14	0	0	52	0	0	7	0	0	18	0
Lane Group Flow (vph)	210	115	0	128	315	0	60	1333	0	233	1324	0
Confl. Peds. (#/hr)	15		10	10		15	24		18	18		24
Heavy Vehicles (%)	0%	1%	0%	3%	1%	3%	0%	1%	4%	1%	2%	1%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	36.0	36.0		23.0	23.0		39.0	39.0		52.0	52.0	
Effective Green, g (s)	36.0	36.0		23.0	23.0		39.0	39.0		52.0	52.0	
Actuated g/C Ratio	0.36	0.36		0.23	0.23		0.39	0.39		0.52	0.52	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	257	645		282	381		103	1363		236	1769	
v/s Ratio Prot	c0.07	0.06			0.19			0.38		c0.09	0.39	
v/s Ratio Perm	c0.22			0.10			0.23			c0.42		
v/c Ratio	0.82	0.18		0.45	0.83		0.58	0.98		0.99	0.75	
Uniform Delay, d1	25.2	21.9		33.1	36.6		24.1	30.1		27.6	18.9	
Progression Factor	1.00	1.00		1.00	1.00		1.28	1.18		1.00	1.00	
Incremental Delay, d2	24.2	0.6		5.2	18.2		13.8	14.4		55.4	3.0	
Delay (s)	49.3	22.5		38.3	54.8		44.7	50.1		83.0	21.8	
Level of Service	D	C		D	D		D	D		F	C	
Approach Delay (s)		39.1			50.5			49.8			30.9	
Approach LOS		D			D			D			C	

Intersection Summary				
HCM 2000 Control Delay	41.1	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.98			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	94.3%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	5	4	1183	973	21
Future Volume (Veh/h)	12	5	4	1183	973	21
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)	13	5	4	1286	1058	23
Pedestrians	9					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				229	157	
pX, platoon unblocked	0.86	0.74	0.74			
vC, conflicting volume	1730	550	1090			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	250	0	414			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	99	100			
cM capacity (veh/h)	609	795	837			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	18	433	857	705	376
Volume Left	13	4	0	0	0
Volume Right	5	0	0	0	23
cSH	651	837	1700	1700	1700
Volume to Capacity	0.03	0.00	0.50	0.41	0.22
Queue Length 95th (m)	0.7	0.1	0.0	0.0	0.0
Control Delay (s)	10.7	0.1	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	10.7	0.0		0.0	
Approach LOS	B				

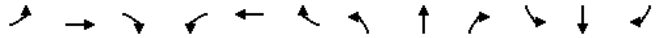
Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	45.5%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	351	448	36	397	43	955	107	1051
v/c Ratio	0.83	0.52	0.14	0.83	0.41	0.85	0.63	0.75
Control Delay	37.0	21.0	30.4	50.3	41.1	40.2	40.0	29.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.0	21.0	30.4	50.3	41.1	40.2	40.0	29.4
Queue Length 50th (m)	43.7	61.0	5.7	74.3	6.8	94.8	12.1	73.0
Queue Length 95th (m)	#90.3	90.1	14.3	#124.7	19.1	#122.4	m21.2	96.6
Internal Link Dist (m)		76.2		327.8		194.7		204.9
Turn Bay Length (m)			30.0		20.0		20.0	
Base Capacity (vph)	421	865	249	478	104	1126	170	1409
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.52	0.14	0.83	0.41	0.85	0.63	0.75

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	323	376	36	33	293	73	40	851	28	98	752	215
Future Volume (vph)	323	376	36	33	293	73	40	851	28	98	752	215
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1835		1805	1808		1744	3514		1805	3372	
Flt Permitted	0.19	1.00		0.50	1.00		0.18	1.00		0.11	1.00	
Satd. Flow (perm)	366	1835		957	1808		326	3514		211	3372	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	351	409	39	36	318	79	43	925	30	107	817	234
RTOR Reduction (vph)	0	3	0	0	9	0	0	2	0	0	27	0
Lane Group Flow (vph)	351	445	0	36	388	0	43	953	0	107	1024	0
Confl. Peds. (#/hr)	27					27	17		28	28		17
Heavy Vehicles (%)	1%	2%	4%	0%	1%	0%	3%	2%	0%	0%	3%	1%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	47.0	47.0		26.0	26.0		32.0	32.0		41.0	41.0	
Effective Green, g (s)	47.0	47.0		26.0	26.0		32.0	32.0		41.0	41.0	
Actuated g/C Ratio	0.47	0.47		0.26	0.26		0.32	0.32		0.41	0.41	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	413	862		248	470		104	1124		166	1382	
v/s Ratio Prot	c0.14	0.24			0.21			c0.27		0.03	c0.30	
v/s Ratio Perm	c0.25			0.04			0.13			0.23		
v/c Ratio	0.85	0.52		0.15	0.83		0.41	0.85		0.64	0.74	
Uniform Delay, d1	20.3	18.5		28.5	34.9		26.6	31.7		22.0	25.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.46	1.10	
Incremental Delay, d2	19.2	2.2		1.2	15.2		11.7	8.0		13.8	2.8	
Delay (s)	39.5	20.7		29.7	50.1		38.3	39.7		46.0	30.2	
Level of Service	D	C		C	D		D	D		D	C	
Approach Delay (s)		29.0			48.4			39.7			31.7	
Approach LOS		C			D			D			C	

Intersection Summary

HCM 2000 Control Delay		35.5	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio		0.89				
Actuated Cycle Length (s)		100.0	Sum of lost time (s)		20.0	
Intersection Capacity Utilization		88.8%	ICU Level of Service		E	
Analysis Period (min)		15				

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	12	3	192	9	4	216
Future Volume (Veh/h)	12	3	192	9	4	216
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)	13	3	209	10	4	235
Pedestrians			3			2
Lane Width (m)			3.6			3.6
Walking Speed (m/s)			1.2			1.2
Percent Blockage			0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			212			
pX, platoon unblocked						
vC, conflicting volume	460	216			219	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	460	216			219	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	100			100	
cM capacity (veh/h)	556	822			1350	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	16	219	239
Volume Left	13	0	4
Volume Right	3	10	0
cSH	592	1700	1350
Volume to Capacity	0.03	0.13	0.00
Queue Length 95th (m)	0.7	0.0	0.1
Control Delay (s)	11.2	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	11.2	0.0	0.2
Approach LOS	B		

Intersection Summary				
Average Delay		0.5		
Intersection Capacity Utilization		25.2%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	147	575	161	413	215	267
v/c Ratio	0.44	0.76	0.81	0.55	0.32	0.39
Control Delay	15.5	20.2	44.6	14.6	10.9	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.5	20.2	44.6	14.6	10.9	9.6
Queue Length 50th (m)	9.9	45.6	13.2	29.4	9.1	8.9
Queue Length 95th (m)	22.1	74.8	#42.0	49.0	28.2	30.2
Internal Link Dist (m)		153.7		76.4	185.8	188.3
Turn Bay Length (m)	25.0		20.0			
Base Capacity (vph)	769	1749	463	1736	677	690
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.33	0.35	0.24	0.32	0.39

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

HCM Signalized Intersection Capacity Analysis
8: Toronto St & Wellington St

2031 Total PM Peak
(200669) - 10-24 Grove

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	517	12	148	377	3	5	83	110	4	73	169
Future Volume (vph)	135	517	12	148	377	3	5	83	110	4	73	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.92			0.91	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1804	1893		1803	1879			1731			1670	
Flt Permitted	0.44	1.00		0.26	1.00			0.99			1.00	
Satd. Flow (perm)	833	1893		500	1879			1718			1663	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	147	562	13	161	410	3	5	90	120	4	79	184
RTOR Reduction (vph)	0	2	0	0	1	0	0	47	0	0	83	0
Lane Group Flow (vph)	147	573	0	161	412	0	0	168	0	0	184	0
Confl. Peds. (#/hr)	1		2	2		1	10		3	3		10
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	21.0	21.0		21.0	21.0			19.2			19.2	
Effective Green, g (s)	21.0	21.0		21.0	21.0			19.2			19.2	
Actuated g/C Ratio	0.40	0.40		0.40	0.40			0.37			0.37	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	335	761		201	755			631			611	
v/s Ratio Prot		0.30			0.22							
v/s Ratio Perm	0.18			c0.32				0.10			c0.11	
v/c Ratio	0.44	0.75		0.80	0.55			0.27			0.30	
Uniform Delay, d1	11.3	13.4		13.8	12.0			11.6			11.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.9	4.2		20.0	0.8			1.0			1.3	
Delay (s)	12.2	17.6		33.8	12.8			12.6			13.0	
Level of Service	B	B		C	B			B			B	
Approach Delay (s)		16.5			18.7			12.6			13.0	
Approach LOS		B			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.56			
Actuated Cycle Length (s)	52.2	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	68.1%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

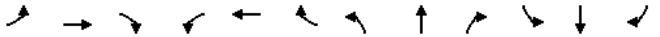
HCM Unsignalized Intersection Capacity Analysis
9: Mary St & Dalton St

2031 Total PM Peak
(200669) - 10-24 Grove

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	13	1	5	20	8	5
Future Volume (Veh/h)	13	1	5	20	8	5
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)	14	1	5	22	9	5
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			16		48	16
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			16		48	16
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)			1600		958	1063

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	15	27	14
Volume Left	0	5	9
Volume Right	1	0	5
cSH	1700	1600	993
Volume to Capacity	0.01	0.00	0.01
Queue Length 95th (m)	0.0	0.1	0.3
Control Delay (s)	0.0	1.4	8.7
Lane LOS		A	A
Approach Delay (s)	0.0	1.4	8.7
Approach LOS			A

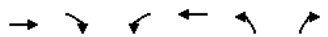
Intersection Summary				
Average Delay	2.8			
Intersection Capacity Utilization	15.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	628	4	4	492	3	3	3	19	1	0	1
Future Volume (Veh/h)	4	628	4	4	492	3	3	3	19	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	683	4	4	535	3	3	3	21	1	0	1
Pedestrians		1			1						3	
Lane Width (m)		3.6			3.6						3.6	
Walking Speed (m/s)		1.2			1.2						1.2	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		100			199							
pX, platoon unblocked	0.86			0.72			0.80	0.80	0.72	0.80	0.80	0.86
vC, conflicting volume	541			687			1240	1242	686	1264	1242	540
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	383			379			772	775	377	803	776	382
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	99	96	100	100	100
cM capacity (veh/h)	1007			855			249	259	485	225	259	569

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	691	542	27	2
Volume Left	4	4	3	1
Volume Right	4	3	21	1
cSH	1007	855	403	323
Volume to Capacity	0.00	0.00	0.07	0.01
Queue Length 95th (m)	0.1	0.1	1.7	0.1
Control Delay (s)	0.1	0.1	14.6	16.2
Lane LOS	A	A	B	C
Approach Delay (s)	0.1	0.1	14.6	16.2
Approach LOS			B	C

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	46.2%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	21	4	3	21	4	5
Future Volume (Veh/h)	21	4	3	21	4	5
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)	23	4	3	23	4	5
Pedestrians					9	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			36		63	34
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			36		63	34
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)			1563		934	1031

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	27	26	9
Volume Left	0	3	4
Volume Right	4	0	5
cSH	1700	1563	986
Volume to Capacity	0.02	0.00	0.01
Queue Length 95th (m)	0.0	0.0	0.2
Control Delay (s)	0.0	0.9	8.7
Lane LOS		A	A
Approach Delay (s)	0.0	0.9	8.7
Approach LOS			A

Intersection Summary				
Average Delay	1.6			
Intersection Capacity Utilization	15.9%	ICU Level of Service	A	
Analysis Period (min)	15			

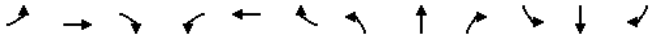
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	617	7	22	462	4	15	1	60	3	5	7
Future Volume (Veh/h)	9	617	7	22	462	4	15	1	60	3	5	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	671	8	24	502	4	16	1	65	3	5	8
Pedestrians					5						2	
Lane Width (m)					3.6						3.6	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		199			100							
pX, platoon unblocked												
vC, conflicting volume	508			679			1004	1251	344	980	1253	255
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	508			679			1004	1251	344	980	1253	255
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			91	99	90	98	97	99
cM capacity (veh/h)	1051			909			184	165	649	177	164	743

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	346	344	275	255	82	16
Volume Left	10	0	24	0	16	3
Volume Right	0	8	0	4	65	8
cSH	1051	1700	909	1700	424	275
Volume to Capacity	0.01	0.20	0.03	0.15	0.19	0.06
Queue Length 95th (m)	0.2	0.0	0.7	0.0	5.7	1.5
Control Delay (s)	0.3	0.0	1.0	0.0	15.5	18.9
Lane LOS	A		A		C	C
Approach Delay (s)	0.2		0.5		15.5	18.9
Approach LOS					C	C

Intersection Summary					
Average Delay	1.5				
Intersection Capacity Utilization	43.4%	ICU Level of Service		A	
Analysis Period (min)	15				

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	279	724	14	608	226	368	139	305
v/c Ratio	0.83	0.56	0.05	0.74	0.50	0.62	0.35	0.55
Control Delay	39.7	22.6	14.7	33.5	18.4	31.4	16.1	28.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.7	22.6	14.7	33.5	18.4	31.4	16.1	28.1
Queue Length 50th (m)	32.3	46.6	1.4	47.0	21.4	52.5	12.4	39.3
Queue Length 95th (m)	#61.1	77.2	4.7	65.1	42.7	94.5	27.1	73.5
Internal Link Dist (m)		80.3		65.0		84.7		300.6
Turn Bay Length (m)	20.0		30.0		15.0		25.0	
Base Capacity (vph)	338	1408	387	1385	464	595	428	556
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.51	0.04	0.44	0.49	0.62	0.32	0.55

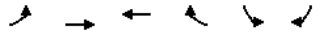
Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	257	526	140	13	414	145	208	311	28	128	181	99
Future Volume (vph)	257	526	140	13	414	145	208	311	28	128	181	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	0.99		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	3430		1798	3398		1760	1873		1783	1763	
Flt Permitted	0.23	1.00		0.37	1.00		0.41	1.00		0.36	1.00	
Satd. Flow (perm)	434	3430		697	3398		763	1873		670	1763	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	279	572	152	14	450	158	226	338	30	139	197	108
RTOR Reduction (vph)	0	23	0	0	39	0	0	3	0	0	19	0
Lane Group Flow (vph)	279	701	0	14	569	0	226	365	0	139	286	0
Confl. Peds. (#/hr)	9		13	13		9	18		10	10		18
Heavy Vehicles (%)	1%	0%	4%	0%	1%	1%	2%	0%	0%	1%	1%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	37.0	31.8		24.2	23.0		36.7	27.1		34.9	26.2	
Effective Green, g (s)	37.0	31.8		24.2	23.0		36.7	27.1		34.9	26.2	
Actuated g/C Ratio	0.42	0.36		0.27	0.26		0.41	0.31		0.39	0.30	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	332	1228		204	880		423	571		372	520	
v/s Ratio Prot	c0.09	0.20		0.00	0.17		c0.06	c0.20		0.04	0.16	
v/s Ratio Perm	c0.25			0.02			0.16			0.11		
v/c Ratio	0.84	0.57		0.07	0.65		0.53	0.64		0.37	0.55	
Uniform Delay, d1	19.2	23.0		23.7	29.3		18.0	26.6		18.3	26.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	17.1	0.6		0.1	1.6		1.3	5.4		0.6	4.1	
Delay (s)	36.3	23.6		23.8	30.9		19.3	32.0		18.9	30.5	
Level of Service	D	C		C	C		B	C		B	C	
Approach Delay (s)		27.2			30.8			27.2			26.9	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	28.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.76			
Actuated Cycle Length (s)	88.8	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	74.9%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	51	171	215	164	100	39
Future Volume (Veh/h)	51	171	215	164	100	39
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)	55	186	234	178	109	42
Pedestrians		2			5	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			105			
pX, platoon unblocked						
vC, conflicting volume	417				624	330
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	417				624	330
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				74	94
cM capacity (veh/h)	1137				426	707

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	241	412	151
Volume Left	55	0	109
Volume Right	0	178	42
cSH	1137	1700	479
Volume to Capacity	0.05	0.24	0.32
Queue Length 95th (m)	1.2	0.0	10.7
Control Delay (s)	2.2	0.0	15.9
Lane LOS	A		C
Approach Delay (s)	2.2	0.0	15.9
Approach LOS			C

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	51.7%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix H

2036 Future Road Network Update

PRELIMINARY

STA: 13+000

STA: 10+000

RETAINING WALL

CURB AND GUTTER

RAMP W-S

NOISE BARRIER

RETAINING WALL

HWY 400 SB

HWY 400 NB

RAMP S-E/W

RETAINING WALL

CURB AND GUTTER

MATCH EXISTING

COULTER STREET

HOT 13+499.67 HWY 400
= HOT 10+000.00 BAYFIELD ST

RETAINING WALLS

BAYFIELD STREET

MATCH EXISTING

RAMP N-E/W

NOISE BARRIER

STA: 10+350

RAMP E-S

SITE 30-172

STA: 13+650

STA: 9+850

RAMP E/W-N

NOISE BARRIER

ROSE STREET

TORONTO STREET

GROVE STREET WEST

CITY OF BARRIE
COUNTY OF SIMCOE

BAYFIELD STREET

MATCH EXISTING

LEGEND

- EXISTING HIGHWAY 400 RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- 2004 EA RIGHT-OF-WAY
- 2017 PROPOSED ADDITIONAL RIGHT-OF-WAY
- NEW OR REPLACEMENT TRAFFIC SIGNALS

Ontario
Ministry of Transportation

AECOM

HIGHWAY 400
HIGHWAY 89 TO JUNCTION AT HIGHWAY 11
W.O. 06-20016

KEY MAP

HIGHWAY 400
RECOMMENDED PLAN
STATION 13+000 TO STATION 13+650

SCALE
25m 0m 50m

PLATE
38

Appendix I

2036 Background Traffic Operations Reports

Lane Group	EBL	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	28	322	278	230	147	1732	1925
v/c Ratio	0.18	0.82	0.83	0.72	0.77	0.49	0.95
Control Delay	37.7	43.0	61.1	46.1	45.1	8.6	31.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.7	43.0	61.1	46.1	45.1	8.6	31.6
Queue Length 50th (m)	4.8	40.7	55.1	37.9	21.0	45.7	180.4
Queue Length 95th (m)	13.2	#87.2	#99.0	#71.4	m28.6	54.6	#249.3
Internal Link Dist (m)				232.7		69.6	97.3
Turn Bay Length (m)					65.0		
Base Capacity (vph)	152	391	334	321	191	3508	2028
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	0.18	0.82	0.83	0.72	0.77	0.49	0.95

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	0	296	256	62	150	135	1593	0	0	1756	15
Future Volume (vph)	26	0	296	256	62	150	135	1593	0	0	1756	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0		4.5	6.0			6.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.91			0.95	
Frpb, ped/bikes	1.00		0.98	1.00	0.99		1.00	1.00			1.00	
Flpb, ped/bikes	0.99		1.00	0.99	1.00		1.00	1.00			1.00	
Frt	1.00		0.85	1.00	0.89		1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1796		1554	1758	1546		1770	5085			3495	
Flt Permitted	0.43		1.00	0.95	1.00		0.06	1.00			1.00	
Satd. Flow (perm)	804		1554	1758	1546		119	5085			3495	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	0	322	278	67	163	147	1732	0	0	1909	16
RTOR Reduction (vph)	0	0	96	0	28	0	0	0	0	0	0	0
Lane Group Flow (vph)	28	0	226	278	202	0	147	1732	0	0	1925	0
Confl. Peds. (#/hr)	5		4	4		5	27		20	20		27
Heavy Vehicles (%)	0%	0%	2%	2%	4%	10%	2%	2%	2%	0%	3%	13%
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2					
Actuated Green, G (s)	19.0		19.0	19.0	19.0		69.0	69.0			58.0	
Effective Green, g (s)	19.0		19.0	19.0	19.0		69.0	69.0			58.0	
Actuated g/C Ratio	0.19		0.19	0.19	0.19		0.69	0.69			0.58	
Clearance Time (s)	6.0		6.0	6.0	6.0		4.5	6.0			6.0	
Lane Grp Cap (vph)	152		295	334	293		189	3508			2027	
v/s Ratio Prot					0.13		c0.05	0.34			c0.55	
v/s Ratio Perm	0.03		0.15	c0.16			0.48					
v/c Ratio	0.18		0.76	0.83	0.69		0.78	0.49			0.95	
Uniform Delay, d1	34.0		38.4	39.0	37.8		26.3	7.3			19.6	
Progression Factor	1.00		1.00	1.00	1.00		1.85	1.13			1.00	
Incremental Delay, d2	2.7		17.1	20.9	12.6		16.0	0.3			11.2	
Delay (s)	36.6		55.5	59.9	50.4		64.6	8.5			30.8	
Level of Service	D		E	E	D		E	A			C	
Approach Delay (s)		54.0			55.6			12.9			30.8	
Approach LOS		D			E			B			C	

Intersection Summary

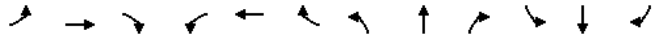
HCM 2000 Control Delay	28.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	97.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	958	472	1111	137	366	1039
v/c Ratio	0.83	0.80	0.80	0.29	0.80	0.36
Control Delay	37.8	35.9	45.9	20.9	32.7	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.8	35.9	45.9	20.9	32.7	18.6
Queue Length 50th (m)	91.5	70.3	73.1	6.0	61.1	51.6
Queue Length 95th (m)	117.5	#123.2	m89.5	m18.7	m67.9	m57.7
Internal Link Dist (m)			104.6			96.2
Turn Bay Length (m)				30.0	90.0	
Base Capacity (vph)	1150	589	1396	476	455	2852
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.80	0.80	0.29	0.80	0.36

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	881	0	434	0	0	0	0	1022	126	337	956	0
Future Volume (vph)	881	0	434	0	0	0	0	1022	126	337	956	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		6.0					6.0	6.0	6.0	6.0	
Lane Util. Factor	0.97		1.00					0.91	1.00	1.00	0.91	
Frpb, ped/bikes	1.00		0.98					1.00	0.91	1.00	1.00	
Flpb, ped/bikes	1.00		1.00					1.00	1.00	1.00	1.00	
Frt	1.00		0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3335		1588					4988	1448	1805	5187	
Flt Permitted	0.95		1.00					1.00	1.00	0.12	1.00	
Satd. Flow (perm)	3335		1588					4988	1448	224	5187	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	958	0	472	0	0	0	0	1111	137	366	1039	0
RTOR Reduction (vph)	0	0	66	0	0	0	0	0	71	0	0	0
Lane Group Flow (vph)	958	0	406	0	0	0	0	1111	66	366	1039	0
Confl. Peds. (#/hr)			3	3			29		24	24		29
Heavy Vehicles (%)	5%	4%	0%	0%	4%	20%	8%	4%	2%	0%	0%	1%
Turn Type	Prot		Perm					NA	Perm	pm+pt	NA	
Protected Phases	7							2		1	6	
Permitted Phases			4						2	6		
Actuated Green, G (s)	34.5		33.0					28.0	28.0	55.0	55.0	
Effective Green, g (s)	34.5		33.0					28.0	28.0	55.0	55.0	
Actuated g/C Ratio	0.34		0.33					0.28	0.28	0.55	0.55	
Clearance Time (s)	4.5		6.0					6.0	6.0	6.0	6.0	
Lane Grp Cap (vph)	1150		524					1396	405	455	2852	
v/s Ratio Prot	c0.29							0.22		c0.17	0.20	
v/s Ratio Perm			0.26						0.05	c0.27		
v/c Ratio	0.83		0.78					0.80	0.16	0.80	0.36	
Uniform Delay, d1	30.1		30.2					33.4	27.2	24.8	12.7	
Progression Factor	1.00		1.00					1.27	1.99	1.15	1.45	
Incremental Delay, d2	7.1		10.7					3.1	0.6	5.8	0.1	
Delay (s)	37.2		40.9					45.5	54.5	34.2	18.5	
Level of Service	D		D					D	D	C	B	
Approach Delay (s)		38.4			0.0			46.5			22.6	
Approach LOS		D			A			D			C	

Intersection Summary

HCM 2000 Control Delay	35.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	190	136	64	456	17	795	290	1467
v/c Ratio	0.92	0.21	0.22	0.73	0.25	0.73	0.77	0.83
Control Delay	70.5	17.9	32.2	19.3	40.1	34.9	30.5	25.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.5	17.9	32.2	19.3	40.1	34.9	30.5	25.1
Queue Length 50th (m)	26.3	14.6	10.4	28.1	2.6	66.8	25.1	162.4
Queue Length 95th (m)	#64.6	28.4	22.2	67.4	m6.5	89.1	m#50.4	187.1
Internal Link Dist (m)		81.6		331.6		133.3		100.6
Turn Bay Length (m)	20.0		30.0		30.0		50.0	
Base Capacity (vph)	207	658	294	625	68	1091	378	1778
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.21	0.22	0.73	0.25	0.73	0.77	0.83

Intersection Summary

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

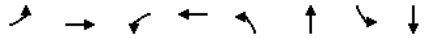
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	67	58	59	58	362	16	686	45	267	1231	119
Future Volume (vph)	175	67	58	59	58	362	16	686	45	267	1231	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	6.0		6.0	6.0		6.0	6.0		4.5	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	0.87		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1730		1671	1603		1633	3395		1787	3472	
Flt Permitted	0.14	1.00		0.67	1.00		0.12	1.00		0.17	1.00	
Satd. Flow (perm)	248	1730		1178	1603		215	3395		315	3472	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	190	73	63	64	63	393	17	746	49	290	1338	129
RTOR Reduction (vph)	0	18	0	0	224	0	0	5	0	0	7	0
Lane Group Flow (vph)	190	118	0	64	232	0	17	790	0	290	1460	0
Confl. Peds. (#/hr)	7		7	7		7	21		14	14		21
Heavy Vehicles (%)	4%	2%	0%	7%	2%	1%	10%	4%	20%	1%	2%	1%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	37.0	37.0		25.0	25.0		32.0	32.0		51.0	51.0	
Effective Green, g (s)	37.0	37.0		25.0	25.0		32.0	32.0		51.0	51.0	
Actuated g/C Ratio	0.37	0.37		0.25	0.25		0.32	0.32		0.51	0.51	
Clearance Time (s)	4.5	6.0		6.0	6.0		6.0	6.0		4.5	6.0	
Lane Grp Cap (vph)	203	640		294	400		68	1086		374	1770	
v/s Ratio Prot	c0.07	0.07			0.14			0.23		0.11	c0.42	
v/s Ratio Perm	c0.28			0.05			0.08			0.28		
v/c Ratio	0.94	0.18		0.22	0.58		0.25	0.73		0.78	0.82	
Uniform Delay, d1	26.2	21.3		29.7	32.9		25.1	30.1		17.6	20.7	
Progression Factor	1.00	1.00		1.00	1.00		1.16	1.02		1.05	1.00	
Incremental Delay, d2	48.4	0.6		1.7	6.0		7.9	3.9		13.5	4.2	
Delay (s)	74.6	21.9		31.4	38.9		36.9	34.8		31.9	24.9	
Level of Service	E	C		C	D		D	C		C	C	
Approach Delay (s)		52.6			38.0			34.8			26.0	
Approach LOS		D			D			C			C	

Intersection Summary					
HCM 2000 Control Delay	32.5	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.95				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	21.0		
Intersection Capacity Utilization	96.6%	ICU Level of Service	F		
Analysis Period (min)	15				
c Critical Lane Group					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	31	13	4	615	1146	19
Future Volume (Veh/h)	31	13	4	615	1146	19
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)	34	14	4	668	1246	21
Pedestrians	8				1	
Lane Width (m)	3.6				3.6	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	1				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				229	157	
pX, platoon unblocked	0.69	0.66	0.66			
vC, conflicting volume	1608	642	1275			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	604	0	405			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	88	98	99			
cM capacity (veh/h)	295	716	760			

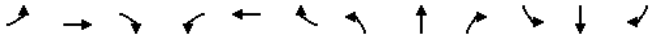
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	48	227	445	831	436
Volume Left	34	4	0	0	0
Volume Right	14	0	0	0	21
cSH	356	760	1700	1700	1700
Volume to Capacity	0.13	0.01	0.26	0.49	0.26
Queue Length 95th (m)	3.7	0.1	0.0	0.0	0.0
Control Delay (s)	16.7	0.2	0.0	0.0	0.0
Lane LOS	C	A			
Approach Delay (s)	16.7	0.1		0.0	
Approach LOS	C				

Intersection Summary			
Average Delay		0.4	
Intersection Capacity Utilization		42.3%	ICU Level of Service A
Analysis Period (min)		15	



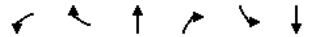
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	233	312	52	337	13	529	84	1378
v/c Ratio	0.79	0.45	0.18	0.69	0.16	0.40	0.20	0.80
Control Delay	43.2	24.8	30.2	40.1	25.9	22.9	14.3	20.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.2	24.8	30.2	40.1	25.9	22.9	14.3	20.1
Queue Length 50th (m)	32.3	44.8	8.2	59.7	1.7	39.8	6.7	66.7
Queue Length 95th (m)	#64.4	69.6	18.5	91.6	6.8	54.2	m11.2	94.7
Internal Link Dist (m)		76.2		327.8		194.7		204.9
Turn Bay Length (m)			30.0		20.0		20.0	
Base Capacity (vph)	296	687	283	488	82	1315	419	1722
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.45	0.18	0.69	0.16	0.40	0.20	0.80

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	214	235	52	48	253	57	12	459	28	77	979	289
Future Volume (vph)	214	235	52	48	253	57	12	459	28	77	979	289
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.97		1.00	0.97		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1733	1788		1745	1780		1801	3365		1759	3389	
Flt Permitted	0.29	1.00		0.57	1.00		0.11	1.00		0.36	1.00	
Satd. Flow (perm)	531	1788		1048	1780		212	3365		664	3389	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	233	255	57	52	275	62	13	499	30	84	1064	314
RTOR Reduction (vph)	0	8	0	0	8	0	0	4	0	0	28	0
Lane Group Flow (vph)	233	304	0	52	329	0	13	525	0	84	1351	0
Confl. Peds. (#/hr)	9		4	4		9	18		16	18		16
Heavy Vehicles (%)	4%	3%	3%	3%	4%	0%	0%	6%	6%	2%	2%	2%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	38.0	38.0		27.0	27.0		39.0	39.0		50.0	50.0	
Effective Green, g (s)	38.0	38.0		27.0	27.0		39.0	39.0		50.0	50.0	
Actuated g/C Ratio	0.38	0.38		0.27	0.27		0.39	0.39		0.50	0.50	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	285	679		282	480		82	1312		408	1694	
v/s Ratio Prot	c0.06	0.17			0.18			0.16		0.01	c0.40	
v/s Ratio Perm	c0.25			0.05			0.06			0.09		
v/c Ratio	0.82	0.45		0.18	0.69		0.16	0.40		0.21	0.80	
Uniform Delay, d1	27.1	23.2		28.0	32.7		19.8	22.0		13.6	20.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.10	0.84	
Incremental Delay, d2	22.3	2.1		1.4	7.7		4.1	0.9		0.9	3.0	
Delay (s)	49.3	25.3		29.5	40.4		23.9	23.0		15.8	20.4	
Level of Service	D	C		C	D		C	C		B	C	
Approach Delay (s)		35.6			39.0			23.0			20.1	
Approach LOS		D			D			C			C	

Intersection Summary				
HCM 2000 Control Delay	26.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.87			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	88.0%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	17	10	140	23	12	154
Future Volume (Veh/h)	17	10	140	23	12	154
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)	18	11	152	25	13	167
Pedestrians			78			5
Lane Width (m)			3.6			3.6
Walking Speed (m/s)			1.2			1.2
Percent Blockage			7			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			212			
pX, platoon unblocked						
vC, conflicting volume	436	170			177	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	436	170			177	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	99			99	
cM capacity (veh/h)	535	871			1399	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	29	177	180
Volume Left	18	0	13
Volume Right	11	25	0
cSH	627	1700	1399
Volume to Capacity	0.05	0.10	0.01
Queue Length 95th (m)	1.2	0.0	0.2
Control Delay (s)	11.0	0.0	0.6
Lane LOS	B		A
Approach Delay (s)	11.0	0.0	0.6
Approach LOS	B		

Intersection Summary				
Average Delay	1.1			
Intersection Capacity Utilization	29.5%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	118	461	115	427	164	184
v/c Ratio	0.52	0.74	0.57	0.68	0.22	0.26
Control Delay	23.3	23.4	26.5	21.0	6.9	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.3	23.4	26.5	21.0	6.9	7.4
Queue Length 50th (m)	9.6	41.1	9.6	37.0	4.3	5.1
Queue Length 95th (m)	23.3	67.9	23.9	61.5	17.2	19.3
Internal Link Dist (m)		153.7		76.4	185.8	188.3
Turn Bay Length (m)	25.0		20.0			
Base Capacity (vph)	528	1465	473	1480	761	714
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.31	0.24	0.29	0.22	0.26

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	420	4	106	390	3	9	54	87	13	55	101
Future Volume (vph)	109	420	4	106	390	3	9	54	87	13	55	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.95	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.92			0.92	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1686	1824		1717	1843			1652			1564	
Flt Permitted	0.37	1.00		0.33	1.00			0.98			0.98	
Satd. Flow (perm)	659	1824		594	1843			1626			1532	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	118	457	4	115	424	3	10	59	95	14	60	110
RTOR Reduction (vph)	0	1	0	0	1	0	0	50	0	0	54	0
Lane Group Flow (vph)	118	460	0	115	426	0	0	114	0	0	130	0
Confl. Peds. (#/hr)	1		16	16		1	39		3	3		39
Heavy Vehicles (%)	7%	4%	0%	4%	3%	0%	0%	6%	3%	0%	11%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	19.0	19.0		19.0	19.0			24.2			24.2	
Effective Green, g (s)	19.0	19.0		19.0	19.0			24.2			24.2	
Actuated g/C Ratio	0.34	0.34		0.34	0.34			0.44			0.44	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	226	627		204	634			712			671	
v/s Ratio Prot		c0.25			0.23							
v/s Ratio Perm	0.18			0.19				0.07			c0.08	
v/c Ratio	0.52	0.73		0.56	0.67			0.16			0.19	
Uniform Delay, d1	14.5	15.9		14.7	15.4			9.4			9.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.2	4.4		3.5	2.8			0.5			0.6	
Delay (s)	16.6	20.3		18.3	18.3			9.8			10.2	
Level of Service	B	C		B	B			A			B	
Approach Delay (s)		19.6			18.3			9.8			10.2	
Approach LOS		B			B			A			B	

Intersection Summary					
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B		
HCM 2000 Volume to Capacity ratio	0.43				
Actuated Cycle Length (s)	55.2	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	58.7%	ICU Level of Service	B		
Analysis Period (min)	15				

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	28	7	1	19	17	12
Future Volume (Veh/h)	28	7	1	19	17	12
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)	30	8	1	21	18	13
Pedestrians					37	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					3	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			75		94	71
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			75		94	71
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)			1477		877	961

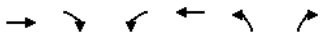
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	38	22	31
Volume Left	0	1	18
Volume Right	8	0	13
cSH	1700	1477	910
Volume to Capacity	0.02	0.00	0.03
Queue Length 95th (m)	0.0	0.0	0.8
Control Delay (s)	0.0	0.3	9.1
Lane LOS		A	A
Approach Delay (s)	0.0	0.3	9.1
Approach LOS			A

Intersection Summary				
Average Delay	3.2			
Intersection Capacity Utilization	13.3%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	453	3	11	441	3	3	0	22	3	3	12
Future Volume (Veh/h)	16	453	3	11	441	3	3	0	22	3	3	12
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	17	492	3	12	479	3	3	0	24	3	3	13
Pedestrians		4			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		100			199							
pX, platoon unblocked	0.91			0.79			0.83	0.83	0.79	0.83	0.83	0.91
vC, conflicting volume	482			495			1050	1034	496	1058	1034	484
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	386			225			727	707	226	736	707	389
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			99			99	100	96	99	99	98
cM capacity (veh/h)	1071			1059			267	291	640	262	291	601

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	512	494	27	19
Volume Left	17	12	3	3
Volume Right	3	3	24	13
cSH	1071	1059	554	438
Volume to Capacity	0.02	0.01	0.05	0.04
Queue Length 95th (m)	0.4	0.3	1.2	1.1
Control Delay (s)	0.5	0.3	11.8	13.6
Lane LOS	A	A	B	B
Approach Delay (s)	0.5	0.3	11.8	13.6
Approach LOS			B	B

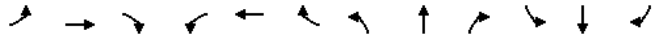
Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	42.9%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	31	6	6	15	6	7
Future Volume (Veh/h)	31	6	6	15	6	7
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)	34	7	7	16	7	8
Pedestrians				1	3	
Lane Width (m)				3.6	3.6	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			44		70	42
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			44		70	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		99	99
cM capacity (veh/h)			1560		927	1026

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	41	23	15
Volume Left	0	7	7
Volume Right	7	0	8
cSH	1700	1560	977
Volume to Capacity	0.02	0.00	0.02
Queue Length 95th (m)	0.0	0.1	0.4
Control Delay (s)	0.0	2.3	8.7
Lane LOS		A	A
Approach Delay (s)	0.0	2.3	8.7
Approach LOS			A

Intersection Summary				
Average Delay	2.3			
Intersection Capacity Utilization	16.4%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	432	28	70	441	6	1	2	17	7	3	3
Future Volume (Veh/h)	10	432	28	70	441	6	1	2	17	7	3	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	470	30	76	479	7	1	2	18	8	3	3
Pedestrians					6						8	
Lane Width (m)					3.6						3.6	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					1						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		199			100							
pX, platoon unblocked												
vC, conflicting volume	494			500			903	1153	256	924	1164	251
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	494			500			903	1153	256	924	1164	251
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			93			100	99	98	96	98	100
cM capacity (veh/h)	1059			1060			213	179	739	200	176	744

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	246	265	316	246	21	14
Volume Left	11	0	76	0	1	8
Volume Right	0	30	0	7	18	3
cSH	1059	1700	1060	1700	522	229
Volume to Capacity	0.01	0.16	0.07	0.14	0.04	0.06
Queue Length 95th (m)	0.3	0.0	1.8	0.0	1.0	1.6
Control Delay (s)	0.5	0.0	2.6	0.0	12.2	21.7
Lane LOS	A		A		B	C
Approach Delay (s)	0.2		1.5		12.2	21.7
Approach LOS					B	C

Intersection Summary				
Average Delay	1.4			
Intersection Capacity Utilization	42.7%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	138	521	22	459	90	153	114	411
v/c Ratio	0.37	0.48	0.08	0.66	0.24	0.25	0.19	0.65
Control Delay	18.9	22.4	15.8	31.7	13.0	20.7	12.2	28.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.9	22.4	15.8	31.7	13.0	20.7	12.2	28.3
Queue Length 50th (m)	14.0	28.3	2.1	33.0	7.1	16.3	9.0	52.9
Queue Length 95th (m)	26.8	53.5	6.7	49.6	16.3	34.6	19.7	#99.1
Internal Link Dist (m)		80.3		65.0		84.7		300.6
Turn Bay Length (m)	20.0		30.0		15.0		25.0	
Base Capacity (vph)	384	1510	357	1521	420	608	637	632
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.35	0.06	0.30	0.21	0.25	0.18	0.65

Intersection Summary

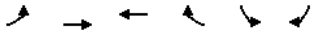
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	357	122	20	332	90	83	114	27	105	270	109
Future Volume (vph)	127	357	122	20	332	90	83	114	27	105	270	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		0.98	1.00	
Frt	1.00	0.96		1.00	0.97		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1760	3306		1484	3342		1682	1750		1746	1787	
Flt Permitted	0.32	1.00		0.46	1.00		0.33	1.00		0.65	1.00	
Satd. Flow (perm)	588	3306		717	3342		587	1750		1203	1787	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	138	388	133	22	361	98	90	124	29	114	293	118
RTOR Reduction (vph)	0	35	0	0	29	0	0	7	0	0	13	0
Lane Group Flow (vph)	138	486	0	22	430	0	90	146	0	114	398	0
Confl. Peds. (#/hr)	20		29	29		20	18		34	34		18
Heavy Vehicles (%)	2%	2%	5%	20%	4%	0%	7%	4%	6%	1%	1%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	31.2	24.6		20.5	17.9		32.8	26.5		33.2	26.7	
Effective Green, g (s)	31.2	24.6		20.5	17.9		32.8	26.5		33.2	26.7	
Actuated g/C Ratio	0.39	0.31		0.26	0.22		0.41	0.33		0.41	0.33	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	364	1014		208	745		326	578		542	594	
v/s Ratio Prot	c0.04	0.15		0.00	c0.13		c0.02	0.08		0.02	c0.22	
v/s Ratio Perm	0.10			0.02			0.09			0.07		
v/c Ratio	0.38	0.48		0.11	0.58		0.28	0.25		0.21	0.67	
Uniform Delay, d1	16.7	22.6		22.6	27.8		15.4	19.6		14.7	23.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.4		0.2	1.1		0.5	1.0		0.2	5.9	
Delay (s)	17.3	23.0		22.8	28.9		15.9	20.7		14.9	28.9	
Level of Service	B	C		C	C		B	C		B	C	
Approach Delay (s)		21.8			28.6			18.9			25.8	
Approach LOS		C			C			B			C	

Intersection Summary

HCM 2000 Control Delay	24.2	HCM 2000 Level of Service	C			
HCM 2000 Volume to Capacity ratio	0.56					
Actuated Cycle Length (s)	80.2	Sum of lost time (s)	20.0			
Intersection Capacity Utilization	63.4%	ICU Level of Service	B			
Analysis Period (min)	15					

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	81	107	49	149	50
Future Volume (Veh/h)	12	81	107	49	149	50
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)	13	88	116	53	162	54
Pedestrians		2			5	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			105			
pX, platoon unblocked						
vC, conflicting volume	174				262	150
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	174				262	150
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				77	94
cM capacity (veh/h)	1397				718	892

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	101	169	216
Volume Left	13	0	162
Volume Right	0	53	54
cSH	1397	1700	754
Volume to Capacity	0.01	0.10	0.29
Queue Length 95th (m)	0.2	0.0	9.5
Control Delay (s)	1.0	0.0	11.7
Lane LOS	A		B
Approach Delay (s)	1.0	0.0	11.7
Approach LOS			B

Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	32.6%	ICU Level of Service	A
Analysis Period (min)	15		

Queues
1: Coulter St./Highway 400 off-ramp & Bayfield St.

03-25-2022

Lane Group	EBL	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	37	276	201	341	222	2464	2450
v/c Ratio	0.37	0.54	0.49	0.85	0.86	0.71	1.30
Control Delay	61.2	19.2	54.5	74.3	72.4	15.7	168.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	3.3	0.0
Total Delay	61.2	19.2	54.5	74.3	72.4	19.0	168.8
Queue Length 50th (m)	9.8	20.7	54.9	101.5	51.9	159.5	~516.7
Queue Length 95th (m)	22.8	51.9	82.0	#155.2	#99.8	174.6	#556.2
Internal Link Dist (m)				232.7		82.1	97.3
Turn Bay Length (m)					65.0		
Base Capacity (vph)	99	513	411	400	257	3491	1889
Starvation Cap Reductn	0	0	0	0	0	909	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	0.37	0.54	0.49	0.85	0.86	0.95	1.30

Intersection Summary

~ 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: Coulter St./Highway 400 off-ramp & Bayfield St.

03-25-2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	0	254	185	144	169	204	2267	0	0	2234	20
Future Volume (vph)	34	0	254	185	144	169	204	2267	0	0	2234	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0		4.5	6.0			6.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.91			0.95	
Frpb, ped/bikes	1.00		0.99	1.00	0.98		1.00	1.00			1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00			1.00	
Frt	1.00		0.85	1.00	0.92		1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1805		1560	1765	1696		1770	5085			3497	
Flt Permitted	0.22		1.00	0.95	1.00		0.05	1.00			1.00	
Satd. Flow (perm)	426		1560	1765	1696		87	5085			3497	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	37	0	276	201	157	184	222	2464	0	0	2428	22
RTOR Reduction (vph)	0	0	150	0	5	0	0	0	0	0	0	0
Lane Group Flow (vph)	37	0	127	201	336	0	222	2464	0	0	2450	0
Confl. Peds. (#/hr)	9		1	1		9	27		56	56		27
Heavy Vehicles (%)	0%	0%	2%	2%	0%	2%	2%	2%	0%	0%	3%	0%
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2					
Actuated Green, G (s)	35.0		35.0	35.0	35.0		103.0	103.0			81.0	
Effective Green, g (s)	35.0		35.0	35.0	35.0		103.0	103.0			81.0	
Actuated g/C Ratio	0.23		0.23	0.23	0.23		0.69	0.69			0.54	
Clearance Time (s)	6.0		6.0	6.0	6.0		4.5	6.0			6.0	
Lane Grp Cap (vph)	99		364	411	395		256	3491			1888	
v/s Ratio Prot					c0.20		c0.10	0.48			c0.70	
v/s Ratio Perm	0.09		0.08	0.11			0.49					
v/c Ratio	0.37		0.35	0.49	0.85		0.87	0.71			1.30	
Uniform Delay, d1	48.3		48.0	49.8	55.0		52.2	14.3			34.5	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	10.5		2.6	4.1	20.1		30.4	1.2			137.9	
Delay (s)	58.8		50.6	53.9	75.1		82.7	15.5			172.4	
Level of Service	E		D	D	E		F	B			F	
Approach Delay (s)		51.6			67.2			21.1			172.4	
Approach LOS		D			E			C			F	

Intersection Summary

HCM 2000 Control Delay	88.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	114.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Queues
2: Highway 400 off-ramp/Highway 400 on-ramp

03-25-2022

Lane Group	EBL	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	1239	420	1827	364	389	1204
v/c Ratio	0.93	0.65	1.02	0.67	1.20	0.43
Control Delay	54.4	36.7	71.1	36.7	156.0	21.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.4	36.7	71.1	36.7	156.0	21.6
Queue Length 50th (m)	182.0	90.5	~220.9	72.2	~130.3	82.0
Queue Length 95th (m)	214.5	129.0	#259.0	114.9	#203.4	98.1
Internal Link Dist (m)			107.4			83.3
Turn Bay Length (m)				30.0	90.0	
Base Capacity (vph)	1474	705	1799	543	323	2771
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.60	1.02	0.67	1.20	0.43

Intersection Summary

~ 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
2: Highway 400 off-ramp/Highway 400 on-ramp

03-25-2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1140	0	386	0	0	0	0	1681	335	358	1108	0
Future Volume (vph)	1140	0	386	0	0	0	0	1681	335	358	1108	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		6.0					6.0	6.0	4.5	6.0	
Lane Util. Factor	0.97		1.00					0.91	1.00	1.00	0.91	
Frpb, ped/bikes	1.00		0.99					1.00	0.87	1.00	1.00	
Flpb, ped/bikes	1.00		1.00					1.00	1.00	1.00	1.00	
Frt	1.00		0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3400		1592					5085	1371	1805	5187	
Flt Permitted	0.95		1.00					1.00	1.00	0.07	1.00	
Satd. Flow (perm)	3400		1592					5085	1371	136	5187	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1239	0	420	0	0	0	0	1827	364	389	1204	0
RTOR Reduction (vph)	0	0	34	0	0	0	0	0	61	0	0	0
Lane Group Flow (vph)	1239	0	386	0	0	0	0	1827	303	389	1204	0
Confl. Peds. (#/hr)			1	1			24		29	29		24
Heavy Vehicles (%)	3%	2%	0%	0%	2%	3%	3%	2%	2%	0%	0%	2%
Turn Type	Prot		Perm					NA	Perm	pm+pt	NA	
Protected Phases	7							2		1	6	
Permitted Phases			4						2	6		
Actuated Green, G (s)	56.7		55.2					51.2	51.2	77.2	77.2	
Effective Green, g (s)	56.7		55.2					51.2	51.2	77.2	77.2	
Actuated g/C Ratio	0.39		0.38					0.35	0.35	0.53	0.53	
Clearance Time (s)	4.5		6.0					6.0	6.0	4.5	6.0	
Vehicle Extension (s)	3.0		3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	1335		608					1802	486	321	2773	
v/s Ratio Prot	c0.36							0.36		c0.18	0.23	
v/s Ratio Perm			0.24						0.22	c0.47		
v/c Ratio	0.93		0.63					1.01	0.62	1.21	0.43	
Uniform Delay, d1	41.9		36.4					46.6	38.6	48.3	20.4	
Progression Factor	1.00		1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	11.3		2.2					24.7	5.9	120.7	0.5	
Delay (s)	53.2		38.6					71.3	44.6	169.0	20.9	
Level of Service	D		D					E	D	F	C	
Approach Delay (s)		49.5			0.0			66.9			57.0	
Approach LOS		D			A			E			E	

Intersection Summary

HCM 2000 Control Delay	58.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	144.4	Sum of lost time (s)	16.5
Intersection Capacity Utilization	96.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Queues
4: Grove St.

03-25-2022

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	179	110	111	611	54	1478	473	1449
v/c Ratio	0.86	0.16	0.34	1.11	0.72	1.27	1.44	0.82
Control Delay	60.2	17.8	33.7	99.9	73.0	165.4	238.5	25.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.2	17.8	33.7	99.9	73.0	165.4	238.5	25.3
Queue Length 50th (m)	24.3	11.9	18.4	~114.1	10.5	~194.3	~115.3	123.5
Queue Length 95th (m)	#57.9	24.1	34.7	#183.4	m12.3	m#219.6	#178.9	155.8
Internal Link Dist (m)		81.6		331.6		133.3		100.6
Turn Bay Length (m)	20.0		30.0		30.0		50.0	
Base Capacity (vph)	207	677	324	548	75	1161	329	1757
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.16	0.34	1.11	0.72	1.27	1.44	0.82

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
4: Grove St.

03-25-2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	74	28	102	118	444	50	1238	121	435	1126	207
Future Volume (vph)	165	74	28	102	118	444	50	1238	121	435	1126	207
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.97		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.88		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1795		1727	1585		1794	3495		1787	3416	
Flt Permitted	0.13	1.00		0.69	1.00		0.12	1.00		0.11	1.00	
Satd. Flow (perm)	253	1795		1247	1585		229	3495		203	3416	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	179	80	30	111	128	483	54	1346	132	473	1224	225
RTOR Reduction (vph)	0	13	0	0	136	0	0	7	0	0	15	0
Lane Group Flow (vph)	179	97	0	111	475	0	54	1471	0	473	1434	0
Confl. Peds. (#/hr)	15		10	10		15	24		18	18		24
Heavy Vehicles (%)	0%	1%	0%	3%	1%	3%	0%	1%	4%	1%	2%	1%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	37.0	37.0		26.0	26.0		33.0	33.0		51.0	51.0	
Effective Green, g (s)	37.0	37.0		26.0	26.0		33.0	33.0		51.0	51.0	
Actuated g/C Ratio	0.37	0.37		0.26	0.26		0.33	0.33		0.51	0.51	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	202	664		324	412		75	1153		325	1742	
v/s Ratio Prot	c0.06	0.05			c0.30			0.42		c0.20	0.42	
v/s Ratio Perm	0.27			0.09			0.24			c0.54		
v/c Ratio	0.89	0.15		0.34	1.15		0.72	1.28		1.46	0.82	
Uniform Delay, d1	25.8	21.0		30.1	37.0		29.4	33.5		29.6	20.7	
Progression Factor	1.00	1.00		1.00	1.00		1.48	1.42		1.00	1.00	
Incremental Delay, d2	39.3	0.5		2.9	93.0		24.8	127.3		221.3	4.5	
Delay (s)	65.0	21.4		32.9	130.0		68.2	174.9		250.9	25.2	
Level of Service	E	C		C	F		E	F		F	C	
Approach Delay (s)		48.4			115.1			171.2			80.8	
Approach LOS		D			F			F			F	

Intersection Summary

HCM 2000 Control Delay	115.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.36		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	122.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
5: Dalton St.

03-25-2022

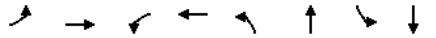
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	6	4	1296	1067	23
Future Volume (Veh/h)	13	6	4	1296	1067	23
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	7	4	1409	1160	25
Pedestrians	9					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				229	157	
pX, platoon unblocked	0.82	0.68	0.68			
vC, conflicting volume	1894	602	1194			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	121	0	340			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	99	100			
cM capacity (veh/h)	696	731	819			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	21	474	939	773	412
Volume Left	14	4	0	0	0
Volume Right	7	0	0	0	25
cSH	707	819	1700	1700	1700
Volume to Capacity	0.03	0.00	0.55	0.45	0.24
Queue Length 95th (m)	0.7	0.1	0.0	0.0	0.0
Control Delay (s)	10.2	0.1	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	10.2	0.0		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay		0.1		
Intersection Capacity Utilization		48.6%	ICU Level of Service	A
Analysis Period (min)		15		

Queues
6: Bayfield St. & Wellington St.

03-25-2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	388	493	39	437	48	1048	115	1156
v/c Ratio	0.95	0.70	0.14	0.97	0.64	0.93	0.68	0.82
Control Delay	59.2	32.5	16.5	72.6	69.6	48.2	41.3	28.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.2	32.5	16.5	72.6	69.6	48.2	41.3	28.7
Queue Length 50th (m)	60.4	83.0	4.0	86.3	8.3	108.0	13.2	70.3
Queue Length 95th (m)	#119.2	121.6	9.7	#149.7	#28.2	#150.3	m20.7	94.7
Internal Link Dist (m)		76.2		327.8		194.7		204.9
Turn Bay Length (m)			30.0		20.0		20.0	
Base Capacity (vph)	410	700	282	452	75	1126	170	1409
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.95	0.70	0.14	0.97	0.64	0.93	0.68	0.82

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

HCM Signalized Intersection Capacity Analysis
6: Bayfield St. & Wellington St.

03-25-2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	357	415	39	36	324	78	44	933	31	106	826	237
Future Volume (vph)	357	415	39	36	324	78	44	933	31	106	826	237
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.5	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1836		1805	1810		1747	3513		1805	3372	
Flt Permitted	0.14	1.00		0.41	1.00		0.13	1.00		0.11	1.00	
Satd. Flow (perm)	264	1836		773	1810		238	3513		211	3372	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	388	451	42	39	352	85	48	1014	34	115	898	258
RTOR Reduction (vph)	0	3	0	0	9	0	0	2	0	0	27	0
Lane Group Flow (vph)	388	490	0	39	428	0	48	1046	0	115	1129	0
Confl. Peds. (#/hr)	27					27	17		28	28		17
Heavy Vehicles (%)	1%	2%	4%	0%	1%	0%	3%	2%	0%	0%	3%	1%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4		3	8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	47.0	38.0		29.0	24.5		32.0	32.0		41.0	41.0	
Effective Green, g (s)	47.0	38.0		29.0	24.5		32.0	32.0		41.0	41.0	
Actuated g/C Ratio	0.47	0.38		0.29	0.24		0.32	0.32		0.41	0.41	
Clearance Time (s)	4.0	6.0		4.5	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	405	697		270	443		76	1124		166	1382	
v/s Ratio Prot	c0.18	0.27		0.01	0.24			c0.30		0.03	c0.33	
v/s Ratio Perm	c0.27			0.04			0.20			0.25		
v/c Ratio	0.96	0.70		0.14	0.97		0.63	0.93		0.69	0.82	
Uniform Delay, d1	27.7	26.2		25.8	37.3		29.0	32.9		23.1	26.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.42	0.97	
Incremental Delay, d2	35.3	5.9		1.1	35.1		33.7	14.6		15.4	3.9	
Delay (s)	63.0	32.1		27.0	72.4		62.7	47.5		48.2	29.3	
Level of Service	E	C		C	E		E	D		D	C	
Approach Delay (s)		45.7			68.7			48.2			31.0	
Approach LOS		D			E			D			C	

Intersection Summary				
HCM 2000 Control Delay	44.4	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.99			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.5	
Intersection Capacity Utilization	95.3%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Unsignalized Intersection Capacity Analysis
7: Dalton St. & Toronto St.

03-25-2022

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	3	197	10	4	229
Future Volume (Veh/h)	13	3	197	10	4	229
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)	14	3	214	11	4	249
Pedestrians			3			2
Lane Width (m)			3.6			3.6
Walking Speed (m/s)			1.2			1.2
Percent Blockage			0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			212			
pX, platoon unblocked						
vC, conflicting volume	480	222			225	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	480	222			225	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	100			100	
cM capacity (veh/h)	542	817			1344	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	17	225	253
Volume Left	14	0	4
Volume Right	3	11	0
cSH	576	1700	1344
Volume to Capacity	0.03	0.13	0.00
Queue Length 95th (m)	0.7	0.0	0.1
Control Delay (s)	11.4	0.0	0.1
Lane LOS	B		A
Approach Delay (s)	11.4	0.0	0.1
Approach LOS	B		

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	25.9%	ICU Level of Service	A
Analysis Period (min)	15		

Queues
8: Toronto St. & Wellington St.

03-25-2022

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	148	635	177	456	237	283
v/c Ratio	0.39	0.83	0.74	0.46	0.42	0.49
Control Delay	16.8	27.8	29.7	11.5	17.5	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.8	27.8	29.7	11.5	17.5	15.4
Queue Length 50th (m)	13.2	72.0	10.7	34.8	16.6	15.8
Queue Length 95th (m)	26.2	109.7	#26.6	53.9	43.2	44.9
Internal Link Dist (m)		153.7		76.4	185.8	188.3
Turn Bay Length (m)	25.0		20.0			
Base Capacity (vph)	564	1127	238	1342	561	583
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.56	0.74	0.34	0.42	0.49

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

HCM Signalized Intersection Capacity Analysis
8: Toronto St. & Wellington St.

03-25-2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	136	571	13	163	417	3	6	90	121	4	79	178
Future Volume (vph)	136	571	13	163	417	3	6	90	121	4	79	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		4.5	6.0			6.0			6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.92			0.91	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1803	1893		1805	1879			1729			1667	
Flt Permitted	0.50	1.00		0.15	1.00			0.99			1.00	
Satd. Flow (perm)	949	1893		293	1879			1710			1660	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	148	621	14	177	453	3	7	98	132	4	86	193
RTOR Reduction (vph)	0	1	0	0	0	0	0	53	0	0	90	0
Lane Group Flow (vph)	148	634	0	177	456	0	0	184	0	0	193	0
Confl. Peds. (#/hr)	1		2	2		1	10		3	3		10
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	1%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	27.7	27.7		35.7	35.7			20.3			20.3	
Effective Green, g (s)	27.7	27.7		35.7	35.7			20.3			20.3	
Actuated g/C Ratio	0.41	0.41		0.53	0.53			0.30			0.30	
Clearance Time (s)	6.0	6.0		4.5	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	386	771		231	986			510			495	
v/s Ratio Prot		0.33		c0.04	0.24							
v/s Ratio Perm	0.16			c0.36				0.11			c0.12	
v/c Ratio	0.38	0.82		0.77	0.46			0.36			0.39	
Uniform Delay, d1	14.2	18.0		12.5	10.1			18.8			18.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.6	7.1		14.1	0.3			2.0			2.3	
Delay (s)	14.8	25.0		26.6	10.5			20.7			21.2	
Level of Service	B	C		C	B			C			C	
Approach Delay (s)		23.1			15.0			20.7			21.2	
Approach LOS		C			B			C			C	

Intersection Summary					
HCM 2000 Control Delay	19.9	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.66				
Actuated Cycle Length (s)	68.0	Sum of lost time (s)		16.5	
Intersection Capacity Utilization	71.4%	ICU Level of Service		C	
Analysis Period (min)	15				
c Critical Lane Group					

HCM Unsignalized Intersection Capacity Analysis
9: Mary St. & Dalton St.

03-25-2022

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	14	1	6	22	9	6
Future Volume (Veh/h)	14	1	6	22	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)	15	1	7	24	10	7
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			17		54	16
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			17		54	16
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)			1599		949	1062

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	16	31	17
Volume Left	0	7	10
Volume Right	1	0	7
cSH	1700	1599	992
Volume to Capacity	0.01	0.00	0.02
Queue Length 95th (m)	0.0	0.1	0.4
Control Delay (s)	0.0	1.7	8.7
Lane LOS		A	A
Approach Delay (s)	0.0	1.7	8.7
Approach LOS			A

Intersection Summary				
Average Delay	3.1			
Intersection Capacity Utilization	16.4%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
10: Mary St.

03-25-2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	693	4	4	544	3	3	3	21	1	0	1
Future Volume (Veh/h)	4	693	4	4	544	3	3	3	21	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	753	4	4	591	3	3	3	23	1	0	1
Pedestrians		1			1						3	
Lane Width (m)		3.6			3.6						3.6	
Walking Speed (m/s)		1.2			1.2						1.2	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		100			199							
pX, platoon unblocked	0.83			0.69			0.77	0.77	0.69	0.77	0.77	0.83
vC, conflicting volume	597			757			1366	1368	756	1392	1368	596
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	407			417			820	824	415	855	824	407
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			99	99	95	99	100	100
cM capacity (veh/h)	949			783			224	235	437	199	235	531

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	761	598	29	2
Volume Left	4	4	3	1
Volume Right	4	3	23	1
cSH	949	783	368	290
Volume to Capacity	0.00	0.01	0.08	0.01
Queue Length 95th (m)	0.1	0.1	2.0	0.2
Control Delay (s)	0.1	0.1	15.6	17.5
Lane LOS	A	A	C	C
Approach Delay (s)	0.1	0.1	15.6	17.5
Approach LOS			C	C

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	49.7%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
11: Maple Avenue & Dalton St.

03-25-2022

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	23	4	3	23	4	6
Future Volume (Veh/h)	23	4	3	23	4	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)	25	4	3	25	4	7
Pedestrians					9	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			38		67	36
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			38		67	36
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	99
cM capacity (veh/h)			1560		929	1029

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	29	28	11
Volume Left	0	3	4
Volume Right	4	0	7
cSH	1700	1560	990
Volume to Capacity	0.02	0.00	0.01
Queue Length 95th (m)	0.0	0.0	0.3
Control Delay (s)	0.0	0.8	8.7
Lane LOS		A	A
Approach Delay (s)	0.0	0.8	8.7
Approach LOS			A

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	15.9%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
12: Maple Avenue

03-25-2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	681	7	25	510	4	16	1	66	3	5	7
Future Volume (Veh/h)	10	681	7	25	510	4	16	1	66	3	5	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	740	8	27	554	4	17	1	72	3	5	8
Pedestrians					5						2	
Lane Width (m)					3.6						3.6	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		199			100							
pX, platoon unblocked												
vC, conflicting volume	560			748			1108	1380	379	1082	1382	281
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	560			748			1108	1380	379	1082	1382	281
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			89	99	88	98	96	99
cM capacity (veh/h)	1005			856			153	137	616	145	137	715

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	381	378	304	281	90	16
Volume Left	11	0	27	0	17	3
Volume Right	0	8	0	4	72	8
cSH	1005	1700	856	1700	383	234
Volume to Capacity	0.01	0.22	0.03	0.17	0.24	0.07
Queue Length 95th (m)	0.3	0.0	0.8	0.0	7.2	1.8
Control Delay (s)	0.4	0.0	1.2	0.0	17.3	21.5
Lane LOS	A		A		C	C
Approach Delay (s)	0.2		0.6		17.3	21.5
Approach LOS					C	C

Intersection Summary				
Average Delay	1.6			
Intersection Capacity Utilization	47.4%	ICU Level of Service		A
Analysis Period (min)	15			

Queues
13: Ross St./Sunnidale Rd

03-25-2022

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	309	791	13	663	250	403	150	335
v/c Ratio	0.81	0.55	0.04	0.77	0.65	0.75	0.47	0.73
Control Delay	34.4	20.8	13.5	35.0	25.6	39.7	21.2	39.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.4	20.8	13.5	35.0	25.6	39.7	21.2	39.6
Queue Length 50th (m)	34.9	49.8	1.2	53.7	27.2	64.4	15.3	50.6
Queue Length 95th (m)	#71.8	82.2	4.2	73.1	#52.4	#121.5	31.6	#100.4
Internal Link Dist (m)		80.3		65.0		84.7		300.6
Turn Bay Length (m)	20.0		30.0		15.0		25.0	
Base Capacity (vph)	382	1565	319	1310	396	539	332	462
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.51	0.04	0.51	0.63	0.75	0.45	0.73

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
13: Ross St./Sunnidale Rd

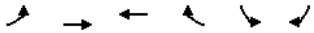
03-25-2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	284	574	154	12	453	157	230	344	27	138	200	109
Future Volume (vph)	284	574	154	12	453	157	230	344	27	138	200	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	0.99		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1786	3428		1799	3398		1765	1873		1782	1764	
Flt Permitted	0.20	1.00		0.35	1.00		0.27	1.00		0.29	1.00	
Satd. Flow (perm)	381	3428		667	3398		510	1873		545	1764	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	309	624	167	13	492	171	250	374	29	150	217	118
RTOR Reduction (vph)	0	24	0	0	38	0	0	3	0	0	19	0
Lane Group Flow (vph)	309	767	0	13	625	0	250	400	0	150	316	0
Confl. Peds. (#/hr)	9		13	13		9	18		10	10		18
Heavy Vehicles (%)	1%	0%	4%	0%	1%	1%	2%	0%	0%	1%	1%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	41.5	36.3		25.7	24.5		36.8	25.3		30.6	22.2	
Effective Green, g (s)	41.5	36.3		25.7	24.5		36.8	25.3		30.6	22.2	
Actuated g/C Ratio	0.46	0.40		0.28	0.27		0.40	0.28		0.34	0.24	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	373	1364		202	912		364	519		296	429	
v/s Ratio Prot	c0.12	0.22		0.00	0.18		c0.09	c0.21		0.05	0.18	
v/s Ratio Perm	c0.26			0.02			0.19			0.12		
v/c Ratio	0.83	0.56		0.06	0.69		0.69	0.77		0.51	0.74	
Uniform Delay, d1	18.2	21.3		23.7	29.9		20.1	30.3		22.6	31.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	14.0	0.5		0.1	2.2		5.3	10.6		1.4	10.8	
Delay (s)	32.2	21.8		23.8	32.0		25.4	40.9		24.0	42.6	
Level of Service	C	C		C	C		C	D		C	D	
Approach Delay (s)		24.8			31.9			35.0			36.8	
Approach LOS		C			C			C			D	

Intersection Summary

HCM 2000 Control Delay	30.7	HCM 2000 Level of Service		C		
HCM 2000 Volume to Capacity ratio	0.85					
Actuated Cycle Length (s)	91.2	Sum of lost time (s)		20.0		
Intersection Capacity Utilization	80.7%	ICU Level of Service		D		
Analysis Period (min)	15					

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	42	148	186	139	84	33
Future Volume (Veh/h)	42	148	186	139	84	33
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)	46	161	202	151	91	36
Pedestrians		2			5	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			105			
pX, platoon unblocked						
vC, conflicting volume	358				536	284
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	358				536	284
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				81	95
cM capacity (veh/h)	1196				484	750

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	207	353	127
Volume Left	46	0	91
Volume Right	0	151	36
cSH	1196	1700	538
Volume to Capacity	0.04	0.21	0.24
Queue Length 95th (m)	1.0	0.0	7.3
Control Delay (s)	2.1	0.0	13.7
Lane LOS	A		B
Approach Delay (s)	2.1	0.0	13.7
Approach LOS			B

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix J

2036 Future Total Traffic Operations Reports

Lane Group	EBL	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	28	322	279	230	148	1742	1928
v/c Ratio	0.18	0.82	0.84	0.72	0.77	0.50	0.95
Control Delay	37.7	43.0	61.5	46.5	45.6	8.9	31.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.7	43.0	61.5	46.5	45.6	8.9	31.8
Queue Length 50th (m)	4.8	40.7	55.3	38.1	21.2	48.0	181.1
Queue Length 95th (m)	13.2	#87.2	#99.5	#71.8	m29.4	56.7	#250.0
Internal Link Dist (m)				232.7		86.6	97.3
Turn Bay Length (m)					65.0		
Base Capacity (vph)	152	391	334	320	191	3508	2028
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	0.18	0.82	0.84	0.72	0.77	0.50	0.95

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	0	296	257	62	150	136	1603	0	0	1759	15
Future Volume (vph)	26	0	296	257	62	150	136	1603	0	0	1759	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0		4.5	6.0			6.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.91			0.95	
Frpb, ped/bikes	1.00		0.98	1.00	0.99		1.00	1.00			1.00	
Flpb, ped/bikes	0.99		1.00	0.99	1.00		1.00	1.00			1.00	
Frt	1.00		0.85	1.00	0.89		1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1796		1554	1758	1546		1770	5085			3495	
Flt Permitted	0.43		1.00	0.95	1.00		0.06	1.00			1.00	
Satd. Flow (perm)	804		1554	1758	1546		119	5085			3495	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	0	322	279	67	163	148	1742	0	0	1912	16
RTOR Reduction (vph)	0	0	96	0	27	0	0	0	0	0	0	0
Lane Group Flow (vph)	28	0	226	279	203	0	148	1742	0	0	1928	0
Confl. Peds. (#/hr)	5		4	4		5	27		20	20		27
Heavy Vehicles (%)	0%	0%	2%	2%	4%	10%	2%	2%	2%	0%	3%	13%
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2					
Actuated Green, G (s)	19.0		19.0	19.0	19.0		69.0	69.0			58.0	
Effective Green, g (s)	19.0		19.0	19.0	19.0		69.0	69.0			58.0	
Actuated g/C Ratio	0.19		0.19	0.19	0.19		0.69	0.69			0.58	
Clearance Time (s)	6.0		6.0	6.0	6.0		4.5	6.0			6.0	
Lane Grp Cap (vph)	152		295	334	293		189	3508			2027	
v/s Ratio Prot					0.13		c0.05	0.34			c0.55	
v/s Ratio Perm	0.03		0.15	c0.16			0.49					
v/c Ratio	0.18		0.76	0.84	0.69		0.78	0.50			0.95	
Uniform Delay, d1	34.0		38.4	39.0	37.8		26.5	7.3			19.7	
Progression Factor	1.00		1.00	1.00	1.00		1.82	1.17			1.00	
Incremental Delay, d2	2.7		17.1	21.2	12.7		16.7	0.3			11.4	
Delay (s)	36.6		55.5	60.2	50.5		64.9	8.8			31.0	
Level of Service	D		E	E	D		E	A			C	
Approach Delay (s)		54.0			55.9			13.2			31.0	
Approach LOS		D			E			B			C	

Intersection Summary

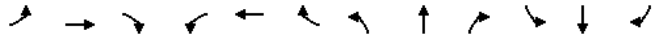
HCM 2000 Control Delay	28.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	97.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	958	474	1123	142	366	1043
v/c Ratio	0.83	0.80	0.78	0.29	0.84	0.37
Control Delay	37.8	36.2	39.4	17.7	35.2	18.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.8	36.2	39.4	17.7	35.2	18.5
Queue Length 50th (m)	91.5	70.9	64.9	4.8	62.1	51.6
Queue Length 95th (m)	117.5	#124.5	83.2	m16.5	m68.8	m57.5
Internal Link Dist (m)			104.6			79.1
Turn Bay Length (m)				30.0	90.0	
Base Capacity (vph)	1150	589	1446	489	436	2852
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.80	0.78	0.29	0.84	0.37

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	881	0	436	0	0	0	0	1033	131	337	960	0
Future Volume (vph)	881	0	436	0	0	0	0	1033	131	337	960	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		6.0					6.0	6.0	6.0	6.0	
Lane Util. Factor	0.97		1.00					0.91	1.00	1.00	0.91	
Frpb, ped/bikes	1.00		0.98					1.00	0.91	1.00	1.00	
Flpb, ped/bikes	1.00		1.00					1.00	1.00	1.00	1.00	
Frt	1.00		0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3335		1588					4988	1448	1805	5187	
Flt Permitted	0.95		1.00					1.00	1.00	0.11	1.00	
Satd. Flow (perm)	3335		1588					4988	1448	217	5187	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	958	0	474	0	0	0	0	1123	142	366	1043	0
RTOR Reduction (vph)	0	0	66	0	0	0	0	0	70	0	0	0
Lane Group Flow (vph)	958	0	408	0	0	0	0	1123	72	366	1043	0
Confl. Peds. (#/hr)			3	3			29		24	24		29
Heavy Vehicles (%)	5%	4%	0%	0%	4%	20%	8%	4%	2%	0%	0%	1%
Turn Type	Prot		Perm					NA	Perm	pm+pt	NA	
Protected Phases	7							2		1	6	
Permitted Phases			4						2	6		
Actuated Green, G (s)	34.5		33.0					29.0	29.0	55.0	55.0	
Effective Green, g (s)	34.5		33.0					29.0	29.0	55.0	55.0	
Actuated g/C Ratio	0.34		0.33					0.29	0.29	0.55	0.55	
Clearance Time (s)	4.5		6.0					6.0	6.0	6.0	6.0	
Lane Grp Cap (vph)	1150		524					1446	419	436	2852	
v/s Ratio Prot	c0.29							0.23		c0.17	0.20	
v/s Ratio Perm			0.26						0.05	c0.29		
v/c Ratio	0.83		0.78					0.78	0.17	0.84	0.37	
Uniform Delay, d1	30.1		30.2					32.5	26.5	25.7	12.7	
Progression Factor	1.00		1.00					1.12	1.62	1.14	1.44	
Incremental Delay, d2	7.1		10.9					2.6	0.6	7.4	0.1	
Delay (s)	37.2		41.1					39.1	43.7	36.7	18.4	
Level of Service	D		D					D	D	D	B	
Approach Delay (s)		38.5			0.0			39.6			23.1	
Approach LOS		D			A			D			C	

Intersection Summary			
HCM 2000 Control Delay	33.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	207	146	64	456	20	795	290	1475
v/c Ratio	0.82	0.22	0.23	0.75	0.29	0.75	0.76	0.85
Control Delay	48.6	18.1	33.3	20.9	49.7	45.2	35.4	24.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.6	18.1	33.3	20.9	49.7	45.2	35.4	24.8
Queue Length 50th (m)	28.2	16.1	10.6	29.5	3.6	79.7	30.3	165.6
Queue Length 95th (m)	#63.4	30.4	22.6	69.6	m8.7	101.3	m#58.5	190.6
Internal Link Dist (m)		81.6		331.6		133.3		100.6
Turn Bay Length (m)	20.0		30.0		30.0		50.0	
Base Capacity (vph)	251	670	280	608	68	1057	380	1741
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.22	0.23	0.75	0.29	0.75	0.76	0.85

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	190	68	66	59	58	362	18	686	45	267	1231	126
Future Volume (vph)	190	68	66	59	58	362	18	686	45	267	1231	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	0.87		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1722		1671	1603		1633	3395		1787	3468	
Flt Permitted	0.14	1.00		0.66	1.00		0.13	1.00		0.16	1.00	
Satd. Flow (perm)	261	1722		1168	1603		222	3395		304	3468	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	207	74	72	64	63	393	20	746	49	290	1338	137
RTOR Reduction (vph)	0	16	0	0	224	0	0	5	0	0	8	0
Lane Group Flow (vph)	207	130	0	64	232	0	20	790	0	290	1468	0
Confl. Peds. (#/hr)	7		7	7		7	21		14	14		21
Heavy Vehicles (%)	4%	2%	0%	7%	2%	1%	10%	4%	20%	1%	2%	1%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	38.0	38.0		24.0	24.0		31.0	31.0		50.0	50.0	
Effective Green, g (s)	38.0	38.0		24.0	24.0		31.0	31.0		50.0	50.0	
Actuated g/C Ratio	0.38	0.38		0.24	0.24		0.31	0.31		0.50	0.50	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	246	654		280	384		68	1052		374	1734	
v/s Ratio Prot	c0.08	0.08			0.14			0.23		0.12	c0.42	
v/s Ratio Perm	c0.23			0.05			0.09			0.27		
v/c Ratio	0.84	0.20		0.23	0.60		0.29	0.75		0.78	0.85	
Uniform Delay, d1	25.0	20.8		30.6	33.8		26.2	31.0		18.1	21.7	
Progression Factor	1.00	1.00		1.00	1.00		1.37	1.30		1.34	0.90	
Incremental Delay, d2	27.9	0.7		1.9	6.9		9.8	4.5		13.5	4.9	
Delay (s)	52.9	21.5		32.5	40.6		45.7	45.0		37.7	24.5	
Level of Service	D	C		C	D		D	D		D	C	
Approach Delay (s)		39.9			39.6			45.0			26.7	
Approach LOS		D			D			D			C	

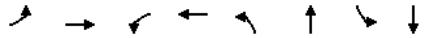
Intersection Summary				
HCM 2000 Control Delay	34.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.91			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	97.3%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	31	13	4	617	1154	19
Future Volume (Veh/h)	31	13	4	617	1154	19
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)	34	14	4	671	1254	21
Pedestrians	8				1	
Lane Width (m)	3.6				3.6	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	1				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				229	157	
pX, platoon unblocked	0.68	0.65	0.65			
vC, conflicting volume	1617	646	1283			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	578	0	375			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	89	98	99			
cM capacity (veh/h)	302	705	767			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	48	228	447	836	439
Volume Left	34	4	0	0	0
Volume Right	14	0	0	0	21
cSH	362	767	1700	1700	1700
Volume to Capacity	0.13	0.01	0.26	0.49	0.26
Queue Length 95th (m)	3.6	0.1	0.0	0.0	0.0
Control Delay (s)	16.4	0.2	0.0	0.0	0.0
Lane LOS	C	A			
Approach Delay (s)	16.4	0.1		0.0	
Approach LOS	C				

Intersection Summary			
Average Delay		0.4	
Intersection Capacity Utilization		42.5%	ICU Level of Service
Analysis Period (min)		15	



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	233	312	52	338	13	530	86	1385
v/c Ratio	0.79	0.45	0.18	0.69	0.16	0.40	0.21	0.80
Control Delay	43.5	24.8	30.2	40.2	26.1	22.9	12.7	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.5	24.8	30.2	40.2	26.1	22.9	12.7	17.7
Queue Length 50th (m)	32.3	44.8	8.2	59.9	1.7	39.8	6.1	58.8
Queue Length 95th (m)	#64.5	69.6	18.5	91.9	6.8	54.3	m10.3	85.6
Internal Link Dist (m)		76.2		327.8		194.7		204.9
Turn Bay Length (m)			30.0		20.0		20.0	
Base Capacity (vph)	295	687	283	488	81	1317	418	1721
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.45	0.18	0.69	0.16	0.40	0.21	0.80

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	214	235	52	48	253	58	12	460	28	79	985	289
Future Volume (vph)	214	235	52	48	253	58	12	460	28	79	985	289
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.97		1.00	0.97		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1733	1788		1745	1780		1801	3365		1759	3389	
Flt Permitted	0.29	1.00		0.57	1.00		0.11	1.00		0.36	1.00	
Satd. Flow (perm)	529	1788		1048	1780		208	3365		663	3389	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	233	255	57	52	275	63	13	500	30	86	1071	314
RTOR Reduction (vph)	0	8	0	0	8	0	0	4	0	0	27	0
Lane Group Flow (vph)	233	304	0	52	330	0	13	526	0	86	1358	0
Confl. Peds. (#/hr)	9		4	4		9	18		16	18		16
Heavy Vehicles (%)	4%	3%	3%	3%	4%	0%	0%	6%	6%	2%	2%	2%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	38.0	38.0		27.0	27.0		39.0	39.0		50.0	50.0	
Effective Green, g (s)	38.0	38.0		27.0	27.0		39.0	39.0		50.0	50.0	
Actuated g/C Ratio	0.38	0.38		0.27	0.27		0.39	0.39		0.50	0.50	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	285	679		282	480		81	1312		408	1694	
v/s Ratio Prot	c0.06	0.17			0.19			0.16		0.01	c0.40	
v/s Ratio Perm	c0.25			0.05			0.06			0.09		
v/c Ratio	0.82	0.45		0.18	0.69		0.16	0.40		0.21	0.80	
Uniform Delay, d1	27.1	23.2		28.0	32.7		19.8	22.1		13.6	20.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.97	0.72	
Incremental Delay, d2	22.3	2.1		1.4	7.8		4.2	0.9		0.9	3.0	
Delay (s)	49.4	25.3		29.5	40.5		24.0	23.0		14.1	18.0	
Level of Service	D	C		C	D		C	C		B	B	
Approach Delay (s)		35.6			39.1			23.0			17.7	
Approach LOS		D			D			C			B	

Intersection Summary				
HCM 2000 Control Delay	24.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.88			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	88.2%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	17	10	142	23	13	162
Future Volume (Veh/h)	17	10	142	23	13	162
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)	18	11	154	25	14	176
Pedestrians			78			5
Lane Width (m)			3.6			3.6
Walking Speed (m/s)			1.2			1.2
Percent Blockage			7			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			212			
pX, platoon unblocked						
vC, conflicting volume	448	172			179	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	448	172			179	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	99			99	
cM capacity (veh/h)	526	869			1397	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	29	179	190
Volume Left	18	0	14
Volume Right	11	25	0
cSH	618	1700	1397
Volume to Capacity	0.05	0.11	0.01
Queue Length 95th (m)	1.2	0.0	0.2
Control Delay (s)	11.1	0.0	0.6
Lane LOS	B		A
Approach Delay (s)	11.1	0.0	0.6
Approach LOS	B		

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	30.8%	ICU Level of Service	A
Analysis Period (min)	15		

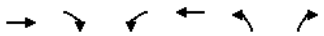
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	121	461	115	427	164	192
v/c Ratio	0.54	0.74	0.57	0.68	0.22	0.27
Control Delay	23.9	23.4	26.5	21.0	6.9	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.9	23.4	26.5	21.0	6.9	7.4
Queue Length 50th (m)	9.9	41.1	9.6	37.0	4.3	5.3
Queue Length 95th (m)	23.7	67.9	23.9	61.5	17.2	20.0
Internal Link Dist (m)		153.7		76.4	185.8	188.3
Turn Bay Length (m)	25.0		20.0			
Base Capacity (vph)	528	1465	473	1480	761	715
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.31	0.24	0.29	0.22	0.27

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	111	420	4	106	390	3	9	54	87	13	56	108
Future Volume (vph)	111	420	4	106	390	3	9	54	87	13	56	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.95	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.92			0.92	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1686	1824		1717	1843			1652			1561	
Flt Permitted	0.37	1.00		0.33	1.00			0.98			0.98	
Satd. Flow (perm)	659	1824		594	1843			1625			1530	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	121	457	4	115	424	3	10	59	95	14	61	117
RTOR Reduction (vph)	0	1	0	0	1	0	0	50	0	0	56	0
Lane Group Flow (vph)	121	460	0	115	426	0	0	114	0	0	136	0
Confl. Peds. (#/hr)	1		16	16		1	39		3	3		39
Heavy Vehicles (%)	7%	4%	0%	4%	3%	0%	0%	6%	3%	0%	11%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	19.0	19.0		19.0	19.0			24.2			24.2	
Effective Green, g (s)	19.0	19.0		19.0	19.0			24.2			24.2	
Actuated g/C Ratio	0.34	0.34		0.34	0.34			0.44			0.44	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	226	627		204	634			712			670	
v/s Ratio Prot		c0.25			0.23							
v/s Ratio Perm	0.18			0.19				0.07			c0.09	
v/c Ratio	0.54	0.73		0.56	0.67			0.16			0.20	
Uniform Delay, d1	14.6	15.9		14.7	15.4			9.4			9.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.4	4.4		3.5	2.8			0.5			0.7	
Delay (s)	17.0	20.3		18.3	18.3			9.8			10.2	
Level of Service	B	C		B	B			A			B	
Approach Delay (s)		19.6			18.3			9.8			10.2	
Approach LOS		B			B			A			B	

Intersection Summary					
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.44				
Actuated Cycle Length (s)	55.2	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	59.2%	ICU Level of Service		B	
Analysis Period (min)	15				

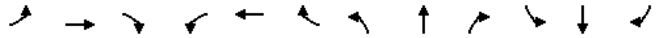
c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	29	7	1	19	17	12
Future Volume (Veh/h)	29	7	1	19	17	12
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)	32	8	1	21	18	13
Pedestrians					37	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					3	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			77		96	73
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			77		96	73
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)			1475		875	958

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	40	22	31
Volume Left	0	1	18
Volume Right	8	0	13
cSH	1700	1475	908
Volume to Capacity	0.02	0.00	0.03
Queue Length 95th (m)	0.0	0.0	0.8
Control Delay (s)	0.0	0.3	9.1
Lane LOS		A	A
Approach Delay (s)	0.0	0.3	9.1
Approach LOS			A

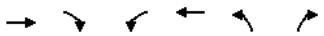
Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	453	3	11	441	3	3	0	22	3	3	12
Future Volume (Veh/h)	16	453	3	11	441	3	3	0	22	3	3	12
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	17	492	3	12	479	3	3	0	24	3	3	13
Pedestrians		4			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		100			199							
pX, platoon unblocked	0.91			0.79			0.83	0.83	0.79	0.83	0.83	0.91
vC, conflicting volume	482			495			1050	1034	496	1058	1034	484
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	387			225			728	707	226	737	707	390
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			99			99	100	96	99	99	98
cM capacity (veh/h)	1071			1059			267	291	640	261	291	600

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	512	494	27	19
Volume Left	17	12	3	3
Volume Right	3	3	24	13
cSH	1071	1059	554	437
Volume to Capacity	0.02	0.01	0.05	0.04
Queue Length 95th (m)	0.4	0.3	1.2	1.1
Control Delay (s)	0.5	0.3	11.8	13.6
Lane LOS	A	A	B	B
Approach Delay (s)	0.5	0.3	11.8	13.6
Approach LOS			B	B

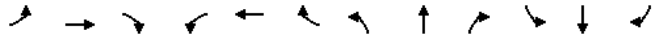
Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	42.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	31	7	6	15	6	7
Future Volume (Veh/h)	31	7	6	15	6	7
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)	34	8	7	16	7	8
Pedestrians				1	3	
Lane Width (m)				3.6	3.6	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			45		71	42
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			45		71	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		99	99
cM capacity (veh/h)			1559		927	1025

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	42	23	15
Volume Left	0	7	7
Volume Right	8	0	8
cSH	1700	1559	977
Volume to Capacity	0.02	0.00	0.02
Queue Length 95th (m)	0.0	0.1	0.4
Control Delay (s)	0.0	2.3	8.7
Lane LOS		A	A
Approach Delay (s)	0.0	2.3	8.7
Approach LOS			A

Intersection Summary				
Average Delay	2.3			
Intersection Capacity Utilization	16.4%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	432	28	70	441	6	1	2	17	7	4	3
Future Volume (Veh/h)	10	432	28	70	441	6	1	2	17	7	4	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	470	30	76	479	7	1	2	18	8	4	3
Pedestrians					6						8	
Lane Width (m)					3.6						3.6	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					1						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		199			100							
pX, platoon unblocked												
vC, conflicting volume	494			500			904	1153	256	924	1164	251
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	494			500			904	1153	256	924	1164	251
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			93			100	99	98	96	98	100
cM capacity (veh/h)	1059			1060			212	179	739	200	176	744

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	246	265	316	246	21	15
Volume Left	11	0	76	0	1	8
Volume Right	0	30	0	7	18	3
cSH	1059	1700	1060	1700	522	225
Volume to Capacity	0.01	0.16	0.07	0.14	0.04	0.07
Queue Length 95th (m)	0.3	0.0	1.8	0.0	1.0	1.7
Control Delay (s)	0.5	0.0	2.6	0.0	12.2	22.2
Lane LOS	A		A		B	C
Approach Delay (s)	0.2		1.5		12.2	22.2
Approach LOS					B	C

Intersection Summary				
Average Delay	1.4			
Intersection Capacity Utilization	42.7%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	138	522	24	464	90	153	115	411
v/c Ratio	0.38	0.48	0.08	0.67	0.24	0.25	0.19	0.65
Control Delay	18.9	22.4	15.9	31.7	13.0	20.8	12.2	28.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.9	22.4	15.9	31.7	13.0	20.8	12.2	28.3
Queue Length 50th (m)	14.0	28.4	2.3	33.3	7.1	16.4	9.2	52.9
Queue Length 95th (m)	26.8	53.7	7.0	50.2	16.4	34.6	19.9	#99.4
Internal Link Dist (m)		80.3		65.0		84.7		300.6
Turn Bay Length (m)	20.0		30.0		15.0		25.0	
Base Capacity (vph)	382	1509	357	1520	419	607	636	632
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.35	0.07	0.31	0.21	0.25	0.18	0.65

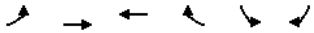
Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	358	122	22	335	92	83	114	27	106	270	109
Future Volume (vph)	127	358	122	22	335	92	83	114	27	106	270	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		0.98	1.00	
Frt	1.00	0.96		1.00	0.97		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1761	3307		1484	3341		1682	1750		1746	1787	
Flt Permitted	0.31	1.00		0.46	1.00		0.33	1.00		0.65	1.00	
Satd. Flow (perm)	580	3307		717	3341		587	1750		1203	1787	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	138	389	133	24	364	100	90	124	29	115	293	118
RTOR Reduction (vph)	0	35	0	0	30	0	0	7	0	0	13	0
Lane Group Flow (vph)	138	487	0	24	434	0	90	146	0	115	398	0
Confl. Peds. (#/hr)	20		29	29		20	18		34	34		18
Heavy Vehicles (%)	2%	2%	5%	20%	4%	0%	7%	4%	6%	1%	1%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	31.2	24.6		20.5	17.9		32.8	26.5		33.2	26.7	
Effective Green, g (s)	31.2	24.6		20.5	17.9		32.8	26.5		33.2	26.7	
Actuated g/C Ratio	0.39	0.31		0.26	0.22		0.41	0.33		0.41	0.33	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	362	1014		208	745		326	578		542	594	
v/s Ratio Prot	c0.04	0.15		0.00	c0.13		c0.02	0.08		0.02	c0.22	
v/s Ratio Perm	0.10			0.03			0.09			0.07		
v/c Ratio	0.38	0.48		0.12	0.58		0.28	0.25		0.21	0.67	
Uniform Delay, d1	16.7	22.6		22.6	27.8		15.4	19.6		14.7	23.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.4		0.2	1.2		0.5	1.0		0.2	5.9	
Delay (s)	17.4	23.0		22.8	29.0		15.9	20.7		14.9	28.9	
Level of Service	B	C		C	C		B	C		B	C	
Approach Delay (s)		21.8			28.7			18.9			25.8	
Approach LOS		C			C			B			C	

Intersection Summary					
HCM 2000 Control Delay	24.3	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.56				
Actuated Cycle Length (s)	80.2	Sum of lost time (s)	20.0		
Intersection Capacity Utilization	63.4%	ICU Level of Service	B		
Analysis Period (min)	15				

c Critical Lane Group



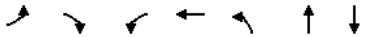
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	14	81	107	58	173	59
Future Volume (Veh/h)	14	81	107	58	173	59
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	88	116	63	188	64
Pedestrians		2			5	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			105			
pX, platoon unblocked						
vC, conflicting volume	184				270	154
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	184				270	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 %	99				73	93
cM capacity (veh/h)	1385				708	886

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	103	179	252
Volume Left	15	0	188
Volume Right	0	63	64
cSH	1385	1700	746
Volume to Capacity	0.01	0.11	0.34
Queue Length 95th (m)	0.3	0.0	11.9
Control Delay (s)	1.2	0.0	12.3
Lane LOS	A		B
Approach Delay (s)	1.2	0.0	12.3
Approach LOS			B

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	36.1%	ICU Level of Service	A
Analysis Period (min)	15		

Queues
1: Bayfield St & Coulter St/Hwy 400 off-ramp

03-25-2022



Lane Group	EBL	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	37	277	203	341	223	2472	2458
v/c Ratio	0.37	0.54	0.49	0.85	0.87	0.71	1.30
Control Delay	61.2	19.4	54.6	74.3	73.0	15.8	170.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	3.5	0.0
Total Delay	61.2	19.4	54.6	74.3	73.0	19.2	170.6
Queue Length 50th (m)	9.8	21.0	55.6	101.5	52.3	160.6	~519.5
Queue Length 95th (m)	22.8	52.2	82.7	#155.2	#100.4	175.8	#559.0
Internal Link Dist (m)				232.7		82.1	97.3
Turn Bay Length (m)					65.0		
Base Capacity (vph)	99	513	411	400	257	3491	1889
Starvation Cap Reductn	0	0	0	0	0	906	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	0.37	0.54	0.49	0.85	0.87	0.96	1.30

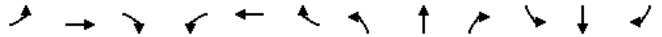
Intersection Summary

~ 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: Bayfield St & Coulter St/Hwy 400 off-ramp

03-25-2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	0	255	187	144	169	205	2274	0	0	2241	20
Future Volume (vph)	34	0	255	187	144	169	205	2274	0	0	2241	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0		4.5	6.0			6.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.91			0.95	
Frpb, ped/bikes	1.00		0.99	1.00	0.98		1.00	1.00			1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00			1.00	
Frt	1.00		0.85	1.00	0.92		1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1805		1560	1765	1696		1770	5085			3497	
Flt Permitted	0.22		1.00	0.95	1.00		0.05	1.00			1.00	
Satd. Flow (perm)	426		1560	1765	1696		87	5085			3497	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	37	0	277	203	157	184	223	2472	0	0	2436	22
RTOR Reduction (vph)	0	0	150	0	5	0	0	0	0	0	0	0
Lane Group Flow (vph)	37	0	128	203	336	0	223	2472	0	0	2458	0
Confl. Peds. (#/hr)	9		1	1		9	27		56	56		27
Heavy Vehicles (%)	0%	0%	2%	2%	0%	2%	2%	2%	0%	0%	3%	0%
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2					
Actuated Green, G (s)	35.0		35.0	35.0	35.0		103.0	103.0			81.0	
Effective Green, g (s)	35.0		35.0	35.0	35.0		103.0	103.0			81.0	
Actuated g/C Ratio	0.23		0.23	0.23	0.23		0.69	0.69			0.54	
Clearance Time (s)	6.0		6.0	6.0	6.0		4.5	6.0			6.0	
Lane Grp Cap (vph)	99		364	411	395		256	3491			1888	
v/s Ratio Prot					c0.20		c0.10	0.49			c0.70	
v/s Ratio Perm	0.09		0.08	0.12			0.50					
v/c Ratio	0.37		0.35	0.49	0.85		0.87	0.71			1.30	
Uniform Delay, d1	48.3		48.0	49.8	55.0		52.3	14.3			34.5	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	10.5		2.6	4.2	20.1		31.0	1.2			139.7	
Delay (s)	58.8		50.6	54.0	75.1		83.3	15.6			174.2	
Level of Service	E		D	D	E		F	B			F	
Approach Delay (s)		51.6			67.2			21.2			174.2	
Approach LOS		D			E			C			F	

Intersection Summary

HCM 2000 Control Delay	89.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	114.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Queues
2: Hwy 400 off-ramp/Hwy 400 on-ramp

03-25-2022

Lane Group	EBL	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	1239	426	1836	364	389	1215
v/c Ratio	0.92	0.66	1.08	0.71	1.13	0.44
Control Delay	51.3	35.5	90.5	40.0	128.1	22.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.3	35.5	90.5	40.0	128.1	22.0
Queue Length 50th (m)	175.3	89.0	~222.9	72.1	~117.1	79.8
Queue Length 95th (m)	206.5	126.7	#277.3	121.3	#199.7	103.5
Internal Link Dist (m)			107.4			83.3
Turn Bay Length (m)				30.0	90.0	
Base Capacity (vph)	1586	755	1703	516	344	2735
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.56	1.08	0.71	1.13	0.44

Intersection Summary

~ 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
2: Hwy 400 off-ramp/Hwy 400 on-ramp

03-25-2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1140	0	392	0	0	0	0	1689	335	358	1118	0
Future Volume (vph)	1140	0	392	0	0	0	0	1689	335	358	1118	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		6.0					6.0	6.0	4.5	6.0	
Lane Util. Factor	0.97		1.00					0.91	1.00	1.00	0.91	
Frpb, ped/bikes	1.00		0.99					1.00	0.87	1.00	1.00	
Flpb, ped/bikes	1.00		1.00					1.00	1.00	1.00	1.00	
Frt	1.00		0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3400		1592					5085	1376	1805	5187	
Flt Permitted	0.95		1.00					1.00	1.00	0.08	1.00	
Satd. Flow (perm)	3400		1592					5085	1376	147	5187	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1239	0	426	0	0	0	0	1836	364	389	1215	0
RTOR Reduction (vph)	0	0	34	0	0	0	0	0	60	0	0	0
Lane Group Flow (vph)	1239	0	392	0	0	0	0	1836	304	389	1215	0
Confl. Peds. (#/hr)			1	1			24		29	29		24
Heavy Vehicles (%)	3%	2%	0%	0%	2%	3%	3%	2%	2%	0%	0%	2%
Turn Type	Prot		Perm					NA	Perm	pm+pt	NA	
Protected Phases	7							2		1	6	
Permitted Phases			4						2	6		
Actuated Green, G (s)	56.0		54.5					47.2	47.2	74.3	74.3	
Effective Green, g (s)	56.0		54.5					47.2	47.2	74.3	74.3	
Actuated g/C Ratio	0.40		0.39					0.34	0.34	0.53	0.53	
Clearance Time (s)	4.5		6.0					6.0	6.0	4.5	6.0	
Vehicle Extension (s)	3.0		3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	1352		616					1704	461	343	2737	
v/s Ratio Prot	c0.36							0.36		c0.18	0.23	
v/s Ratio Perm			0.25						0.22	c0.42		
v/c Ratio	0.92		0.64					1.08	0.66	1.13	0.44	
Uniform Delay, d1	40.2		35.1					46.8	39.9	46.5	20.5	
Progression Factor	1.00		1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	9.9		2.2					46.0	7.2	90.1	0.5	
Delay (s)	50.1		37.3					92.8	47.2	136.6	21.0	
Level of Service	D		D					F	D	F	C	
Approach Delay (s)		46.8			0.0			85.2			49.1	
Approach LOS		D			A			F			D	

Intersection Summary

HCM 2000 Control Delay	62.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	140.8	Sum of lost time (s)	16.5
Intersection Capacity Utilization	97.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Queues
4: Bayfield St & Grove St

03-25-2022

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	191	117	111	613	61	1478	473	1467
v/c Ratio	0.92	0.17	0.34	1.12	0.81	1.27	1.44	0.84
Control Delay	71.2	17.6	33.8	102.9	85.9	165.4	238.5	25.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.2	17.6	33.8	102.9	85.9	165.4	238.5	25.8
Queue Length 50th (m)	26.1	12.4	18.4	~115.8	11.9	~194.4	~115.3	126.1
Queue Length 95th (m)	#64.0	25.1	34.8	#184.7	m14.2	m#228.7	#178.9	159.4
Internal Link Dist (m)		81.6		331.6		133.3		100.6
Turn Bay Length (m)	20.0		30.0		30.0		50.0	
Base Capacity (vph)	207	676	322	546	75	1161	329	1754
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.17	0.34	1.12	0.81	1.27	1.44	0.84

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
4: Bayfield St & Grove St

03-25-2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	176	75	32	102	120	444	56	1238	121	435	1126	224
Future Volume (vph)	176	75	32	102	120	444	56	1238	121	435	1126	224
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.97		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.88		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1787		1728	1586		1795	3495		1787	3408	
Flt Permitted	0.13	1.00		0.68	1.00		0.12	1.00		0.11	1.00	
Satd. Flow (perm)	253	1787		1240	1586		229	3495		203	3408	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	191	82	35	111	130	483	61	1346	132	473	1224	243
RTOR Reduction (vph)	0	15	0	0	134	0	0	7	0	0	17	0
Lane Group Flow (vph)	191	102	0	111	479	0	61	1471	0	473	1450	0
Confl. Peds. (#/hr)	15		10	10		15	24		18	18		24
Heavy Vehicles (%)	0%	1%	0%	3%	1%	3%	0%	1%	4%	1%	2%	1%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	37.0	37.0		26.0	26.0		33.0	33.0		51.0	51.0	
Effective Green, g (s)	37.0	37.0		26.0	26.0		33.0	33.0		51.0	51.0	
Actuated g/C Ratio	0.37	0.37		0.26	0.26		0.33	0.33		0.51	0.51	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	202	661		322	412		75	1153		325	1738	
v/s Ratio Prot	c0.07	0.06			c0.30			0.42		c0.20	0.43	
v/s Ratio Perm	0.28			0.09			0.27			c0.54		
v/c Ratio	0.95	0.15		0.34	1.16		0.81	1.28		1.46	0.83	
Uniform Delay, d1	27.1	21.0		30.1	37.0		30.7	33.5		29.6	20.9	
Progression Factor	1.00	1.00		1.00	1.00		1.45	1.41		1.00	1.00	
Incremental Delay, d2	50.5	0.5		2.9	96.8		37.3	127.6		221.3	4.9	
Delay (s)	77.6	21.5		33.0	133.8		81.9	174.7		250.9	25.8	
Level of Service	E	C		C	F		F	F		F	C	
Approach Delay (s)		56.3			118.4			171.0			80.7	
Approach LOS		E			F			F			F	

Intersection Summary

HCM 2000 Control Delay	115.9	HCM 2000 Level of Service		F	
HCM 2000 Volume to Capacity ratio	1.37				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)		20.0	
Intersection Capacity Utilization	123.6%	ICU Level of Service		H	
Analysis Period (min)	15				

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
5: Bayfield St & Dalton St

03-25-2022

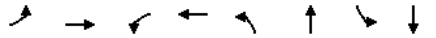
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	6	4	1302	1071	23
Future Volume (Veh/h)	13	6	4	1302	1071	23
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	7	4	1415	1164	25
Pedestrians	9					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				229	157	
pX, platoon unblocked	0.81	0.67	0.67			
vC, conflicting volume	1901	604	1198			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	105	0	320			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	99	100			
cM capacity (veh/h)	706	724	825			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	21	476	943	776	413
Volume Left	14	4	0	0	0
Volume Right	7	0	0	0	25
cSH	712	825	1700	1700	1700
Volume to Capacity	0.03	0.00	0.55	0.46	0.24
Queue Length 95th (m)	0.7	0.1	0.0	0.0	0.0
Control Delay (s)	10.2	0.1	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	10.2	0.0		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay		0.1		
Intersection Capacity Utilization		48.8%	ICU Level of Service	A
Analysis Period (min)		15		

Queues
6: Bayfield St & Wellington St

03-25-2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	388	493	39	439	48	1052	117	1158
v/c Ratio	0.92	0.70	0.12	0.95	0.66	0.91	0.87	0.84
Control Delay	54.3	32.5	15.3	68.9	72.4	44.3	67.0	29.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.3	32.5	15.3	68.9	72.4	44.3	67.0	29.5
Queue Length 50th (m)	59.7	83.0	3.9	86.3	8.3	106.7	13.7	69.1
Queue Length 95th (m)	#117.0	121.6	9.4	#148.7	#28.7	#147.0	m#22.3	99.5
Internal Link Dist (m)		76.2		327.8		194.7		204.9
Turn Bay Length (m)			30.0		20.0		20.0	
Base Capacity (vph)	420	700	312	461	73	1161	134	1376
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.70	0.13	0.95	0.66	0.91	0.87	0.84

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

HCM Signalized Intersection Capacity Analysis
6: Bayfield St & Wellington St

03-25-2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	357	415	39	36	324	80	44	937	31	108	828	237
Future Volume (vph)	357	415	39	36	324	80	44	937	31	108	828	237
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1836		1805	1809		1747	3513		1805	3372	
Flt Permitted	0.14	1.00		0.40	1.00		0.12	1.00		0.11	1.00	
Satd. Flow (perm)	259	1836		757	1809		223	3513		205	3372	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	388	451	42	39	352	87	48	1018	34	117	900	258
RTOR Reduction (vph)	0	3	0	0	9	0	0	3	0	0	26	0
Lane Group Flow (vph)	388	490	0	39	430	0	48	1049	0	117	1132	0
Confl. Peds. (#/hr)	27					27	17		28	28		17
Heavy Vehicles (%)	1%	2%	4%	0%	1%	0%	3%	2%	0%	0%	3%	1%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4		3	8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	48.0	38.0		31.0	25.0		33.0	33.0		40.0	40.0	
Effective Green, g (s)	48.0	38.0		31.0	25.0		33.0	33.0		40.0	40.0	
Actuated g/C Ratio	0.48	0.38		0.31	0.25		0.33	0.33		0.40	0.40	
Clearance Time (s)	4.0	6.0		4.0	6.0		6.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	414	697		297	452		73	1159		130	1348	
v/s Ratio Prot	c0.18	0.27		0.01	0.24			0.30		0.03	c0.34	
v/s Ratio Perm	c0.27			0.03			0.22			c0.33		
v/c Ratio	0.94	0.70		0.13	0.95		0.66	0.91		0.90	0.84	
Uniform Delay, d1	27.3	26.2		24.4	36.9		28.7	32.0		29.3	27.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.17	0.94	
Incremental Delay, d2	31.0	5.9		0.9	31.8		38.0	11.7		43.6	4.5	
Delay (s)	58.3	32.1		25.3	68.7		66.6	43.7		77.8	30.0	
Level of Service	E	C		C	E		E	D		E	C	
Approach Delay (s)		43.6			65.1			44.7			34.4	
Approach LOS		D			E			D			C	

Intersection Summary				
HCM 2000 Control Delay	43.5	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.99			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	95.5%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Unsignalized Intersection Capacity Analysis
7: Toronto St & Dalton St

03-25-2022

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	3	206	10	4	235
Future Volume (Veh/h)	13	3	206	10	4	235
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)	14	3	224	11	4	255
Pedestrians			3			2
Lane Width (m)			3.6			3.6
Walking Speed (m/s)			1.2			1.2
Percent Blockage			0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			212			
pX, platoon unblocked						
vC, conflicting volume	496	232			235	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	496	232			235	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	100			100	
cM capacity (veh/h)	531	806			1332	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	17	235	259
Volume Left	14	0	4
Volume Right	3	11	0
cSH	565	1700	1332
Volume to Capacity	0.03	0.14	0.00
Queue Length 95th (m)	0.7	0.0	0.1
Control Delay (s)	11.6	0.0	0.1
Lane LOS	B		A
Approach Delay (s)	11.6	0.0	0.1
Approach LOS	B		

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	26.2%	ICU Level of Service	A
Analysis Period (min)	15		

Queues
8: Toronto St & Wellington St

03-25-2022

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	157	635	177	457	238	290
v/c Ratio	0.41	0.83	0.74	0.46	0.42	0.50
Control Delay	17.2	27.8	29.7	11.5	17.5	15.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.2	27.8	29.7	11.5	17.5	15.6
Queue Length 50th (m)	14.2	72.0	10.7	34.8	16.7	16.3
Queue Length 95th (m)	27.9	109.7	#26.6	53.9	43.4	46.1
Internal Link Dist (m)		153.7		76.4	185.8	188.3
Turn Bay Length (m)	25.0		20.0			
Base Capacity (vph)	564	1127	238	1342	561	584
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.56	0.74	0.34	0.42	0.50

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
8: Toronto St & Wellington St

03-25-2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	571	13	163	417	4	6	91	121	4	80	183
Future Volume (vph)	144	571	13	163	417	4	6	91	121	4	80	183
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		4.5	6.0			6.0			6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.93			0.91	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1803	1893		1805	1879			1730			1666	
Flt Permitted	0.50	1.00		0.15	1.00			0.99			1.00	
Satd. Flow (perm)	948	1893		293	1879			1710			1659	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	157	621	14	177	453	4	7	99	132	4	87	199
RTOR Reduction (vph)	0	1	0	0	0	0	0	53	0	0	92	0
Lane Group Flow (vph)	157	634	0	177	457	0	0	185	0	0	198	0
Confl. Peds. (#/hr)	1		2	2		1	10		3	3		10
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	1%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	27.7	27.7		35.7	35.7			20.3			20.3	
Effective Green, g (s)	27.7	27.7		35.7	35.7			20.3			20.3	
Actuated g/C Ratio	0.41	0.41		0.53	0.53			0.30			0.30	
Clearance Time (s)	6.0	6.0		4.5	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	386	771		231	986			510			495	
v/s Ratio Prot		0.33		c0.04	0.24							
v/s Ratio Perm	0.17			c0.36				0.11			c0.12	
v/c Ratio	0.41	0.82		0.77	0.46			0.36			0.40	
Uniform Delay, d1	14.3	18.0		12.5	10.1			18.8			19.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.7	7.1		14.1	0.3			2.0			2.4	
Delay (s)	15.0	25.0		26.6	10.5			20.8			21.4	
Level of Service	B	C		C	B			C			C	
Approach Delay (s)		23.0			15.0			20.8			21.4	
Approach LOS		C			B			C			C	

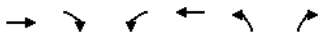
Intersection Summary

HCM 2000 Control Delay	19.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	68.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
9: Mary St & Dalton St

03-25-2022



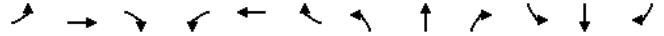
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	14	1	6	22	9	6
Future Volume (Veh/h)	14	1	6	22	9	6
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	1	7	24	10	7
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			17		54	16
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			17		54	16
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)			1599		949	1062

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	16	31	17
Volume Left	0	7	10
Volume Right	1	0	7
cSH	1700	1599	992
Volume to Capacity	0.01	0.00	0.02
Queue Length 95th (m)	0.0	0.1	0.4
Control Delay (s)	0.0	1.7	8.7
Lane LOS		A	A
Approach Delay (s)	0.0	1.7	8.7
Approach LOS			A

Intersection Summary				
Average Delay	3.1			
Intersection Capacity Utilization	16.4%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
10: Mary St & Wellington St

03-25-2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	693	4	4	544	3	3	3	21	1	0	1
Future Volume (Veh/h)	4	693	4	4	544	3	3	3	21	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	753	4	4	591	3	3	3	23	1	0	1
Pedestrians		1			1						3	
Lane Width (m)		3.6			3.6						3.6	
Walking Speed (m/s)		1.2			1.2						1.2	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		100			199							
pX, platoon unblocked	0.83			0.69			0.77	0.77	0.69	0.77	0.77	0.83
vC, conflicting volume	597			757			1366	1368	756	1392	1368	596
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	407			417			820	823	415	854	824	407
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			99	99	95	99	100	100
cM capacity (veh/h)	949			783			224	235	437	199	235	531

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	761	598	29	2
Volume Left	4	4	3	1
Volume Right	4	3	23	1
cSH	949	783	368	290
Volume to Capacity	0.00	0.01	0.08	0.01
Queue Length 95th (m)	0.1	0.1	2.0	0.2
Control Delay (s)	0.1	0.1	15.6	17.5
Lane LOS	A	A	C	C
Approach Delay (s)	0.1	0.1	15.6	17.5
Approach LOS			C	C

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	49.7%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
11: Maple Ave & Dalton St

03-25-2022

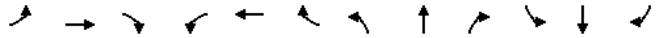
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	23	4	3	23	4	6
Future Volume (Veh/h)	23	4	3	23	4	6
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	25	4	3	25	4	7
Pedestrians					9	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			38		67	36
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			38		67	36
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	99
cM capacity (veh/h)			1560		929	1029

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	29	28	11
Volume Left	0	3	4
Volume Right	4	0	7
cSH	1700	1560	990
Volume to Capacity	0.02	0.00	0.01
Queue Length 95th (m)	0.0	0.0	0.3
Control Delay (s)	0.0	0.8	8.7
Lane LOS		A	A
Approach Delay (s)	0.0	0.8	8.7
Approach LOS			A

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	15.9%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
12: Maple Ave & Wellington St

03-25-2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	681	7	25	510	4	16	1	66	3	5	7
Future Volume (Veh/h)	10	681	7	25	510	4	16	1	66	3	5	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	740	8	27	554	4	17	1	72	3	5	8
Pedestrians					5						2	
Lane Width (m)					3.6						3.6	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		199			100							
pX, platoon unblocked												
vC, conflicting volume	560			748			1108	1380	379	1082	1382	281
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	560			748			1108	1380	379	1082	1382	281
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			89	99	88	98	96	99
cM capacity (veh/h)	1005			856			153	137	616	145	137	715

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	381	378	304	281	90	16
Volume Left	11	0	27	0	17	3
Volume Right	0	8	0	4	72	8
cSH	1005	1700	856	1700	383	234
Volume to Capacity	0.01	0.22	0.03	0.17	0.24	0.07
Queue Length 95th (m)	0.3	0.0	0.8	0.0	7.2	1.8
Control Delay (s)	0.4	0.0	1.2	0.0	17.3	21.5
Lane LOS	A		A		C	C
Approach Delay (s)	0.2		0.6		17.3	21.5
Approach LOS					C	C

Intersection Summary				
Average Delay	1.6			
Intersection Capacity Utilization	47.4%	ICU Level of Service		A
Analysis Period (min)	15			

Queues
13: Ross St/Sunnidale Rd & Welllington St/Wellington St

03-25-2022

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	309	795	14	668	250	406	152	335
v/c Ratio	0.81	0.55	0.05	0.77	0.65	0.76	0.48	0.73
Control Delay	34.6	20.8	13.5	35.1	25.8	40.3	21.6	39.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.6	20.8	13.5	35.1	25.8	40.3	21.6	39.8
Queue Length 50th (m)	34.9	50.3	1.3	54.2	27.3	65.1	15.6	50.7
Queue Length 95th (m)	#72.5	82.7	4.5	73.6	#52.8	#123.6	32.0	#100.6
Internal Link Dist (m)		80.3		65.0		84.7		300.6
Turn Bay Length (m)	20.0		30.0		15.0		25.0	
Base Capacity (vph)	381	1563	319	1308	395	537	328	461
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.51	0.04	0.51	0.63	0.76	0.46	0.73

Intersection Summary

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

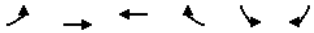
HCM Signalized Intersection Capacity Analysis
13: Ross St/Sunnidale Rd & Welllington St/Wellington St

03-25-2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	284	578	154	13	455	159	230	344	29	140	200	109
Future Volume (vph)	284	578	154	13	455	159	230	344	29	140	200	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	0.99		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1786	3429		1799	3398		1765	1871		1783	1764	
Flt Permitted	0.20	1.00		0.35	1.00		0.27	1.00		0.28	1.00	
Satd. Flow (perm)	378	3429		665	3398		508	1871		533	1764	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	309	628	167	14	495	173	250	374	32	152	217	118
RTOR Reduction (vph)	0	23	0	0	38	0	0	3	0	0	19	0
Lane Group Flow (vph)	309	772	0	14	630	0	250	403	0	152	316	0
Confl. Peds. (#/hr)	9		13	13		9	18		10	10		18
Heavy Vehicles (%)	1%	0%	4%	0%	1%	1%	2%	0%	0%	1%	1%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	41.7	36.5		25.9	24.7		36.8	25.3		30.6	22.2	
Effective Green, g (s)	41.7	36.5		25.9	24.7		36.8	25.3		30.6	22.2	
Actuated g/C Ratio	0.46	0.40		0.28	0.27		0.40	0.28		0.33	0.24	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	372	1369		203	918		362	517		293	428	
v/s Ratio Prot	c0.12	0.23		0.00	0.19		c0.09	c0.22		0.05	0.18	
v/s Ratio Perm	c0.26			0.02			0.19			0.13		
v/c Ratio	0.83	0.56		0.07	0.69		0.69	0.78		0.52	0.74	
Uniform Delay, d1	18.2	21.3		23.7	29.9		20.2	30.5		22.8	31.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	14.5	0.5		0.1	2.1		5.6	11.1		1.6	10.9	
Delay (s)	32.7	21.8		23.8	32.0		25.8	41.6		24.3	42.8	
Level of Service	C	C		C	C		C	D		C	D	
Approach Delay (s)		24.9			31.9			35.6			37.0	
Approach LOS		C			C			D			D	

Intersection Summary					
HCM 2000 Control Delay	30.9	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.85				
Actuated Cycle Length (s)	91.4	Sum of lost time (s)	20.0		
Intersection Capacity Utilization	80.8%	ICU Level of Service	D		
Analysis Period (min)	15				

c Critical Lane Group



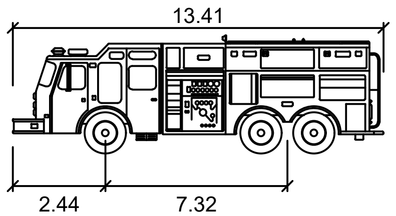
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	51	148	186	164	100	39
Future Volume (Veh/h)	51	148	186	164	100	39
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	55	161	202	178	109	42
Pedestrians		2			5	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			105			
pX, platoon unblocked						
vC, conflicting volume	385				567	298
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	385				567	298
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				76	94
cM capacity (veh/h)	1169				460	737

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	216	380	151
Volume Left	55	0	109
Volume Right	0	178	42
cSH	1169	1700	514
Volume to Capacity	0.05	0.22	0.29
Queue Length 95th (m)	1.2	0.0	9.7
Control Delay (s)	2.4	0.0	14.9
Lane LOS	A		B
Approach Delay (s)	2.4	0.0	14.9
Approach LOS			B

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	49.0%	ICU Level of Service	A
Analysis Period (min)	15		

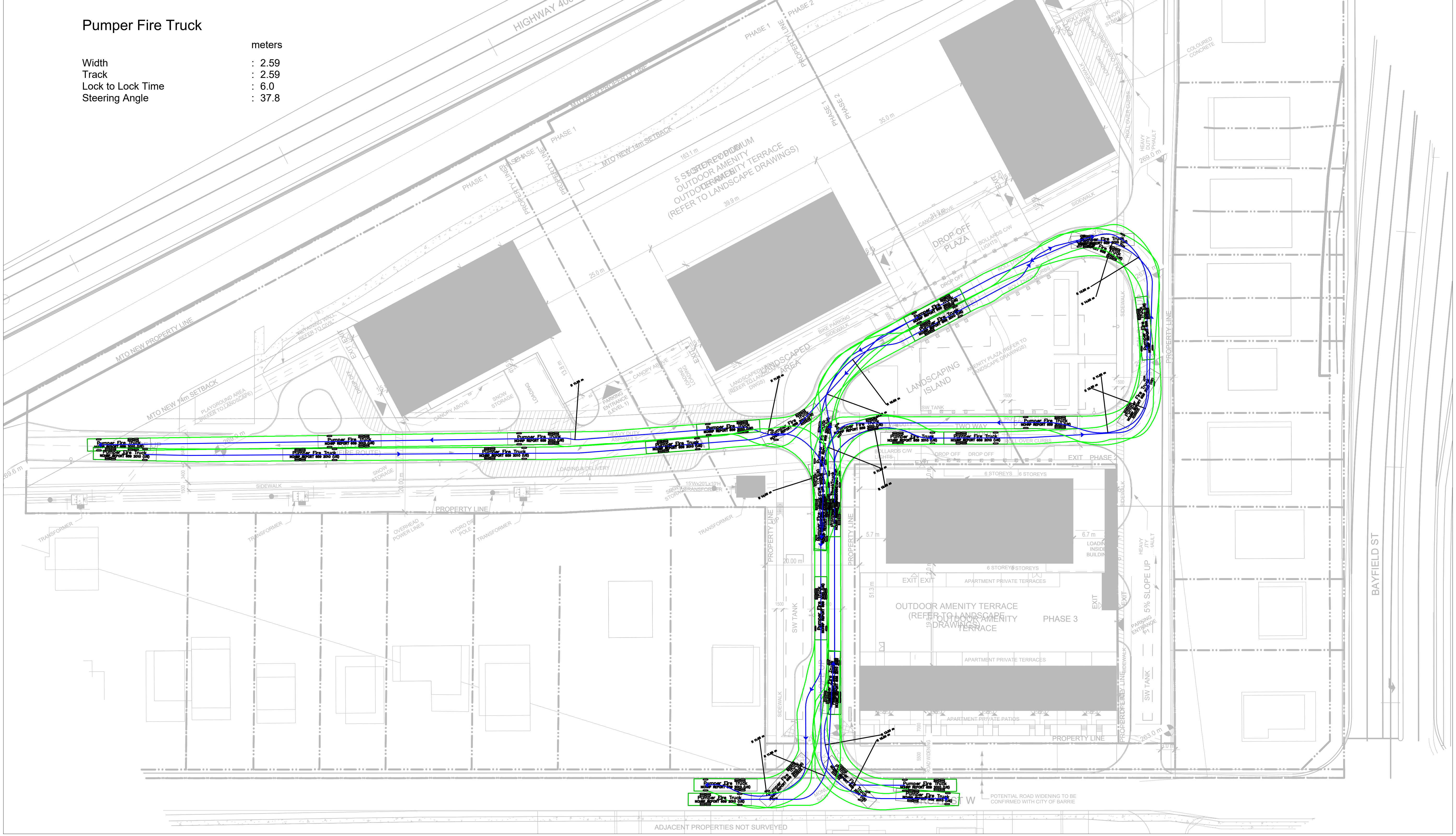
Appendix K

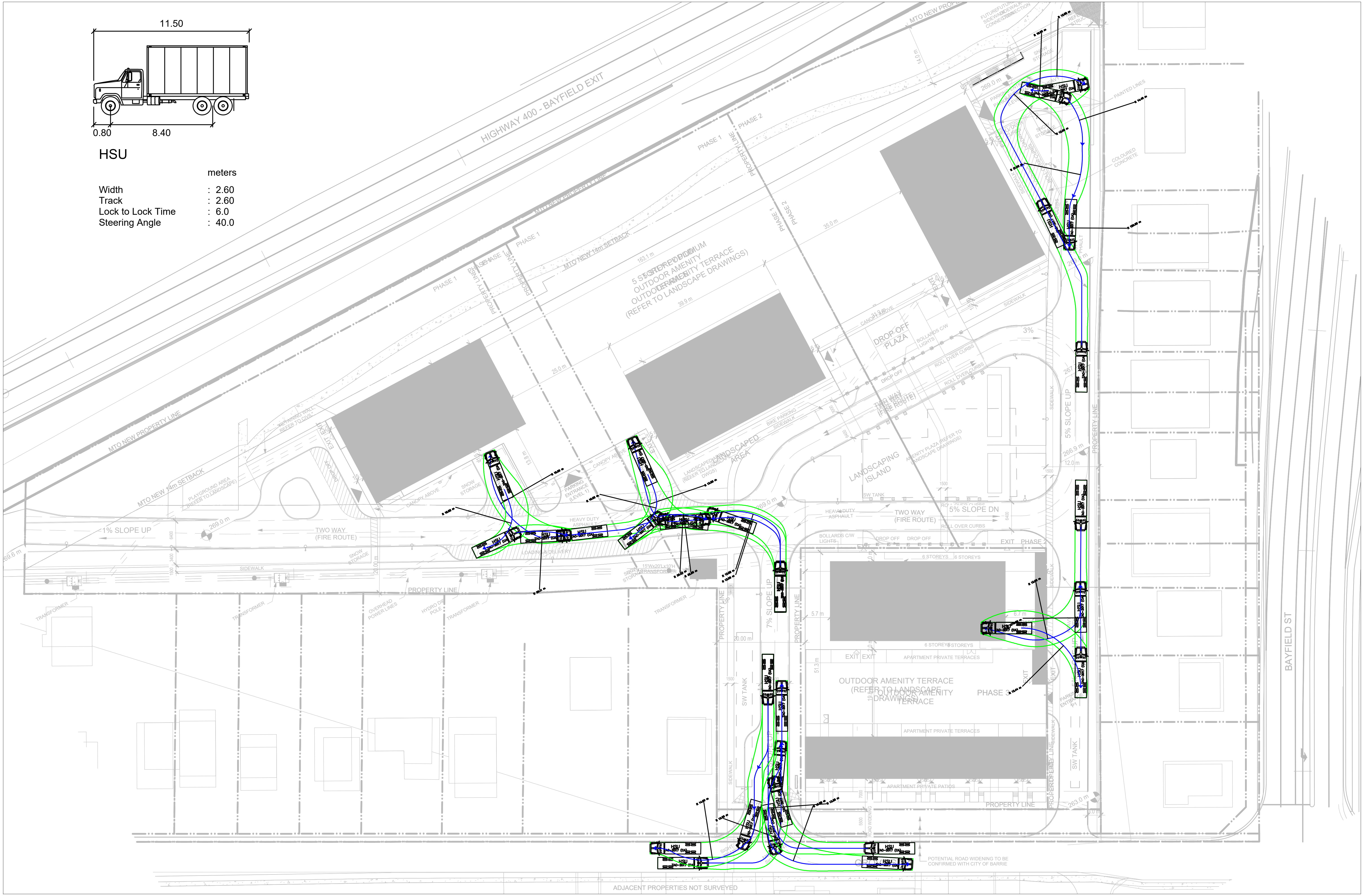
Vehicle Maneuvering Diagrams



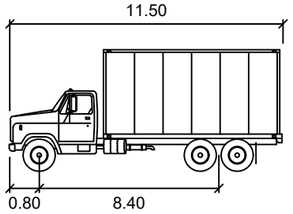
Pumper Fire Truck

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





11.50
0.80
8.40
HSU
meters
Width : 2.60
Track : 2.60
Lock to Lock Time : 6.0
Steering Angle : 40.0
HIGHWAY 400 - BAYFIELD EXIT
MTO NEW PROPERTY LINE
MTO NEW 14m SETBACK
PHASE 1
PHASE 2
PROPERTY LINE
5 STOREY PODIUM
OUTDOOR AMENITY TERRACE
(REFER TO LANDSCAPE DRAWINGS)
163.1 m
39.9 m
35.0 m
25.0 m
14.0 m
13.8 m
DROP OFF PLAZA
BOLLARDS C/W LIGHTS
ROLL OVER CURBS
DROP OFF
TWO WAY
(FIRE ROUTE)
BIKE PARKING
SIDEWALK
LANDSCAPED AREA
LANDSCAPING ISLAND
AMENITY PLAZA (REFER TO LANDSCAPE DRAWINGS)
CANOPY ABOVE
SNOW STORAGE
PARKING ENTRANCE (LEVEL 1)
HEAVY DUTY ASPHAULT
LOADING & DELIVERY
"RETAINING WALL, REFER TO CIVIL"
PLAYGROUND AREA (REFER TO LANDSCAPE)
EXIT
1% SLOPE UP
269.0 m
269.6 m
6400
3400
1500
20.00 m
SIDEWALK
PROPERTY LINE
TRANSFORMER
OVERHEAD POWER LINES
HYDRO DIP POLE
15'Wx20'Lx10'H TRANSFORMER
7% SLOPE UP
SW TANK
5.7 m
6 STOREYS
51.3 m
APARTMENT PRIVATE TERRACES
APARTMENT PRIVATE PATIOS
OUTDOOR AMENITY TERRACE
(REFER TO LANDSCAPE DRAWINGS)
PHASE 3
6.7 m
5% SLOPE DN
5% SLOPE UP
3%
266.9 m
267
12.0 m
263.0 m
3.0 m
PAINTED LINES
COLOURED CONCRETE
FUTURE SIDEWALK CONNECTION
PARKING ENTRANCE P1
ROAD WIDENING
7000
5500
POTENTIAL ROAD WIDENING TO BE CONFIRMED WITH CITY OF BARRIE
ADJACENT PROPERTIES NOT SURVEYED
BAYFIELD ST
HSU
TAC-2017 (CA)

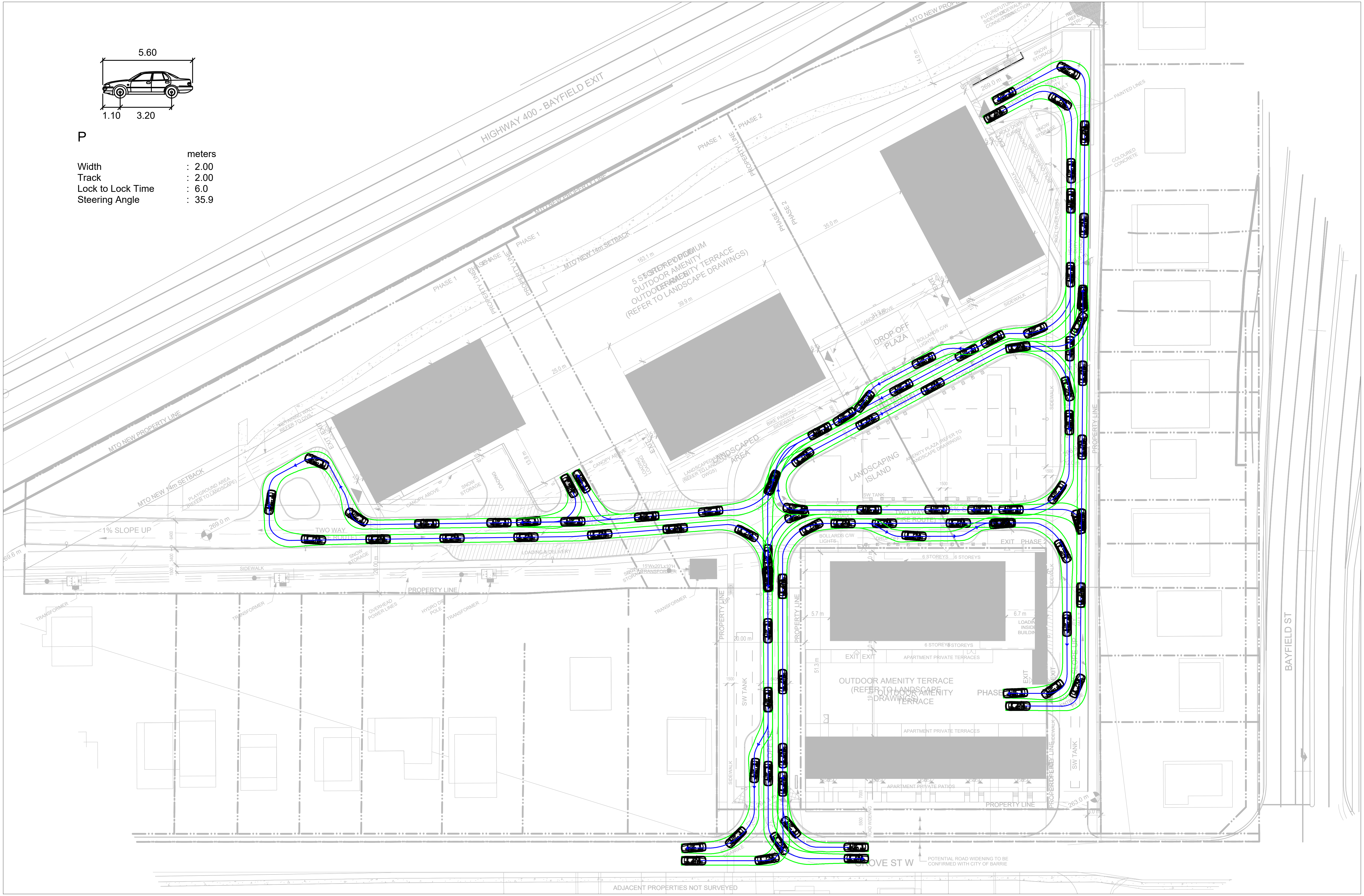


HSU

	meters
Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 40.0

HIGHWAY 400 - BAYFIELD EXIT
MTO NEW PROPERTY LINE
MTO NEW 14m SETBACK
PHASE 1
PHASE 2
PROPERTY LINE
5 STOREY PODIUM
OUTDOOR AMENITY TERRACE
(REFER TO LANDSCAPE DRAWINGS)
DROP-OFF PLAZA
TWO WAY (FIRE ROUTE)
1% SLOPE UP
5% SLOPE DN
5% SLOPE UP
SIDEWALK
SNOW STORAGE
LANDSCAPING ISLAND
SW TANK
APARTMENT PRIVATE TERRACES
APARTMENT PRIVATE PATIOS
OUTDOOR AMENITY TERRACE
(REFER TO LANDSCAPE DRAWINGS)
PHASE 3
BAYFIELD ST
ADJACENT PROPERTIES NOT SURVEYED
POTENTIAL ROAD WIDENING TO BE CONFIRMED WITH CITY OF BARRIE

7.62
1.01
4.50
AllStar Chevrolet 4500 (2016) Type 4
meters
Width : 2.44
Track : 1.96
Lock to Lock Time : 6.0
Steering Angle : 34.2
HIGHWAY 400 - BAYFIELD EXIT
MTO NEW PROPERTY LINE
MTO NEW 14m SETBACK
PROPERTY LINE
PHASE 1
PHASE 2
PHASE 3
DROP OFF PLAZA
LANDSCAPING ISLAND
LANDSCAPED AREA
TWO WAY (FIRE ROUTE)
1% SLOPE UP
5% SLOPE UP
5% SLOPE DN
LOADING & DELIVERY
SIDEWALK
SW TANK
OUTDOOR AMENITY TERRACE (REFER TO LANDSCAPE DRAWINGS)
APARTMENT PRIVATE TERRACES
APARTMENT PRIVATE PATIOS
6 STOREYS
BAYFIELD ST
POTENTIAL ROAD WIDENING TO BE CONFIRMED WITH CITY OF BARRIE
ADJACENT PROPERTIES NOT SURVEYED


5.60
1.10
3.20
P
meters
Width : 2.00
Track : 2.00
Lock to Lock Time : 6.0
Steering Angle : 35.9
HIGHWAY 400 - BAYFIELD EXIT
MTO NEW PROPERTY LINE
MTO NEW 14m SETBACK
PHASE 1
PHASE 2
PROPERTY LINE
DROP OFF PLAZA
LANDSCAPING ISLAND
LANDSCAPED AREA
TWO WAY FIRE ROUTE
1% SLOPE UP
SIDEWALK
OUTDOOR AMENITY TERRACE (REFER TO LANDSCAPE DRAWINGS)
APARTMENT PRIVATE TERRACES
APARTMENT PRIVATE PATIOS
6 STOREYS
SW TANK
GROVE ST W
BAYFIELD ST
POTENTIAL ROAD WIDENING TO BE CONFIRMED WITH CITY OF BARRIE
ADJACENT PROPERTIES NOT SURVEYED