TRANSPORTATION IMPACT STUDY

3855 DUNDAS STREET WEST
COMMERCIAL DEVELOPMENT
CITY OF MISSISSAUGA

PREPARED FOR:
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PREPARED BY:

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ORIGINAL - NOVEMBER 2018
UPDATED – NOVEMBER 2020

CFCA FILE NO. 1644-5084

CROZIER
CONSULTING ENGINEERS

Revision Number	Date	Comments
Rev. 0	November 2018	1st Submission
Rev. 1	November 2020	2nd Submission, updated to address agency comments

1.0 Executive Summary

Background

CF Crozier & Associates Inc. (Crozier) was retained by Dymon Investments Ltd. (Dymon) to undertake a Transportation Impact Study (TIS) in support of the development application for a proposed commercial development located at 3855 Dundas Street West in the City of Mississauga.

The updated development proposal includes two two-storey buildings consisting of a total of 4,068 sq. m (41,800 sq. ft) of industrial condo use and one five-storey building consisting of a total of 16,388 sq. m (176,405 sq. ft) of self-storage space. There are 135 parking spaces proposed as a part of the development proposal. The development proposes a right-in/right-out (RI/RO) access to Dundas Street West and a full-moves access to Ninth Line opposite the Glen Oaks Funeral Home & Cemetery Access (herein referred to as the Glen Oaks Access). The Site Plan, prepared by Nicholas Caragianis Architect Inc. (updated November 18, 2020) has been included as **Figure 1.**

This Updated TIS has been prepared to address agency comments and reflect the revised development proposal.

Scope

The study has been completed in accordance with the guidelines outlined below, as well as with Terms of Reference established with City of Mississauga staff and Region of Halton staff.

- Guidelines for the Preparation of Traffic Impact Studies (MTO, September 2014);
- Transportation Impact Study Guidelines (Region of Halton, January 2015); and
- Traffic Impact Study Guidelines (City of Mississauga).

The Transportation Impact Study analyzes the following intersections:

- Dundas Street West and Ninth Line
- Dundas Street West and Highway 403 West Ramp Terminal
- Dundas Street West and Highway 403 East Ramp Terminal
- Ninth Line and Burnhamthorpe Road
- Dundas Street West and proposed site access
- Ninth Line and Glen Oaks Access / proposed site access

Existing Conditions

Analysis of 2018 existing traffic operations indicates that the boundary road network is currently operating at acceptable levels of service, with the exception of Dundas Street and Ninth Line which is currently operating at capacity during the weekday p.m. peak hour. It was noted, however, that the modelling of the northbound right-turn is considered to overstate traffic operations for the aforementioned movement as camera footage indicates that despite the permissive phase type, northbound right-turn vehicles are steadily proceeding through the intersection during the protected eastbound and westbound left-turn phases.

Several other movements on the boundary road network are operating at or beyond capacity. There are opportunities to improve existing traffic operations, as noted:

- Implement a protected-overlap phase type for the northbound right-turn movement at Dundas Street West and Ninth Line; and

- Optimize signal timings for all signalized intersections.

Additionally, the intersection of Ninth Line and Burnhamthorpe Road is planned to be converted to roundabout control in the future, which would mitigate existing traffic operational issues.

Future Background Conditions

It is assumed that the proposed development will be fully built-out within the five-year horizon (2023). The MTO's guidelines require analysis of the five and ten year horizons from the estimated year of full build-out. Therefore, the 2023, 2028 and 2033 horizon years were analyzed, as confirmed by City staff and Regional staff.

Growth rates for Dundas Street West, Ninth Line and Burnhamthorpe Road were provided by City staff and Regional staff, and growth rates for the Highway 403 off-ramp approaches were derived from historical traffic volumes on Highway 403.

The Region of Halton has instructed Crozier to account for the future roadway improvements outlined in **Table E1.**

Table E1: Future Roadway Improvements

Roadway	Segment or Intersection	Improvement	Assumed Year of Opening
Burnhamthorpe Road (future William Halton Parkway)	Trafalgar Road to east of Ninth Line	Widen to four lanes	2021 [1]
Ninth Line	William Halton Parkway	Two-lane roundabout construction	2021 [1]
	William Halton Parkway to Highway 407	Widen to four lanes	2025 [1]
	Dundas Street West to William Halton Parkway	Widen to four lanes	2027 [1]

Note 1: Assumed year of opening provided by Regional staff per the Region of Halton's Capital Implementation Plan.

Based on the assumed years of opening for the roadway improvements outlined above, the two-lane roundabout construction at Ninth Line and William Halton Parkway (existing Burnhamthorpe Road) and four-lane cross-section for William Halton Parkway was accounted for in the 2023, 2028 and 2033 horizon years, and the widening of Ninth Line was accounted for in the 2028 and 2033 horizon years.

Analysis of 2033 future background traffic operations indicate that the intersections of Dundas Street West and Ninth Line, and Dundas Street West and Highway 403 West Ramp Terminal are expected to operate at or beyond capacity during the weekday a.m. and p.m. peak hours, respectively. However, the signal timing recommendations to existing traffic operations are expected to ultimately reduce critical traffic operations. It is noted that the 95th percentile queue lengths at the Highway 403 ramp terminals to Dundas Street West are not expected to extend to the freeway segment and will not impede traffic operations on Highway 403. Additionally, the roundabout intersection of Ninth Line and William Halton Parkway is expected to operate at satisfactory levels of service, indicating that the implementation of roundabout control is expected to significantly improve traffic operations.

Future Total Conditions

The proposed development is expected to generate a total of 51, 68 and 95 total two-way trips during the weekday a.m. and p.m., and Saturday peak hours, respectively. These trip generation forecasts were conducted using a previous version of the development proposal which featured higher GFAs for both the self-storage and industrial condo buildings. Therefore, the trip generation forecasts and future total traffic analysis contained within this report are conservative.

Analysis for the southbound left-turn movement from Ninth Line to Site Access B indicates that an exclusive southbound left-turn lane with 15 metres of storage is warranted. However, the future widening of Ninth Line proposes a 3.0 metre centre lane which could be allocated as an exclusive southbound left-turn lane on Ninth Line to Site Access B, which would provide 15 metres of vehicle storage.

Analysis of 2033 future total traffic operations indicate that the intersections of Dundas Street West and Ninth Line, and Dundas Street West and Highway 403 West Ramp Terminal are expected to operate at or beyond capacity during the weekday a.m. and p.m. peak hours, respectively. These operations are consistent with 2033 future background conditions.

The maximum forecasted increase in control delay from 2033 future background to future total conditions at the Highway 403 ramp terminals on Dundas Street West is 1.5 seconds during the weekday a.m. peak hour. The intersection is expected to experience a decrease in control delay of 7.8 seconds maximum during the weekday p.m. and Saturday peak periods as a result of the recommended signal timing optimizations. It is noted that the 95th percentile queue lengths at the Highway 403 ramp terminals to Dundas Street West are not expected to extend to the freeway segment and will not impede traffic operations on Highway 403.

The proposed RI/RO site access to Dundas Street West is expected to operate at acceptable levels of service. The proposed full-moves site access to Ninth Line expected to operate at capacity during the weekday p.m. peak hour, which is typical for full-moves unsignalized accesses on high-volume arterial roadways in urban areas during commuter peak hours. The forecasted outbound volume-to-capacity ratio is low during the weekday p.m. peak hour. Thus, the operations for the full-moves access are supportable.

These metrics indicate that the addition of site traffic to the boundary road network is expected to result in minor impacts to traffic operations. Therefore, the proposed development is supportable from a transportation operations perspective with the implementation of signal timing optimizations.

Safety Review

The proposed site access to Dundas Street West satisfies MTO access management guidelines and minimum sight distance requirements. The proposed site access to Ninth Line does not satisfy minimum spacing requirements per the Region's guidelines for full-moves accesses. However, the proposed site access is justifiable for the following reasons:

- The forecasted traffic operations at the full-moves access during the weekday p.m. peak hour are common for full-moves accesses on high-volume arterial roadways during commuter peak hours. Additionally, the forecasted outbound volume-to-capacity ratios are low. Thus, the traffic operations at the full-moves access are supportable;
- The proposed site access is located opposite the existing Glen Oaks access which eliminates the potential for vehicle-vehicle conflicts that would arise from an offset access alignment;
- There are several existing accesses on Regional Roads in Oakville between intersections and full-moves accesses that are less than the required 300 metres spacing;

- Minimum sight distance requirements are satisfied at the site access for drivers turning left onto Ninth Line; and

- Heavy trucks exiting the site returning to the provincial highway network require a full-moves access to turn left onto Ninth Line, left onto Dundas Street West and access Highway 403 via the Dundas Street West interchange.

The proposed site layout is expected to result in predictable travel patterns throughout the site and thus reduce the potential for vehicle-vehicle and vehicle-pedestrian collisions.

The illustrated truck turning circulation on the Site Plan to and from the proposed loading spaces for the self-storage building do not indicate any maneuverability issues to truck circulation.

Transportation Demand Management (TDM) Opportunities

Analysis of existing modal split indicates that there is a heavy reliance on automobile travel in the study area, which is expected given the environment of the study area.

However, there are existing transit services and active transportation facilities on Dundas Street West and Ninth Line in the study area. The future widening of Ninth Line north of Dundas Street West will provide on-street bike lanes and multi-use paths on both sides of the roadway. The provision of these active transportation facilities will provide connectivity to the existing active transportation facilities on the boundary road network and encourage walking and cycling as viable modes of transportation.

The development could provide a connection to the multi-use trail from the site to the future multi-use trail on the east side of Ninth Line to be constructed as part of the road widening. A direct connection between the site and the surrounding active transportation network would further increase pedestrian and cyclist safety and encourage walking and cycling as viable modes of transportation.

There are other traditional TDM opportunities applicable to the proposed development. For example, employees could carpool to work to reduce travel expenses and pollution, and take advantage of carpooling facilities such as the High-Occupancy Vehicle (HOV) lanes on Highway 403 in Burlington, Oakville and Mississauga, and online resources to help travellers find and share carpool trips. Additionally, employees could walk, bike or use transit to access the proposed development through promotion of these alternate modes of transportation.

There are also opportunities for “soft” TDM measures. For example, employers could supply their employees with transit information (i.e. Mississauga “MiWay” Transit and Oakville Transit schedules and maps), maps of active transportation facilities in the Region of Halton and City of Mississauga, and other informational material to promote awareness of alternate modes of transportation.

Conclusion

The analysis contained within this report was prepared using the Site Plan prepared by Nicholas Caragianis Architect Inc. (updated November 18, 2020). Any minor revisions to the development concept are not expected to affect the conclusions contained with this report.

In conclusion, the proposed development can be supported from a transportation operations and safety perspective, with the implementation of the noted recommendations.

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2.1 Background

CF Crozier & Associates Inc. (Crozier) was retained by Dymon Investments Ltd. (Dymon) to undertake a Transportation Impact Study (TIS) in support of the development application for a proposed commercial development located at 3855 Dundas Street West in the City of Mississauga.

Although the subject property is located within the City of Mississauga, Ninth Line is under the jurisdiction of the Region of Halton (designated as Regional Road 13). Additionally, the subject property is located within 200 metres of the interchange of Highway 403 and Dundas Street West, and thus is considered to be within the Ministry of Transportation of Ontario (MTO) permit control area.

The original TIS was submitted to the City of Mississauga, Region of Halton and MTO in November 2018. The City, Region and MTO provided comments on the first submission, particularly regarding:

- Methodologies for capacity analysis;
- Trip distribution and assignment methodologies and assumptions;
- The proposed full-moves access to Ninth Line; and
- The need for parking justification analysis to support the proposed development.

Appendix A contains correspondence containing the comments.

This TIS Update has been prepared to address agency comments and reflect the revised development proposal. A Parking Justification Study has been prepared and submitted under a separate cover to support the proposed development.

2.2 Development Proposal

The updated development proposal includes two two-storey buildings consisting of a total of 4,068 sq. m (41,800 sq. ft) of industrial condo use and one five-storey building consisting of a total of 16,388 sq. m (176,405 sq. ft) of self-storage space.

The development proposes a right-in/right-out (RI/RO) access to Dundas Street West and a full-moves access to Ninth Line opposite the Glen Oaks Funeral Home & Cemetery Access (herein referred to as the Glen Oaks Access).

The Site Plan, prepared by Nicholas Caragianis Architect Inc. (updated November 18, 2020) has been included as **Figure 1.**

2.3 Purpose and Scope

The purpose of the study is to evaluate the transportation-related impacts of the proposed development on the boundary road network and to recommend any required mitigation measures, if warranted.

The study reviews the following main aspects of the proposed development from a transportation engineering perspective:

- Existing, future background, and future total traffic operations on the boundary road network during the weekday a.m. and p.m. peak hours, and Saturday peak hour;
- Forecasted trip generation and distribution of the proposed development;
- Mitigation measures to support the proposed development, if required;
- Justification for the provision of a full-moves access to Ninth Line;
- Transportation safety components, including: sight distance requirements at the site accesses, access spacing and restrictions, and general safety issues pertaining to road users; and
- Transportation Demand Management (TDM) opportunities to reduce single-occupancy vehicle (SOV) trips.

The study has been completed in accordance with the following guidelines:

- Guidelines for the Preparation of Traffic Impact Studies (MTO, September 2014);
- Transportation Impact Study Guidelines (Region of Halton, January 2015); and
- Traffic Impact Study Guidelines (City of Mississauga).

The study has also been completed in accordance with Terms of Reference established with City and Region staff. The MTO did not provide any comment on the proposed scope of work during the pre-consultation phase. **Appendix A** contains the correspondence outlining the approved terms of reference.

3.0 Existing Conditions

3.1 Development Lands

The subject property is located between a residential neighbourhood to the west, and employment and commercial lands to the east. The subject property is bound by Ninth Line Sports Park to the north, Dundas Street West to the south, vacant lands and Highway 403 to the east, and Ninth Line to the west. The subject property is currently vacant.

The subject property is currently zoned as E2-93 "Business Employment." **Appendix B** contains the Zoning By-Law excerpts.

Figure 2 contains the Site Location Plan.

3.2 Study Intersections

The Transportation Impact Study analyzes the following intersections:

- Dundas Street West and Ninth Line
- Dundas Street West and Highway 403 West Ramp Terminal
- Dundas Street West and Highway 403 East Ramp Terminal
- Ninth Line and Burnhamthorpe Road
- Dundas Street West and proposed site access
- Ninth Line and Glen Oaks Access / proposed site access

3.3 Boundary Road Network

The boundary road network at the site frontage is described in **Table 1.**

Table 1: Boundary Road Network

Feature	Roadway			
	Dundas Street West	**Ninth Line**	**Burnhamthorpe Road**	**Highway 403**
Direction	Two-way (East-West)	Two-way (North-South)	Two-way (North-South)	Two-way (North-South) [1]
Classification	Arterial - Regional Road 5 (Halton Region)	Arterial - Regional Road 13 (Halton Region)	Arterial - Regional Road 27 (Halton Region)	Provincial Freeway
Jurisdiction	City of Mississauga & Region of Halton [2]	City of Mississauga & Region of Halton [2]	Region of Halton	MTO
Speed Limit	60 km/h	60 km/h	60 km/h	100 km/h *Off-Ramp advisory speed is 60 km/h*
Number of lanes total	Six	Four – south of Glen Oaks Access Two – north of Glen Oaks Access	Two	Four
Median type	Raised centre median	Centre lane – south of Dundas Street West None – north of Dundas Street West	None	Drainage channel (typical freeway separation)

Note 1: While Highway 403 primarily spans east-west, the freeway spans north-south in the immediate study area.
Note 2: Dundas Street West and Ninth Line both act as the jurisdiction line between the Town of Oakville (Region of Halton) and City of Mississauga (Region of Peel).

Dundas Street West connects to Highway 403 via a Parclo A-4 full-moves interchange.

The intersection of Dundas Street West and Ninth Line is signalized and operates under a semi-actuated mode of control, with Dundas Street West operating as the major street. The side-street phases are callable via overhead camera detection. All left-turn movements currently operate under a protected-permissive phase type. All intersection approaches feature marked pedestrian crosswalks.

The intersections of Dundas Street West and the Highway 403 ramp terminals are signalized and operate under a semi-actuated mode of control, with Dundas Street West operating as the major street. The side-street phases are callable via overhead camera detection. The minor street approaches (the off-ramp approaches) feature marked pedestrian crosswalks.

The intersection of Ninth Line and Glen Oaks Access is unsignalized with the side-street approach operating under stop control.

The intersection of Ninth Line and Burnhamthorpe Road is signalized and operates under a fully-actuated mode of control, with Burnhamthorpe Road operating as the major street. All approaches feature stop-bar loop detectors to allow the side-street phase to be called and to allow the main-street phase to be extended depending on the vehicle demand during the cycle. The southbound left-turn movement currently operates under a protected-permissive phase type. All intersection approaches feature marked pedestrian crosswalks.

Figure 3 illustrates the existing boundary road network, including lane configurations, storage lengths, and intersection control.

3.4 Transit Operations

Oakville Transit operates bus Route 24 (South Common) in the immediate study area on Dundas Street West. The route is a two-way operation that spans from the GO Oakville station to the South Common Centre in Mississauga. The route operates from Monday to Friday from morning to evening (with peak hour headways of 15 minutes) and on Saturday and Sunday from morning to evening (with all-day headways of 30 minutes).

There are two existing bus stops in the immediate study area, located nearside at the north-east and south-west corners of the intersection of Dundas Street West and Ninth Line. These bus stops are serviced by Route 24.

City of Mississauga Transit System "Mi-Way" and GO Transit do not provide transit services within the immediate study area.

The boundary road network in **Figure 3** illustrates the existing bus stop locations in the study area. **Appendix C** contains relevant transit information.

3.5 Active Transportation Network

The existing active transportation facilities on the boundary road network are described in **Table 2.**

Table 2: Active Transportation Network

Roadway	Pedestrian Facilities	Separation from Roadway	Cycling Facilities	Separation from Roadway
Dundas Street West	3.0 metre multi-use path (south side; west of Ninth Line)	2.5 metre concrete and grass boulevard	3.0 metre multi-use path (south side; west of Ninth Line)	2.5 metre concrete and grass boulevard
Ninth Line	3.0 metre multi-use path (west side; south of Dundas Street West) 1.5 metre concrete sidewalk (east side; south of Dundas Street West)	2.5 metre concrete and grass boulevard	3.0 metre multi-use path (west side; south of Dundas Street West) 1.5 metre on-street bike lanes (both sides; south of Dundas Street West)	2.5 metre concrete and grass boulevard (multi-use path) No separation (bike lanes)
Burnhamthorpe Road	None	N/A	None	N/A
Highway 403	None	N/A	None	N/A

As outlined above, the only roadway segments in the immediate study area to feature active transportation facilities are Dundas Street West (west of Ninth Line) and Ninth Line (south of Dundas Street West). The other roadways on the boundary road network do not feature active transportation facilities.

The boundary road network in **Figure 3** illustrates the existing pedestrian and cycling facilities in the study area.

3.6 Traffic Data

Turning movement counts were conducted by Spectrum Traffic Data Inc. staff at the study intersections on Thursday October 25, 2018 between 6:00 a.m. – 9:00 a.m., and on Saturday October 27, 2018 between 10:00 a.m. – 5:00 p.m. Although these counts are now over two years old, these counts were still used as the base data for this TIS Update since agencies are not accepting updated traffic counts due to impacts on travel patterns from the COVID-19 pandemic.

Intersection analysis was conducted utilizing peak hour factors (PHFs) as calculated for each intersection during each time period. **Table 3** outlines the calculated peak hour factors at each intersection during each peak hour.

Table 3: Peak Hour Factors

Intersection	Peak Hour	Peak Hour Factor
Dundas Street West and Ninth Line	Weekday A.M. 7:45 a.m. – 8:45 a.m.	0.97
	Weekday P.M. 5:00 p.m. – 6:00 p.m.	0.98
	Saturday P.M. 12:15 p.m. – 1:15 p.m.	0.97
Dundas Street West and Highway 403 West Ramp Terminal	Weekday A.M. 7:30 a.m. – 8:30 a.m.	0.96
	Weekday P.M. 5:00 p.m. – 6:00 p.m.	0.96
	Saturday P.M. 12:15 p.m. – 1:15 p.m.	0.96
Dundas Street West and Highway 403 East Ramp Terminal	Weekday A.M. 7:45 a.m. – 8:45 a.m.	0.95
	Weekday P.M. 4:45 p.m. – 5:45 p.m.	0.97
	Saturday P.M. 12:15 p.m. – 1:15 p.m.	0.97
Ninth Line and Glen Oaks Access	Weekday A.M. 7:30 a.m. – 8:30 a.m.	0.91
	Weekday P.M. 4:45 p.m. – 5:45 p.m.	0.93
	Saturday P.M. 12:15 p.m. – 1:15 p.m.	0.96
Ninth Line and Burnhamthorpe Road	Weekday A.M. 7:45 a.m. – 8:45 a.m.	0.95
	Weekday P.M. 5:00 p.m. – 6:00 p.m.	0.95
	Saturday P.M. 4:00 p.m. – 5:00 p.m.	0.96

These PHFs are overall reflective of typical urban commuter environments.

Signal timing plans provided by City staff were applied in this analysis as the City operates all signalized intersections in the study area.

The traffic count data and signal timing data are contained in **Appendix D**. **Figure 4** illustrates the 2018 existing traffic volumes that were recorded.

3.7 Traffic Modelling

3.7.1. City of Mississauga Modelling Guidelines

The boundary road network was modelled in Synchro 9.0 in conformance with the modelling guidelines per the City of Mississauga's "Traffic Impact Study Guidelines", as these modelling guidelines were considered to be the most conservative amongst all of the governing Traffic Impact Study guidelines for this analysis (i.e. the Region of Halton and MTO's guidelines do not outline specific "default" lost time parameters whereas the City of Mississauga's guidelines do). **Table 4** summarizes the Synchro modelling parameters set out by the City's guidelines.

Table 4: City of Mississauga Synchro Modelling Parameters

Parameter	Value
Ideal (base) saturation flow rate	Protected left-turn: 1,860 veh/hr/lane Exclusive through: 1,900 veh/hr/lane Exclusive right-turn: 1,640 veh/hr/lane
Lost Time [1]	Protected left-turn: 1.0 s Back-to-back left-turns: 1.0 s Main Phase: 5.0 s

Note 1: Lost time refers to the total lost time for the respective phase (intergreen minus lost time adjustment). Lost time adjustments were calculated so that the total lost time for the respective phases are equal to the values set out in the City's guidelines.

In the original TIS, the results for signalized intersection operations were derived from Synchro whereas the results for unsignalized intersection operations were derived using HCM2000 methodology, and 95th percentile queue lengths were derived from Synchro. Per the Region's comments, the results for signalized and unsignalized intersection operations were derived in this update using HCM2000 methodology and 95th percentile queue lengths were derived in this update using SimTraffic (assuming a seeding interval of 10 minutes, a recording interval of 60 minutes, and an average based on three runs).

The Level of Service (LOS) definitions for signalized and unsignalized intersections are included in **Appendix E**.

3.7.2. Left-Turn on Intergreen Adjustments

In addition to the City of Mississauga's modelling guidelines, adjustments were applied to account for left-turn on intergreens.

At intersections with high through volumes, left-turning vehicles waiting for gaps in the opposing traffic stream during a permissive phase may only be able maneuver through the intersection during the intergreen period. This behavior is typically observed at intersections approaching capacity, and was confirmed by viewing the camera footage collected during the traffic counts.

In accounting for the increased capacity of left-turning vehicles at the intersections in the boundary road network, the Canadian Capacity Guide recommends that up to two passenger cars can be reasonably discharged during each intergreen period for permissive phases.

The number of vehicles that are expected to discharge per intergreen period is determined by the following formula on page 3-20 in the Canadian Capacity Guide:

$Q_{LTOI} = n * X_{LTOI}$,

Where
Q_{LTOI} = *left-turn flow on intergreen (pcu/hr)*
n = number of cycles per hour
X_{LTOI} = *average number of left-turn passenger car units per intergreen period (2 assumed)*

Left turning volumes were analyzed with a reduction in volumes when movements were found to experience a volume-to-capacity ratio in excess of 1.00 under existing, future background or future total scenarios. This adjustment was not applied to left-turn movements with no opposing traffic volumes (i.e. the Highway 403 off-ramp terminals on Dundas Street West).

Thus, adjustments were applied to the intersections of Dundas Street West and Ninth Line as outlined in **Table 5.**

Table 5: Left-Turn on Intergreen Adjustments

Affected Scenario	Intersection	Time Period	Movements Adjusted	Affected Horizon Years
Future Background	Dundas Street and Ninth Line	Weekday A.M. Peak Hour	Northbound Left-Turn	2033
		Weekday P.M. Peak Hour	Northbound Left-Turn	2033
Future Total	Dundas Street and Ninth Line	Weekday A.M. Peak Hour	Northbound Left-Turn	2028 and 2033
			Southbound Left-Turn	2033
		Weekday P.M. Peak Hour	Eastbound Left-Turn Southbound Left-Turn	2028 and 2033
			Northbound Left-Turn	2028

These modifications are in conformance with standard industry practice.

3.8 Intersection Operations

The existing intersection operations at the study intersections were analyzed using the existing traffic volumes illustrated in **Figure 4.** Detailed capacity analysis worksheets are included in **Appendix F**.

Table 6 outlines the 2018 existing traffic operations.

Table 6: 2018 Existing Traffic Operations

Intersection	Control	Peak Hour	Level of Service 1	Control Delay	Critical v/c ratio 2	95th Percentile Queue Length > Storage Length
Dundas Street West and Ninth Line	Signal	A.M.	D	36.0 s	0.85 (EBT)	123.9m > 75.0m (EBR)
		P.M.	F	88.7 s	1.00 (WBT) 1.88 (NBR)	131.8m > 130.0m (NBL) 158.0m > 90.0m (NBR)
		SAT.	C	25.5 s	0.85 (SBL)	None
Dundas Street West and Highway 403 West Ramp Terminal	Signal	A.M.	D	49.3 s	1.19 (SBL)	None
		P.M.	D	42.6 s	0.99 (SBL) 1.09 (SBR)	200.3m > 145.0m (SBL)
		SAT.	C	21.3 s	0.76 (SBR)	None
Dundas Street West and Highway 403 East Ramp Terminal	Signal	A.M.	B	16.2 s	0.73 (NBR)	None
		P.M.	B	11.8 s	0.69 (NBR)	None
		SAT.	B	14.6 s	0.72 (NBR)	None
Ninth Line and Glen Oaks Access	Stop (Minor Street)	A.M.	C	19.2 s	0.01 (EBLR)	None
		P.M.	C	15.2 s	0.04 (EBLR)	21.2m > 15.0m (NBL)
		SAT.	B	14.1 s	0.16 (EBLR)	19.1m > 15.0m (NBL)
Ninth Line and Burnhamthorpe Road	Signal	A.M.	C	34.5 s	0.92 (EBT) 0.87 (NBT)	113.2 m > 20 m (EBL) 55.3 m > 30 m (SBL)
		P.M.	D	41.8 s	0.99 (EBTR) 0.95 (WBL) 0.89 (WBT) 0.89 (NBT)	94.6 m > 20.0 m (EBL) 200.5m > 120.2m (WBL) 90.1m > 30.0m (NBL) 68.8m > 30.0m (SBL)
		SAT.	B	12.1 s	0.67 (SBL)	None

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro/ICU). The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM2000).
Note 2: The critical v/c ratio is considered to be the maximum v/c ratio for movements at the intersection. In addition, all v/c ratios for ramp approaches at ramp terminals greater than 0.75 are outlined and highlighted (per MTO guidelines), and all v/c ratios for all other movements greater than 0.85 are outlined and highlighted.

The boundary road network is currently operating at LOS "D" or better, with the exception of the intersection of Dundas Street West and Ninth Line which is currently operating at LOS "F" during the weekday p.m. peak hour with volume-to-capacity ratios exceeding 1.00.

The northbound right-turn movement at the intersection of Dundas Street West and Ninth Line is currently operating with a volume-to-capacity ratio of 1.88 during the weekday p.m. peak hour and a 95th percentile queue length of 158.0 metres, attributed to the existing 671 vehicles per hour for the aforementioned movement. Heavy northbound right-turn volumes and delays were observed via the camera footage collected during the traffic counts. While this movement operates with an exclusive turn lane, this movement could operate with a protected overlap phase type (i.e. a green arrow indication for the northbound right-turn during the protected eastbound and westbound left-turn phases) to increase the capacity for the northbound right-turn lane movement.

It was observed via the camera footage collected during the traffic counts that despite the existing permissive phase type for the aforementioned movement, northbound right-turn drivers are merely coming to a "rolling" stop or in some instances not stopping at all before proceeding through the intersection during the protected eastbound and westbound left-turn phases. This indicates that the northbound right-turn movement is currently operating as if the phase type was protected overlap. Accordingly, the ideal saturation flow rate for this movement of 1640 vehicles per hour is considered to be understated, as it is expected that the ideal saturation flow rate would resemble that of a protected turning movement (1860 vehicles per hour).

Therefore, the results outlined for the northbound right-turn movement at the intersection of Dundas Street West and Ninth Line during the weekday p.m. peak hour are considered overstated, and thus the movement was modelled with a protected-overlap phase type under future scenarios.

There are other movements at intersections operating at LOS "D" or better that are currently experiencing volume-to-capacity ratios approaching or exceeding 1.00; particularly at the Highway 403 West Ramp Terminal at Dundas Street West at which the southbound left-turn movement is experiencing a volume-to-capacity ratio of 1.19 during the weekday a.m. peak hour attributed to heavy southbound left-turn volumes (as confirmed via the camera footage collected during the traffic counts).

Analysis of signal timings indicates that there are opportunities to improve the operations on the boundary road network by optimizing intersection splits. For example, optimized splits would reduce the volume-to-capacity ratio for the southbound right-turn movement at Dundas Street West and Highway 403 West Ramp Terminal from 1.09 to 0.96. Accordingly, signal timings were optimized for future background and future total analysis.

Additionally, the intersection of Ninth Line and Burnhamthorpe Road is planned to be converted to roundabout control by 2021, which would be expected to mitigate the existing critical volume-to-capacity ratios and queue lengths at the intersection.

4.0 Future Background Conditions

4.1 Horizon Years

It is assumed that the proposed development will be fully built-out within the five-year horizon (2023). Per the City of Mississauga and Region of Halton's guidelines, the horizon year is five-years from the date of the study (2018). However, the MTO's guidelines require analysis of the five and ten year horizons from the estimated year of full build-out. Therefore, the 2023, 2028 and 2033 horizon years were analyzed, as confirmed by City staff and Regional staff.

4.2 Growth Rate

4.2.1. Dundas Street West and Ninth Line

City staff have provided Crozier with growth rates to apply to Dundas Street West and Ninth Line. **Table 7** outlines the compounded growth rates provided by City staff.

Table 7: Compounded Growth Rates

Street	Dundas Street West					
Horizon Years	2018 to 2023 (incl.)		2023 to 2028 (incl.)		2028 to 2033	
Direction	Eastbound	Westbound	Eastbound	Westbound	Eastbound	Westbound
A.M. Peak Hour	1.0%	2.0%	0.5%	0.0% [1]	0.5%	0.0% [1]
P.M. Peak Hour	2.5%	1.0%	0.0% [1]	1.0%	0.0% [1]	1.0%
Street	**Ninth Line**					
Horizon Years	2018 to 2023 (incl.)		2023 to 2028 (incl.)		2028 to 2033	
Direction	Northbound	Southbound	Northbound	Southbound	Northbound	Southbound
A.M. Peak Hour	0.0% [1]	1.0%	6.0% [2]	5.0% [2]	6.0% [2]	5.0% [2]
P.M. Peak Hour	1.5%	0.5%	6.0% [2]	7.0% [2]	6.0% [2]	7.0% [2]

Note 1: For analysis, a growth rate of 0.5% compounded annually was applied in lieu of a zero percent growth rate.
Note 2: These growth rates were applied to through movements only. An industry standard growth rate of 2% compounded annually was applied to adjacent turning movements.

The higher growth rates on Ninth Line from 2023 onwards reflect the future widening of Ninth Line north of Dundas Street West (see Section 4.3).

The growth rates outlined above were applied to the boundary road network, with the following exceptions:

- It was not considered appropriate to apply a zero percent growth rate to any movements for future traffic forecasts. Therefore, a growth rate of 0.5% compounded annually was applied to the movements during the time periods where a zero percent growth rate is identified as above.

- The growth rates outlined above were applied to all movements on the respective roadways, with the exception of the horizon years with compounded growth rates between 5-7% (for Ninth Line). City staff have instructed Crozier to apply these higher growth rates to through movements only on Ninth Line for the respective directions and horizon years. In these instances, an industry standard growth rate of 2% compounded annually was applied to turning movements on Ninth Line.

As these growth rates were derived from City forecasting models for the weekday a.m. and p.m. peak periods, no growth rates were provided for the Saturday peak hour. Accordingly, the growth rates for the weekday p.m. peak period were assumed for the Saturday peak hour.

4.2.2. Burnhamthorpe Road

Regional staff have instructed Crozier to apply a 1% growth rate compounded annually on the boundary road network. While the growth rates provided by City staff for Dundas Street West and Ninth Line were higher and thus used in this analysis, the 1% growth rate was applied to eastbound and westbound traffic on Burnhamthorpe Road.

4.2.3. Highway 403 Ramp Terminals

To determine growth rates for the ramp approaches at the Highway 403 ramp terminals on Dundas Street West, historical growth rates were derived from Annual Average Daily Traffic (AADT) on Highway 403 at the Dundas Street West interchange. The latest AADT data available is for 2016; thus, growth rates from 2012 to 2016 were analyzed. **Appendix G** contains the growth rate data and analysis.

A compounded growth rate of 2.49% compounded annually was determined for Highway 403 between 2012 and 2016. Therefore, a growth rate of 2.5% compounded annually was applied to the ramp approaches at the Highway 403 ramp terminals.

4.3 Future Roadway Improvements

The Region of Halton is currently in the process of completing a Municipal Class Environmental Assessment for the widening of Ninth Line from two lanes to four lanes north of Dundas Street West to Highway 407. While the Environmental Study Report is not available for review at this time, the preliminary design drawings for the road widening were made available to Crozier.

Per the preliminary design drawings prepared by CIMA+ (dated June 22, 2017), the widening of Ninth Line will provide four travel lanes, a centre lane, on-street bike lanes, and a 3.0 metre multi-use path on both sides of the roadway. **Appendix H** contains the preliminary design drawings prepared by CIMA+ for the Ninth Line widening.

Additionally, the Region of Halton has identified the construction of William Halton Parkway as a future roadway improvement. The future roadway will run along the existing Burnhamthorpe Road alignment at Ninth Line. As part of the future roadway construction, the intersection of Ninth Line and Burnhamthorpe Road will be converted to a two-lane roundabout, which according to Regional staff is expected to be operational by 2021.

Table 8 outlines the future roadway improvements in the study area.

Table 8: Future Roadway Improvements

Roadway	Segment or Intersection	Improvement	Assumed Year of Opening
Burnhamthorpe Road (future William Halton Parkway)	Trafalgar Road to east of Ninth Line	Widen to four lanes	2021 [1]
Ninth Line	William Halton Parkway	Two-lane roundabout construction	2021 [1]
	William Halton Parkway to Highway 407	Widen to four lanes	2025 [1]
	Dundas Street West to William Halton Parkway	Widen to four lanes	2027 [1]

Note 1: Assumed year of opening provided by Regional staff per the Region of Halton's Capital Implementation Plan.

Based on the assumed years of opening for the roadway improvements outlined above, the two-lane roundabout construction at Ninth Line and William Halton Parkway (existing Burnhamthorpe Road) and four-lane cross-section for William Halton Parkway was accounted for in the 2023, 2028 and 2033 horizon years, and the widening of Ninth Line was accounted for in the 2028 and 2033 horizon years.

4.4 Roundabout Modelling

Modelling analysis for the future roundabout-controlled intersection of Ninth Line and William Halton Parkway was conducted using Junctions 8 (ARCADY) roundabout analysis software. Roundabout geometrics were measured from the preliminary design drawings.

4.5 Intersection Operations

The future background intersection operations at the study intersections were analyzed using the 2023, 2028 and 2033 future background traffic volumes illustrated in **Figures 5, 6 and 7,** respectively, and optimized signal timings as recommended in **Table 9**.

Table 9: Signal Phase Changes – Existing Conditions to Future Background Conditions

<table>
<tr><th rowspan="2">Intersection</th><th colspan="3">Peak Period</th></tr>
<tr><th>Weekday A.M.</th><th>Weekday P.M.</th><th>Saturday</th></tr>
<tr><td>Ninth Line and Dundas Street West
(160s cycle length)
2023 & 2028 horizon</td><td rowspan="2">EBL – Add 13.2s
EBTR – Subtract 2.7s
WBTR – Subtract 15.9s
NBL – Subtract 5.0s
NBTR – Add 0.7s
NBR – Add permissive/overlap
SBL – Add 2.0s
SBTR – Add 7.7s</td><td rowspan="2">EBL – Subtract 1.5s
EBTR – Subtract 23.5s
WBL – Add 15.0s
WBTR – Subtract 7.0s
NBL – Add 1.0s
NBTR – Add 15.0s
NBR – Add permissive/overlap
SBL – Subtract 6.5s
SBTR – Add 7.5s</td><td>EBL – Add 4.0s
EBTR – Subtract 7.0s
WBL – Add 2.0s
WBTR – Subtract 9.0s
NBLTR – Add 5.0s
SBLTR – Add 5.0s</td></tr>
<tr><td>Ninth Line and Dundas Street West
(160s cycle length)
2033 horizon</td><td>EBL – Add 2.0s
EBTR – Subtract 10.0s
WBL – Subtract 1.0s
WBTR – Subtract 13.0s
NBLTR – Add 11.0s
SBLTR – Add 11.0s</td></tr>
<tr><td>Dundas Street West and Highway 403 West Ramp Terminal</td><td>EBT – Subtract 22.0s
WBT – Subtract 22.0s
SBTR – Add 22.0s</td><td>EBT – Subtract 16.0s
WBT – Subtract 16.0s
SBTR – Add 16.0s</td><td>EBT – Subtract 10.0s
WBT – Subtract 10.0s
SBTR – Add 10.0s</td></tr>
</table>

Detailed capacity analysis worksheets are included in **Appendix F**. Future background signalization was optimized for the 2033 horizon year and retrofitted for all analysis years.

Tables 10, 11 and 12 outline the 2023, 2028 and 2033 future background traffic operations, respectively.

Table 10: 2023 Future Background Traffic Operations

Intersection	Control	Peak Hour	Level of Service [1]	Control Delay	Critical v/c ratio [2]	95th Percentile Queue Length > Storage Length
Dundas Street West and Ninth Line	Signal	A.M.	D	36.7 s	0.90 (EBT)	319.1m > 220.0m (EBL) 182.0 > 75.0m (EBR)
		P.M.	E	65.6 s	1.08 (WBT) 1.10 (NBR)	316.1m > 220.0m (EBL) 179.7m > 75.0m (EBR) 184.9m > 70.0m (WBR) 231.2m > 130.0m (NBL) 159.4m > 90.0m (NBR) 68.2m > 65.0m (SBR)
		SAT.	C	29.3 s	0.87 (SBL)	74.3m > 70.0m (WBR)
Dundas Street West and Highway 403 West Ramp Terminal	Signal	A.M.	D	47.4 s	1.00 (EBT) 0.90 (SBL)	185.2m > 145.0m (SBL)
		P.M.	E	70.0 s	1.12 (EBT) 0.91 (SBL) 1.00 (SBR)	259.6m > 145.0m (SBL)
		SAT.	C	24.1 s	0.79 (SBR)	None
Dundas Street West and Highway 403 East Ramp Terminal	Signal	A.M.	B	18.3 s	0.76 (NBR)	None
		P.M.	B	13.5 s	0.74 (NBR)	None
		SAT.	B	16.0 s	0.76 (NBR)	None
Ninth Line and Glen Oaks Access	Stop (Minor Street)	A.M.	C	20.3 s	0.01 (EBLR)	None
		P.M.	C	15.5 s	0.04 (EBLR)	20.6m > 15.0m (NBL)
		SAT.	B	14.4 s	0.17 (EBLR)	17.8m > 15.0m (NBL)
Ninth Line and William Halton Parkway	Round-about	A.M.	A	5.19 s West leg	0.56 West leg	None
		P.M.	A	4.60 s South leg	0.55 South leg	None
		SAT.	A	2.81 s South leg	0.32 South leg	None

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro/ICU). The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM2000).

Note 2: The critical v/c ratio is considered to be the maximum v/c ratio for movements at the intersection. In addition, all v/c ratios for ramp approaches at ramp terminals greater than 0.75 are outlined and highlighted (per MTO guidelines), and all v/c ratios for all other movements greater than 0.85 are outlined and highlighted.

Table 11: 2028 Future Background Traffic Operations

Intersection	Control	Peak Hour	Level of Service [1]	Control Delay	Critical v/c ratio [2]	95th Percentile Queue Length > Storage Length
Dundas Street West and Ninth Line	Signal	A.M.	D	43.5 s	0.93 (EBT) 0.92 (NBL) 0.88 (SBL)	280.8m > 220.0m (EBL) 183.0m > 75.0m (EBR) 272.2m > 130m (NBL) 139.3m > 115.0m (SBL)
Dundas Street West and Ninth Line	Signal	P.M.	F	94.7 s	0.93 (EBT) 1.22 (WBT) 0.98 (NBL) 0.92 (NBT) 1.13 (NBR)	338.5m > 220.0m (EBL) 183.0m > 75.0m (EBR) 171.5m > 70.0m (WBR) 203.6 m > 130 m (NBL)
Dundas Street West and Ninth Line	Signal	SAT.	D	35.4 s	0.93 (SBL)	110.2m > 75.0m (EBR) 142.1m > 70.0m (WBR) 147.7m > 115.0m (SBL)
Dundas Street West and Highway 403 West Ramp Terminal	Signal	A.M.	E	57.6 s	1.01 (EBT) 1.04 (SBL) 0.85 (SBR)	229.3m > 145.0m (SBL)
Dundas Street West and Highway 403 West Ramp Terminal	Signal	P.M.	F	80.7 s	1.15 (EBT) 1.03 (SBL) 1.13 (SBR)	250.6m > 14500m (SBL)
Dundas Street West and Highway 403 West Ramp Terminal	Signal	SAT.	C	27.4 s	0.83 (SBR)	None
Dundas Street West and Highway 403 East Ramp Terminal	Signal	A.M.	C	21.2 s	0.81 (NBR)	None
Dundas Street West and Highway 403 East Ramp Terminal	Signal	P.M.	B	15.4 s	0.77 (NBR)	None
Dundas Street West and Highway 403 East Ramp Terminal	Signal	SAT.	B	18.0 s	0.79 (NBR)	None
Ninth Line and Glen Oaks Access	Stop (Minor Street)	A.M.	B	13.7 s	0.01 (EBLR)	None
Ninth Line and Glen Oaks Access	Stop (Minor Street)	P.M.	B	14.2 s	0.03 (EBLR)	None
Ninth Line and Glen Oaks Access	Stop (Minor Street)	SAT.	B	14.0 s	0.16 (EBLR)	19.7m > 15.0m (NBL)
Ninth Line and William Halton Parkway	Round-about	A.M.	A	7.30 s West leg	0.65 West leg	None
Ninth Line and William Halton Parkway	Round-about	P.M.	A	7.14 s South leg	0.71 South leg	None-
Ninth Line and William Halton Parkway	Round-about	SAT.	A	3.28 s South leg	0.41 South leg	None

Note 1: *The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro/ICU). The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM2000).*

Note 2: The critical v/c ratio is considered to be the maximum v/c ratio for movements at the intersection. In addition, all v/c ratios for ramp approaches at ramp terminals greater than 0.75 are outlined and highlighted (per MTO guidelines), and all v/c ratios for all other movements greater than 0.85 are outlined and highlighted.

Table 12: 2033 Future Background Traffic Operations

Intersection	Control	Peak Hour	Level of Service [1]	Control Delay	Critical v/c ratio [2]	95th Percentile Queue Length > Storage Length
Dundas Street West and Ninth Line	Signal	A.M.	E	57.6 s	1.03 (EBT) 0.96 (SBL) 0.97 (SBT)	335.1m > 220.0m (EBL) 183.1m > 75.0m (EBR) 404.5m > 230.0m (WBL) 175.6m > 70.0m (WBR) 274.0m > 130m (NBL) 130.5m > 115.0m (SBL) 82.0m > 65.0m (SBR)
		P.M.	F	129.5 s	0.97 (EBT) 1.30 (WBT) 1.31 (SBL) 1.30 (NBT) 1.25 (NBR)	186.7m > 220.0m (EBL) 142.8m > 75.0m (EBR) 370.2m > 220.0m (WBL) 177.1m > 70.0m (WBR) 277.0m > 130 m (NBL) 174.3m > 90 m (NBR) 139.4m > 115.0m (SBL) 92.5m > 65.0m (SBR)
		SAT.	D	45.4 s	0.91 (EBT) 0.91 (WBL) 0.97 (SBL)	128.2m > 75.0m (EBR) 133.0m > 130.0m (NBL) 132.7m > 115.0m (SBL)
Dundas Street West and Highway 403 West Ramp Terminal	Signal	A.M.	E	79.8 s	1.07 (EBT) 1.12 (SBL) 0.99 (SBR)	245.3m > 145.0m (SBL)
		P.M.	F	95.3 s	1.18 (EBT) 1.17 (SBL) 1.28 (SBR)	248.5m > 145.0m (SBL)
		SAT.	C	31.2 s	0.77 (SBL) 0.86 (SBR)	None
Dundas Street West and Highway 403 East Ramp Terminal	Signal	A.M.	C	24.1 s	0.84 (NBR)	None
		P.M.	B	17.8 s	0.79 (NBR)	None
		SAT.	C	20.4 s	0.81 (NBR)	None
Ninth Line and Glen	Stop	A.M.	C	16.4 s	0.01 (EBLR)	None

Oaks Access	(Minor Street)	P.M.	D	25.4 s	0.07 (EBLR)	None
		SAT.	C	19.6 s	0.25 (EBLR)	20.5m > 15.0m (NBL)
Ninth Line and William Halton Parkway	Round-about	A.M.	B	14.11 s West leg	0.80 West leg	None
		P.M.	C	20.69 s South leg	0.92 South leg	None
		SAT.	A	4.18 s South leg	0.53 South leg	None

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro/ICU). The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM2000).

Note 2: The critical v/c ratio is considered to be the maximum v/c ratio for movements at the intersection. In addition, all v/c ratios for ramp approaches at ramp terminals greater than 0.75 are outlined and highlighted (per MTO guidelines), and all v/c ratios for all other movements greater than 0.85 are outlined and highlighted.

The intersections of Dundas Street West and Ninth Line, and Dundas Street West and Highway 403 West Ramp Terminal are expected to operate at LOS "E" and "F" during the weekday a.m. and p.m. peak hours, respectively, with heavy control delays and volume-to-capacity ratios approaching or exceeding 1.00. This is a result of the already heavy traffic volumes under existing conditions being grown over a 15-year horizon, especially with high growth rates applied to northbound and southbound through traffic on Ninth Line. Additionally, several movements are expected to operate with 95th percentile queue lengths exceeding their designated storage lengths, which is typical for high-volume arterial-to-arterial intersections.

However, it is noted that the signal timing recommendations to existing traffic operations are expected to ultimately reduce critical traffic operations. For example, with the implementation of a protected overlap phase for the northbound right-turn movement at Dundas Street West and Ninth Line, the volume-to-capacity ratio is expected to decrease from 1.88 to 1.25, even over a 15-year horizon with future background traffic growth. As discussed under existing conditions, the northbound right-turn movement is observed to be currently operating similar to a protected phase which indicates that the permissive phase modelling is overestimating traffic operations.

There are other movements at intersections operating at LOS "D" or better that are currently experiencing volume-to-capacity ratios approaching 1.00. However, unlike existing conditions where some of these volume-to-capacity ratios exceeded 1.00, none of these volume-to-capacity ratios are expected to exceed 1.00 under 2033 future background conditions, indicating that the optimized signal timings have ultimately reduced critical traffic operations.

It is noted that the 95th percentile queue lengths at the Highway 403 ramp terminals to Dundas Street West are not expected to extend to the freeway segment and will not impede traffic operations on Highway 403.

The roundabout intersection of Ninth Line and William Halton Parkway is expected to operate at LOS "C" or better under 2033 future background conditions. The south leg is expected to operate with a volume-to-capacity ratio of 0.92, but the movement is otherwise expected to operate with minor delays. These operations indicate that the implementation of roundabout control at the intersection of Ninth Line and William Halton Parkway is expected to significantly improve traffic operations.

5.0 Site Generated Traffic

The proposed development will result in additional vehicles on the boundary road network that would otherwise not exist. The proposed development will also result in additional turning movements at the study intersections.

5.1 Unadjusted Trip Generation

Trip generation for the proposed development was forecasted using published data from the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition which reflects the latest edition of the Trip Generation Manual.

Land Use Category (LUC) 151 "Mini-Warehouse" is defined as "… a building in which a number of storage units or vaults are rented for the storage of goods. They are typically referred to as 'self-storage' facilities." Therefore, LUC 151 was applied to the self-storage component of the proposed development.

There is no land use in the ITE Trip Generation Manual for industrial condo; however, the project team has advised Crozier that the industrial condo units would operate as manufacturing facilities. Therefore, LUC 140 "Manufacturing" was applied to the proposed industrial condo units.

The fitted curve equation was applied where a fitted curve equation is provided, and the number of data plot points exceeds 20 data points. Otherwise, the average rate was applied.

Trip generation forecasts were conducted using a previous version of the development proposal which featured higher GFAs for both the self-storage and industrial condo buildings. Therefore, the trip generation forecasts and future total traffic analysis contained within this report are conservative.

Table 13 outlines the trip generation for the proposed development.

Table 13: Trip Generation

ITE Land Use Category	GFA	Peak Hour	Trips Generated		
			Inbound	Outbound	Total
LUC 151 "Mini-Warehouse"	194,887 sq. ft	A.M.	11	8	19
		P.M.	15	18	33
		SAT.	35	25	60
LUC 140 "Manufacturing"	51,840 sq. ft	A.M.	25	7	32
		P.M.	11	24	35
		SAT.	11 [1]	24 [1]	35 [1]
Development Total		**A.M.**	**36**	**15**	**51**
		P.M.	**26**	**42**	**68**
		SAT.	**46**	**49**	**95**

Note 1: Saturday peak hour data was not available for LUC 140; therefore, the weekday p.m. peak hour trip generation was applied to the Saturday peak hour.

The proposed development is expected to generate a total of 51, 68 and 95 total two-way trips during the weekday a.m. and p.m., and Saturday peak hours, respectively.

The original development proposal was projected to generate a total of 46, 161 and 223 total two-way primary trips during the weekday a.m. and p.m., and Saturday peak hours, respectively. Therefore, the updated development proposal has resulted in a significant trip generation reduction during the weekday p.m. and Saturday peak hours. These results are attributed to the removal of the retail component that was originally proposed, which generated significant traffic during the weekday p.m. and Saturday peak periods.

The original development proposal included a retail component for which pass-by trips were accounted for. However, as the current proposal does not include any retail component, pass-by trips were not accounted for in this TIS Update.

5.2 Trip Distribution

In the original TIS, separate trip distributions were applied to the self-storage and retail components.

The trip distribution for the self-storage component was based on the location of estimated residential catchment areas and the location of existing self-storage facilities in Oakville and Mississauga. The primary trip distribution for the retail component was based on based on 2016 Transportation Tomorrow Survey (TTS) data, for which TTS results were filtered to auto trips entering 2006 GTA Zones 4035 and 3634 during the p.m. peak period for the purposes of "market/shop."

To address agency comments and reflect the updated development proposal, the TTS query was updated to filter results to auto trips entering 2006 GTA Zone 3634 for the purposes of "work" and "other" to reflect the employment nature of the industrial condo use and the non-employment nature of the self-storage component, respectively. No time filter was applied to auto trips entering Zone 3634 as to capture overall trip distribution patterns throughout the day. Further, the same trip distribution was applied to the entire site as opposed to individual components.

From this query, trip origins were determined, and percentage of trips assigned from each origin was accounted for. Trips were assumed to travel to and from their origin points based on the most convenient route.

Review of travel times and routes via Google Maps during peak travel times, it was found that while inbound and outbound trips would mostly be assumed to use the same route, not all inbound trips from Highway 403 (east) would necessarily exit the site via the same route. The reasoning for this is the outbound delays associated with left-turn movements onto Ninth Line, then onto Dundas Street West, then travelling through the Highway 403 West Ramp Terminal to access the Highway 403 eastbound on-ramp at the Dundas Street West ramp terminal. It was found that a faster alternate route from the site is to turn right onto Ninth Line (north), turn right onto William Halton Parkway, and access Highway 403 east at the Winston Churchill Boulevard interchange.

Therefore, inbound trips from Highway 403 (east) were evenly split outbound between Highway 403 (east) via the Dundas Street West interchange, and Highway 403 (east) via Ninth Line and William Halton Parkway.

The resultant trip distribution is outlined in **Table 14**.

Table 14: Trip Distribution

Route	Inbound Percentage	Outbound Percentage
East via Dundas Street West	20%	20%
East via Highway 403	35%	15%
North via Ninth Line	10%	30%
West via Dundas Street West	10%	10%
West via Highway 403	10%	10%
South via Ninth Line	15%	15%
Total	**100%**	**100%**

Figures 8 and 9 outline the trip distribution and assignment, respectively, for the proposed development.

6.0 Future Total Conditions

6.1 Basis of Assessment

The site generated traffic volumes illustrated in **Figure 9** were added to the 2023, 2028 and 2033 future background traffic volumes in **Figures 5, 6 and 7**, respectively, to determine the future total traffic volumes. **Figures 10, 11 and 12** outline the 2023, 2028 and 2033 future total traffic volumes, respectively.

6.2 Left-Turn Lane Warrant Analysis

Auxiliary left-turn lane warrant analysis was conducted for the intersection of Ninth Line and Glen Oaks Access / Site Access B under 2033 future total conditions. The analysis was conducted using the Ministry of Transportation (MTO)'s "Design Supplement for TAC Geometric Design Guide for Canadian Roads – June 2017." As the proposed site access will form the east leg of the intersection at Ninth Line, the southbound left-turn movement was analyzed for left-turn lane requirements.

The design speed of a roadway in an urban environment is typically 10-20 km/h greater than the posted speed limit. The posted speed limit on Ninth Line is 60 km/h. Therefore, a design speed of 80 km/h was assumed for the left-turn lane warrant analysis.

As the future cross-section of Ninth Line proposes a centre lane separating opposing travel flows, the warrant for "Left Turn Storage Lanes Four-Lane Divided Highways Unsignalized" was applied to the 2033 horizon year.

Table 15 outlines the results of the left-turn lane warrant analysis.

Table 15: Left-Turn Lane Warrant Analysis Results

Location	Movement	Design Speed	Horizon Year	Number of lanes on major road	Left-Turn Lane Storage Requirement?
Ninth Line and Glen Oaks Access / Site Access B	Southbound left-turn	80 km/h	2033	Four	15 metres

The results of the left-turn lane analysis indicate that an exclusive southbound left-turn lane with approximately 15 metres of storage is warranted on Ninth Line at Site Access B. The reasoning for the required storage is the northbound opposing volumes during the weekday p.m. peak hour exceeding the maximum opposing volume threshold on the left-turn lane warrant, even with a low forecasted southbound left-turn volume during this peak hour.

However, per the preliminary design drawings prepared by CIMA+, a centre lane median is proposed as part of the Ninth Line widening. The width of the centre lane at the Site Access is approximately 3.0 metres. This proposed centre lane is marked by pavement markings as a gore area (marked yellow on the preliminary design drawings). This unused centre lane could be allocated as an exclusive southbound left-turn lane on Ninth Line to Site Access B, which would provide 15 metres of vehicle storage. This turn lane would be aligned with the existing northbound left-turn lane to the Glen Oaks access, and would operate separately from the southbound left-turn lane to Dundas Street West.

Appendix J contains the left-turn warrant analysis worksheets.

6.3 Intersection Operations

The future total intersection operations at the study intersections were analyzed using the 2023, 2028 and 2033 future total traffic volumes illustrated in **Figures 10, 11 and 12,** respectively, and optimized signal timings as outlined in **Table 16.**

Table 16: Signal Phase Changes – Existing Conditions to Future Total Conditions

<table>
<tr><th rowspan="2">Intersection</th><th colspan="3">Peak Period</th></tr>
<tr><th>Weekday A.M.</th><th>Weekday P.M.</th><th>Saturday</th></tr>
<tr><td>Ninth Line and Dundas Street West
(160s cycle length)
2023 & 2028 horizon</td><td rowspan="2">EBL – Add 13.8s
EBTR – Subtract 4.5s
WBL – Add 2.0s
WBTR – Subtract 16.3s
NBL – Subtract 4.4s
NBTR – Subtract 0.5s
NBR – Add permissive/overlap
SBL – Add 3.0s
SBTR – Add 6.9s</td><td rowspan="2">EBL – Subtract 3.0s
EBTR – Subtract 23.0s
WBL – Add 14.0s
WBTR – Subtract 6.0s
NBL – Add 9.0s
NBTR – Add 15.0s
NBR – Add permissive/overlap
SBL – Subtract 6.0s</td><td>EBL – Add 12.0s
EBTR – Subtract 3.1s
WBL – Add 2.1s
WBTR – Subtract 13.0s
NBLTR – Subtract 9.0s
SBL – Add protected/permissive with 13.0s phase
SBLTR – Subtract 1.0s</td></tr>
<tr><td>Ninth Line and Dundas Street West
(160s cycle length)
2033 horizon</td><td>EBL – Add 9.0s
EBTR – Subtract 5.0s
WBL – Add 1.0s
WBTR – Subtract 13.0s
NBLTR – Subtract 9.0s
SBL – Add protected/permissive with 13.0s phase
SBLTR – Add 4.0s</td></tr>
<tr><td>Dundas Street West and Highway 403 West Ramp Terminal</td><td>EBT – Subtract 22.0s
WBT – Subtract 22.0s
SBTR – Add 22.0s</td><td>EBT – Subtract 8.0s
WBT – Subtract 8.0s
SBTR – Add 8.0s</td><td>EBT – Subtract 9.0s
WBT – Subtract 9.0s
SBTR – Add 9.0s</td></tr>
</table>

Detailed capacity analysis worksheets are included in **Appendix F**.

Tables 17, 18 and 19 outline the 2023, 2028 and 2033 future total traffic operations, respectively.

Table 17: 2023 Future Total Traffic Operations

Intersection	Control	Peak Hour	Level of Service [1]	Control Delay	Critical v/c ratio [2]	95th Percentile Queue Length > Storage Length
Dundas Street West and Ninth Line	Signal	A.M.	D	41.0 s	0.92 (EBT)	356.1m > 220.0m (EBL) 176.6 > 75.0m (EBR) 161.5m > 130.0m (NBL) 127.3m > 115.0m (SBL)
		P.M.	E	67.8 s	1.15 (EBL) 1.07 (WBT) 0.87 (NBL) 1.11 (NBR)	334.3m > 220.0m (EBL) 108.3m > 75.0m (EBR) 174.7m > 70.0m (WBR) 248.3m > 130.0m (NBL) 174.7m > 90.0m (NBR) 126.7m > 115.0m (SBL) 66.6m > 65.0m (SBR)
		SAT.	C	33.3 s	0.80 (NBL)	140.7m > 115.0m (SBL)
Dundas Street West and Highway 403 West Ramp Terminal	Signal	A.M.	D	48.1 s	1.00 (EBT) 0.90 (SBL)	183.9m > 145.0m (SBL)
		P.M.	E	56.5 s	1.01 (EBT) 1.01 (SBL) 1.11 (SBR)	248.7m > 145.0m (SBL)
		SAT.	C	24.7 s	0.81 (SBR)	None
Dundas Street West and Highway 403 East Ramp Terminal	Signal	A.M.	B	18.3 s	0.76 (NBR)	None
		P.M.	B	13.6 s	0.74 (NBR)	None
		SAT.	B	16.0 s	0.76 (NBR)	None
Dundas Street West and Site Access A	Stop (Minor Street)	A.M.	A	10.0 s	0.01 (SBR)	None
		P.M.	A	9.5 s	0.01 (SBR)	None
		SAT.	A	9.6 s	0.02 (SBR)	None
Ninth Line and Glen Oaks Access / Site Access B	Stop (Minor Street)	A.M.	C	20.3 s	0.05 (WBLTR)	None
		P.M.	B	16.9 s	0.10 (WBLTR)	20.7m > 15.0m (NBL)
		SAT.	C	18.4 s	0.15 (EBLTR)	None
Ninth Line and William Halton Parkway	Round-about	A.M.	A	5.33 s West leg	0.56 West leg	None

		P.M.	A	4.68 s South leg	0.56 South leg	None
		SAT.	A	2.85 s South leg	0.32 South leg	None

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro/ICU). The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM2000).

Note 2: The critical v/c ratio is considered to be the maximum v/c ratio for movements at the intersection. In addition, all v/c ratios for ramp approaches at ramp terminals greater than 0.75 are outlined and highlighted (per MTO guidelines), and all v/c ratios for all other movements greater than 0.85 are outlined and highlighted.

Table 18: 2028 Future Total Traffic Operations

Intersection	Control	Peak Hour	Level of Service [1]	Control Delay	Critical v/c ratio [2]	95^{th} Percentile Queue Length > Storage Length
Dundas Street West and Ninth Line	Signal	A.M.	D	50.9 s	1.00 (EBT) 0.95 (WBL) 0.92 (SBL)	383.7m > 220.0m (EBL) 170.2 > 75.0m (EBR) 252.4m > 130.0m (NBL) 133.8m > 115.0m (SBL)
		P.M.	F	94.0 s	0.95 (EBL) 0.93 (EBT) 1.21 (WBT) 1.00 (NBL) 0.92 (NBT) 1.15 (NBR)	170.2m > 70.0m (WBR) 262.5m > 130.0m (NBL) 162.3m > 90.0m (NBR) 129.3m > 115.0m (SBL) 81.0m > 65.0m (SBR)
		SAT.	D	37.4 s	0.84 (NBL)	105.0m > 70.0m (WBR) 119.5m > 115.0m (SBL)
Dundas Street West and Highway 403 West Ramp Terminal	Signal	A.M.	E	61.3 s	1.05 (EBT) 0.99 (SBL) 0.86 (SBR)	216.8m > 145.0m (SBL)
		P.M.	E	69.2 s	1.04 (EBT) 1.15 (SBL) 1.26 (SBR)	243.0m > 145.0m (SBL)
		SAT.	C	22.6 s	0.84 (SBR)	None
Dundas Street West and Highway 403 East Ramp Terminal	Signal	A.M.	C	21.1 s	0.80 (NBR)	None
		P.M.	B	15.5 s	0.77 (NBR)	None
		SAT.	B	18.1 s	0.79 (NBR)	None
Dundas Street West and Site Access A	Stop (Minor Street)	A.M.	B	10.1 s	0.01 (SBR)	None
		P.M.	A	9.6 s	0.01 (SBR)	None
		SAT.	A	9.1 s	0.01 (SBR)	None
Ninth Line and Glen Oaks Access / Site Access B	Stop (Minor Street)	A.M.	C	16.8 s	0.04 (WBLTR)	None
		P.M.	C	20.4 s	0.12 (WBLTR)	19.8m > 15.0m (NBL)
		SAT.	C	18.9 s	0.13 (WBLTR)	None
Ninth Line and William Halton Parkway	Round-about	A.M.	A	7.51 s West leg	0.65 West leg	None
		P.M.	A	7.34 s South leg	0.71 South leg	None

		SAT.	A	3.34 s South leg	0.41 South leg	None

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro/ICU). The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM2000).

Note 2: The critical v/c ratio is considered to be the maximum v/c ratio for movements at the intersection. In addition, all v/c ratios for ramp approaches at ramp terminals greater than 0.75 are outlined and highlighted (per MTO guidelines), and all v/c ratios for all other movements greater than 0.85 are outlined and highlighted.

Table 19: 2033 Future Total Traffic Operations

Intersection	Control	Peak Hour	Level of Service [1]	Control Delay	Critical v/c ratio [2]	95th Percentile Queue Length > Storage Length
Dundas Street West and Ninth Line	Signal	A.M.	E	64.9 s	1.05 (EBT) 1.01 (WBL) 1.02 (NBL) 0.98 (SBL) 0.98 (SBT)	376.9 m > 75 m (EBR) 178.5m > 70.0m (EBR) 241.0m > 130.0m (NBL) 127.7m > 115 m (SBL) 124.9m > 65.0 m (SBR)
		P.M.	F	128.5 s	1.31 (EBL) 0.96 (EBT) 1.28 (WBT) 1.16 (NBL) 1.21 (NBT) 1.26 (NBR) 0.90 (SBL)	209.9m > 75 m (EBR) 177.5m > 70.0m (WBR) 242.9 m > 130 m (NBL) 173.2 m > 90 m (NBR) 143.7m > 115.0m (SBL) 96.6 m > 65 m (SBR)
		SAT.	D	43.2 s	0.91 (NBL) 0.91 (SBL)	111.5 m > 75 m (EBR) 132.3m > 70.0m (WBR) 263.6m > 130.0m (NBL) 118.8 m > 115 m (SBL) 71.8m > 65.0m (SBR)
Dundas Street West and Highway 403 West Ramp Terminal	Signal	A.M.	F	81.3 s	1.07 (EBT) 1.12 (SBL) 1.02 (SBR)	236.4m > 145.0m (SBL)
		P.M.	F	87.5 s	1.06 (EBT) 1.30 (SBL) 1.43 (SBR)	246.5m > 145.0m (SBL)
		SAT.	C	31.9 s	0.71 (SBL) 0.87 (SBR)	None
Dundas Street West and Highway 403 East Ramp Terminal	Signal	A.M.	C	24.1 s	0.84 (NBR)	None
		P.M.	B	17.9 s	0.79 (NBR)	None
		SAT.	C	20.5 s	0.81 (NBR)	None
Dundas Street West and Site Access A	Stop (Minor Street)	A.M.	B	10.2 s	0.01 (SBR)	None
		P.M.	A	9.7 s	0.01 (SBR)	None
		SAT.	A	9.2 s	0.01 (SBR)	None

Ninth Line and Glen Oaks Access / Site Access B	Stop (Minor Street)	A.M.	C	23.1 s	0.06 (WBLTR)	None
		P.M.	E	48.9 s	0.29 (WBLTR)	None
		SAT.	D	26.7 s	0.19 (WBLTR)	26.3m > 15.0m (NBL)
Ninth Line and William Halton Parkway	Round-about	A.M.	B	14.58 s West leg	0.80 West leg	None
		P.M.	C	21.99 s South leg	0.92 South leg	None
		SAT.	A	4.27 s South leg	0.54 South leg	None

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro/ICU). The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM2000).

Note 2: The critical v/c ratio is considered to be the maximum v/c ratio for movements at the intersection. In addition, all v/c ratios for ramp approaches at ramp terminals greater than 0.75 are outlined and highlighted (per MTO guidelines), and all v/c ratios for all other movements greater than 0.85 are outlined and highlighted.

The intersections of Dundas Street West and Ninth Line, and Dundas Street West and Highway 403 West Ramp Terminal are expected to operate at LOS "E" and "F" during the weekday a.m. and p.m. peak hours, respectively, with heavy control delays and volume-to-capacity ratios approaching or exceeding 1.00. Additionally, several movements are expected to operate with 95th percentile queue lengths exceeding their designated storage lengths. These operations are consistent with 2033 future background conditions, in which the critical traffic operations were a result of the already heavy traffic volumes under existing conditions being grown over a 15-year horizon, especially with high growth rates applied to northbound and southbound through traffic on Ninth Line.

As discussed under existing conditions, the northbound right-turn movement at the intersection of Dundas Street West and Ninth Line is observed to be currently operating similar to a protected phase which indicates that the permissive phase modelling is overestimating traffic operations.

For the intersection of Dundas Street West and Ninth Line, the maximum forecasted increase in control delay from 2033 future background to future total conditions is 7.3 seconds during the weekday a.m. peak hour. The intersection is expected to experience a decrease in control delay of 2.2 seconds maximum during the weekday p.m. and Saturday peak periods as a result of the recommended signal timing optimizations.

The maximum forecasted increase in control delay from 2033 future background to future total conditions at the Highway 403 ramp terminals on Dundas Street West is 1.5 seconds during the weekday a.m. peak hour. The intersection is expected to experience a decrease in control delay of 7.8 seconds maximum during the weekday p.m. and Saturday peak periods as a result of the recommended signal timing optimizations. Additionally, it is noted that the 95th percentile queue lengths at the Highway 403 ramp terminals to Dundas Street West are not expected to extend to the freeway segment and will not impede traffic operations on Highway 403.

The proposed RI/RO site access to Dundas Street West (Site Access A) is expected to operate at LOS "B" or better during the peak hours.

The proposed full-moves access to Ninth Line (Site Access B) is expected to operate at LOS "E" during the weekday p.m. peak hour with a control delay of 48.9 seconds. These delays are common at full-moves unsignalized accesses on high-volume arterial roadways in urban areas during commuter peak hours, and thus operations for the full-moves access are supportable, also indicated by the low forecasted outbound volume-to-capacity ratios.

The roundabout intersection of Ninth Line and William Halton Parkway is expected to operate at LOS "C" or better under 2033 future total conditions. The south leg is expected to operate with a volume-to-capacity ratio of 0.92, but the movement is otherwise expected to operate with minor delays. The maximum increase in control delay from 2033 future background to future total conditions is 1.3 seconds.

These metrics indicate that the addition of site traffic to the boundary road network is expected to result in minor impacts to traffic operations. Therefore, the proposed development is supportable from a transportation operations perspective.

7.0 Safety Review

Per the Region of Halton and City of Mississauga guidelines, a safety review of the proposed development is required. The purpose of the safety review is to identify any safety deficiencies for auto drivers, pedestrians and cyclists for the proposed development, and to identify how the development proposes to maximize safety for all road users.

7.1 Access Management

The proposed site accesses were evaluated per the Region of Halton's Access Management Guideline (January 2015).

7.1.1. RI/RO to Dundas Street West

The proposed site access to Dundas Street West is located approximately 60 metes east of Ninth Line and will be restricted to a RI/RO operation given the raised centre median on Dundas Street West. Per the Region's guidelines, the minimum spacing requirement for a RI/RO access is 115 metres from an adjacent access or intersection. However, per the MTO's Highway Corridor Management Manual (September 2018), the minimum spacing required between the limits of the Highway 403 right-of-way (ROW) and the site access is between 125-185 metres, with a desirable offset spacing of 150 metres associated with a posted speed of 60 km/h. Given the future ROW limit of Highway 403 to the west, the MTO limit of access is at the easterly limit of the proposed site access. Therefore, the proposed site access satisfies the MTO's spacing requirements. Satisfying the Region's spacing requirement of 115 metres from Ninth Line would result in the access being located within the MTO limit which MTO has advised is unacceptable.

7.1.2. Full-Moves to Ninth Line

The proposed site access to Ninth Line is located approximately 125 metres north of Dundas Street West and is proposed to be a full-moves access. The minimum spacing requirement for a full-moves access is 300 metres from an adjacent access or intersection. While the proposed spacing does not satisfy minimum spacing requirements, it is noted that the proposed site access is opposite the existing full-moves access to Glen Oaks, which is also located approximately 125 metres north of Dundas Street West. The proposed site access would form the fourth leg of the intersection of the existing Glen Oaks Access at Ninth Line. The access is also as far north as can be sited. Further justification for this full-moves access is provided in Section 8.0.

7.2 Sight Distance Analysis

The available sightlines at the proposed site access on Ontario Street were measured and compared to the standards set out in the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR). Sight distance was measured from the proposed site accesses using the following assumptions:

- A standard driver eye height of 1.08 metres for a passenger car, and
- A 4.4 metre setback from the approximate extension of the outer curb to represent a vehicle waiting to exit the site.

Intersection sight distance is calculated using equation 9.9.1 from the GDGCR as outlined below:

$$ISD = 0.278 * V\ major * tg$$

Where;
ISD = Intersection Sight Distance
V major = design speed of roadway (km/h)
tg = assumed time gap for vehicles to turn from stop onto roadway (s)

The design speed of a roadway in an urban environment is typically 10-20 km/h greater than the posted speed limit. The posted speed limit on Dundas Street West and Ninth Line is 60 km/h. Therefore, a design speed of 80 km/h was assumed for the sight distance analysis.

As the proposed access to Dundas Street West will be restricted to a RI/RO operation, sight distance requirements were only analyzed for vehicles turning right from the site access onto the roadway as left-turns are restricted by the access type.

Typically, vehicles turning right from an access onto a roadway will turn into and travel in the curb lane. However, for the proposed access on Dundas Street West approximately 140 metres east of Ninth Line, it is assumed that a portion of site generated traffic will turn left onto Ninth Line which would require several lane changes within a relatively short span. Thus, additional time gaps were applied to the sight distance analysis for the Dundas Street West access.

Table 20 outlines the sight distance analysis for the proposed site accesses.

Table 20: Sight Distance Analysis

Feature	Dundas Street West Access	Ninth Line Access
Access Type	RI/RO	Full-Moves
Posted Speed Limit of Roadway	60 km/h	60 km/h
Assumed Design Speed	80 km/h	80 km/h
Base Time Gap	6.5 s [1]	7.5 s [2]
Additional Time Gap	2.0 s (time to cross three westbound through lanes and left-turn lane adjacent gore area)	1.0 s (time to cross additional northbound through lane and centre lane)
Grade of Roadway	Less than 3%	Less than 3%
Horizontal Alignment of Roadway	Straight	Straight
Sight Distance Required	190 m [3]	190 m [3]
Measured Sight Distance	> 225 m (to east)	+ 225 m (to north and south)
Minimum Sight Distance Satisfied?	Yes	Yes

Note 1: Time gap for right-turning vehicles from a stop onto a two-lane highway with no median and with a grade less than 3%. Value from Table 9.9.5 in the GDGCR.

Note 2: Time gap for left-turning vehicles from a stop onto a two-lane highway with no median and with a grade less than 3%. Value from Table 9.9.3 in the GDGCR.

Note 3: Sight distance values calculated from Intersection Sight Distance equation 9.9.1 in the GDGCR.

As outlined in **Table 20**, minimum sight distance requirements are satisfied at the proposed site accesses on Dundas Street West and Ninth Line.

Therefore, the proposed development is supportable from a sight distance perspective.

7.3 Roadway Alignment

The horizontal alignment of the boundary road network in the study area is relatively straight, and the vertical alignment of the boundary road network is relatively flat. Therefore, roadway alignment is not considered to be a traffic safety concern for the proposed development.

7.4 Vehicle-Vehicle Conflicts

The proposed site access to Ninth Line is directly opposite the existing full-moves access to Glen Oaks and is aligned to form the fourth leg of the intersection. This access alignment eliminates the potential for vehicle-vehicle conflicts that would arise from an offset access alignment.

The proposed site layout results in an outer circular internal aisle surrounding the proposed industrial condo buildings. This outer circular formation will result in separation between vehicles driving across the site and vehicles searching for parking spaces, which will facilitate predictable travel patterns for vehicles and thus reduce the potential for vehicle-vehicle collisions.

7.5 Vehicle-Pedestrian Conflicts

As discussed above, the proposed site layout results in an outer circular internal site circulation in the proposed parking lot. This circular formation will result in predictable travel patterns for vehicles, and thus increase pedestrian safety when drivers walk from their vehicles to the building.

The proposed parking spaces are located directly adjacent to the buildings, thus providing safe and convenient access for drivers entering and exiting the building from their vehicles and not requiring pedestrians to walk across drive aisles. Additionally, the proposed bicycle parking spaces are located adjacent to the buildings, thus providing safe and convenient access for cyclists arriving from and departing to the building.

7.6 Pedestrian and Cycling Connectivity

The predictable vehicle travel patterns within the site is expected to reduce the potential for internal collisions thus increasing safety for all road users including pedestrians and cyclists. To maximize pedestrian and cycling connectivity to and from the site, a connection to the multi-use trail could be provided from the site to the future multi-use trail on the east side of Ninth Line to be constructed as part of the road widening. A direct connection between the site and the surrounding active transportation network would further increase pedestrian and cyclist safety.

7.7 Internal Loading Circulation

The Site Plan illustrates truck turning circulation within the site to the self-storage loading spaces, for both a WB-20 tractor semi-trailer and a Heavy Single-Unit (HSU) truck. The interior loading and loading dock for the proposed self-storage building would operate as a one-way system, with vehicles entering from the site access to Dundas Street West. HSU trucks would drive directly into the loading aisle within the building, and exit at the north end of the building to the proposed site access to Ninth Line. WB-20 trucks would drive along the east side of the self-storage, drive past the loading space, and reverse directly into the loading space. These trucks would then turn left and exit via the proposed site access to Ninth Line.

Per the truck turning circulation shown on the Site Plan, no maneuverability constraints have been identified.

Trucks are primarily expected to arrive from and depart to Highway 403. Thus, trucks exiting the site returning to Highway 403 would turn left from the full-moves access onto Ninth Line, then turn left onto Dundas Street West towards Highway 403. A full-moves access is required to facilitate this outbound truck circulation. A restricted access would require trucks to turn right onto Ninth Line and reroute towards the nearest freeway interchanges via the municipal road system for a greater length compared to turning towards the Dundas Street West interchange.

8.0 Justification for Full-Moves Access

A full-moves access to Ninth Line is supportable for the following reasons:

- The full-moves site access is expected to operate at LOS “E” during the critical weekday p.m. peak hour with traffic operations common for full-moves accesses on high-volume arterial roadways during commuter peak hours. Additionally, the forecasted outbound volume-to-capacity ratios are low. Thus, the traffic operations at the full-moves access are supportable;

- The proposed site access is located opposite the existing Glen Oaks access which eliminates the potential for vehicle-vehicle conflicts that would arise from an offset access alignment;
- There are several examples of access spacings on Regional Roads in Oakville between intersections and full-moves accesses that are less than the required 300 metres spacing, including:
    - The 2018 Dundas Street West full-moves site access on Ninth Line in Oakville located approximately 110 metres south of Dundas Street West;
    - The 620 Ford Drive full-moves site access and opposing 601 & 609 Ford Drive full-moves site access on Ford Drive in Oakville located approximately 105 metres south of Royal Windsor Drive;
    - The Upper Oakville Shopping Centre easterly full-moves site access on Upper Middle Road in Oakville located approximately 95 metres east of the Upper Oakville Shopping Centre service road signalized intersection;
    - The Trafalgar Ridge Plaza Shopping Mall northerly full-moves site access on Trafalgar Road in Oakville located approximately 90 metres north of the Trafalgar Ridge Plaza service road signalized intersection; and
    - The 5600 Mainway southerly full-moves access on Burloak Drive in Oakville located approximately 80 metres south of Mainway.
- Minimum sight distance requirements are satisfied at the site access for drivers turning left onto Ninth Line;
- Heavy trucks exiting the site returning to the provincial highway network require a full-moves access to turn left onto Ninth Line, left onto Dundas Street West and access Highway 403 via the Dundas Street West interchange.

9.0 Transportation Demand Management (TDM) Opportunities

The City of Mississauga has requested that a Transportation Demand Management (TDM) plan be provided as a component of the Transportation Impact Study. The purpose of the TDM plan is to identify existing and future TDM opportunities to reduce single-occupancy vehicle (SOV) trips to and from the proposed development.

9.1 Existing Modal Split

TTS data was used to determine the existing modal split for trips entering the study area. Results were filtered to auto trips entering 2006 GTA Zone 3634 during the a.m. peak period. 2006 GTA Zone 3634 consists of the subject property, as well as other commercial and industrial buildings surrounding Highway 403 in the City of Mississauga.

The existing modal split is outlined in **Table 21**.

Table 21: Existing Modal Split

Mode	Percentage
Transit	7%
Cycling	0%
Auto Driver	87%
Auto Passenger	5%
Walking	1%

Approximately 87% of trips travelling to the study area in the a.m. peak hour are made by auto drivers, with an additional 5% of trips made by auto passengers. These percentages indicate that there is a heavy reliance on automobile travel in the study area, which is expected given the environment of the study area and the limited existing transit and active transportation services and infrastructure in the study area.

Appendix I contains the TTS data.

9.2 Existing Alternate Transportation Opportunities

As outlined in Section 3.0, there are existing active transportation facilities on Dundas Street West (west of Ninth Line) and on Ninth Line (south of Dundas Street West), and there are existing transit services on Dundas Street West accessed by existing bus stops at the intersection of Dundas Street West and Ninth Line.

9.3 Future Alternate Transportation Opportunities

As discussed in Section 4.3, the future widening of Ninth Line north of Dundas Street West will provide on-street bike lanes and multi-use paths on both sides of the roadway. The provision of these active transportation facilities will provide connectivity to the existing active transportation facilities on the boundary road network and encourage walking and cycling as viable modes of transportation.

9.4 Site Specific TDM Opportunities

Given the proposed self-storage and industrial condo uses, and the location of the site, traditional TDM measures such as carpooling, transit, walking, cycling and telework are not all applicable to the proposed development. For example, users of the self-storage facility would be expected to drive to and from the site to pick up or drop off personal items, and thus not be expected to walk, bike, or use transit. Additionally, telework opportunities would not necessarily apply to employees of the industrial condo component as manufacturing-type facilities typically operate on scheduled hours and requires employees to work at the site.

However, there are still traditional TDM opportunities applicable to the proposed development. For example, employees could carpool to work to reduce travel expenses and pollution, and take advantage of carpooling facilities such as the High-Occupancy Vehicle (HOV) lanes on Highway 403 in Burlington, Oakville and Mississauga, and online resources to help travellers find and share carpool trips. Additionally, employees could walk, bike or use transit to access the proposed development through promotion of these alternate modes of transportation.

As discussed in Section 7.6, a connection to the multi-use trail could be provided from the site to the future multi-use trail on the east side of Ninth Line to be constructed as part of the road widening. A direct connection between the site and the surrounding active transportation network would further increase pedestrian and cyclist safety and encourage walking and cycling as viable modes of transportation.

There are also opportunities for "soft" TDM measures. For example, employers could supply their employees with transit information (i.e. Mississauga "MiWay" Transit and Oakville Transit schedules and maps), maps of active transportation facilities in the Region of Halton and City of Mississauga, and other informational material to promote awareness of alternate modes of transportation.

10.0 Conclusions

The analysis contained within this report has resulted in the following key findings:

- Analysis of 2018 existing traffic operations indicates that the boundary road network is currently operating at acceptable levels of service, with the exception of Dundas Street and Ninth Line which is currently operating at capacity during the weekday p.m. peak hour.

- However, the modelling of the northbound right-turn is considered to overstate traffic operations for the aforementioned movement as camera footage indicates that despite the permissive phase type, northbound right-turn vehicles are steadily proceeding through the intersection during the protected eastbound and westbound left-turn phases.

- Several other movements on the boundary road network are operating at or beyond capacity. There are opportunities to improve existing traffic operations, as noted:

    - Implement a protected-overlap phase type for the northbound right-turn movement at Dundas Street West and Ninth Line; and
    - Optimize signal timings for all signalized intersections.

- Additionally, the intersection of Ninth Line and Burnhamthorpe Road is planned to be converted to roundabout control in the future, which would mitigate existing traffic operational issues.

- Analysis of 2033 future background traffic operations indicate that the intersections of Dundas Street West and Ninth Line, and Dundas Street West and Highway 403 West Ramp Terminal are expected to operate at or beyond capacity during the weekday a.m. and p.m. peak hours, respectively.

- However, the signal timing recommendations to existing traffic operations are expected to ultimately reduce critical traffic operations.

- The 95th percentile queue lengths at the Highway 403 ramp terminals to Dundas Street West are not expected to extend to the freeway segment and will not impede traffic operations on Highway 403.

- Additionally, the roundabout intersection of Ninth Line and William Halton Parkway is expected to operate at satisfactory levels of service, indicating that the implementation of roundabout control is expected to significantly improve traffic operations.

- The proposed development is expected to generate a total of 51, 68 and 95 total two-way trips during the weekday a.m. and p.m., and Saturday peak hours, respectively. These trip generation forecasts were conducted using a previous version of the development proposal which featured higher GFAs for both the self-storage and industrial condo buildings. Therefore, the trip generation forecasts and future total traffic analysis contained within this report are conservative.

- Auxiliary left-turn lane analysis for the southbound left-turn movement from Ninth Line to Site Access B indicates that an exclusive southbound left-turn lane with 15 metres of storage is warranted. However, the future widening of Ninth Line proposes a 3.0 metre centre lane which could be allocated as an exclusive southbound left-turn lane on Ninth Line to Site Access B, which would provide 15 metres of vehicle storage.

- Analysis of 2033 future total traffic operations indicate that the intersections of Dundas Street West and Ninth Line, and Dundas Street West and Highway 403 West Ramp Terminal are expected to operate at or beyond capacity during the weekday a.m. and p.m. peak hours, respectively. These operations are consistent with 2033 future background conditions.

- The maximum forecasted increase in control delay from 2033 future background to future total conditions at the Highway 403 ramp terminals on Dundas Street West is 1.5 seconds during the weekday a.m. peak hour. The intersection is expected to experience a decrease in control delay of 7.8 seconds maximum during the weekday p.m. and Saturday peak periods as a result of the recommended signal timing optimizations.

- The 95th percentile queue lengths at the Highway 403 ramp terminals to Dundas Street West are not expected to extend to the freeway segment and will not impede traffic operations on Highway 403.

- The proposed RI/RO site access to Dundas Street West is expected to operate at acceptable levels of service.

- The proposed full-moves site access to Ninth Line expected to operate at capacity during the weekday p.m. peak hour, which is typical for full-moves unsignalized accesses on high-volume arterial roadways in urban areas during commuter peak hours. The forecasted outbound volume-to-capacity ratio is low during the weekday p.m. peak hour. Thus, the operations for the full-moves access are supportable.

- These metrics indicate that the addition of site traffic to the boundary road network is expected to result in minor impacts to traffic operations. Therefore, the proposed development is supportable from a transportation operations perspective with the implementation of signal timing optimizations.

Safety Review

- The proposed site access to Dundas Street West satisfies MTO access management guidelines and minimum sight distance requirements.

- The proposed site access to Ninth Line does not satisfy minimum spacing requirements per the Region's guidelines for full-moves accesses. However, the proposed site access is justifiable for the following reasons:

  - The forecasted traffic operations at the full-moves access during the weekday p.m. peak hour are common for full-moves accesses on high-volume arterial roadways during commuter peak hours. Additionally, the forecasted outbound volume-to-capacity ratios are low. Thus, the traffic operations at the full-moves access are supportable;
  - The proposed site access is located opposite the existing Glen Oaks access which eliminates the potential for vehicle-vehicle conflicts that would arise from an offset access alignment;
  - There are several existing accesses on Regional Roads in Oakville between intersections and full-moves accesses that are less than the required 300 metres spacing;
  - Minimum sight distance requirements are satisfied at the site access for drivers turning left onto Ninth Line; and
  - Heavy trucks exiting the site returning to the provincial highway network require a full-moves access to turn left onto Ninth Line, left onto Dundas Street West and access Highway 403 via the Dundas Street West interchange.

- The proposed site layout is expected to result in predictable travel patterns throughout the site and thus reduce the potential for vehicle-vehicle and vehicle-pedestrian collisions.

- The illustrated truck turning circulation on the Site Plan to and from the proposed loading spaces for the self-storage building do not indicate any maneuverability issues to truck circulation.

- Analysis of existing modal split indicates that there is a heavy reliance on automobile travel in the study area, which is expected given the environment of the study area.

- However, there are existing transit services and active transportation facilities on Dundas Street West and Ninth Line in the study area. The future widening of Ninth Line north of Dundas Street West will provide on-street bike lanes and multi-use paths on both sides of the roadway. The provision of these active transportation facilities will provide connectivity to the existing active transportation facilities on the boundary road network and encourage walking and cycling as viable modes of transportation.

- The development could provide a connection to the multi-use trail from the site to the future multi-use trail on the east side of Ninth Line to be constructed as part of the road widening. A direct connection between the site and the surrounding active transportation network would further increase pedestrian and cyclist safety and encourage walking and cycling as viable modes of transportation.

- There are other traditional TDM opportunities applicable to the proposed development. For example, employees could carpool to work to reduce travel expenses and pollution, and take advantage of carpooling facilities such as the High-Occupancy Vehicle (HOV) lanes on Highway 403 in Burlington, Oakville and Mississauga, and online resources to help travellers find and share carpool trips. Additionally, employees could walk, bike or use transit to access the proposed development through promotion of these alternate modes of transportation.

- There are also opportunities for "soft" TDM measures. For example, employers could supply their employees with transit information (i.e. Mississauga "MiWay" Transit and Oakville Transit schedules and maps), maps of active transportation facilities in the Region of Halton and City of Mississauga, and other informational material to promote awareness of alternate modes of transportation.

Conclusion

The analysis contained within this report was prepared using the Site Plan prepared by Nicholas Caragianis Architect Inc. (updated November 18, 2020). Any minor revisions to the development concept are not expected to affect the conclusions contained with this report.

In conclusion, the proposed development can be supported from a transportation operations and safety perspective, with the implementation of the noted recommendations.

Respectfully submitted by,

C.F. CROZIER & ASSOCIATES INC.

R. Aaron Wignall

R. Aaron Wignall for Alex J.W. Fleming, P.Eng.
Associate

C.F. CROZIER & ASSOCIATES INC.

Darren Loro

Darren J. Loro, C.E.T.
Transportation Technologist

/DL

J:\1600\1644-DYM Capital Corp\5084-3855 Dundas St E\Reports\5084_Transportation Impact Study Update (November 2020).docx

APPENDIX A

Correspondence

File: OZ 18 18
Proposal: a five storey self-storage facility and three one storey commercial retail buildings

MIN OF TRANSPORTATION

MIN OF TRANSPORTATION Contact: Melissa Bruno Tel. (905) 615-3200 x5515

No	Milestone	Condition
1	INFO REPORT	The ministry has reviewed the TIS in support of this application and offers the following comments: 1. Submission must be stamped by a Professional Engineer 2. In Section 5.1 ITE 10th Edition was used to forecast the trip generated development, and in Section 5.2 ITE 3rd Edition was used to defined pass-by trips. Please explain why two different editions to analyzing the trips, and why are adjusted pass-by-trips used for the development of self-storage and retail space? Does the development fall under a category of ?Shopping Centre?? 3. Please explain why two different trip distribution methods were used for one development. E.g. the trips generated by self-storage component used estimating method, but trips generated by retail component used TTS (Transportation Tomorrow Survey) method. 4. In Appendix I -TTS data, origins/destinations and travel mode of trip, used two different study zones, such as 4035 and 3634, but none of the zones belong to study area zone according to 2006GTA zone. Please explain. 5. At Appendix I -TTS data, the filter of Destination Purpose of the trip has been applied for Marketing/Shopping. Is the type of purpose used best represent the development type for a self-storage and retail space? 6. At Appendix I -TTS data, please explain why were two different peak time periods selected to retrieve the data? E.g. PM peak for origin/destination, and AM peak for travel mode data? CONTACT: Phil Iannacito, BA (hons.) Corridor Management Planner / Peel & Simcoe Ministry of Transportation Central Region Corridor Management Section 159 Sir William Hearst Ave., 7th Floor Downsview ON M3M 0B7 phil.iannacito@ontario.ca (416) 235-4592 **Created :** 2019-03-14 09:07:58 **Last Modified :** 2019-03-14 09:09:25

REGION OF PEEL

REGION OF PEEL Contact: Angelo Ambrico Tel. (905) 791-7800 x4612

No	Milestone	Condition
1	INFO REPORT	This site does not have frontage on existing Region of Peel infrastructure. The Region currently has no plans to extend water and sanitary sewer servicing to this property in the future. **Created :** 2019-02-15 11:24:06 **Last Modified :**

Legislative and Planning Services
The Regional Municipality of Halton
1151 Bronte Road,
Oakville, ON L6M 3L1
Fax: 905.825.8822

April 2, 2019

Ms. Melissa Bruno, Project Coordinator
City of Mississauga
300 City Centre Drive 6th Floor,
Mississauga, Ontario L5B 3C1

Dear Ms. Bruno:

Re: Proposed Rezoning Application
3855 Dundas Street West
City of Mississauga, Region of Peel
File: OZ 18/08 W8, 3855 Dundas West Storage GP Corporation

Regional staff has reviewed the proposed zoning bylaw amendment application to amend the zoning from E2-93 to E2 Exception. The proposed E2 zoning is to permit all E2 uses and Retail uses. In addition, adjustments to the site specific provisions are requested to permit increased floor space index, reduced parking spaces, reduced loading spaces and to permit outdoor garbage enclosure within the landscape area. The development of the subject lands is proposed to take place in two parts; Part 1 is for a five storey self-storage facility and Part 2 is for three commercial retail buildings. It is anticipated Part 2 will be severed from Part 1 prior to a site plan application being submitted for Part 2. The development is proposed to connect to Region of Halton municipal water services and to an on-site septic system. Halton Region does **not support the application in its present form** and has fairly substantial concerns related to access and transportation related issues. Halton Region staff offer the following comments.

Provincial Policy Statement, 2014

The Provincial Policy Statement, 2014 (PPS) came into effect on April 30th, 2014 and provides clear direction on land use planning in Ontario to promote strong communities, a strong economy, and a clean and healthy environment. While Regional staff do not see any conflicts or have objections to the use itself, there are concerns and issues to note from a servicing perspective.

As stated above the applicant is proposing both partial servicing as well as a connection to Halton Region's existing waterline. The PPS outlines that municipal sewage and water services are the preferred form of servicing for settlement areas and that intensification and redevelopment on existing municipal services should be promoted, wherever feasible. Further, that individual on-site sewage and water services may be used, provided that site conditions are suitable for the long-term provision of such services with no negative impacts. Within settlement areas, these services may only be used for infilling and minor rounding out of existing development. Negative impacts is defined as being the degradation to the quality and quantity of water, sensitive surface water features and sensitive ground water features, and their related hydrologic functions, due to single, multiple or successive development. It is stated that negative impacts should be

assessed through environmental studies including hydrogeological or water quality impact assessments, in accordance with Provincial standards.
With respect to the provision of partial services, the PPS only permits them where they are necessary to address failed individual on-site sewage services and individual on-site water services in existing development; or within settlement areas, to allow for infilling and minor rounding out of existing development on partial services provided that site conditions are suitable for the long-term provision of such services with no negative impacts.

Currently, the Region is not entertaining new connections to its municipal system for lands not within the Region's boundaries. For this reason, the Region is not in a position to support the proposal in its current state. Should the application be revised to address servicing in a manner that does not rely on Region of Halton servicing, provided all potential impacts to the Halton Region are satisfactorily addressed, Regional staff would not object to the proposal.

Regional staff note that, the subject application does not appear to meet the criteria of the above noted PPS policy direction for partial services and Regional staff are of the opinion that proposed site plan, in its present form, is not consistent with the policy direction of the PPS.

Regional Official Plan Conformity

The subject lands are located outside of the Regional Municipality of Halton. The applicant is proposing to connect to Halton Region's municipal water services. Section 98(17) of the Regional Official Plan states that it is a policy of the Region to consider and permit based on individual merit and in accordance with the goals and objectives of this plan, new urban service system interconnections between the Region of Halton and abutting municipalities. Regional staff has received requests in the past for servicing the lands within the City of Mississauga boundary specifically in the area north of Dundas Street and east of Ninth Line, most recently in late 2017. At that time, the Region's position via the Region's Commissioner of Public Works in consultation with the Regions' Chief Planning Official was that inter-municipal connections in this area would not be entertained and that these matters should be referred to the local municipalities for further consideration (letter attached). This is consistent with the current position for the above noted servicing proposal. Should the applicant consider an alternative servicing arrangement which does not propose connections to Region of Halton services, staff request an opportunity to review the proposal for impacts to Halton Region and provide comments.

At this time, Regional staff are of the opinion that the proposal does not conform to the Region's Official Plan.

Transportation

In the event the subject application is proposed with a satisfactory servicing arrangement, Halton Region has the following Transportation related comments and requirements and requires revisions to the proposal as well as resubmissions of the technical documents provided for review based on the revisions requested.

The Ninth Line EA Study from Dundas Street to Highway 407 is currently underway with completion anticipated for Q3/Q4 2019.The Scheduled start of construction for the section of Ninth Line between William Halton Parkway to Highway 407 is 2023.The Scheduled start of construction for the section of Ninth Line between Dundas Street to William Halton Parkway is 2025.

Land Dedication:
Please be aware Halton Region will have the following land dedication requirements through a future consent and / or site plan application etc. for the subject lands.

- Any lands within 17.5m of the centre line of the original 66ft right-of-way of Ninth Line (Regional Road 38) that are part of the subject property for the purpose of road right-of-way widening and future road improvements.

- Any additional lands that are part of the subject property and have been identified as required for the future widening and of Ninth Line (Regional Road 13), as identified in the Ninth Line Municipal Class EA or Detailed Design Project.
- Any lands within 25m of the centre line of the original 66ft right-of-way of Dundas Street (Regional Road 5) that are part of the subject property for the purpose of road right-of-way widening and future road improvements.
- A daylight triangle measuring 15m along Dundas Street (Regional Road 5) and 15m along Ninth Line (Regional Road 13) for the purpose of road right-of-way widening and future road improvements.

All lands to be dedicated to Halton Region shall be dedicated with clear title (free and clear of encumbrances) and a Certificate of title shall be provided, in a form satisfactory to the Director of Legal Services or his designate and any proposed signage, plantings etc., for the site must be placed outside of the new Regional right-of-way (on private property).

Transportation Study – November 2018:

A transportation study was completed by Crozier Consulting Engineers dated November 2018 and circulated March 5, 2019 for review. The Study has been peer reviewed by CIMA+.

TIS Peer Review Comments:

- *Provide clarification as to whether the trip generation rates or fitted curve equations were used for each land use type;*
- *Provide clarification on the trip distribution assumptions considered for the self-storage land use portion of the development;*
- *Provide clarification if the TTS zone 4025 selected to review trip distribution for the retail land use portion of the development was discussed with the Region and if there are any zones closer to Highway 403 that can be used as a further comparison with TTS zone 4025;*
- *Provide details regarding signal timing optimizations applied to each individual traffic analysis scenario;*
- *Update the report to include a SimTraffic analysis of select intersections to identify potential queue interactions between intersections. Intersections to be reviewed using SimTraffic should include each of the site accesses, and any signalized intersections near major intersections;*
- *Revise the intersection operation summary tables within the report to include a consistent HCM 2000 methodology for reporting measures of effectiveness between unsignalized and signalized intersections;*
- *Revise the Synchro files based on intersection signal timing provided by Region;*
- *Clarify the potential safety implications of southbound queues extending beyond the proposed full movement site access on Ninth Line during future traffic scenarios; and*
- *If available, provide additional details regarding the anticipated number of daily heavy vehicles projected to enter the development.*

Access/Roadway Improvements:

Ninth Line Access:
Transportation Planning does not support the full movement access to the development lands from Ninth Line. The spacing of the access does not conform to Halton's Access Management Guidelines, and is only 125m from the Dundas Street intersection. The statement in the Study regarding "…the proposed site access is opposite the existing full-moves access to Glen Oaks" and "..the proposed site access would form the fourth leg of the intersection of the existing Glen Oaks access to Ninth Line"….cannot be used as justification for access approval.

Additionally, the Glen Oaks access has been in place for a number of years (over 15 years) and was approved under different access management principles and when traffic along Ninth Line was far below today's levels. Secondly, the Glen Oaks access traffic volumes are not comparable to the proposed development (retail, storage) trip generation and distribution. Also, the property owner for Glen Oaks is currently exploring options to relocate the existing Glen Oaks access further north (potentially to align with the baseball diamond entrance).

As stated in the Transportation Study, 95th Percentile queues reported during various peak hour operations indicate queues extending close to and beyond the proposed access location.

Some additional queuing (95th%ile Synchro) noted in the TIS for the Ninth Line at Dundas Street intersection includes:

-2018 existing a.m. – SBT 114m
-2023 Future Background a.m. – SBT 115m
-2028 Future total a.m. – SBLT +105m
-2028 Future total a.m. – SBT 151m
-2033 Future total a.m. – SBLT +116m & SBT +217m
-2033 Future total p.m. – SBLT +76m & SBT 117m

Also, as stated in the TIS regarding peak hour operations of the access - *"The proposed site accesses are overall expected to operate at acceptable levels of service, with the proposed full-moves site access to Ninth Line expected to operate beyond capacity during the weekday p.m. peak hour. It is expected that drivers experiencing heavy delays will divert and turn right onto Ninth Line to travel northbound as an alternate route to depart to Mississauga (via Burnhamthorpe Road). It is not considered feasible to restrict the left-turn movement out of the site access on the basis of heavy control delays during the weekday p.m. commuter peak hours, as it is expected that vehicles will be able to easily turn left from the site access onto Ninth Line during off-peak hours."* The TIS clearly outlines beyond capacity issues during the p.m. peak hour.

The Ninth Line access must be restricted to right-in/right-out movements and will require a pork-chop island to prohibit left-in/left-out turning movements. Should the Glen Oaks access be relocated further north prior to site plan approval, the existing Ninth Line/Dundas Street centre median must be extended 75m northerly.

Dundas Street Access:
Transportation Planning does not support the location of the right-in/right-out access to the development lands from Dundas Street. The spacing of the access does not conform to Halton's Access Management Guidelines, and is only 70m from the Ninth Line intersection (based on the site plan drawing & dimension shown), although the TIS states the spacing meets Halton's minimum 115m spacing. As per Halton's Access Management Guidelines, a minimum of 115m must be achieved from the nearest intersection, measured from the Ninth Line intersection stop bar easterly to the start of the access. This will ensure adequate merging/weaving spacing from the Ninth Line intersection for site development exiting vehicles to enter the westbound right-turn lane, westbound through lanes or westbound left-turn lane. This access spacing will achieve safe operations for the development site and for users of Dundas Street and the intersection at Ninth Line.

With the required access spacing of 115m, the extension of the existing westbound right-turn lane and taper (135m existing length) further east will be required, in order to provide a properly designed westbound right-turn lane for the development access to Dundas Street. This total right-turn lane extension will approximately amount to 110m (70m storage/40m taper extension), and exact extension details & design will be reviewed further as part of the design drawings submission required for a Servicing Agreement. Any required works (Dundas Street right-turn lane extension, development sidewalk connections to the intersection, multi-use trail, boulevard implementation and/or restoration, etc.,) along Dundas Street and along Ninth Line, including any existing utility pole relocations, etc., will be the responsibility of the developer, and must be co-ordinated and approved by Halton Region and the City of Mississauga.

Therefore, the Transportation Study will require a <u>resubmission</u> based on the above noted comments by Halton Region.

<u>Multi-Use Trail</u>:
The developer is responsible for the design and construction of a boulevard plus 3.0m multi-use trail along the north side of Dundas Street and along the east side of Ninth Line adjacent to the development lands. Detail design drawings will be required for this facility (location, design specs, etc.,) for review and approval by Halton Region and the City of Mississauga.

<u>Agreements/Permits:</u>
Through the future planning consent and/or site plan etc. application, the Owner must enter into a <u>Servicing Agreement</u> (through the Development Project Manager) for the completion of required Works for all development associated road improvements (Dundas Street access, Ninth Line access, multi-use trail, boulevards, Dundas Street westbound right-turn lane extension, etc.,), through the submission of detail design drawings. The Owner is responsible for all costs associated with the improvements detailed as part of the works and must submit for approval detail design drawings and cost estimates.

<u>Stormwater Management:</u>
Regarding stormwater management for the development site, Halton Region's Development Project Manager is responsible for the review and approval of the SWM report.

<u>Ministry of Transportation</u>:
Due to the property being within the Controlled Access Highway (CAH) limit of the MTO, their review and approval would also be required for any development application (traffic impact, access, ROW, etc.,).

<u>Permits:</u>
That Entrance Permits be applied for, for the Dundas Street and Ninth Line accesses, and reviewed and approved by Halton Region (with approved design drawings of the entrance attached to the Entrance Permit).

<u>CONCLUSION</u>
Therefore based on the above, Halton Region **does not support** the subject application in its present form. The subject development is to be serviced from the Regional Municipality of Peel. Should an acceptable alternative servicing solution be found, Regional staff request the supporting documentation for the revised servicing scheme be submitted to Regional staff for review and comment. Further, as noted above, there are a number of concerns and outstanding transportation and access related technical requirements from a transportation perspective which requires revisions and resubmissions for review and comment to be addressed.

Should you have any questions or concerns in this regard, please feel free to contact me.

Sincerely,

Laurielle Natywary, MCIP RPP
Senior Planner
Extension 7182
Laurielle.natywary@halton.ca

Attach.

cc: Paul Stewart, Planner, City of Mississauga (via email)
Joe Nethery, Manager, Community Planning, Halton Region (via email)
Laurielle Natywary, Senior Planner, Halton Region (via email)
Matt Krusto, Transportation Coordinator, Halton Region (via email)

Darren Loro

From: Zain Zia <Zain.Zia@mississauga.ca>
Sent: October-11-18 11:36 AM
To: Darren Loro
Cc: Lin Rogers
Subject: RE: 3855 Dundas Street West - Terms of Reference for Traffic Impact Study

Hi Darren,

Based on our review of the Terms of Reference for 3855 Dundas Street West dated October 3, 2018 , the following comments are provided:

- Please ensure the Halton Region and MTO review and approve the Terms of Reference for this Traffic Impact Study.
- Change site address to 3855 Dundas Street West.
- Turning Movement Counts can be obtained from William Wright (William.Wright@mississauga.ca, Ext. 3221). If the data is older than 2 years, then consultant is responsible to conduct the latest counts. Please contact the Halton Region and MTO for additional count data should these locations not be available through the City.
- Please contact Tyler Xuereb (Tyler.Xuereb@mississauga.ca, Ext. 4783) to confirm growth rates. Again, these rates should be reviewed and confirmed with the Halton Region and MTO.
- Please use the following link to gather information of any developments proposed in the neighbouring lands for background traffic: http://www.mississauga.ca/portal/residents/developmentinformation. Please contact the Town of Oakville, Halton Region and MTO for additional development proposals.
- The signal timing plan for signalized intersections can be obtained from Jim Kartsomaniz (Jim.Kartsomanis@mississauga.ca, Ext. 3964). Please contact the Halton Region and MTO for signal timing plans under their respective jurisdiction.
- Internal Road System Driveway Locations - Please include truck turning templates for loading areas for each of the buildings or waste management facilities.
- A comprehensive Transportation Demand Management Plan is to be part of the report. Provide a TDM plan to demonstrate measures to be implemented to reduce single occupancy vehicle (SOV) trips to the site.
- The Traffic Impact Study is to comply with the City of Mississauga Traffic Impact Study Guidelines.
- The Traffic Impact Study is required to be signed and stamped by a Professional Engineer.

Please let me know if you have any questions.

Regards,
Zain

MISSISSAUGA

Zain Zia, B.Eng.Mgt
Engineer in Training, Transportation Projects
T 905-615-3200 ext.5318 | M 289-937-6567
zain.zia@mississauga.ca

City of Mississauga | Transportation & Infrastructure Planning,
Transportation & Works

From: Darren Loro [mailto:dloro@cfcrozier.ca]
Sent: 2018/10/05 12:12 PM
To: Lin Rogers
Subject: RE: 3855 Dundas Street East - Terms of Reference for Traffic Impact Study

Hi Lin,

See attached the latest Site Plan.

Regards,
Darren

| **DARREN LORO,** C.E.T. | TRANSPORTATION TECHNOLOGIST | C.F. CROZIER & ASSOCIATES

| 40 Huron Street, Suite 301 | Collingwood, ON L9Y 4R3

| cfcrozier.ca | dloro@cfcrozier.ca | tel 705 446 3510

CROZIER & ASSOCIATES Consulting Engineers

Land development engineering, from the ground up.

Water Resources-Transportation-Structural-Mechanical-Electrical-Building Science

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From: Lin Rogers <Lin.Rogers@mississauga.ca>
Sent: October-05-18 12:09 PM
To: Darren Loro <dloro@cfcrozier.ca>
Subject: RE: 3855 Dundas Street East - Terms of Reference for Traffic Impact Study

Hi Darren,

Thank you for your email. Could you kindly provide a concept plan for the site?

Best, Lin

MISSISSAUGA

Lin Rogers, P. Eng
Manager, Transportation Projects
T 905-615-3200 ext.4197
lin.rogers@mississauga.ca
City of Mississauga | Transportation and Works Department,
Transportation & Infrastructure Planning Division

From: Darren Loro [mailto:dloro@cfcrozier.ca]
Sent: 2018/10/03 4:21 PM
To: Lin Rogers
Subject: FW: 3855 Dundas Street East - Terms of Reference for Traffic Impact Study

Good afternoon Lin,

My name is Darren and I am reaching out to you from Crozier & Associates in regards to the development application for 3855 Dundas Street East. We were initially directed to Jay Lee to conduct pre-consultation but we recently learnt that she is no longer with the City and thus were directed to you instead. I hope that we have the opportunity to work together on this file.

Background

We have been retained by DYM. Capital Corporation to prepare a Traffic Impact Study for the proposed mixed-use commercial development at 3855 Dundas Street East in the City of Mississauga. The subject property is located at the northeast corner of Dundas Street East and Ninth Line, west of Highway 403.

The development proposes three one-storey buildings and one five-storey building, consisting of a total of 5,182 sq. m of retail space and a total of 11,047 sq. m of self-storage spaces. The development proposes a right/in-right-out (RI/RO) access to Dundas Street East and a full-moves access to Ninth Line opposite the Glen Oaks Funeral Home & Cemetery Access.

We have reviewed the comments that you have shared with MHBC Planning on this file, and have prepared a terms of reference for the Traffic Impact Study in accordance with your comments as well as with the City of Mississauga's Traffic Impact Study Guidelines.

The MTO and Region of Halton will also serve as approval authority for the TIS, given that the boundary road network consists of Highway 403 (MTO) and Ninth Line (Halton). As such, the study will incorporate elements from the MTO's Guidelines for the Preparation of Traffic Impact Studies, as well as the Region of Halton's Transportation Impact Study Guidelines.

Terms of Reference

The proposed terms of reference is outlined below:

1. The TIS will analyze traffic impacts during the weekday a.m and p.m. peak hours, and Saturday peak hour.

2. The following intersections will be analyzed:
    a. Dundas Street East and Highway 403 East Ramp Terminal
    b. Dundas Street East and Highway 403 West Ramp Terminal
    c. Dundas Street East and Ninth Line
    d. Dundas Street East and proposed site access (future total)
    e. Ninth Line and existing Glen Oaks Access / proposed site access

3. Traffic counts will be commissioned at the aforementioned intersections on a typical weekday between the hours of 6:00 a.m. – 9:00 a.m. and 3:00 p.m. – 7:00 p.m., and on a Saturday between the hours of 10:00 a.m. – 5:00 p.m.

4. Traffic operations will be analyzed using Synchro 9.0. Standard traffic operations metrics for signalized and unsignalized intersections including delays, volume-to-capacity ratios, and queuing will be analyzed and reported on.

5. The development is expected to be fully built-out within five years (i.e. by 2023). Per the City of Mississauga and Region of Halton TIS guidelines, the horizon year for the TIS is five-years from the date of the TIS (2018). However, the MTO requires analysis of the five and ten year horizons from the estimated year of full build-out. Therefore, the 2023, 2028 and 2033 horizon years will be analyzed.

6. Background traffic growth will be calculated using historical growth rates on Dundas Street East.

7. Trip generation will be forecasted using the ITE Trip Generation Manual, 10th Edition.

8. Trip distribution will be derived from a combination of existing travel patterns, and expected catchment areas for the self-storage and retail components of the proposed development.

9. The available sight distances at the proposed site accesses will be analyzed and compared to the standards set out in the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR) June 2017.

10. The proposed development will be reviewed from a transportation safety perspective to identify any issues pertaining to weaving, merging, vehicle turning constraints within the site, queuing, etc.

11. Existing and future Transportation Demand Management (TDM) opportunities will be evaluated as part of the TIS to reduce auto share and promote non-auto transportation.

Please review and comment on the terms of reference as outlined above. If this is satisfactory, we will begin our analysis immediately.

If you want to discuss further, please do not hesitate to give me a call.

Thank you for your time!
Darren

| **DARREN LORO,** C.E.T. | TRANSPORTATION TECHNOLOGIST | C.F. CROZIER & ASSOCIATES

| 40 Huron Street, Suite 301 | Collingwood, ON L9Y 4R3

| cfcrozier.ca | dloro@cfcrozier.ca | tel 705 446 3510

CROZIER & ASSOCIATES Consulting Engineers

Land development engineering, from the ground up.

Water Resources · Transportation · Structural · Mechanical · Electrical · Building Science

Darren Loro

From: Krusto, Matt <Matt.Krusto@halton.ca>
Sent: October-18-18 1:43 PM
To: Darren Loro
Subject: RE: 3855 Dundas Street East - Terms of Reference for Traffic Impact Study
Attachments: 3855 DUN SP_180911.pdf

Hi Darren,

I have the following comments:

-Halton Region is currently in the process of completing a Municipal Class Environmental Assessment to widen Ninth Line to 4 lanes from north of Dundas Street to 407 ETR. Please consider this study in the Transportation Impact Study submission. The Environmental Study Report is not final and not available for review in draft form to date, however, the draft north and south section roll plans (preliminary design) is available on the EA Study website http://www.halton.ca/cms/One.aspx?portalId=8310&pageId=143085

-Any permitted accesses and/or required road improvements (traffic signals, turn lanes, access locations/design, illumination, etc.,) for the development will be determined upon the review and approval of the Transportation Impact Study.

-Access/Intersection spacing is required to conform to the Regional Access Management Guidelines and subject to the completion of the Transportation Impact Study. The Access Management Guidelines are available on-line at http://www.halton.ca/common/pages/UserFile.aspx?fileId=136320

-Study must be in accordance to Halton Region's Transportation Impact Guidelines http://www.halton.ca/cms/One.aspx?portalId=8310&pageId=12612

-Regarding the proposed Dundas Street access, while all access locations are to be reviewed as part of the TIS, this access must be initially shown at the <u>east limit</u> of the property, for consideration.

-Identify required/recommended road improvements either as a result of the development impacts, or general non-development improvements.

-Include queuing analysis for southbound Ninth Line in relation to the proposed development access and show impacts, if any, to the existing accesses to the north.

-Include review and comments, as well as preliminary drawings, for a required southbound left-turn lane on Ninth Line for the development access, and how this can be designed in relation to the existing southbound left-turn lane for the Ninth Line at Dundas Street intersection (as currently shown on the EA Study south section roll plan).

-Add the intersection of Ninth Line at William Halton Parkway to the study area intersections. The existing conditions and 2023 condition must be as a 2028 and 2033

-Halton's Capital Implementation Plan timing is as follows:
--Ninth Line widening from 2 to 4 lanes, from Dundas Street to William Halton Park <u>start</u> of construction in 2025 (assume operational in 2027);
--Ninth Line widening from 2 to 4 lanes, from William Halton Parkway to Highway 407 <u>start</u> of construction 2023 (assume operational in 2025);

--William Halton Parkway construction (along existing Burnhamthorpe alignment & along new alignment), from Ninth Line to Trafalgar Road start of construction 2019 (assume operational 2021)

-Data requests for Halton Region information (traffic counts/signal timing) should be completed via the data request process as noted on the Halton Region website http://www.halton.ca/cms/One.aspx?portalId=8310&pageId=12457 or from the City of Mississauga. As City staff have stated, if traffic data is older than 2 years, then updated turning movement counts are required.

-Town of Oakville/City of Mississauga will provide area development details.

-Please ensure MTO review and approve the Terms of Reference for this Study.

-Growth rates: From Halton Region please use 1% growth rates for both Dundas Street and Ninth Line. Please share the City of Mississauga growth rates when received, for review and approval for consistency.

-Please include truck turning templates at all access locations as part of the TIS.

-Halton Region supports the City's request for a comprehensive Transportation Demand Management Plan is to be part of the report.

Let me know if there are any questions.

Matt

Matt Krusto
Transportation Planning Coordinator
Infrastructure Planning & Policy
Public Works
Halton Region
905-825-6000, ext. 7225 | 1-866-442-5866

From: Darren Loro [mailto:dloro@cfcrozier.ca]
Sent: Thursday, October 11, 2018 1:53 PM
To: Monaghan, Patrick
Cc: Krusto, Matt
Subject: RE: 3855 Dundas Street East - Terms of Reference for Traffic Impact Study

Good afternoon Patrick,

No worries - thank you for getting back to me.! The Site Plan is attached.

City of Mississauga staff had no comments contradicting the scope of the TOR, but they noted that they would like us to consult with them for growth rates, and to add a comprehensive TDM section in our report. I have attached the e-mail for your reference. Our scope of work will ultimately be an amalgamation of all the reviewing agencies TIS guidelines.

If you have any questions or wish to discuss further, please do not hesitate to give me a call.

Regards,
Darren

| **DARREN LORO,** C.E.T. | TRANSPORTATION TECHNOLOGIST | C.F. CROZIER & ASSOCIATES

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---

From: Monaghan, Patrick <Patrick.Monaghan@halton.ca>
Sent: October-11-18 1:45 PM
To: Darren Loro <dloro@cfcrozier.ca>
Cc: Matt Krusto <matt.krusto@halton.ca>
Subject: RE: 3855 Dundas Street East - Terms of Reference for Traffic Impact Study

Hi Darren,

Sorry for the delay, could you please provide the proposed Site Plan?

Kind Regards,
Patrick

Patrick Monaghan
Transportation Planning Coordinator
Infrastructure Planning & Policy
Public Works
Halton Region
905-825-6000, ext. 7213 | 1-866-442-5866

From: Darren Loro [mailto:dloro@cfcrozier.ca]
Sent: Wednesday, October 03, 2018 4:33 PM
To: Monaghan, Patrick
Subject: FW: 3855 Dundas Street East - Terms of Reference for Traffic Impact Study

Good afternoon Patrick,

It's been a while since we last spoke – hoping all is well on your end!

I am reaching out to you in regards to the development application for 3855 Dundas Street East. I was directed to you for establishing a terms of reference for the preparation of a TIS. If this isn't your file, can you please provide me with the appropriate contact from the Region?

Background

Crozier & Associates has been retained by DYM. Capital Corporation to prepare a TIS for the proposed mixed-use commercial development at 3855 Dundas Street East in the City of Mississauga. The subject property is located at the northeast corner of Dundas Street East and Ninth Line, west of Highway 403.

The development proposes three one-storey buildings and one five-storey building, consisting of a total of 5,182 sq. m of retail space and a total of 11,047 sq. m of self-storage spaces. The development proposes a right/in-right-out (RI/RO) access to Dundas Street East and a full-moves access to Ninth Line opposite the Glen Oaks Funeral Home & Cemetery Access.

While the subject property is in the City of Mississauga, Ninth Line is under the jurisdiction of the Region of Halton and thus we are reaching out to establish a terms of reference for the TIS in accordance with the Region of Halton's Transportation Impact Study Guidelines (January 2015).

The City of Mississauga and MTO will also serve as approval authorities, given that the subject property is in the City of Mississauga and falls within the MTO control permit area (Highway 403). As such, the study will incorporate elements from the MTO's Guidelines for the Preparation of Traffic Impact Studies, as well as the City of Mississauga's Traffic Impact Study Guidelines.

Terms of Reference

The proposed terms of reference is outlined below:

1. The TIS will analyze traffic impacts during the weekday a.m and p.m. peak hours, and Saturday peak hour.

2. The following intersections will be analyzed:
    a. Dundas Street East and Highway 403 East Ramp Terminal
    b. Dundas Street East and Highway 403 West Ramp Terminal
    c. Dundas Street East and Ninth Line
    d. Dundas Street East and proposed site access (future total)
    e. Ninth Line and existing Glen Oaks Access / proposed site access

3. Traffic counts will be commissioned at the aforementioned intersections on a typical weekday between the hours of 6:00 a.m. – 9:00 a.m. and 3:00 p.m. – 7:00 p.m., and on a Saturday between the hours of 10:00 a.m. – 5:00 p.m.

4. Traffic operations will be analyzed using Synchro 9.0. Standard traffic operations metrics for signalized and unsignalized intersections including delays, volume-to-capacity ratios, and queuing will be analyzed and reported on.

5. The development is expected to be fully built-out within five years (i.e. by 2023). Per the City of Mississauga and Region of Halton TIS guidelines, the horizon year for the TIS is five-years from the date of the TIS (2018). However, the MTO requires analysis of the five and ten year horizons from the estimated year of full build-out. Therefore, the 2023, 2028 and 2033 horizon years will be analyzed.

6. Background traffic growth will be calculated using historical growth rates on Dundas Street East and Ninth Line.

7. Trip generation will be forecasted using the ITE Trip Generation Manual, 10^{th} Edition.

8. Trip distribution will be derived from a combination of existing travel patterns, and expected catchment areas for the self-storage and retail components of the proposed development.

9. The available sight distances at the proposed site accesses will be analyzed and compared to the standards set out in the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR) June 2017.

10. The proposed development will be reviewed from a transportation safety perspective to identify any issues pertaining to weaving, merging, vehicle turning constraints within the site, queuing, etc. Additionally, the proposed site accesses will be reviewed per the Region of Halton's Access Management Guideline (January 2015).

11. Existing and future Transportation Demand Management (TDM) opportunities will be evaluated as part of the TIS to reduce auto share and promote non-auto transportation.

Please review and comment on the terms of reference as outlined above. If this is satisfactory, we will begin our analysis immediately.

If you want to discuss further, please do not hesitate to give me a call.

Thank you for your time!
Darren

| **DARREN LORO,** C.E.T. | TRANSPORTATION TECHNOLOGIST | C.F. CROZIER & ASSOCIATES

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Darren Loro

From: Tyler Xuereb <Tyler.Xuereb@mississauga.ca>
Sent: October-18-18 11:04 AM
To: Darren Loro
Subject: RE: 3855 Dundas Street West - Terms of Reference for Traffic Impact Study

Good Morning Darren,

Using the City's Travel Demand Model and supporting traffic count data the City's Transportation Planning Section has determined the projected growth for Dundas Street and Ninth Line to be used as part of your study. The recommended projected growth is shown below:

Dundas Street

	Compounded Annual Growth from Existing to 2023		Compounded Annual Growth from 2023-2028		Compounded Annual Growth from 2028-2033	
	EB	WB	EB	WB	EB	WB
Time						
AM Peak Hour	1.0%	2.0%	0.5%	0.0%	0.5%	0.0%
PM Peak Hour	2.5%	1.0%	0.0%	1.0%	0.0%	1.0%

Ninth Line

	Compounded Annual Growth from Existing to 2023		Compounded Annual Growth from 2023-2028		Compounded Annual Growth from 2028-2033	
	EB	WB	EB	WB	EB	WB
Time						
AM Peak Hour	0.0%	1.0%	6.0%	5.0%	6.0%	5.0%
PM Peak Hour	1.5%	0.5%	6.0%	7.0%	6.0%	7.0%

- In regards to the horizon years that you have requested, our current model horizon years are 2021, 2031 and 2041 and as such growth rates that you requested from existing to 2023 are rates calculated from our existing scenario to 2021 scenario, rates from 2023 to 2028 are rates derived from our 2021 to 2031 scenario as well as rates from 2028 to 2033 are derived from our 2021 to 2031 scenarios.
- The above analysis assumes the widening of Ninth line from 1 through lane in each direction to 2 through lanes in each direction, therefore your analysis should also reflect these network changes.
- Also, this analysis assumes the widening of Burnhamthorpe Road from 1 through lane to 2 through lanes in each direction.

- Growth rates provided for Ninth Line only represent growth north of Dundas Street as this is within city boundaries. Ninth Line south of Dundas Street is outside of city boundaries and as such would have to contact Halton Region for these rates.

If you have any questions regarding the information provided please let me know.

Regards,

Tyler

From: Darren Loro [mailto:dloro@cfcrozier.ca]
Sent: 2018/10/12 2:36 PM
To: Tyler Xuereb
Subject: RE: 3855 Dundas Street West - Terms of Reference for Traffic Impact Study

Hi Tyler,

We will be analyzing the following intersections:

a. Dundas Street East and Highway 403 East Ramp Terminal
b. Dundas Street East and Highway 403 West Ramp Terminal
c. Dundas Street East and Ninth Line
d. Dundas Street East and proposed site access (future total only)
e. Ninth Line and existing Glen Oaks Access / proposed site access (future total only)

The horizon years agreed upon with Zain are: 2023 (anticipated full build-out), 2028 (five-year horizon) and 2033 (ten-year horizon). As this TIS will also be subject to MTO approval, we went with a five and ten year horizon from full build-out per the MTO's TIS guidelines. These horizon years are still to be confirmed with the MTO.

Hope this helps!
Darren

| **DARREN LORO,** C.E.T. | TRANSPORTATION TECHNOLOGIST | C.F. CROZIER & ASSOCIATES

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From: Tyler Xuereb <Tyler.Xuereb@mississauga.ca>
Sent: October-12-18 2:32 PM
To: Darren Loro <dloro@cfcrozier.ca>
Subject: RE: 3855 Dundas Street West - Terms of Reference for Traffic Impact Study

Hello Darren.

I can for sure help with this request, can you provided me with the list of intersections that you will be analyzing as well as the horizon years.

Thanks,

Tyler

From: Darren Loro [mailto:dloro@cfcrozier.ca]
Sent: 2018/10/12 2:24 PM
To: Tyler Xuereb
Subject: FW: 3855 Dundas Street West - Terms of Reference for Traffic Impact Study

Good afternoon Tyler,

I am e-mailing from C.F. Crozier & Associates Consulting Engineers. We have been retained to prepare a Traffic Impact Study for the proposed commercial development at 3855 Dundas Street East in the City of Mississauga.

I have been directed to you by Zain Zia to establish future background growth rates on the boundary road network (Dundas Street East and Ninth Line), although we do understand that Ninth Line is a Halton Regional road. Can you please provide us with growth rates for us to use in our TIS?

If you have any questions or wish to discuss further, please do not hesitate to give me a call.

Regards,
Darren

| **DARREN LORO,** C.E.T. | TRANSPORTATION TECHNOLOGIST | C.F. CROZIER & ASSOCIATES

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From: Zain Zia <Zain.Zia@mississauga.ca>
Sent: October-11-18 11:36 AM
To: Darren Loro <dloro@cfcrozier.ca>

Darren Loro

From: Krusto, Matt <Matt.Krusto@halton.ca>
Sent: October-18-18 3:50 PM
To: Darren Loro
Subject: RE: 3855 Dundas Street East - Terms of Reference for Traffic Impact Study

Hi Darren,

The intersection of Ninth Line at William Halton Parkway is the former Ninth Line at Burnhamthorpe Road intersection. Burnhamthorpe Road is now called William Halton Parkway.

Also, sorry there was an unfinished sentence there as well. It should read:

-Add the intersection of Ninth Line at William Halton Parkway to the study area intersections. The 2018 analysis can be as per existing intersection conditions, the 2023, 2028 and 2033 year analysis must be based on the intersection being a 2 lane Roundabout (start of construction for the Roundabout and 4-laning of William Halton Parkway (existing Burnhamthorpe Road) is planned for 2019).

Sorry about that.

Matt

From: Darren Loro [mailto:dloro@cfcrozier.ca]
Sent: Thursday, October 18, 2018 3:04 PM
To: Krusto, Matt
Subject: RE: 3855 Dundas Street East - Terms of Reference for Traffic Impact Study

Hi Matt,

Thank you for circulating your comments on our Terms of Reference. We will make sure to incorporate them into the TIS.

Question: Which intersection are you referring to with Ninth Line and William Halton Parkway (per the highlight below)?

Thanks,
Darren

| **DARREN LORO,** C.E.T. | TRANSPORTATION TECHNOLOGIST | C.F. CROZIER & ASSOCIATES

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-Data requests for Halton Region information (traffic counts/signal timing) should be completed via the data request process as noted on the Halton Region website http://www.halton.ca/cms/One.aspx?portalId=8310&pageId=12457 or from the City of Mississauga. As City staff have stated, if traffic data is older than 2 years, then updated turning movement counts are required.

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-Please ensure MTO review and approve the Terms of Reference for this Study.

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-Please include truck turning templates at all access locations as part of the TIS.

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Let me know if there are any questions.

Matt

Matt Krusto
Transportation Planning Coordinator
Infrastructure Planning & Policy
Public Works
Halton Region
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Sent: Thursday, October 11, 2018 1:53 PM
To: Monaghan, Patrick
Cc: Krusto, Matt
Subject: RE: 3855 Dundas Street East - Terms of Reference for Traffic Impact Study

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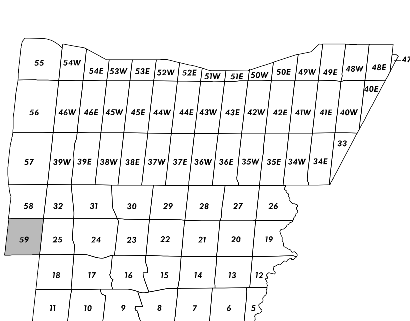
APPENDIX B

Zoning By-Law Excerpts



Zoning
Map 59

Schedule "B" To
By–law No. 0225–2007

Revised: 2015 October 31

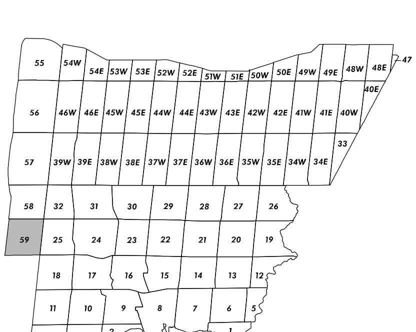
Greenlands Overlay

Zoning Notation Example:
R4–12 = R4–Exception 12

0 100 200
METRES

MISSISSAUGA

58



MISSISSAUGA

0 100 200
METRES

Greenlands Overlay

Zoning Notation Example:
R4–12 = R4–Exception 12

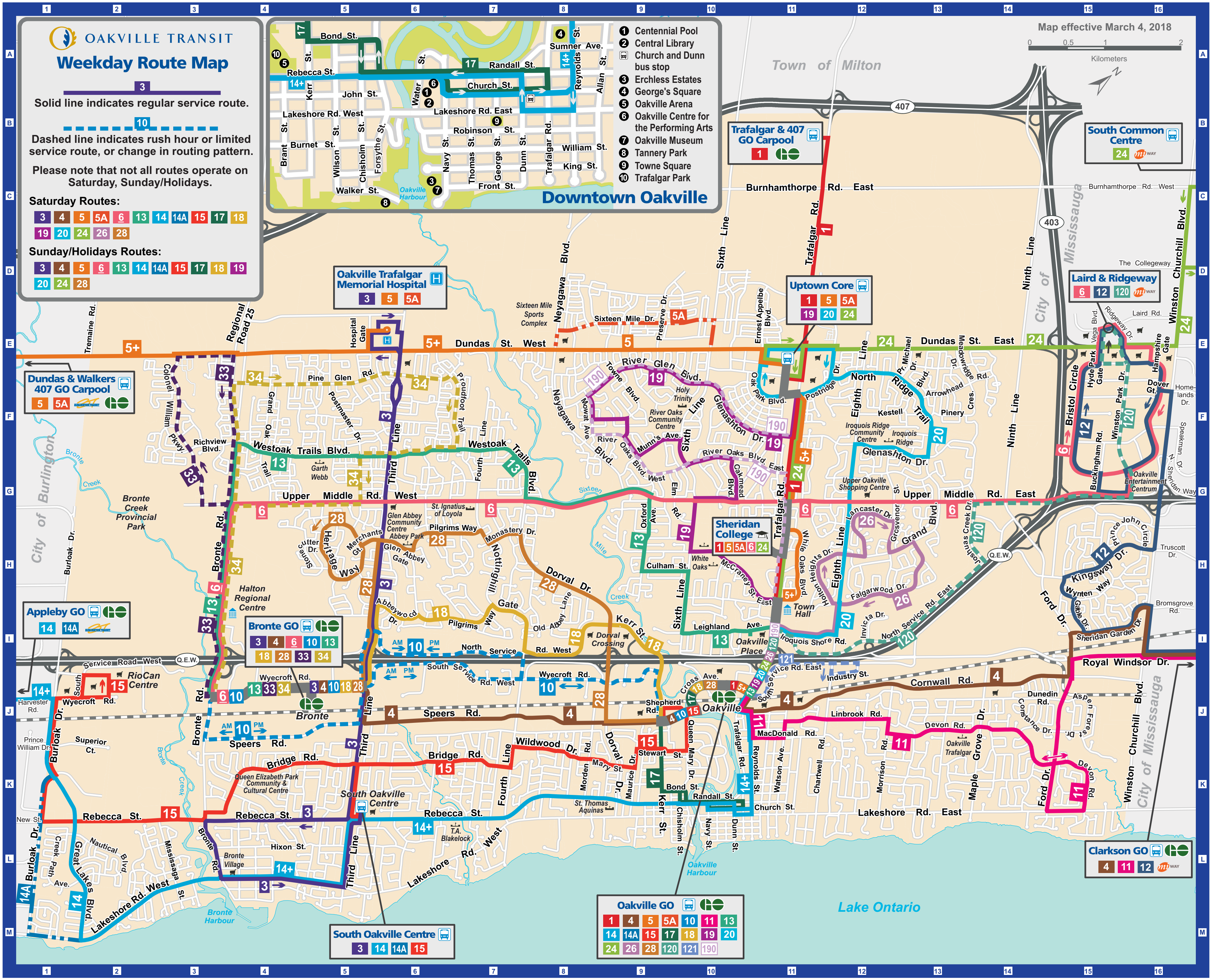
Zoning
Map 59

Schedule "B" To
By–law No. 0225–2007

Revised: 2015 October 31

APPENDIX C

Transit Information

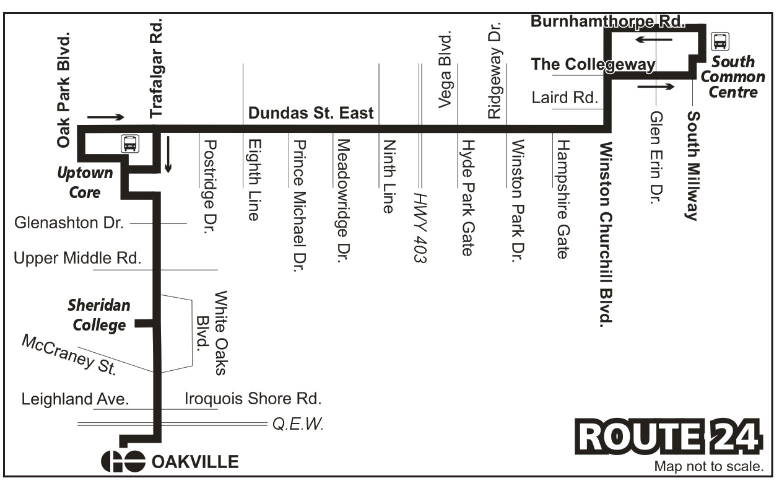


OAKVILLE TRANSIT
Weekday Route Map
Solid line indicates regular service route.
Dashed line indicates rush hour or limited service route, or change in routing pattern.
Please note that not all routes operate on Saturday, Sunday/Holidays.
Saturday Routes:
3 4 5 5A 6 13 14 14A 15 17 18 19 20 24 26 28
Sunday/Holidays Routes:
3 4 5 6 13 14 14A 15 17 18 19 20 24 28
Downtown Oakville
1 Centennial Pool
2 Central Library
Church and Dunn bus stop
3 Erchless Estates
4 George's Square
5 Oakville Arena
6 Oakville Centre for the Performing Arts
7 Oakville Museum
8 Tannery Park
9 Towne Square
10 Trafalgar Park
Map effective March 4, 2018
Kilometers
Town of Milton
City of Mississauga
City of Burlington
Lake Ontario
Trafalgar & 407 GO Carpool 1
South Common Centre 24
Oakville Trafalgar Memorial Hospital 3 5 5A
Uptown Core 1 5 5A 19 20 24
Laird & Ridgeway 6 12 120
Dundas & Walkers 407 GO Carpool 5 5A
Sheridan College 1 5 5A 6 24
Appleby GO 14 14A
Bronte GO 3 4 6 10 13 18 28 33 34
Clarkson GO 4 11 12
Oakville GO 1 4 5 5A 10 11 13 14 14A 15 17 18 19 20 24 26 28 120 121 190
South Oakville Centre 3 14 14A 15
Bronte Creek Provincial Park
Halton Regional Centre
Bronte Harbour
Oakville Harbour
Sixteen Mile Sports Complex
Oakville Place
Dorval Crossing
RioCan Centre
Upper Oakville Shopping Centre
Oakville Entertainment Centrum
Town Hall

24 SOUTH COMMON

Monday to Friday — Effective September 4, 2016

Timepoint	Oakville GO (Depart)	Sheridan College	Trafalgar & Upper Middle	Uptown Core	Dundas & Eighth Line	Dundas & Hampshire	South Common (Arrive)	South Common (Depart)	Dundas & Hampshire	Dundas & Eighth Line	Uptown Core	Trafalgar & Upper Middle	Sheridan College	Oakville GO (Arrive)
Monday to Friday														
	To South Common							**To Oakville GO**						
a.m.	--	--	--	--	--	--	--	6:25	6:35	6:42	6:48	6:54	6:57	7:06
a.m.	--	--	--	--	--	--	--	6:40	6:50	6:57	7:03	7:09	7:12	7:21
a.m.	6:10	6:19	6:22	6:30	6:35	6:42	6:51	6:55	7:05	7:12	7:18	7:24	7:27	7:36
a.m.	6:25	6:34	6:37	6:45	6:50	6:57	7:06	7:10	7:20	7:27	7:33	7:39	7:42	7:51
a.m.	6:40	6:49	6:52	7:00	7:05	7:12	7:21	7:25	7:35	7:42	7:48	7:54	7:57	8:06
a.m.	6:55	7:04	7:07	7:15	7:20	7:27	7:36	7:40	7:50	7:57	8:03	8:09	8:12	8:21
a.m.	7:10	7:19	7:22	7:30	7:35	7:42	7:51	7:55	8:05	8:12	8:18	8:24	8:27	8:36
a.m.	7:25	7:34	7:37	7:45	7:50	7:57	8:06	8:10	8:20	8:27	8:33	8:39	8:42	8:51
a.m.	7:40	7:49	7:52	8:00	8:05	8:12	8:21	8:25	8:35	8:42	8:48	8:54	8:57	9:06
a.m.	7:55	8:04	8:07	8:15	8:20	8:27	8:36	8:40	8:50	8:57	9:03	9:09	9:12	9:21
a.m.	8:10	8:19	8:22	8:30	8:35	8:42	8:51	8:55	9:05	9:12	9:18	9:24	9:27	9:36
a.m.	8:25	8:34	8:37	8:45	8:50	8:57	9:06	9:10	9:20	9:27	9:33	9:39	9:42	9:51
a.m.	8:40	8:49	8:52	9:00	9:05	9:12	9:21	9:25	9:35	9:42	9:48	9:54	9:57	10:06
a.m.	9:10	9:19	9:22	9:30	9:35	9:42	9:51	9:55	10:05	10:12	10:18	10:24	10:27	10:36
	and every 30 minutes until							*and every 30 minutes until*						
p.m.	3:10	3:19	3:22	3:30	3:35	3:42	3:51	3:55	4:05	4:12	4:18	4:24	4:27	4:36
p.m.	3:40	3:49	3:52	4:00	4:05	4:12	4:21	4:25	4:35	4:42	4:48	4:54	4:57	5:06
p.m.	4:10	4:19	4:22	4:30	4:35	4:42	4:51	4:55	5:05	5:12	5:18	5:24	5:27	5:36
p.m.	4:25	4:34	4:37	4:45	4:50	4:57	5:06	5:10	5:20	5:27	5:33	5:39	5:42	5:51
p.m.	4:40	4:49	4:52	5:00	5:05	5:12	5:21	5:25	5:35	5:42	5:48	5:54	5:57	6:06
p.m.	4:55	5:04	5:07	5:15	5:20	5:27	5:36	5:40	5:50	5:57	6:03	6:09	6:12	6:21
p.m.	5:10	5:19	5:22	5:30	5:35	5:42	5:51	5:55	6:05	6:12	6:18	6:24	6:27	6:36
p.m.	5:25	5:34	5:37	5:45	5:50	5:57	6:06	6:10	6:20	6:27	6:33	6:39	6:42	6:51
p.m.	5:40	5:49	5:52	6:00	6:05	6:12	6:21	6:25	6:35	6:42	6:48	6:54	6:57	7:06
p.m.	5:55	6:04	6:07	6:15	6:20	6:27	6:36	6:40	6:50	6:57	7:03	7:09	7:12	7:21
p.m.	6:10	6:19	6:22	6:30	6:35	6:42	6:51	6:55	7:05	7:12	7:18	7:24	7:27	7:36
p.m.	6:25	6:34	6:37	6:45	6:50	6:57	7:06	7:10	7:20	7:27	7:33	7:39	7:42	7:51
p.m.	6:40	6:49	6:52	7:00	7:05	7:12	7:21	7:25	7:35	7:42	7:48	7:54	7:57	8:06
p.m.	6:55	7:04	7:07	7:15	7:20	7:27	7:36	7:40	7:50	7:57	8:03	8:09	8:12	8:21
p.m.	7:10	7:19	7:22	7:30	7:35	7:42	7:51	7:55	8:05	8:12	8:18	8:24	8:27	8:36
p.m.	7:40	7:49	7:52	8:00	8:05	8:12	8:21	8:25	8:35	8:42	8:48	8:54	8:57	9:06
p.m.	8:10	8:19	8:22	8:30	8:35	8:42	8:51	8:55	9:05	9:12	9:18	9:24	9:27	9:36
p.m.	8:40	8:49	8:52	9:00	9:05	9:12	9:21	9:25	9:35	9:42	9:48	9:54	9:57	10:06
p.m.	9:10	9:19	9:22	9:30	9:35	9:42	9:51	9:55	10:05	10:12	10:18	10:24	10:27	10:36
p.m.	9:40	9:49	9:52	10:00	10:05	10:12	10:21	10:25	10:35	10:42	10:48	10:54	10:57	11:06
p.m.	10:10	10:19	10:22	10:30	10:35	10:42	10:51	10:55	11:05	11:12	11:18	11:24	11:27	11:36
p.m.	10:40	10:49	10:52	11:00	11:05	11:12	11:21	11:25	11:35	11:42	11:48	11:54	11:57	12:06



Late Night Service departs from the Oakville GO station at 11:40 p.m., 12:30 and 1:30 a.m., Monday to Saturday, and 7:40 p.m. on Sunday and holidays. Let the driver know the nearest bus stop to your destination within Oakville. Drop-off service covers up to Winston Churchill Blvd. only.

Have you tried real-time bus tracking?

Track your bus at oakvilletransit.ca or download the Oakville Transit mobile app.

Download on the App Store | GET IT ON Google play

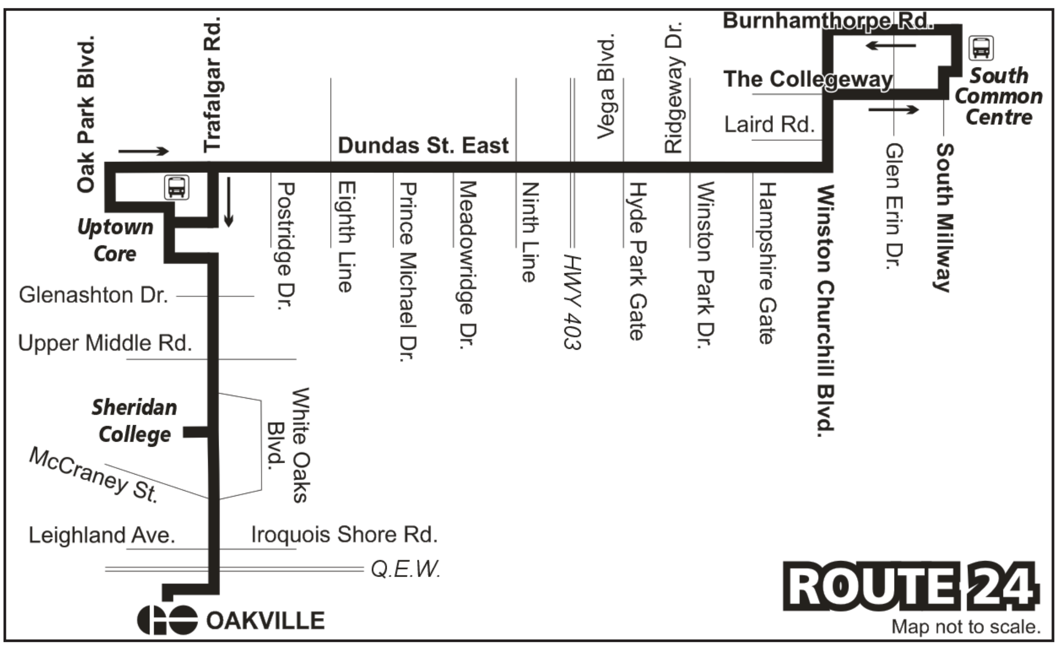
While every effort will be made to operate our service to these timetables, all schedules including bus stop times and transfer times are based on normal traffic and weather conditions and as such are subject to change. Oakville Transit will not be responsible for any loss, damage or inconvenience that may result from any errors, omissions or service delays.

OAKVILLE TRANSIT

24 SOUTH COMMON

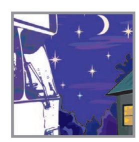
Saturday, Sunday/Holidays — *Effective September 4, 2016*

Timepoint	Oakville GO (Depart)	Sheridan College	Trafalgar & Upper Middle	Uptown Core	Dundas & Eighth Line	Dundas & Hampshire	South Common (Arrive)	South Common (Depart)	Dundas & Hampshire	Dundas & Eighth Line	Uptown Core	Trafalgar & Upper Middle	Sheridan College	Oakville GO (Arrive)
Saturday														
	To South Common							**To Oakville GO**						
a.m.	6:40	6:49	6:52	7:00	7:05	7:12	7:21	7:25	7:35	7:42	7:48	7:54	7:57	8:06
a.m.	7:10	7:19	7:22	7:30	7:35	7:42	7:51	7:55	8:05	8:12	8:18	8:24	8:27	8:36
a.m.	7:40	7:49	7:52	8:00	8:05	8:12	8:21	8:25	8:35	8:42	8:48	8:54	8:57	9:06
	and every 30 minutes until							*and every 30 minutes until*						
p.m.	6:40	6:49	6:52	7:00	7:05	7:12	7:21	7:25	7:35	7:42	7:48	7:54	7:57	8:06
p.m.	7:10	7:19	7:22	7:30	7:35	7:42	7:51	7:55	8:05	8:12	8:18	8:24	8:27	8:36
p.m.	7:40	7:49	7:52	8:00	8:05	8:12	8:21	8:25	8:35	8:42	8:48	8:54	8:57	9:06
p.m.	8:40	8:49	8:52	9:00	9:05	9:12	9:21	9:25	9:35	9:42	9:48	9:54	9:57	10:06
p.m.	9:40	9:49	9:52	10:00	10:05	10:12	10:21	10:25	10:35	10:42	10:48	10:54	10:57	11:06
p.m.	10:40	10:49	10:52	11:00	11:05	11:12	11:21	11:25	11:35	11:42	11:48	11:54	11:57	12:06
Sunday / Holidays														
	To South Common							**To Oakville GO**						
a.m.	--	--	--	--	--	--	--	8:25	8:35	8:42	8:48	8:54	8:57	9:06
a.m.	8:10	8:19	8:22	8:30	8:35	8:42	8:51	8:55	9:05	9:12	9:18	9:24	9:27	9:36
a.m.	8:40	8:49	8:52	9:00	9:05	9:12	9:21	9:25	9:35	9:42	9:48	9:54	9:57	10:06
a.m.	9:10	9:19	9:22	9:30	9:35	9:42	9:51	9:55	10:05	10:12	10:18	10:24	10:27	10:36
	and every 30 minutes until							*and every 30 minutes until*						
p.m.	5:40	5:49	5:52	6:00	6:05	6:12	6:21	6:25	6:35	6:42	6:48	6:54	6:57	7:06
p.m.	6:10	6:19	6:22	6:30	6:35	6:42	6:51	6:55	7:05	7:12	7:18	7:24	7:27	7:36
p.m.	6:40	6:49	6:52	7:00	7:05	7:12	7:21	7:25	7:35	7:42	7:48	7:54	7:57	8:06



Late Night Service

departs from the Oakville GO station at 11:40 p.m., 12:30 and 1:30 a.m., Monday to Saturday, and 7:40 p.m. on Sunday and holidays. Let the driver know the nearest bus stop to your destination within Oakville.



Drop-off service covers up to Winston Churchill Blvd. only.

Oakville Transit
430 Wyecroft Road
8:30 a.m. - 4:30 p.m.
Monday - Friday

oakvilletransit.ca
@oakvilletransit

Mailing Address
Oakville Transit
1225 Trafalgar Road
Oakville, ON L6H 0H3

Info Line 905-815-2020
care-A-van 905-337-9222

APPENDIX D

Traffic Data

Turning Movement Count (1 . DUNDAS ST E & NINTH LINE)

Start Time	N Approach NINTH LINE						E Approach DUNDAS ST W						S Approach NINTH LINE						W Approach DUNDAS ST W						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
06:00:00	4	27	21	0	0	52	4	62	5	0	0	71	2	7	6	0	0	15	41	238	6	0	0	285	423	
06:15:00	4	50	28	0	0	82	8	101	7	1	0	117	11	15	19	0	0	45	43	300	12	0	0	355	599	
06:30:00	9	50	45	0	0	104	5	136	9	1	0	151	11	27	13	0	0	51	59	371	13	0	0	443	749	
06:45:00	8	78	41	0	0	127	13	180	10	0	0	203	17	15	23	0	0	55	59	449	23	0	0	531	916	2687
07:00:00	9	70	35	0	0	114	11	163	7	1	0	182	17	48	28	0	1	93	50	405	29	0	0	484	873	3137
07:15:00	8	89	47	0	0	144	13	177	11	0	0	201	25	66	22	0	0	113	71	615	44	0	0	730	1188	3726
07:30:00	13	131	54	0	0	198	32	210	24	0	0	266	43	68	30	0	0	141	59	562	67	0	0	688	1293	4270
07:45:00	19	159	71	0	0	249	13	227	42	0	0	282	43	99	31	0	0	173	86	584	51	0	0	721	1425	4779
08:00:00	21	132	55	0	0	208	41	218	47	0	0	306	30	66	37	0	0	133	74	601	59	0	0	734	1381	5287
08:15:00	36	140	56	0	0	232	48	230	37	0	0	315	36	82	43	0	0	161	92	523	65	0	0	680	1388	5487
08:30:00	40	117	61	0	0	218	26	173	28	0	0	227	39	64	53	0	0	156	95	561	57	1	0	714	1315	5509
08:45:00	32	112	49	0	0	193	20	221	17	1	0	259	30	57	40	0	0	127	84	507	47	0	0	638	1217	5301
BREAK																										
15:00:00	31	47	26	0	0	104	49	474	36	4	0	563	44	95	75	0	0	214	33	266	27	0	0	326	1207	
15:15:00	40	60	30	0	0	130	34	414	33	2	0	483	63	113	80	0	0	256	44	306	33	0	0	383	1252	
15:30:00	47	79	30	0	1	156	46	477	26	1	0	550	76	111	71	0	0	258	44	314	34	0	0	392	1356	
15:45:00	51	66	23	0	0	140	44	468	31	2	0	545	115	149	79	0	0	343	35	275	42	0	0	352	1380	5195
16:00:00	63	67	37	0	0	167	43	548	33	2	1	626	156	147	68	0	2	371	38	310	26	0	0	374	1538	5526
16:15:00	54	65	27	0	0	146	29	558	24	1	1	612	164	140	100	0	1	404	38	301	28	0	0	367	1529	5803
16:30:00	52	74	35	0	0	161	28	450	36	0	0	514	178	177	87	0	0	442	35	284	24	0	0	343	1460	5907
16:45:00	57	78	30	0	0	165	31	574	28	0	0	633	194	157	61	0	1	412	47	374	31	0	0	452	1662	6189
17:00:00	62	76	33	0	0	171	38	689	30	0	1	757	170	171	88	0	0	429	29	346	32	1	0	408	1765	6416
17:15:00	70	68	36	0	0	174	33	613	29	1	0	676	174	199	66	0	1	439	45	378	39	0	0	462	1751	6638
17:30:00	44	78	39	0	0	161	40	697	27	1	0	765	153	156	84	0	0	393	38	392	35	0	0	465	1784	6962
17:45:00	54	74	22	0	0	150	33	601	35	0	0	669	174	190	92	0	0	456	40	323	42	0	0	405	1680	6980
18:00:00	57	62	45	0	0	164	36	539	28	2	0	605	110	123	69	0	0	302	43	304	31	0	0	378	1449	6664
18:15:00	41	61	21	0	0	123	38	578	35	4	1	655	102	86	64	0	0	252	47	345	22	1	0	415	1445	6358
18:30:00	38	53	30	0	0	121	34	485	28	1	0	548	78	98	70	0	1	246	39	310	18	1	0	368	1283	5857
18:45:00	14	44	25	0	0	83	42	442	37	1	0	522	50	86	62	0	0	198	32	323	30	0	0	385	1188	5365
Grand Total	978	2207	1052	0	1	4237	832	10705	740	26	4	12303	2305	2812	1561	0	7	6678	1440	10867	967	4	0	13278	**36496**	-
Approach%	23.1%	52.1%	24.8%	0%		-	6.8%	87%	6%	0.2%		-	34.5%	42.1%	23.4%	0%		-	10.8%	81.8%	7.3%	0%		-	-	-

Totals %	2.7%	6%	2.9%	0%	11.6%	2.3%	29.3%	2%	0.1%	33.7%	6.3%	7.7%	4.3%	0%	18.3%	3.9%	29.8%	2.6%	0%	36.4%	-	-
Heavy	20	54	18	0	-	27	333	25	0	-	124	73	63	0	-	58	273	13	0	-	-	-
Heavy %	2%	2.4%	1.7%	0%	-	3.2%	3.1%	3.4%	0%	-	5.4%	2.6%	4%	0%	-	4%	2.5%	1.3%	0%	-	-	-
Bicycles	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycle %	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

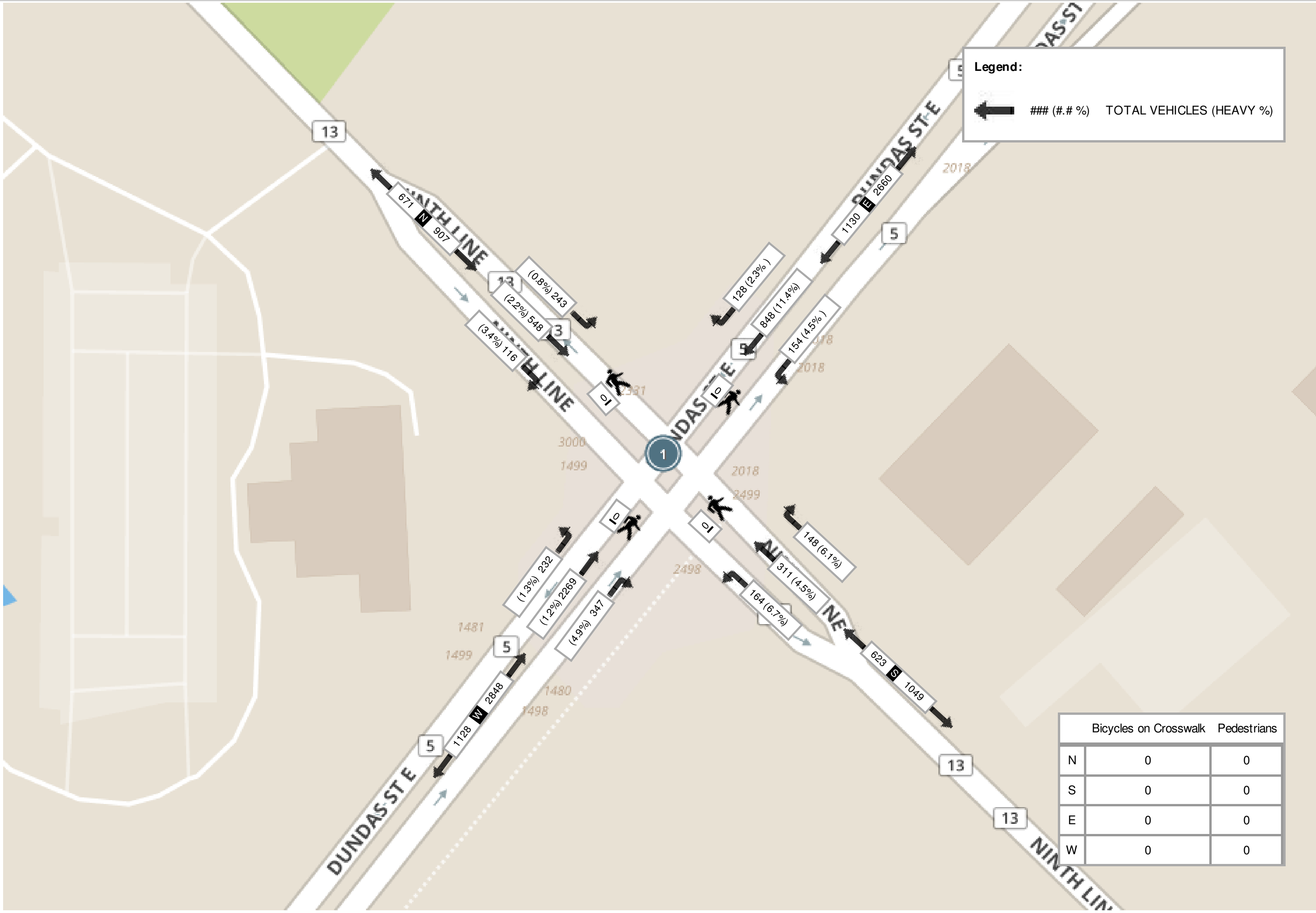
Peak Hour: 07:45 AM - 08:45 AM Weather: Mostly Cloudy (2.8 °C)

Start Time	N Approach NINTH LINE						E Approach DUNDAS ST W						S Approach NINTH LINE						W Approach DUNDAS ST W						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
07:45:00	19	159	71	0	0	249	13	227	42	0	0	282	43	99	31	0	0	173	86	584	51	0	0	721	1425
08:00:00	21	132	55	0	0	208	41	218	47	0	0	306	30	66	37	0	0	133	74	601	59	0	0	734	1381
08:15:00	36	140	56	0	0	232	48	230	37	0	0	315	36	82	43	0	0	161	92	523	65	0	0	680	1388
08:30:00	40	117	61	0	0	218	26	173	28	0	0	227	39	64	53	0	0	156	95	561	57	1	0	714	1315
Grand Total	116	548	243	0	0	907	128	848	154	0	0	1130	148	311	164	0	0	623	347	2269	232	1	0	2849	**5509**
Approach%	12.8%	60.4%	26.8%	0%		-	11.3%	75%	13.6%	0%		-	23.8%	49.9%	26.3%	0%		-	12.2%	79.6%	8.1%	0%		-	-
Totals %	2.1%	9.9%	4.4%	0%		16.5%	2.3%	15.4%	2.8%	0%		20.5%	2.7%	5.6%	3%	0%		11.3%	6.3%	41.2%	4.2%	0%		51.7%	-
PHF	0.73	0.86	0.86	0		0.91	0.67	0.92	0.82	0		0.9	0.86	0.79	0.77	0		0.9	0.91	0.94	0.89	0.25		0.97	-
Heavy	4	12	2	0		18	3	97	7	0		107	9	14	11	0		34	17	27	3	0		47	-
Heavy %	3.4%	2.2%	0.8%	0%		2%	2.3%	11.4%	4.5%	0%		9.5%	6.1%	4.5%	6.7%	0%		5.5%	4.9%	1.2%	1.3%	0%		1.6%	-
Lights	112	535	241	0		888	125	751	147	0		1023	139	297	153	0		589	330	2242	229	1		2802	-
Lights %	96.6%	97.6%	99.2%	0%		97.9%	97.7%	88.6%	95.5%	0%		90.5%	93.9%	95.5%	93.3%	0%		94.5%	95.1%	98.8%	98.7%	100%		98.4%	-
Single-Unit Trucks	1	8	1	0		10	3	52	6	0		61	3	6	7	0		16	4	14	0	0		18	-
Single-Unit Trucks %	0.9%	1.5%	0.4%	0%		1.1%	2.3%	6.1%	3.9%	0%		5.4%	2%	1.9%	4.3%	0%		2.6%	1.2%	0.6%	0%	0%		0.6%	-
Buses	3	3	0	0		6	0	5	0	0		5	2	3	1	0		6	3	5	2	0		10	-
Buses %	2.6%	0.5%	0%	0%		0.7%	0%	0.6%	0%	0%		0.4%	1.4%	1%	0.6%	0%		1%	0.9%	0.2%	0.9%	0%		0.4%	-
Articulated Trucks	0	1	1	0		2	0	40	1	0		41	4	5	3	0		12	10	8	1	0		19	-
Articulated Trucks %	0%	0.2%	0.4%	0%		0.2%	0%	4.7%	0.6%	0%		3.6%	2.7%	1.6%	1.8%	0%		1.9%	2.9%	0.4%	0.4%	0%		0.7%	-
Bicycles on Road	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Bicycles on Road %	0%	0.2%	0%	0%		0.1%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-

Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast (7.4 °C)

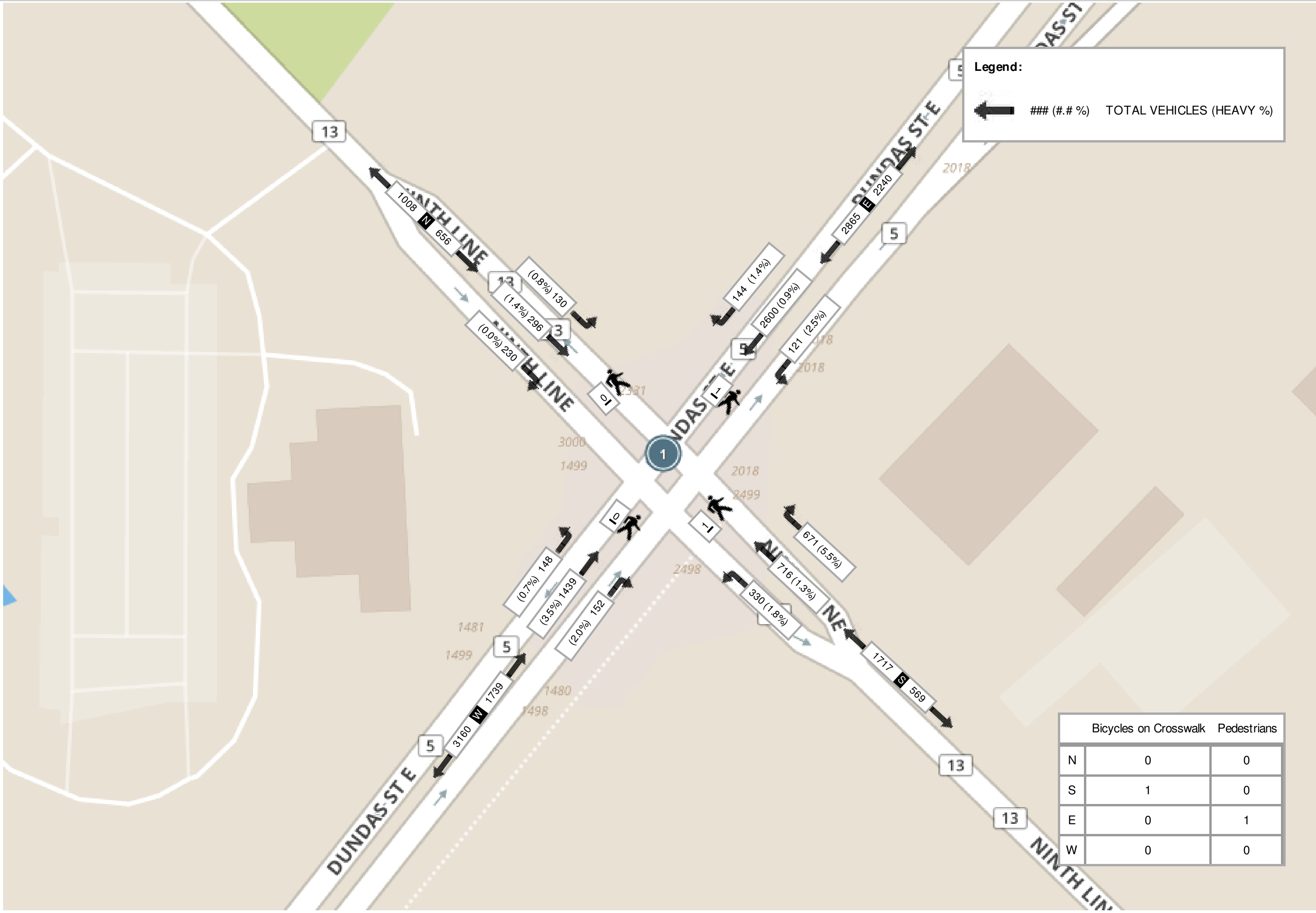
Start Time	N Approach NINTH LINE						E Approach DUNDAS ST W						S Approach NINTH LINE						W Approach DUNDAS ST W						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
17:00:00	62	76	33	0	0	171	38	689	30	0	1	757	170	171	88	0	0	429	29	346	32	1	0	408	1765
17:15:00	70	68	36	0	0	174	33	613	29	1	0	676	174	199	66	0	1	439	45	378	39	0	0	462	1751
17:30:00	44	78	39	0	0	161	40	697	27	1	0	765	153	156	84	0	0	393	38	392	35	0	0	465	1784
17:45:00	54	74	22	0	0	150	33	601	35	0	0	669	174	190	92	0	0	456	40	323	42	0	0	405	1680
Grand Total	230	296	130	0	0	656	144	2600	121	2	1	2867	671	716	330	0	1	1717	152	1439	148	1	0	1740	**6980**
Approach%	35.1%	45.1%	19.8%	0%		-	5%	90.7%	4.2%	0.1%		-	39.1%	41.7%	19.2%	0%		-	8.7%	82.7%	8.5%	0.1%		-	-
Totals %	3.3%	4.2%	1.9%	0%		9.4%	2.1%	37.2%	1.7%	0%		41.1%	9.6%	10.3%	4.7%	0%		24.6%	2.2%	20.6%	2.1%	0%		24.9%	-
PHF	0.82	0.95	0.83	0		0.94	0.9	0.93	0.86	0.5		0.94	0.96	0.9	0.9	0		0.94	0.84	0.92	0.88	0.25		0.94	-
Heavy	0	4	1	0		5	2	24	3	0		29	37	9	6	0		52	3	50	1	0		54	-
Heavy %	0%	1.4%	0.8%	0%		0.8%	1.4%	0.9%	2.5%	0%		1%	5.5%	1.3%	1.8%	0%		3%	2%	3.5%	0.7%	0%		3.1%	-
Lights	230	292	129	0		651	142	2576	118	2		2838	634	707	324	0		1665	149	1389	147	1		1686	-
Lights %	100%	98.6%	99.2%	0%		99.2%	98.6%	99.1%	97.5%	100%		99%	94.5%	98.7%	98.2%	0%		97%	98%	96.5%	99.3%	100%		96.9%	-
Single-Unit Trucks	0	4	0	0		4	1	9	0	0		10	17	6	4	0		27	1	26	1	0		28	-
Single-Unit Trucks %	0%	1.4%	0%	0%		0.6%	0.7%	0.3%	0%	0%		0.3%	2.5%	0.8%	1.2%	0%		1.6%	0.7%	1.8%	0.7%	0%		1.6%	-
Buses	0	0	0	0		0	0	6	0	0		6	1	1	0	0		2	0	5	0	0		5	-
Buses %	0%	0%	0%	0%		0%	0%	0.2%	0%	0%		0.2%	0.1%	0.1%	0%	0%		0.1%	0%	0.3%	0%	0%		0.3%	-
Articulated Trucks	0	0	1	0		1	1	9	3	0		13	19	2	2	0		23	2	19	0	0		21	-
Articulated Trucks %	0%	0%	0.8%	0%		0.2%	0.7%	0.3%	2.5%	0%		0.5%	2.8%	0.3%	0.6%	0%		1.3%	1.3%	1.3%	0%	0%		1.2%	-
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	0%		-	-	-	-	50%		-	-	-	-	0%		-	-	-	-	0%		-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	50%		-	-	-	-	0%		-

Peak Hour: 07:45 AM - 08:45 AM Weather: Mostly Cloudy (2.8 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	0
S	0	0
E	0	0
W	0	0

Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast (7.4 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	0
S	1	0
E	0	1
W	0	0

Turning Movement Count (1 . DUNDAS ST E & NINTH LINE)

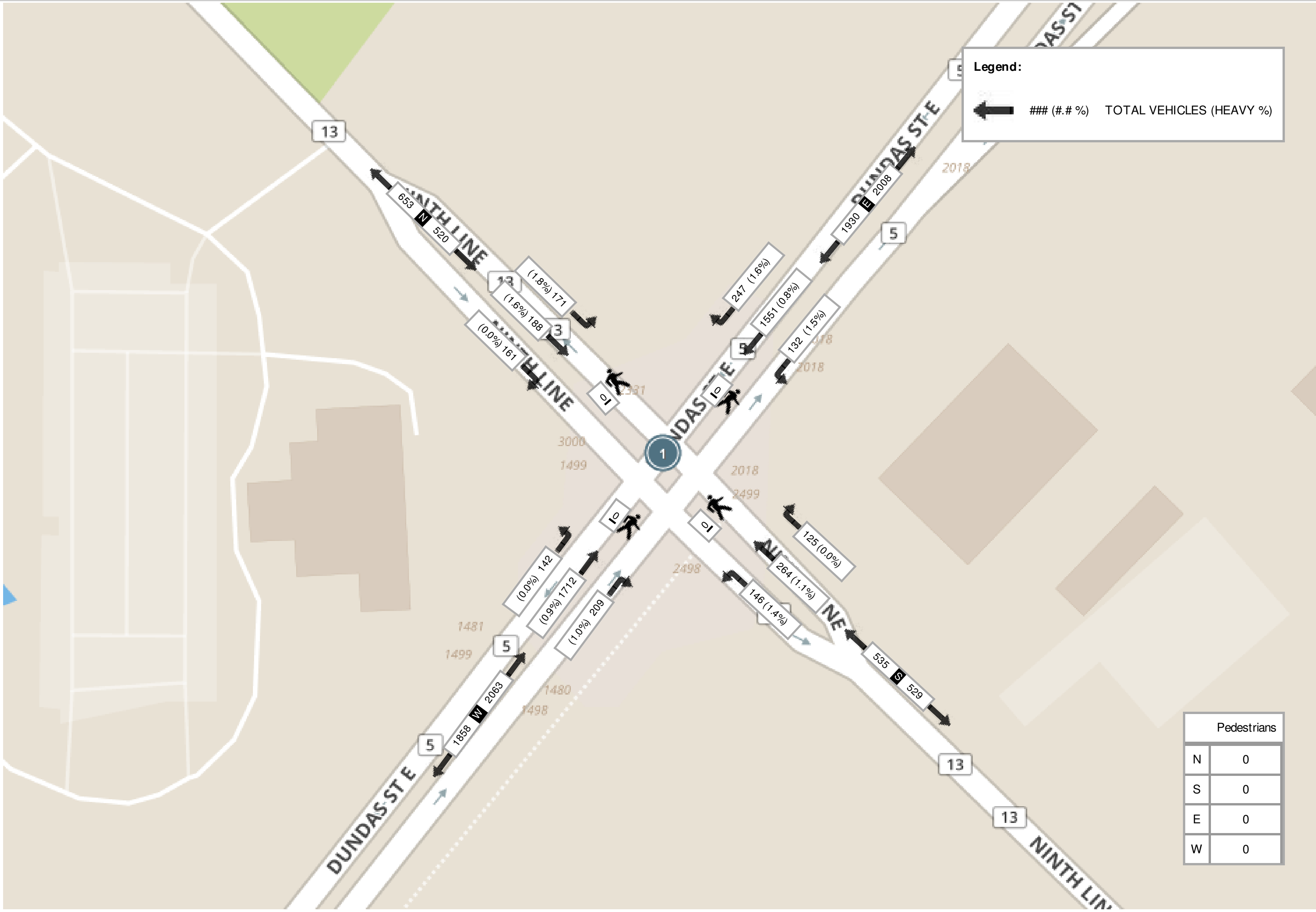
Start Time	N Approach NINTH LINE						E Approach DUNDAS ST E						S Approach NINTH LINE						W Approach DUNDAS ST E						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
10:00:00	32	44	43	1	0	120	33	227	10	1	1	271	27	36	30	0	1	93	45	350	20	0	0	415	899	
10:15:00	24	37	29	0	0	90	19	244	15	0	0	278	18	29	25	0	0	72	34	402	22	0	0	458	898	
10:30:00	16	36	32	0	0	84	33	275	17	0	0	325	37	41	25	0	0	103	46	362	25	0	0	433	945	
10:45:00	16	45	46	0	0	107	23	272	26	1	0	322	26	55	37	0	0	118	36	397	32	0	0	465	1012	3754
11:00:00	23	35	40	0	0	98	31	310	25	0	0	366	32	34	36	0	0	102	62	418	28	0	0	508	1074	3929
11:15:00	19	30	27	0	0	76	26	394	21	1	0	442	30	43	31	0	0	104	44	397	26	1	0	468	1090	4121
11:30:00	25	41	45	0	0	111	31	341	20	5	0	397	34	63	25	0	0	122	34	408	25	0	0	467	1097	4273
11:45:00	26	41	27	0	0	94	55	379	28	1	0	463	26	48	36	0	0	110	42	428	34	0	0	504	1171	4432
12:00:00	39	53	42	0	0	134	58	338	36	1	0	433	33	57	33	1	0	124	47	370	32	0	0	449	1140	4498
12:15:00	25	47	48	0	0	120	60	350	26	2	0	438	30	71	26	0	0	127	48	460	28	0	0	536	1221	4629
12:30:00	40	46	33	0	0	119	63	436	34	0	0	533	31	67	30	0	0	128	57	427	40	0	0	524	1304	4836
12:45:00	44	50	45	0	0	139	66	352	43	2	0	463	34	73	40	0	0	147	48	418	43	0	0	509	1258	4923
13:00:00	52	45	45	0	0	142	58	413	29	5	0	505	30	53	50	0	0	133	56	407	31	0	0	494	1274	5057
13:15:00	30	52	39	0	0	121	25	424	24	3	0	476	20	38	35	0	0	93	51	386	37	1	0	475	1165	5001
13:30:00	20	42	45	0	0	107	36	353	25	4	0	418	32	58	22	0	0	112	48	404	26	1	0	479	1116	4813
13:45:00	23	37	39	0	0	99	39	427	34	1	0	501	40	40	33	1	0	114	55	410	23	0	0	488	1202	4757
14:00:00	39	52	56	0	0	147	56	368	36	3	0	463	37	83	32	0	0	152	33	345	23	0	0	401	1163	4646
14:15:00	61	50	46	0	0	157	57	385	35	3	0	480	32	46	36	0	0	114	46	442	35	0	0	523	1274	4755
14:30:00	40	64	53	0	0	157	34	470	29	1	0	534	30	47	39	0	0	116	45	386	26	0	0	457	1264	4903
14:45:00	41	39	62	0	0	142	41	406	24	1	0	472	35	60	45	0	0	140	56	391	35	0	0	482	1236	4937
15:00:00	26	50	45	0	0	121	45	455	35	1	0	536	45	59	39	0	0	143	50	398	30	0	0	478	1278	5052
15:15:00	39	49	41	0	0	129	42	490	20	1	0	553	29	62	30	0	0	121	49	379	26	0	0	454	1257	5035
15:30:00	28	31	33	0	0	92	34	430	26	2	0	492	32	65	30	0	0	127	48	378	33	0	0	459	1170	4941
15:45:00	20	43	42	0	0	105	33	505	31	2	0	571	27	58	35	0	0	120	40	350	27	0	0	417	1213	4918
16:00:00	27	36	24	0	0	87	43	454	20	1	0	518	29	58	35	0	0	122	37	368	29	0	0	434	1161	4801
16:15:00	30	51	41	0	0	122	33	406	29	3	0	471	31	87	31	0	0	149	40	422	30	0	0	492	1234	4778
16:30:00	29	50	30	0	0	109	51	505	23	1	0	580	23	59	37	0	0	119	37	368	31	0	0	436	1244	4852
16:45:00	19	64	31	0	0	114	39	413	31	1	0	484	24	61	40	0	0	125	47	310	45	0	0	402	1125	4764
Grand Total	853	1260	1129	1	0	3243	1164	10822	752	47	1	12785	854	1551	943	2	1	3350	1281	10981	842	3	0	13107	**32485**	-
Approach%	26.3%	38.9%	34.8%	0%		-	9.1%	84.6%	5.9%	0.4%		-	25.5%	46.3%	28.1%	0.1%		-	9.8%	83.8%	6.4%	0%		-	**-**	-
Totals %	2.6%	3.9%	3.5%	0%		10%	3.6%	33.3%	2.3%	0.1%		39.4%	2.6%	4.8%	2.9%	0%		10.3%	3.9%	33.8%	2.6%	0%		40.3%	**-**	-

Heavy	6	11	11	0	-	15	74	7	0	-	6	16	15	0	-	14	99	6	0	-	-	-
Heavy %	0.7%	0.9%	1%	0%	-	1.3%	0.7%	0.9%	0%	-	0.7%	1%	1.6%	0%	-	1.1%	0.9%	0.7%	0%	-	-	-
Bicycles	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycle %	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Peak Hour: 12:15 PM - 01:15 PM Weather: Rain (3.2 °C)

Start Time	N Approach NINTH LINE						E Approach DUNDAS ST E						S Approach NINTH LINE						W Approach DUNDAS ST E						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
12:15:00	25	47	48	0	0	120	60	350	26	2	0	438	30	71	26	0	0	127	48	460	28	0	0	536	1221
12:30:00	40	46	33	0	0	119	63	436	34	0	0	533	31	67	30	0	0	128	57	427	40	0	0	524	1304
12:45:00	44	50	45	0	0	139	66	352	43	2	0	463	34	73	40	0	0	147	48	418	43	0	0	509	1258
13:00:00	52	45	45	0	0	142	58	413	29	5	0	505	30	53	50	0	0	133	56	407	31	0	0	494	1274
Grand Total	161	188	171	0	0	520	247	1551	132	9	0	1939	125	264	146	0	0	535	209	1712	142	0	0	2063	**5057**
Approach%	31%	36.2%	32.9%	0%		-	12.7%	80%	6.8%	0.5%		-	23.4%	49.3%	27.3%	0%		-	10.1%	83%	6.9%	0%		-	-
Totals %	3.2%	3.7%	3.4%	0%		10.3%	4.9%	30.7%	2.6%	0.2%		38.3%	2.5%	5.2%	2.9%	0%		10.6%	4.1%	33.9%	2.8%	0%		40.8%	-
PHF	0.77	0.94	0.89	0		0.92	0.94	0.89	0.77	0.45		0.91	0.92	0.9	0.73	0		0.91	0.92	0.93	0.83	0		0.96	-
Heavy	0	3	3	0		6	4	12	2	0		18	0	3	2	0		5	2	15	0	0		17	-
Heavy %	0%	1.6%	1.8%	0%		1.2%	1.6%	0.8%	1.5%	0%		0.9%	0%	1.1%	1.4%	0%		0.9%	1%	0.9%	0%	0%		0.8%	-
Lights	161	185	168	0		514	243	1539	130	9		1921	125	261	144	0		530	207	1697	142	0		2046	-
Lights %	100%	98.4%	98.2%	0%		98.8%	98.4%	99.2%	98.5%	100%		99.1%	100%	98.9%	98.6%	0%		99.1%	99%	99.1%	100%	0%		99.2%	-
Single-Unit Trucks	0	3	3	0		6	3	7	1	0		11	0	3	1	0		4	1	8	0	0		9	-
Single-Unit Trucks %	0%	1.6%	1.8%	0%		1.2%	1.2%	0.5%	0.8%	0%		0.6%	0%	1.1%	0.7%	0%		0.7%	0.5%	0.5%	0%	0%		0.4%	-
Buses	0	0	0	0		0	0	3	0	0		3	0	0	0	0		0	0	2	0	0		2	-
Buses %	0%	0%	0%	0%		0%	0%	0.2%	0%	0%		0.2%	0%	0%	0%	0%		0%	0%	0.1%	0%	0%		0.1%	-
Articulated Trucks	0	0	0	0		0	1	2	1	0		4	0	0	1	0		1	1	5	0	0		6	-
Articulated Trucks %	0%	0%	0%	0%		0%	0.4%	0.1%	0.8%	0%		0.2%	0%	0%	0.7%	0%		0.2%	0.5%	0.3%	0%	0%		0.3%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-

Peak Hour: 12:15 PM - 01:15 PM Weather: Rain (3.2 °C)



	Pedestrians
N	0
S	0
E	0
W	0

Turning Movement Count (2 . DUNDAS ST E & HWY 403 W RAMP TERMINAL)

Start Time	N Approach HWY 403 W OFF RAMP TERMINAL					E Approach DUNDAS ST E					W Approach DUNDAS ST E					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	U-Turn E:E	Peds E:	Approach Total	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
06:00:00	45	30	0	0	75	0	24	0	0	24	253	0	0	0	253	352	
06:15:00	71	51	0	0	122	0	39	0	0	39	339	0	0	0	339	500	
06:30:00	80	75	0	0	155	0	54	0	0	54	381	0	0	0	381	590	
06:45:00	134	100	0	0	234	0	79	0	0	79	487	0	0	0	487	800	2242
07:00:00	101	87	0	0	188	0	66	0	0	66	484	0	0	0	484	738	2628
07:15:00	124	121	0	0	245	0	93	0	0	93	611	0	0	0	611	949	3077
07:30:00	151	129	0	0	280	0	109	0	0	109	667	0	0	0	667	1056	3543
07:45:00	180	193	0	0	373	0	110	0	0	110	640	0	0	0	640	1123	3866
08:00:00	186	160	0	0	346	0	148	0	0	148	684	0	0	0	684	1178	4306
08:15:00	162	205	0	0	367	0	166	0	0	166	637	0	0	0	637	1170	4527
08:30:00	129	183	0	0	312	0	124	0	0	124	585	0	0	0	585	1021	4492
08:45:00	133	149	0	0	282	0	118	0	0	118	601	0	0	0	601	1001	4370
BREAK																	
15:00:00	231	77	0	0	308	0	306	0	0	306	367	0	0	0	367	981	
15:15:00	244	64	0	0	308	0	300	1	0	301	359	0	0	0	359	968	
15:30:00	204	79	0	3	283	0	308	0	0	308	427	0	0	0	427	1018	
15:45:00	254	90	0	3	344	0	295	0	0	295	413	0	0	0	413	1052	4019
16:00:00	274	87	0	0	361	0	366	0	0	366	444	0	0	0	444	1171	4209
16:15:00	264	68	0	0	332	0	323	0	0	323	537	0	0	0	537	1192	4433
16:30:00	206	71	0	0	277	0	312	0	0	312	496	0	0	0	496	1085	4500
16:45:00	196	86	0	0	282	0	391	0	0	391	554	0	0	0	554	1227	4675
17:00:00	365	78	0	1	443	0	349	0	0	349	540	0	0	0	540	1332	4836
17:15:00	300	81	0	0	381	0	407	0	0	407	480	0	0	0	480	1268	4912
17:30:00	301	79	0	0	380	0	395	0	0	395	531	0	0	0	531	1306	5133

17:45:00	302	87	0	0	389	0	343	0	0	343	498	0	0	0	498	1230	5136
18:00:00	253	74	0	0	327	0	378	0	0	378	407	0	0	0	407	1112	4916
18:15:00	294	59	0	0	353	0	340	0	0	340	518	0	0	0	518	1211	4859
18:30:00	254	82	0	0	336	0	308	1	0	309	383	0	0	0	383	1028	4581
18:45:00	192	62	0	0	254	0	336	0	0	336	376	0	0	0	376	966	4317
Grand Total	5630	2707	0	7	8337	0	6587	2	0	6589	13699	0	0	0	13699	**28625**	-
Approach%	67.5%	32.5%	0%		-	0%	100%	0%		-	100%	0%	0%		-	-	-
Totals %	19.7%	9.5%	0%		29.1%	0%	23%	0%		23%	47.9%	0%	0%		47.9%	-	-
Heavy	260	141	0		-	0	130	0		-	402	0	0		-	-	-
Heavy %	4.6%	5.2%	0%		-	0%	2%	0%		-	2.9%	0%	0%		-	-	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	-	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	-	-

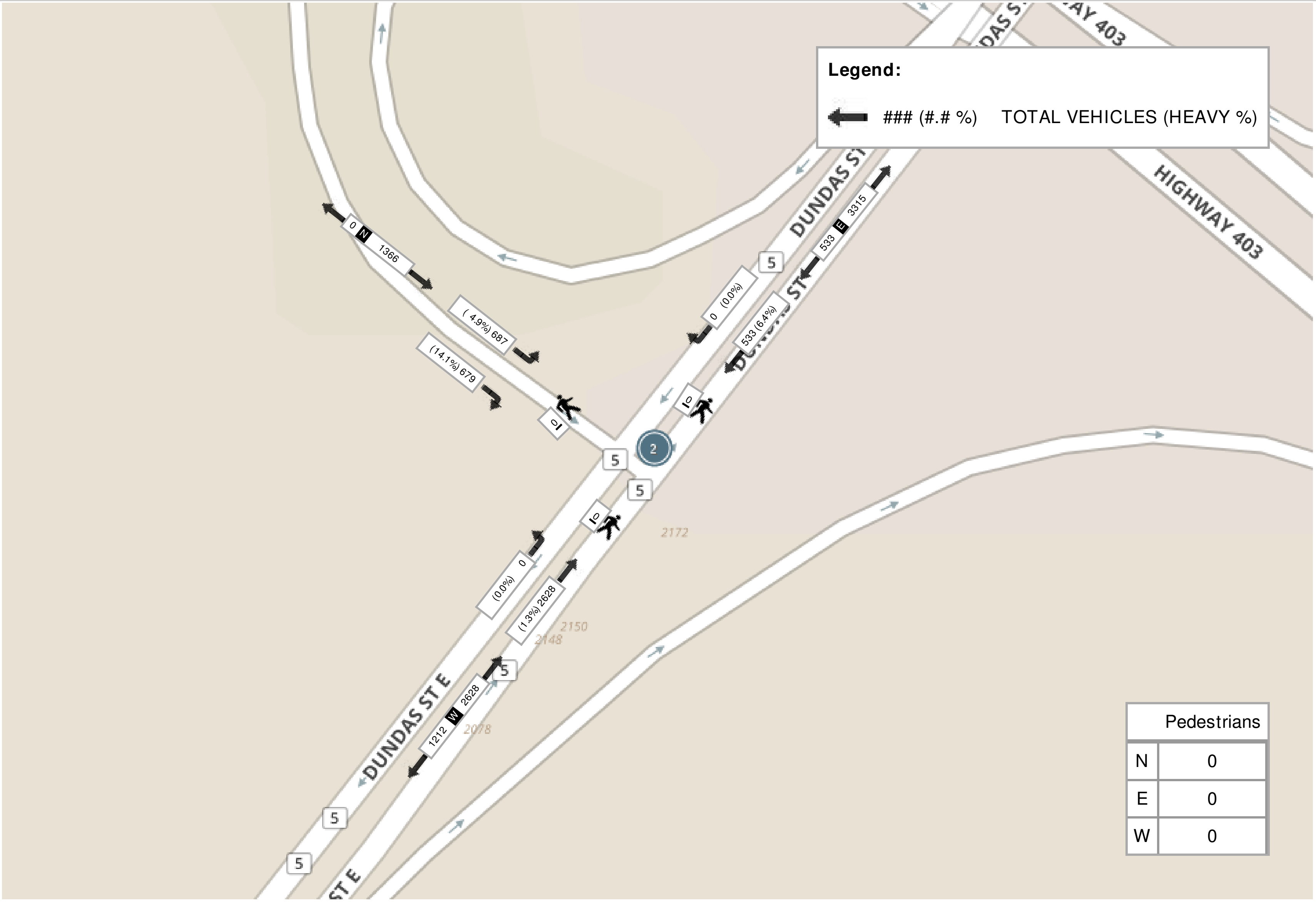
Peak Hour: 07:30 AM - 08:30 AM Weather: Mostly Cloudy (2.8 °C)

Start Time	N Approach HWY 403 W OFF RAMP TERMINAL					E Approach DUNDAS ST E					W Approach DUNDAS ST E					Int. Total (15 min)
	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	
07:30:00	151	129	0	0	280	0	109	0	0	109	667	0	0	0	667	1056
07:45:00	180	193	0	0	373	0	110	0	0	110	640	0	0	0	640	1123
08:00:00	186	160	0	0	346	0	148	0	0	148	684	0	0	0	684	1178
08:15:00	162	205	0	0	367	0	166	0	0	166	637	0	0	0	637	1170
Grand Total	679	687	0	0	1366	0	533	0	0	533	2628	0	0	0	2628	**4527**
Approach%	49.7%	50.3%	0%		-	0%	100%	0%		-	100%	0%	0%		-	-
Totals %	15%	15.2%	0%		30.2%	0%	11.8%	0%		11.8%	58.1%	0%	0%		58.1%	-
PHF	0.91	0.84	0		0.92	0	0.8	0		0.8	0.96	0	0		0.96	-
Heavy	96	34	0		130	0	34	0		34	34	0	0		34	-
Heavy %	14.1%	4.9%	0%		9.5%	0%	6.4%	0%		6.4%	1.3%	0%	0%		1.3%	-
Lights	583	653	0		1236	0	499	0		499	2594	0	0		2594	-
Lights %	85.9%	95.1%	0%		90.5%	0%	93.6%	0%		93.6%	98.7%	0%	0%		98.7%	-
Single-Unit Trucks	55	17	0		72	0	26	0		26	15	0	0		15	-
Single-Unit Trucks %	8.1%	2.5%	0%		5.3%	0%	4.9%	0%		4.9%	0.6%	0%	0%		0.6%	-
Buses	3	0	0		3	0	5	0		5	6	0	0		6	-
Buses %	0.4%	0%	0%		0.2%	0%	0.9%	0%		0.9%	0.2%	0%	0%		0.2%	-
Articulated Trucks	38	17	0		55	0	3	0		3	13	0	0		13	-
Articulated Trucks %	5.6%	2.5%	0%		4%	0%	0.6%	0%		0.6%	0.5%	0%	0%		0.5%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-

Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast (7.4 °C)

Start Time	N Approach HWY 403 W OFF RAMP TERMINAL					E Approach DUNDAS ST E					W Approach DUNDAS ST E					Int. Total (15 min)
	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	
17:00:00	365	78	0	1	443	0	349	0	0	349	540	0	0	0	540	1332
17:15:00	300	81	0	0	381	0	407	0	0	407	480	0	0	0	480	1268
17:30:00	301	79	0	0	380	0	395	0	0	395	531	0	0	0	531	1306
17:45:00	302	87	0	0	389	0	343	0	0	343	498	0	0	0	498	1230
Grand Total	1268	325	0	1	1593	0	1494	0	0	1494	2049	0	0	0	2049	**5136**
Approach%	79.6%	20.4%	0%		-	0%	100%	0%		-	100%	0%	0%		-	-
Totals %	24.7%	6.3%	0%		31%	0%	29.1%	0%		29.1%	39.9%	0%	0%		39.9%	-
PHF	0.87	0.93	0		0.9	0	0.92	0		0.92	0.95	0	0		0.95	-
Heavy	16	16	0		32	0	11	0		11	88	0	0		88	-
Heavy %	1.3%	4.9%	0%		2%	0%	0.7%	0%		0.7%	4.3%	0%	0%		4.3%	-
Lights	1252	309	0		1561	0	1483	0		1483	1961	0	0		1961	-
Lights %	98.7%	95.1%	0%		98%	0%	99.3%	0%		99.3%	95.7%	0%	0%		95.7%	-
Single-Unit Trucks	7	8	0		15	0	3	0		3	45	0	0		45	-
Single-Unit Trucks %	0.6%	2.5%	0%		0.9%	0%	0.2%	0%		0.2%	2.2%	0%	0%		2.2%	-
Buses	0	0	0		0	0	6	0		6	7	0	0		7	-
Buses %	0%	0%	0%		0%	0%	0.4%	0%		0.4%	0.3%	0%	0%		0.3%	-
Articulated Trucks	9	8	0		17	0	2	0		2	36	0	0		36	-
Articulated Trucks %	0.7%	2.5%	0%		1.1%	0%	0.1%	0%		0.1%	1.8%	0%	0%		1.8%	-
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-
Pedestrians%	-	-	-	100%		-	-	-	0%		-	-	-	0%		-

Peak Hour: 07:30 AM - 08:30 AM Weather: Mostly Cloudy (2.8 °C)



	Pedestrians
N	0
E	0
W	0

Crozier & Associates

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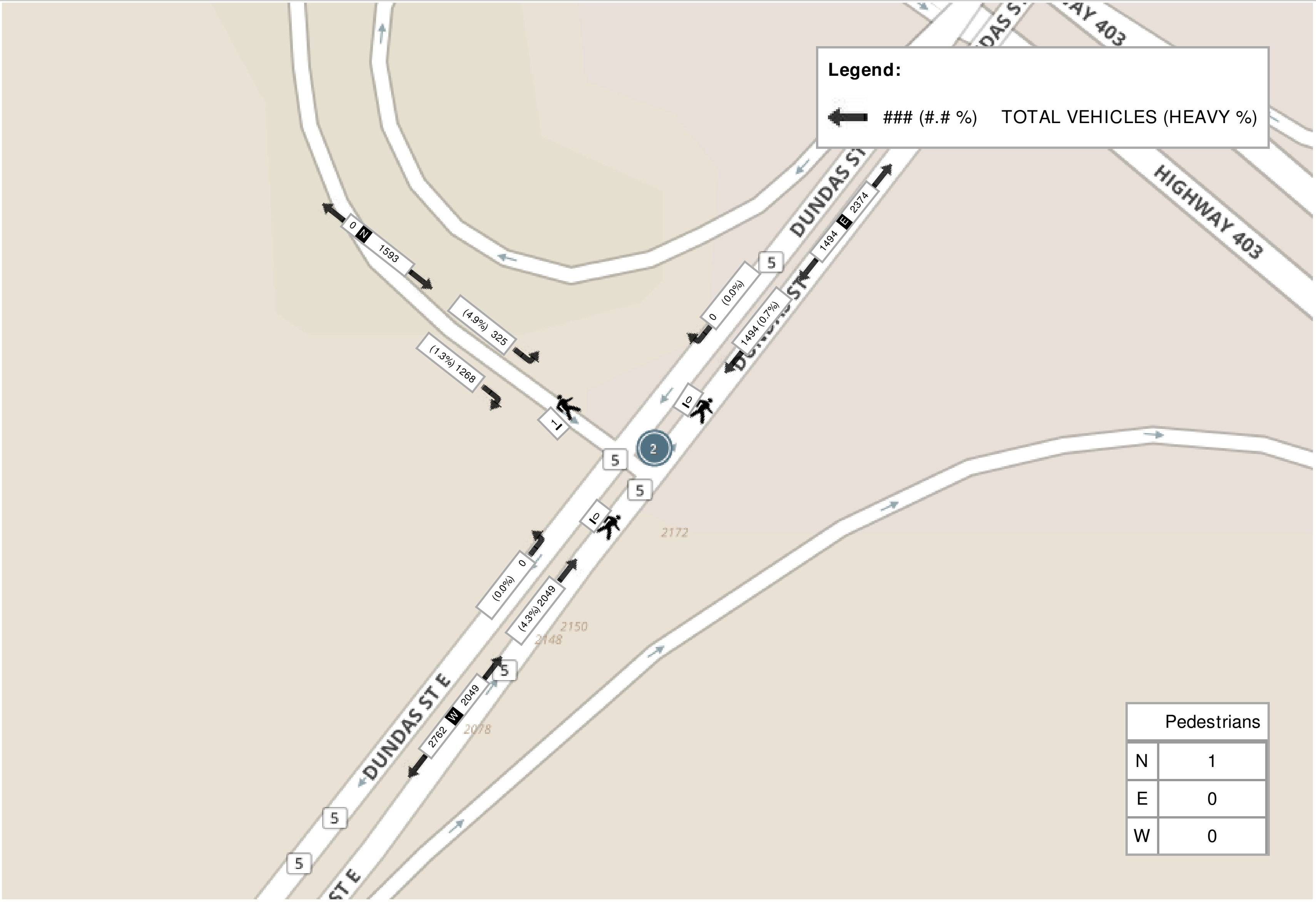
Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast (7.4 °C)



	Pedestrians
N	1
E	0
W	0

Turning Movement Count (2 . DUNDAS ST E & HWY 403 W RAMP TERMINAL)

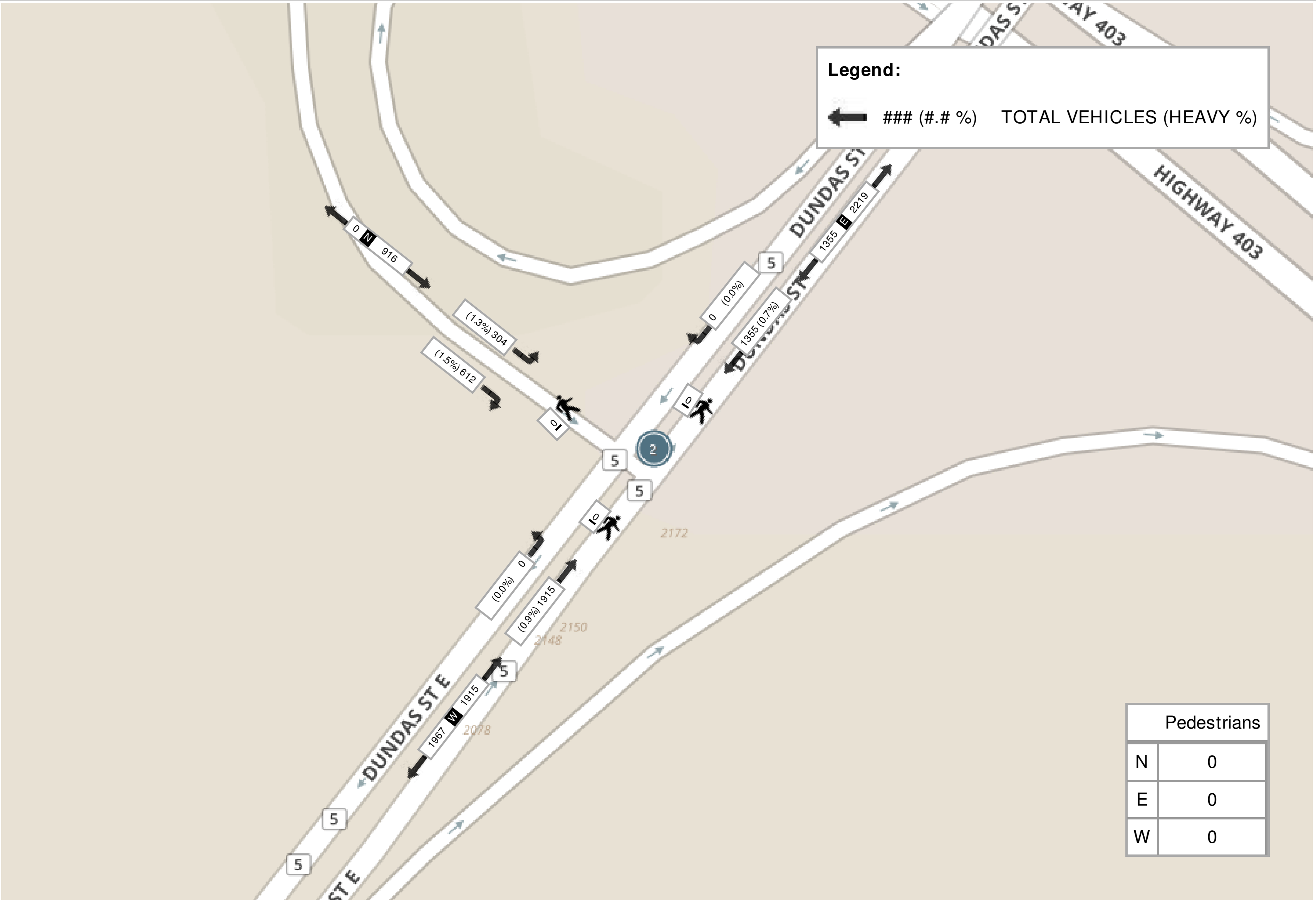
Start Time	N Approach HWY 403 W OFF RAMP TERMINAL					E Approach DUNDAS ST E					W Approach DUNDAS ST E					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	U-Turn E:E	Peds E:	Approach Total	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
10:00:00	78	63	0	0	141	0	194	0	0	194	431	0	0	0	431	766	
10:15:00	100	65	0	2	165	0	194	0	1	194	394	0	0	0	394	753	
10:30:00	93	45	0	0	138	0	222	0	0	222	430	0	0	0	430	790	
10:45:00	94	76	0	0	170	0	230	0	0	230	425	0	0	0	425	825	3134
11:00:00	108	53	0	0	161	0	266	0	0	266	477	0	0	0	477	904	3272
11:15:00	125	68	0	0	193	0	295	0	0	295	468	0	0	0	468	956	3475
11:30:00	116	62	0	0	178	0	310	0	0	310	421	0	0	0	421	909	3594
11:45:00	133	54	0	0	187	0	297	0	0	297	487	0	0	0	487	971	3740
12:00:00	120	82	0	0	202	0	313	1	0	314	440	0	0	0	440	956	3792
12:15:00	147	67	0	0	214	0	311	0	0	311	500	0	0	0	500	1025	3861
12:30:00	163	73	0	0	236	0	360	0	0	360	491	0	0	0	491	1087	4039
12:45:00	161	95	0	0	256	0	312	0	0	312	446	0	0	0	446	1014	4082
13:00:00	141	69	0	0	210	0	372	1	0	373	478	0	0	0	478	1061	4187
13:15:00	141	78	0	0	219	0	327	1	0	328	465	0	0	0	465	1012	4174
13:30:00	148	90	0	0	238	0	288	0	0	288	433	0	0	0	433	959	4046
13:45:00	158	68	0	0	226	0	329	0	0	329	502	0	0	0	502	1057	4089
14:00:00	117	64	0	0	181	0	352	0	0	352	411	0	0	0	411	944	3972
14:15:00	143	62	0	0	205	0	330	0	0	330	478	0	0	0	478	1013	3973
14:30:00	157	64	0	0	221	0	370	0	0	370	451	0	0	0	451	1042	4056
14:45:00	157	66	0	0	223	0	339	0	0	339	446	0	0	0	446	1008	4007
15:00:00	156	51	0	0	207	0	346	1	0	347	473	0	0	0	473	1027	4090
15:15:00	171	81	0	0	252	0	378	0	0	378	434	0	0	0	434	1064	4141
15:30:00	167	79	0	0	246	0	345	0	0	345	418	0	0	0	418	1009	4108

15:45:00	181	68	0	0	249	0	359	0	0	359	412	0	0	0	412	1020	4120
16:00:00	157	84	0	0	241	0	343	0	0	343	414	0	0	0	414	998	4091
16:15:00	179	70	0	0	249	0	311	0	0	311	459	0	0	0	459	1019	4046
16:30:00	195	69	0	0	264	0	352	0	0	352	429	0	0	0	429	1045	4082
16:45:00	184	76	0	0	260	0	314	1	0	315	326	0	0	0	326	901	3963
Grand Total	3990	1942	0	2	5932	0	8759	5	1	8764	12439	0	0	0	12439	**27135**	-
Approach%	67.3%	32.7%	0%		-	0%	99.9%	0.1%		-	100%	0%	0%		-	**-**	-
Totals %	14.7%	7.2%	0%		21.9%	0%	32.3%	0%		32.3%	45.8%	0%	0%		45.8%	**-**	-
Heavy	46	40	0		-	0	52	0		-	107	0	0		-	**-**	-
Heavy %	1.2%	2.1%	0%		-	0%	0.6%	0%		-	0.9%	0%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

Peak Hour: 12:15 PM - 01:15 PM Weather: Rain (3.2 °C)

Start Time	N Approach HWY 403 W OFF RAMP TERMINAL					E Approach DUNDAS ST E					W Approach DUNDAS ST E					Int. Total (15 min)
	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	
12:15:00	147	67	0	0	214	0	311	0	0	311	500	0	0	0	500	1025
12:30:00	163	73	0	0	236	0	360	0	0	360	491	0	0	0	491	1087
12:45:00	161	95	0	0	256	0	312	0	0	312	446	0	0	0	446	1014
13:00:00	141	69	0	0	210	0	372	1	0	373	478	0	0	0	478	1061
Grand Total	612	304	0	0	916	0	1355	1	0	1356	1915	0	0	0	1915	**4187**
Approach%	66.8%	33.2%	0%		-	0%	99.9%	0.1%		-	100%	0%	0%		-	-
Totals %	14.6%	7.3%	0%		21.9%	0%	32.4%	0%		32.4%	45.7%	0%	0%		45.7%	-
PHF	0.94	0.8	0		0.89	0	0.91	0.25		0.91	0.96	0	0		0.96	-
Heavy	9	4	0		13	0	9	0		9	17	0	0		17	-
Heavy %	1.5%	1.3%	0%		1.4%	0%	0.7%	0%		0.7%	0.9%	0%	0%		0.9%	-
Lights	603	300	0		903	0	1346	1		1347	1898	0	0		1898	-
Lights %	98.5%	98.7%	0%		98.6%	0%	99.3%	100%		99.3%	99.1%	0%	0%		99.1%	-
Single-Unit Trucks	6	3	0		9	0	4	0		4	10	0	0		10	-
Single-Unit Trucks %	1%	1%	0%		1%	0%	0.3%	0%		0.3%	0.5%	0%	0%		0.5%	-
Buses	0	0	0		0	0	4	0		4	2	0	0		2	-
Buses %	0%	0%	0%		0%	0%	0.3%	0%		0.3%	0.1%	0%	0%		0.1%	-
Articulated Trucks	3	1	0		4	0	1	0		1	5	0	0		5	-
Articulated Trucks %	0.5%	0.3%	0%		0.4%	0%	0.1%	0%		0.1%	0.3%	0%	0%		0.3%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-

Peak Hour: 12:15 PM - 01:15 PM Weather: Rain (3.2 °C)



	Pedestrians
N	0
E	0
W	0

Turning Movement Count (3 . DUNDAS ST E & HWY 403 E RAMP TERMINAL)

Start Time	E Approach DUNDAS ST E					S Approach HWY 403 E OFF RAMP TERMINAL					W Approach DUNDAS ST E					Int. Total (15 min)	Int. Total (1 hr)
	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	U-Turn W:W	Peds W:	Approach Total		
06:00:00	39	0	0	0	39	59	3	0	0	62	0	108	0	0	108	209	
06:15:00	65	0	0	0	65	57	6	0	0	63	0	186	0	0	186	314	
06:30:00	79	0	0	0	79	74	8	0	0	82	0	240	0	0	240	401	
06:45:00	86	0	0	0	86	79	11	0	0	90	0	354	0	0	354	530	1454
07:00:00	101	0	0	0	101	68	6	0	0	74	0	320	0	0	320	495	1740
07:15:00	127	0	0	0	127	101	9	0	1	110	0	426	0	0	426	663	2089
07:30:00	144	0	0	0	144	90	16	0	0	106	0	502	0	0	502	752	2440
07:45:00	125	0	0	0	125	124	9	0	0	133	0	562	1	0	563	821	2731
08:00:00	150	0	0	0	150	97	28	0	0	125	0	588	0	0	588	863	3099
08:15:00	145	0	0	0	145	117	23	0	0	140	0	602	0	0	602	887	3323
08:30:00	147	0	0	0	147	86	7	0	0	93	0	545	0	0	545	785	3356
08:45:00	151	0	0	0	151	110	8	0	0	118	0	547	0	0	547	816	3351
BREAK																	
15:00:00	352	0	0	0	352	83	23	0	0	106	0	303	0	0	303	761	
15:15:00	331	0	0	0	331	114	9	0	0	123	0	289	0	0	289	743	
15:30:00	351	0	0	0	351	105	15	0	0	120	0	342	0	0	342	813	
15:45:00	336	0	0	0	336	90	12	0	1	102	0	325	0	0	325	763	3080
16:00:00	424	0	0	0	424	87	22	0	1	109	0	329	0	0	329	862	3181
16:15:00	359	0	1	0	360	69	14	0	1	83	0	359	1	0	360	803	3241
16:30:00	461	0	0	0	461	113	13	0	3	126	0	319	0	0	319	906	3334
16:45:00	431	0	0	0	431	93	12	0	4	105	0	388	0	0	388	924	3495
17:00:00	473	0	1	0	474	116	11	0	0	127	0	382	0	0	382	983	3616
17:15:00	448	0	1	0	449	90	13	0	1	103	0	375	0	0	375	927	3740
17:30:00	463	0	0	0	463	86	14	0	0	100	0	423	0	0	423	986	3820

17:45:00	385	0	0	0	385	70	12	0	0	82	0	398	0	0	398	865	3761
18:00:00	409	0	0	0	409	105	10	0	0	115	0	319	0	0	319	843	3621
18:15:00	393	0	0	0	393	105	13	0	1	118	0	359	0	0	359	870	3564
18:30:00	386	0	0	0	386	116	22	0	0	138	0	310	0	0	310	834	3412
18:45:00	337	0	0	0	337	106	17	0	0	123	0	322	0	0	322	782	3329
Grand Total	7698	0	3	0	7701	2610	366	0	13	2976	0	10522	2	0	10524	**21201**	-
Approach%	100%	0%	0%		-	87.7%	12.3%	0%		-	0%	100%	0%		-	-	-
Totals %	36.3%	0%	0%		36.3%	12.3%	1.7%	0%		14%	0%	49.6%	0%		49.6%	-	-
Heavy	164	0	0		-	99	21	0		-	0	291	0		-	-	-
Heavy %	2.1%	0%	0%		-	3.8%	5.7%	0%		-	0%	2.8%	0%		-	-	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	-	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	-	-

Peak Hour: 07:45 AM - 08:45 AM Weather: Mostly Cloudy (2.8 °C)

Start Time	E Approach DUNDAS ST E					S Approach HWY 403 E OFF RAMP TERMINAL					W Approach DUNDAS ST E					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
07:45:00	125	0	0	0	125	124	9	0	0	133	0	562	1	0	563	821
08:00:00	150	0	0	0	150	97	28	0	0	125	0	588	0	0	588	863
08:15:00	145	0	0	0	145	117	23	0	0	140	0	602	0	0	602	887
08:30:00	147	0	0	0	147	86	7	0	0	93	0	545	0	0	545	785
Grand Total	567	0	0	0	567	424	67	0	0	491	0	2297	1	0	2298	**3356**
Approach%	100%	0%	0%		-	86.4%	13.6%	0%		-	0%	100%	0%		-	-
Totals %	16.9%	0%	0%		16.9%	12.6%	2%	0%		14.6%	0%	68.4%	0%		68.5%	-
PHF	0.95	0	0		0.95	0.85	0.6	0		0.88	0	0.95	0.25		0.95	-
Heavy	38	0	0		38	9	1	0		10	0	60	0		60	-
Heavy %	6.7%	0%	0%		6.7%	2.1%	1.5%	0%		2%	0%	2.6%	0%		2.6%	-
Lights	529	0	0		529	415	66	0		481	0	2237	1		2238	-
Lights %	93.3%	0%	0%		93.3%	97.9%	98.5%	0%		98%	0%	97.4%	100%		97.4%	-
Single-Unit Trucks	29	0	0		29	5	1	0		6	0	37	0		37	-
Single-Unit Trucks %	5.1%	0%	0%		5.1%	1.2%	1.5%	0%		1.2%	0%	1.6%	0%		1.6%	-
Buses	3	0	0		3	0	0	0		0	0	5	0		5	-
Buses %	0.5%	0%	0%		0.5%	0%	0%	0%		0%	0%	0.2%	0%		0.2%	-
Articulated Trucks	6	0	0		6	4	0	0		4	0	18	0		18	-
Articulated Trucks %	1.1%	0%	0%		1.1%	0.9%	0%	0%		0.8%	0%	0.8%	0%		0.8%	-
Bicycles on Road	0	0	0		0	0	0	0		0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-

Spectrum

Crozier & Associates

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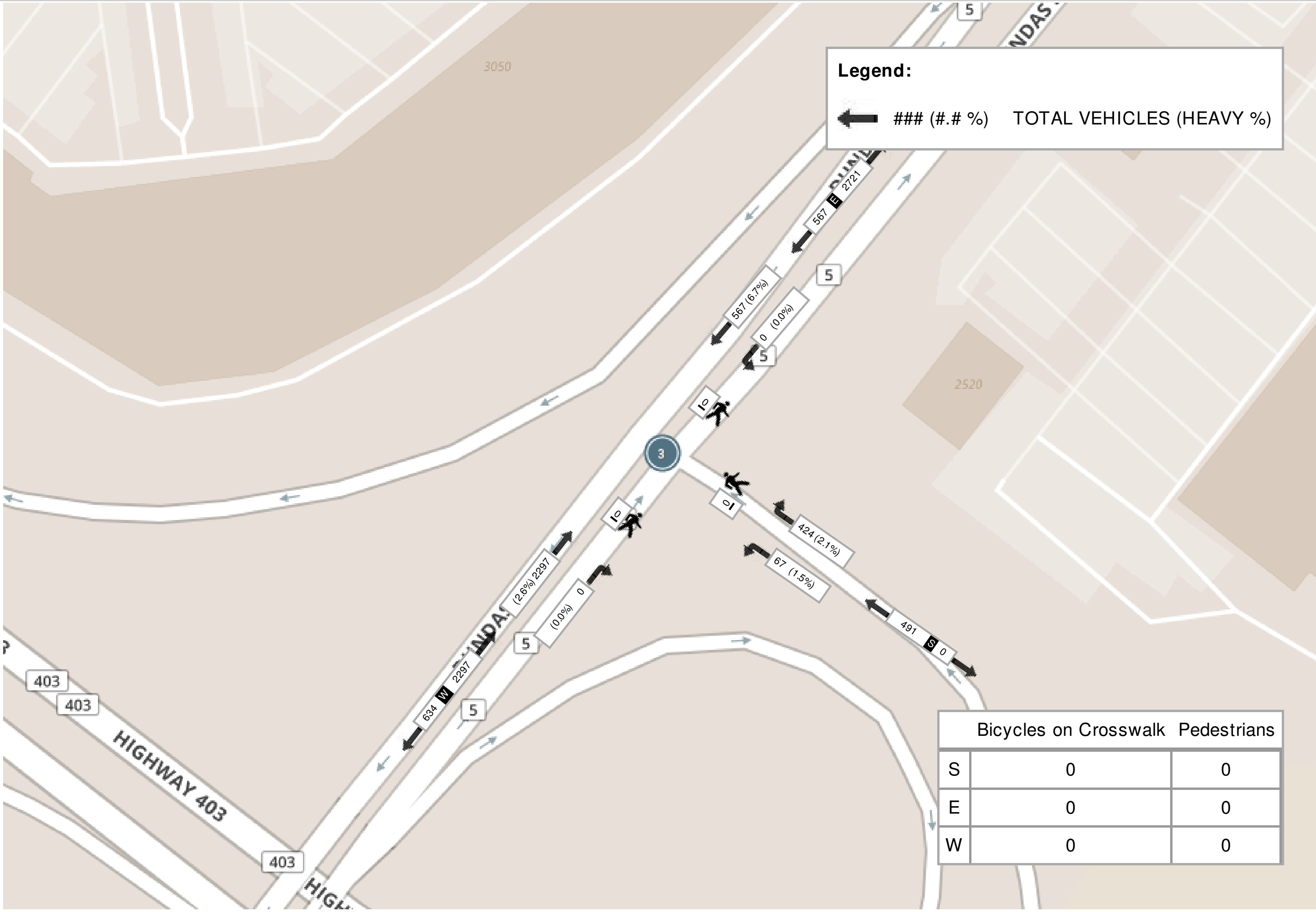
Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast (7.4 °C)

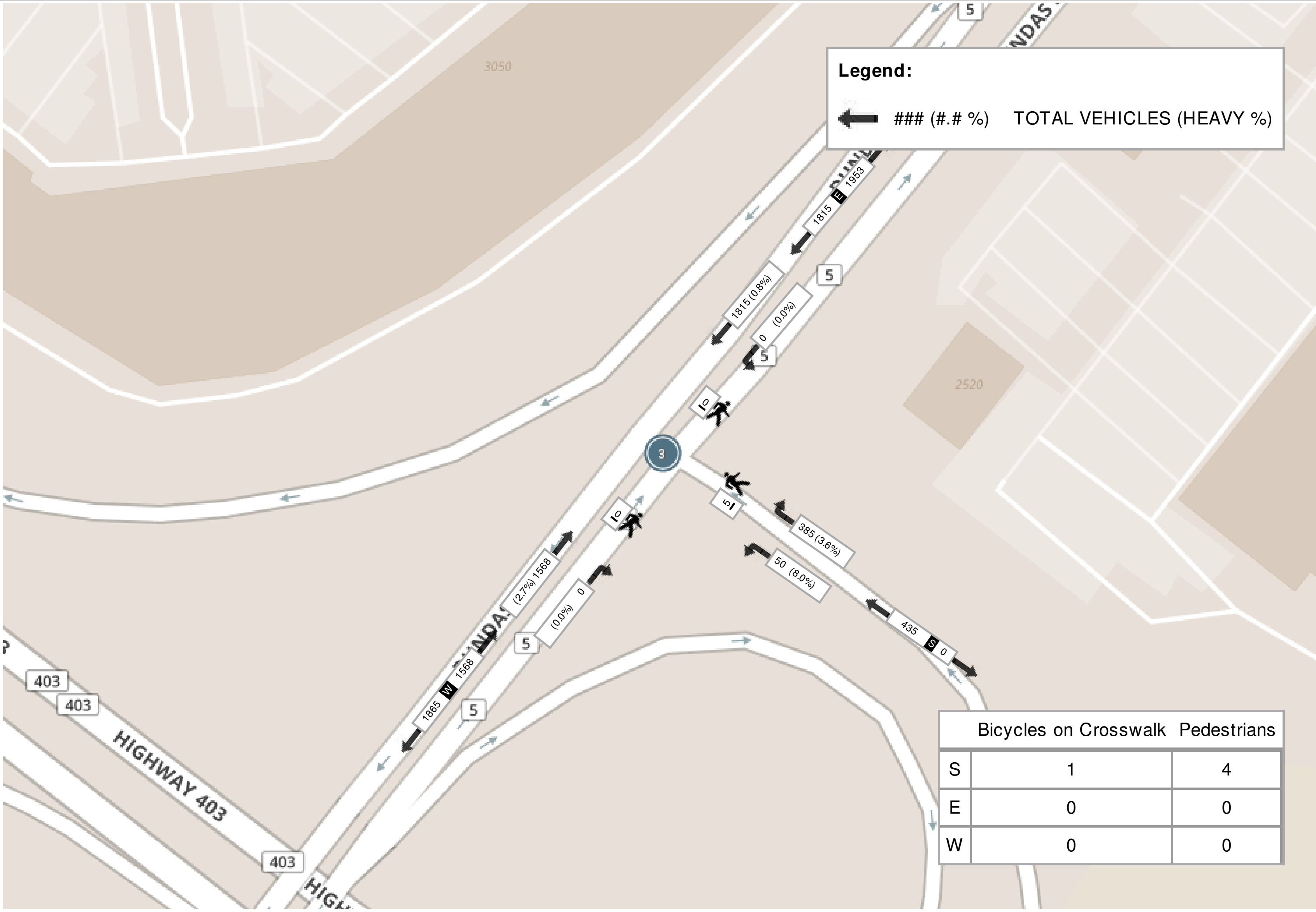
Start Time	E Approach DUNDAS ST E					S Approach HWY 403 E OFF RAMP TERMINAL					W Approach DUNDAS ST E					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
16:45:00	431	0	0	0	431	93	12	0	4	105	0	388	0	0	388	924
17:00:00	473	0	1	0	474	116	11	0	0	127	0	382	0	0	382	983
17:15:00	448	0	1	0	449	90	13	0	1	103	0	375	0	0	375	927
17:30:00	463	0	0	0	463	86	14	0	0	100	0	423	0	0	423	986
Grand Total	1815	0	2	0	1817	385	50	0	5	435	0	1568	0	0	1568	**3820**
Approach%	99.9%	0%	0.1%		-	88.5%	11.5%	0%		-	0%	100%	0%		-	-
Totals %	47.5%	0%	0.1%		47.6%	10.1%	1.3%	0%		11.4%	0%	41%	0%		41%	-
PHF	0.96	0	0.5		0.96	0.83	0.89	0		0.86	0	0.93	0		0.93	-
Heavy	14	0	0		14	14	4	0		18	0	42	0		42	-
Heavy %	0.8%	0%	0%		0.8%	3.6%	8%	0%		4.1%	0%	2.7%	0%		2.7%	-
Lights	1801	0	2		1803	371	46	0		417	0	1526	0		1526	-
Lights %	99.2%	0%	100%		99.2%	96.4%	92%	0%		95.9%	0%	97.3%	0%		97.3%	-
Single-Unit Trucks	8	0	0		8	9	2	0		11	0	24	0		24	-
Single-Unit Trucks %	0.4%	0%	0%		0.4%	2.3%	4%	0%		2.5%	0%	1.5%	0%		1.5%	-
Buses	6	0	0		6	1	0	0		1	0	4	0		4	-
Buses %	0.3%	0%	0%		0.3%	0.3%	0%	0%		0.2%	0%	0.3%	0%		0.3%	-
Articulated Trucks	0	0	0		0	4	2	0		6	0	14	0		14	-
Articulated Trucks %	0%	0%	0%		0%	1%	4%	0%		1.4%	0%	0.9%	0%		0.9%	-
Bicycles on Road	0	0	0		0	0	0	0		0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	0	-	-	-	-	4	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%		-	-	-	80%		-	-	-	0%		-
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	20%		-	-	-	0%		-

Peak Hour: 07:45 AM - 08:45 AM Weather: Mostly Cloudy (2.8 °C)



	Bicycles on Crosswalk	Pedestrians
S	0	0
E	0	0
W	0	0

Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast (7.4 °C)



	Bicycles on Crosswalk	Pedestrians
S	1	4
E	0	0
W	0	0

Turning Movement Count (3 . DUNDAS ST E & HWY 403 E RAMP TERMINAL)

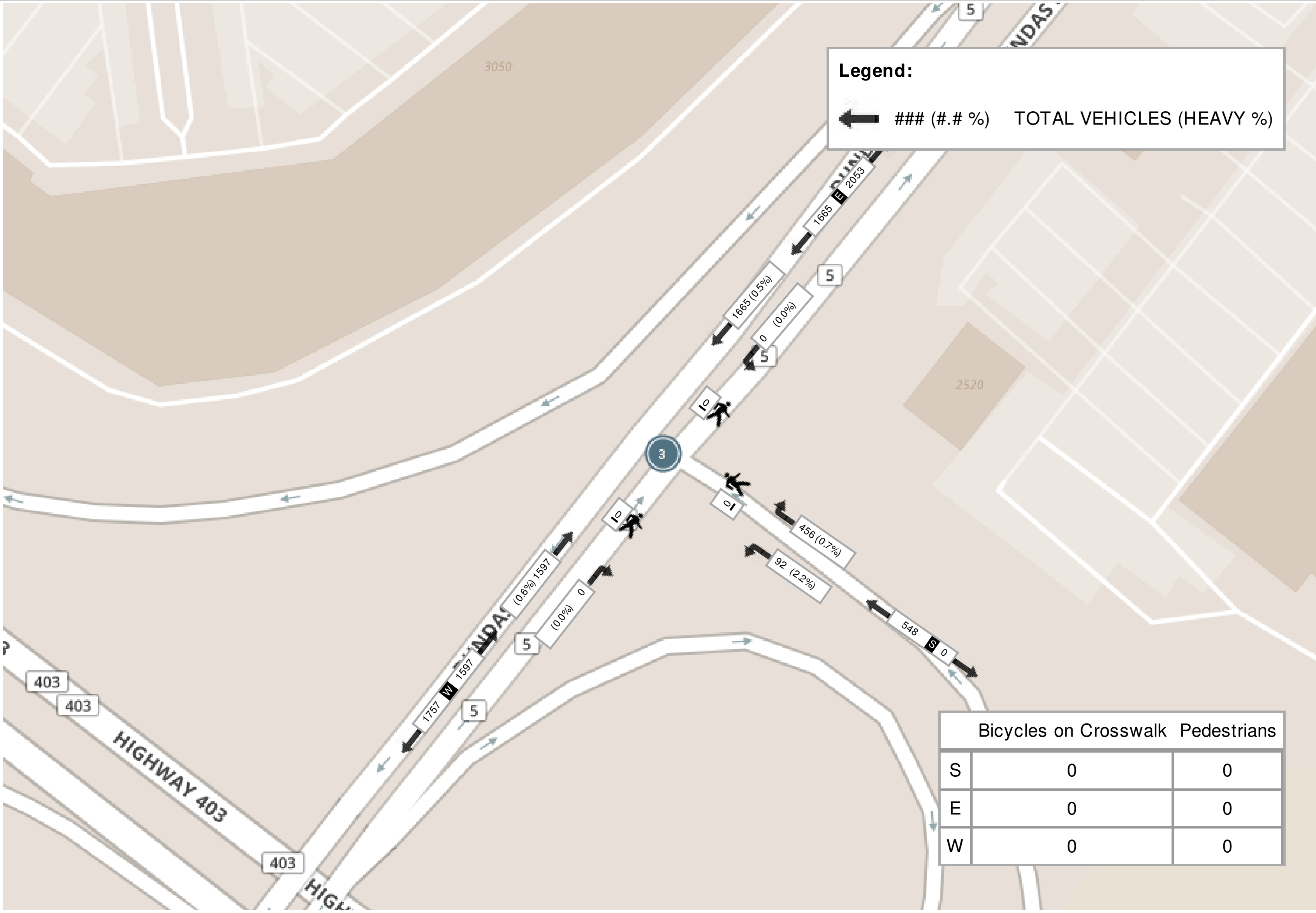
Start Time	E Approach DUNDAS ST E					S Approach HWY 403 E OFF RAMP TERMINAL					W Approach DUNDAS ST E					Int. Total (15 min)	Int. Total (1 hr)
	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	U-Turn W:W	Peds W:	Approach Total		
10:00:00	230	0	0	0	230	89	13	0	0	102	0	326	0	0	326	658	
10:15:00	266	0	0	2	266	90	12	0	0	102	0	340	0	0	340	708	
10:30:00	267	0	0	0	267	102	15	0	0	117	0	323	0	0	323	707	
10:45:00	297	0	0	0	297	110	15	0	0	125	0	368	0	0	368	790	2863
11:00:00	361	0	0	0	361	104	19	0	0	123	0	372	0	0	372	856	3061
11:15:00	318	0	0	0	318	108	17	0	0	125	0	345	0	0	345	788	3141
11:30:00	382	0	0	0	382	97	19	0	0	116	0	366	0	0	366	864	3298
11:45:00	382	0	0	0	382	134	15	0	0	149	0	368	0	0	368	899	3407
12:00:00	338	0	0	0	338	103	22	0	0	125	0	352	0	0	352	815	3366
12:15:00	426	0	0	0	426	104	28	0	0	132	0	419	0	0	419	977	3555
12:30:00	393	0	0	0	393	119	22	0	0	141	0	384	0	0	384	918	3609
12:45:00	399	0	0	0	399	106	22	0	0	128	0	402	0	0	402	929	3639
13:00:00	447	0	0	0	447	127	20	0	0	147	0	392	0	0	392	986	3810
13:15:00	377	0	0	0	377	112	16	0	0	128	0	380	0	0	380	885	3718
13:30:00	398	0	0	0	398	103	20	0	0	123	0	369	0	0	369	890	3690
13:45:00	416	0	0	0	416	124	11	0	0	135	0	387	0	0	387	938	3699
14:00:00	410	0	0	0	410	130	21	0	0	151	0	339	0	0	339	900	3613
14:15:00	435	0	0	0	435	115	21	0	0	136	0	393	0	0	393	964	3692
14:30:00	435	0	0	0	435	103	12	0	0	115	0	372	0	0	372	922	3724
14:45:00	419	0	0	0	419	78	14	0	0	92	0	408	0	0	408	919	3705
15:00:00	450	0	0	0	450	96	16	0	1	112	0	353	0	0	353	915	3720
15:15:00	429	0	0	0	429	111	17	0	0	128	0	362	0	0	362	919	3675
15:30:00	452	0	0	0	452	86	14	0	0	100	0	378	0	0	378	930	3683

15:45:00	400	0	1	0	401	85	12	0	0	97	0	353	0	0	353	851	3615
16:00:00	410	0	0	0	410	90	14	0	0	104	0	357	1	0	358	872	3572
16:15:00	431	0	0	0	431	95	16	0	0	111	0	392	0	0	392	934	3587
16:30:00	383	0	0	0	383	108	20	0	0	128	0	350	0	0	350	861	3518
16:45:00	405	0	0	0	405	106	23	0	0	129	0	288	0	0	288	822	3489
Grand Total	10756	0	1	2	10757	2935	486	0	1	3421	0	10238	1	0	10239	**24417**	-
Approach%	100%	0%	0%		-	85.8%	14.2%	0%		-	0%	100%	0%		-	-	-
Totals %	44.1%	0%	0%		44.1%	12%	2%	0%		14%	0%	41.9%	0%		41.9%	-	-
Heavy	48	0	0		-	26	14	0		-	0	79	0		-	-	-
Heavy %	0.4%	0%	0%		-	0.9%	2.9%	0%		-	0%	0.8%	0%		-	-	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	-	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	-	-

Peak Hour: 12:15 PM - 01:15 PM Weather: Rain (3.2 °C)

Start Time	E Approach DUNDAS ST E					S Approach HWY 403 E OFF RAMP TERMINAL					W Approach DUNDAS ST E					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
12:15:00	426	0	0	0	426	104	28	0	0	132	0	419	0	0	419	977
12:30:00	393	0	0	0	393	119	22	0	0	141	0	384	0	0	384	918
12:45:00	399	0	0	0	399	106	22	0	0	128	0	402	0	0	402	929
13:00:00	447	0	0	0	447	127	20	0	0	147	0	392	0	0	392	986
Grand Total	1665	0	0	0	1665	456	92	0	0	548	0	1597	0	0	1597	**3810**
Approach%	100%	0%	0%		-	83.2%	16.8%	0%		-	0%	100%	0%		-	-
Totals %	43.7%	0%	0%		43.7%	12%	2.4%	0%		14.4%	0%	41.9%	0%		41.9%	-
PHF	0.93	0	0		0.93	0.9	0.82	0		0.93	0	0.95	0		0.95	-
Heavy	9	0	0		9	3	2	0		5	0	9	0		9	-
Heavy %	0.5%	0%	0%		0.5%	0.7%	2.2%	0%		0.9%	0%	0.6%	0%		0.6%	-
Lights	1656	0	0		1656	453	90	0		543	0	1588	0		1588	-
Lights %	99.5%	0%	0%		99.5%	99.3%	97.8%	0%		99.1%	0%	99.4%	0%		99.4%	-
Single-Unit Trucks	6	0	0		6	0	1	0		1	0	6	0		6	-
Single-Unit Trucks %	0.4%	0%	0%		0.4%	0%	1.1%	0%		0.2%	0%	0.4%	0%		0.4%	-
Buses	3	0	0		3	1	0	0		1	0	2	0		2	-
Buses %	0.2%	0%	0%		0.2%	0.2%	0%	0%		0.2%	0%	0.1%	0%		0.1%	-
Articulated Trucks	0	0	0		0	2	1	0		3	0	1	0		1	-
Articulated Trucks %	0%	0%	0%		0%	0.4%	1.1%	0%		0.5%	0%	0.1%	0%		0.1%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-

Peak Hour: 12:15 PM - 01:15 PM Weather: Rain (3.2 °C)



	Bicycles on Crosswalk	Pedestrians
S	0	0
E	0	0
W	0	0

Turning Movement Count (4 . NINTH LINE & GLEN OAKS FUNERAL HOME ACCESS)

Start Time	N Approach NINTH LINE					S Approach NINTH LINE					W Approach GLEN OAKS FUNERAL HOME ACCESS					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	U-Turn N:N	Peds N:	Approach Total	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Left W:N	U-Turn W:W	Peds W:	Approach Total		
06:00:00	0	57	0	0	57	21	0	0	0	21	0	0	0	0	0	78	
06:15:00	0	80	0	0	80	33	0	0	0	33	0	0	0	0	0	113	
06:30:00	0	114	0	0	114	41	0	0	0	41	1	0	0	0	1	156	
06:45:00	0	111	0	0	111	54	1	0	0	55	0	0	0	0	0	166	513
07:00:00	0	123	0	0	123	77	0	0	0	77	0	0	0	0	0	200	635
07:15:00	1	150	0	0	151	114	4	0	0	118	0	0	0	0	0	269	791
07:30:00	0	209	0	0	209	162	6	0	0	168	1	0	0	0	1	378	1013
07:45:00	1	233	0	0	234	157	6	0	0	163	0	0	0	0	0	397	1244
08:00:00	0	215	0	0	215	153	2	1	0	156	1	0	0	0	1	372	1416
08:15:00	0	225	0	0	225	208	1	0	0	209	1	0	0	0	1	435	1582
08:30:00	0	225	0	0	225	134	8	1	0	143	1	0	0	0	1	369	1573
08:45:00	3	189	0	0	192	124	9	0	0	133	5	1	0	0	6	331	1507
BREAK																	
15:00:00	2	100	0	0	102	184	8	0	0	192	8	3	0	0	11	305	
15:15:00	2	134	0	0	136	162	4	1	0	167	11	1	0	0	12	315	
15:30:00	0	139	0	0	139	199	5	0	0	204	6	1	0	0	7	350	
15:45:00	1	128	0	0	129	219	4	1	0	224	3	1	0	0	4	357	1327
16:00:00	0	169	0	0	169	202	6	0	0	208	7	3	0	0	10	387	1409
16:15:00	2	136	0	0	138	224	3	0	0	227	7	3	0	0	10	375	1469
16:30:00	2	145	0	0	147	192	2	1	0	195	16	0	0	0	16	358	1477
16:45:00	1	168	0	0	169	236	1	0	0	237	5	1	0	0	6	412	1532
17:00:00	1	160	0	0	161	228	5	1	0	234	2	0	0	0	2	397	1542
17:15:00	0	186	0	0	186	255	2	1	0	258	0	0	0	0	0	444	1611
17:30:00	0	143	0	0	143	246	7	1	0	254	5	0	0	0	5	402	1655

17:45:00	5	149	0	0	154	226	4	0	0	230	2	0	0	0	2	386	1629
18:00:00	0	155	0	0	155	202	6	0	0	208	10	2	0	0	12	375	1607
18:15:00	4	121	0	0	125	151	6	0	0	157	2	0	0	0	2	284	1447
18:30:00	3	112	0	0	115	140	4	0	0	144	5	0	0	0	5	264	1309
18:45:00	6	88	0	0	94	144	10	1	0	155	5	1	0	0	6	255	1178
Grand Total	34	4164	0	0	4198	4488	114	9	0	4611	104	17	0	0	121	**8930**	-
Approach%	0.8%	99.2%	0%		-	97.3%	2.5%	0.2%		-	86%	14%	0%		-	**-**	-
Totals %	0.4%	46.6%	0%		47%	50.3%	1.3%	0.1%		51.6%	1.2%	0.2%	0%		1.4%	**-**	-
Heavy	0	95	0		-	111	2	0		-	3	0	0		-	**-**	-
Heavy %	0%	2.3%	0%		-	2.5%	1.8%	0%		-	2.9%	0%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

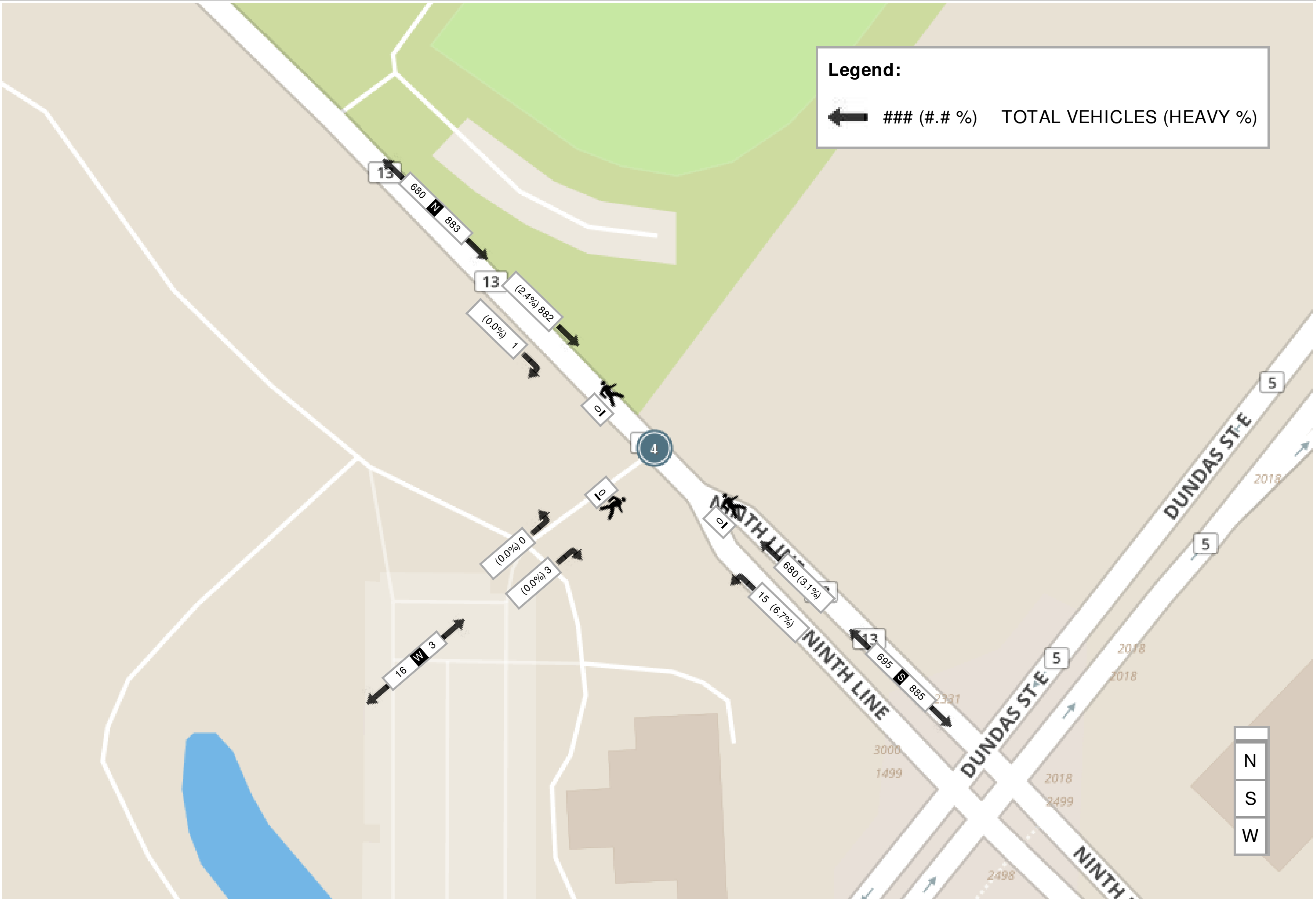
Peak Hour: 07:30 AM - 08:30 AM Weather: Mostly Cloudy (2.8 °C)

Start Time	N Approach NINTH LINE					S Approach NINTH LINE					W Approach GLEN OAKS FUNERAL HOME ACCESS					Int. Total (15 min)
	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	
07:30:00	0	209	0	0	209	162	6	0	0	168	1	0	0	0	1	378
07:45:00	1	233	0	0	234	157	6	0	0	163	0	0	0	0	0	397
08:00:00	0	215	0	0	215	153	2	1	0	156	1	0	0	0	1	372
08:15:00	0	225	0	0	225	208	1	0	0	209	1	0	0	0	1	435
Grand Total	1	882	0	0	883	680	15	1	0	696	3	0	0	0	3	**1582**
Approach%	0.1%	99.9%	0%		-	97.7%	2.2%	0.1%		-	100%	0%	0%		-	-
Totals %	0.1%	55.8%	0%		55.8%	43%	0.9%	0.1%		44%	0.2%	0%	0%		0.2%	-
PHF	0.25	0.95	0		0.94	0.82	0.63	0.25		0.83	0.75	0	0		0.75	-
Heavy	0	21	0		21	21	1	0		22	0	0	0		0	-
Heavy %	0%	2.4%	0%		2.4%	3.1%	6.7%	0%		3.2%	0%	0%	0%		0%	-
Lights	1	860	0		861	659	14	1		674	3	0	0		3	-
Lights %	100%	97.5%	0%		97.5%	96.9%	93.3%	100%		96.8%	100%	0%	0%		100%	-
Single-Unit Trucks	0	10	0		10	10	1	0		11	0	0	0		0	-
Single-Unit Trucks %	0%	1.1%	0%		1.1%	1.5%	6.7%	0%		1.6%	0%	0%	0%		0%	-
Buses	0	7	0		7	5	0	0		5	0	0	0		0	-
Buses %	0%	0.8%	0%		0.8%	0.7%	0%	0%		0.7%	0%	0%	0%		0%	-
Articulated Trucks	0	4	0		4	6	0	0		6	0	0	0		0	-
Articulated Trucks %	0%	0.5%	0%		0.5%	0.9%	0%	0%		0.9%	0%	0%	0%		0%	-
Bicycles on Road	0	1	0		1	0	0	0		0	0	0	0		0	-
Bicycles on Road %	0%	0.1%	0%		0.1%	0%	0%	0%		0%	0%	0%	0%		0%	-

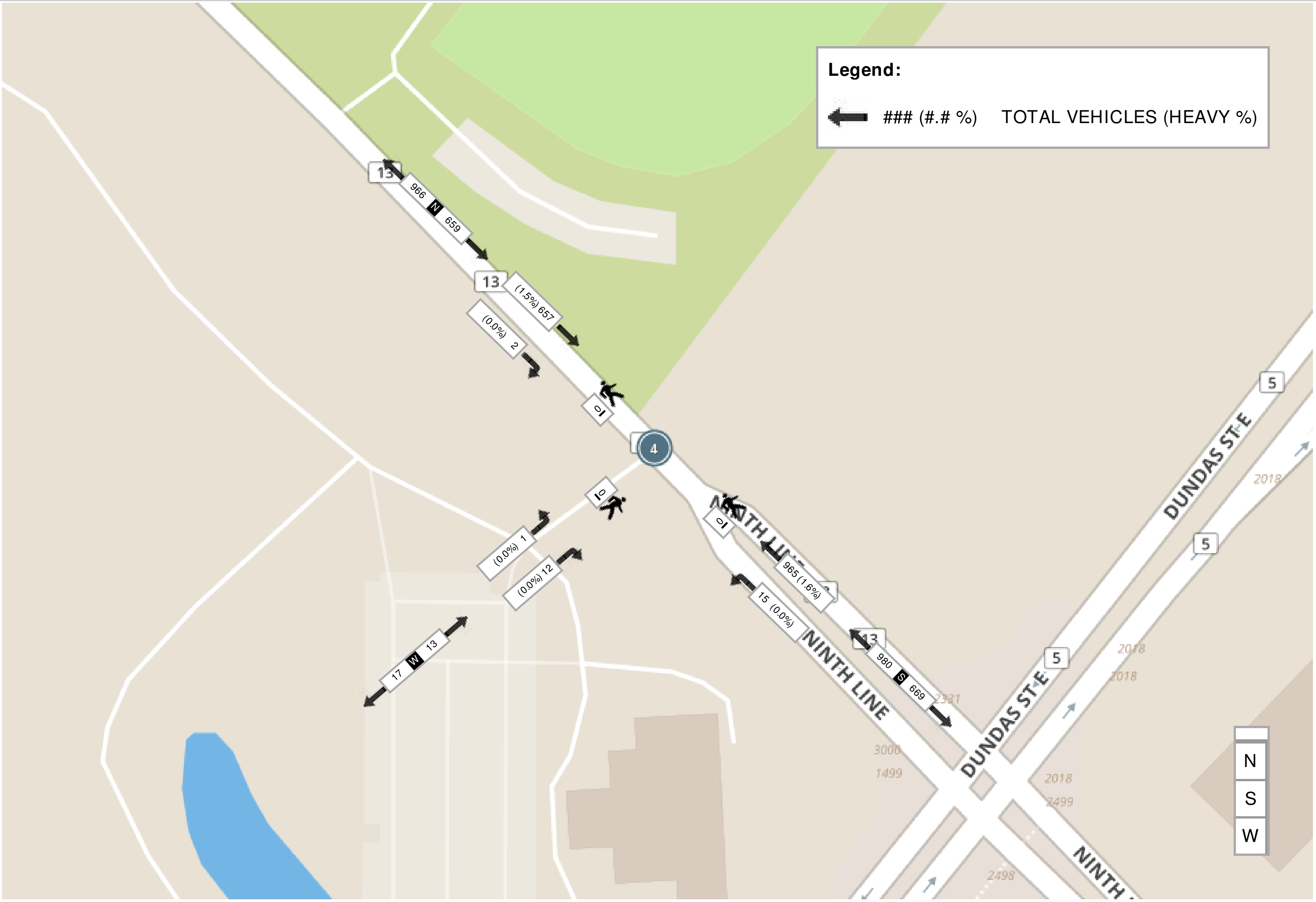
Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast (7.4 °C)

Start Time	N Approach NINTH LINE					S Approach NINTH LINE					W Approach GLEN OAKS FUNERAL HOME ACCESS					Int. Total (15 min)
	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	
16:45:00	1	168	0	0	169	236	1	0	0	237	5	1	0	0	6	412
17:00:00	1	160	0	0	161	228	5	1	0	234	2	0	0	0	2	397
17:15:00	0	186	0	0	186	255	2	1	0	258	0	0	0	0	0	444
17:30:00	0	143	0	0	143	246	7	1	0	254	5	0	0	0	5	402
Grand Total	2	657	0	0	659	965	15	3	0	983	12	1	0	0	13	**1655**
Approach%	0.3%	99.7%	0%		-	98.2%	1.5%	0.3%		-	92.3%	7.7%	0%		-	-
Totals %	0.1%	39.7%	0%		39.8%	58.3%	0.9%	0.2%		59.4%	0.7%	0.1%	0%		0.8%	-
PHF	0.5	0.88	0		0.89	0.95	0.54	0.75		0.95	0.6	0.25	0		0.54	-
Heavy	0	10	0		10	15	0	0		15	0	0	0		0	-
Heavy %	0%	1.5%	0%		1.5%	1.6%	0%	0%		1.5%	0%	0%	0%		0%	-
Lights	2	647	0		649	950	15	3		968	12	1	0		13	-
Lights %	100%	98.5%	0%		98.5%	98.4%	100%	100%		98.5%	100%	100%	0%		100%	-
Single-Unit Trucks	0	7	0		7	10	0	0		10	0	0	0		0	-
Single-Unit Trucks %	0%	1.1%	0%		1.1%	1%	0%	0%		1%	0%	0%	0%		0%	-
Buses	0	1	0		1	0	0	0		0	0	0	0		0	-
Buses %	0%	0.2%	0%		0.2%	0%	0%	0%		0%	0%	0%	0%		0%	-
Articulated Trucks	0	2	0		2	5	0	0		5	0	0	0		0	-
Articulated Trucks %	0%	0.3%	0%		0.3%	0.5%	0%	0%		0.5%	0%	0%	0%		0%	-
Bicycles on Road	0	0	0		0	0	0	0		0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-

Peak Hour: 07:30 AM - 08:30 AM Weather: Mostly Cloudy (2.8 °C)



Peak Hour: 04:45 PM - 05:45 PM   Weather: Overcast (7.4 °C)



Turning Movement Count (4 . NINTH LINE & GLEN OAKS FUNERAL HOME ACCESS)

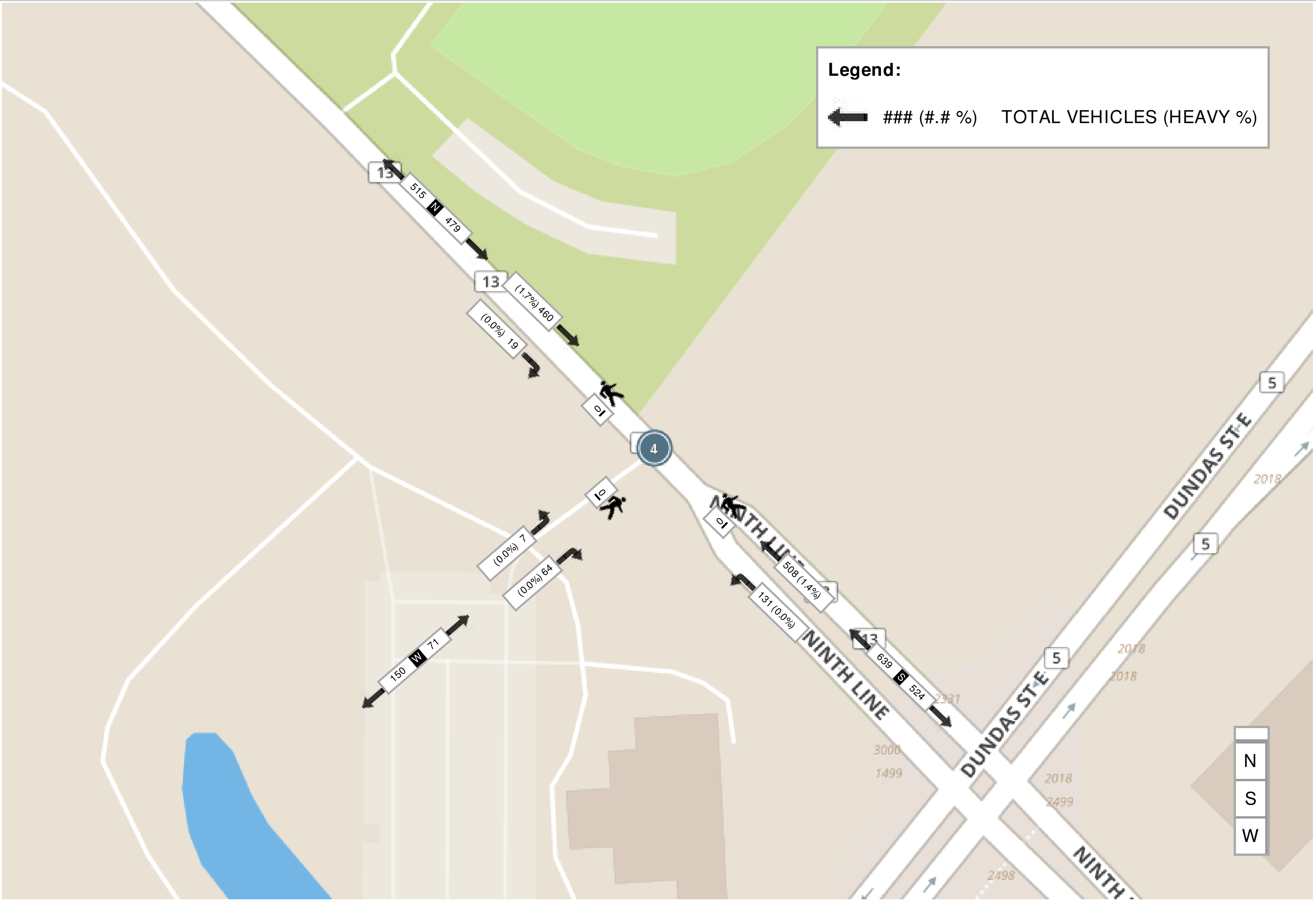
Start Time	N Approach NINTH LINE					S Approach NINTH LINE					W Approach GLEN OAKS FUNERAL HOME ACCESS					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	U-Turn N:N	Peds N:	Approach Total	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Left W:N	U-Turn W:W	Peds W:	Approach Total		
10:00:00	0	117	0	0	117	83	5	1	0	89	2	1	0	0	3	209	
10:15:00	1	85	0	0	86	64	6	0	0	70	4	1	0	0	5	161	
10:30:00	1	88	0	0	89	92	4	0	0	96	0	1	0	0	1	186	
10:45:00	3	94	0	0	97	101	7	0	0	108	7	1	0	0	8	213	769
11:00:00	0	102	0	0	102	90	2	0	0	92	0	1	0	0	1	195	755
11:15:00	1	77	0	0	78	99	1	0	0	100	3	0	0	0	3	181	775
11:30:00	1	106	0	0	107	97	4	2	0	103	4	0	0	0	4	214	803
11:45:00	2	99	0	0	101	134	9	0	0	143	2	0	0	0	2	246	836
12:00:00	4	124	0	0	128	116	36	1	0	153	3	0	0	0	3	284	925
12:15:00	2	110	0	0	112	121	31	0	0	152	5	0	0	0	5	269	1013
12:30:00	8	114	0	0	122	132	47	1	0	180	7	1	0	0	8	310	1109
12:45:00	5	112	0	0	117	138	40	0	0	178	15	0	0	0	15	310	1173
13:00:00	4	124	0	0	128	117	13	0	0	130	37	6	0	0	43	301	1190
13:15:00	1	99	0	0	100	110	7	0	0	117	3	1	0	0	4	221	1142
13:30:00	2	106	0	0	108	102	2	0	0	104	5	1	0	0	6	218	1050
13:45:00	3	94	0	0	97	110	6	0	0	116	7	3	0	0	10	223	963
14:00:00	9	129	0	0	138	139	9	0	0	148	13	3	0	0	16	302	964
14:15:00	2	100	0	0	102	134	9	0	0	143	71	0	0	0	71	316	1059
14:30:00	1	103	0	0	104	111	5	1	0	117	42	4	0	0	46	267	1108
14:45:00	1	103	0	0	104	114	9	0	0	123	31	4	0	0	35	262	1147
15:00:00	1	106	0	0	107	130	9	0	0	139	25	5	0	0	30	276	1121
15:15:00	0	101	0	0	101	135	2	0	0	137	21	2	0	0	23	261	1066
15:30:00	0	83	0	0	83	114	4	0	0	118	12	1	0	0	13	214	1013

15:45:00	1	104	0	0	105	124	6	0	0	130	4	0	0	0	4	239	990
16:00:00	0	76	0	0	76	124	5	0	0	129	4	0	0	0	4	209	923
16:15:00	0	112	0	0	112	134	2	0	0	136	10	0	0	0	10	258	920
16:30:00	0	108	0	0	108	151	1	0	0	152	11	1	0	0	12	272	978
16:45:00	2	99	0	0	101	129	4	0	0	133	5	3	0	0	8	242	981
Grand Total	55	2875	0	0	2930	3245	285	6	0	3536	353	40	0	0	393	**6859**	-
Approach%	1.9%	98.1%	0%		-	91.8%	8.1%	0.2%		-	89.8%	10.2%	0%		-	-	-
Totals %	0.8%	41.9%	0%		42.7%	47.3%	4.2%	0.1%		51.6%	5.1%	0.6%	0%		5.7%	-	-
Heavy	1	25	0		-	32	5	0		-	5	0	0		-	-	-
Heavy %	1.8%	0.9%	0%		-	1%	1.8%	0%		-	1.4%	0%	0%		-	-	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	-	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	-	-

Peak Hour: 12:15 PM - 01:15 PM Weather: Rain (3.2 °C)

Start Time	N Approach NINTH LINE					S Approach NINTH LINE					W Approach GLEN OAKS FUNERAL HOME ACCESS					Int. Total (15 min)
	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	
12:15:00	2	110	0	0	112	121	31	0	0	152	5	0	0	0	5	269
12:30:00	8	114	0	0	122	132	47	1	0	180	7	1	0	0	8	310
12:45:00	5	112	0	0	117	138	40	0	0	178	15	0	0	0	15	310
13:00:00	4	124	0	0	128	117	13	0	0	130	37	6	0	0	43	301
Grand Total	19	460	0	0	479	508	131	1	0	640	64	7	0	0	71	**1190**
Approach%	4%	96%	0%		-	79.4%	20.5%	0.2%		-	90.1%	9.9%	0%		-	-
Totals %	1.6%	38.7%	0%		40.3%	42.7%	11%	0.1%		53.8%	5.4%	0.6%	0%		6%	-
PHF	0.59	0.93	0		0.94	0.92	0.7	0.25		0.89	0.43	0.29	0		0.41	-
Heavy	0	8	0		8	7	0	0		7	0	0	0		0	-
Heavy %	0%	1.7%	0%		1.7%	1.4%	0%	0%		1.1%	0%	0%	0%		0%	-
Lights	19	452	0		471	501	131	1		633	64	7	0		71	-
Lights %	100%	98.3%	0%		98.3%	98.6%	100%	100%		98.9%	100%	100%	0%		100%	-
Single-Unit Trucks	0	8	0		8	6	0	0		6	0	0	0		0	-
Single-Unit Trucks %	0%	1.7%	0%		1.7%	1.2%	0%	0%		0.9%	0%	0%	0%		0%	-
Buses	0	0	0		0	0	0	0		0	0	0	0		0	-
Buses %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-
Articulated Trucks	0	0	0		0	1	0	0		1	0	0	0		0	-
Articulated Trucks %	0%	0%	0%		0%	0.2%	0%	0%		0.2%	0%	0%	0%		0%	-

Peak Hour: 12:15 PM - 01:15 PM   Weather: Rain (3.2 °C)



Turning Movement Count (5 . NINTH LINE & BURNHAMTHROPE RD WEST)

Start Time	N Approach NINTH LINE						E Approach BURNHAMTHROPE RD W						S Approach NINTH LINE						W Approach BURNHAMTHROPE RD W						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
06:00:00	1	43	9	0	0	53	2	6	6	0	0	14	2	12	6	0	0	20	11	34	0	0	0	45	132	
06:15:00	0	55	10	0	0	65	5	17	8	0	0	30	5	23	4	0	0	32	22	58	1	0	0	81	208	
06:30:00	9	100	29	0	0	138	8	29	6	0	0	43	7	25	6	0	0	38	18	66	0	0	0	84	303	
06:45:00	4	85	30	0	0	119	13	32	2	0	0	47	7	39	7	0	0	53	24	101	7	0	0	132	351	994
07:00:00	0	96	33	0	0	129	9	40	9	0	0	58	15	44	9	0	0	68	21	98	11	0	0	130	385	1247
07:15:00	2	123	40	0	0	165	9	36	14	0	0	59	24	87	8	0	0	119	29	130	13	0	0	172	515	1554
07:30:00	2	169	42	0	0	213	11	49	16	0	0	76	22	100	4	0	0	126	22	155	21	0	0	198	613	1864
07:45:00	7	168	53	0	0	228	27	51	11	0	0	89	20	105	11	0	0	136	35	126	16	0	0	177	630	2143
08:00:00	4	157	37	0	0	198	28	48	24	0	0	100	16	107	4	1	0	128	23	144	22	0	0	189	615	2373
08:15:00	8	140	45	0	0	193	22	43	21	0	0	86	14	92	8	0	0	114	29	179	23	0	0	231	624	2482
08:30:00	14	147	43	0	0	204	38	74	25	0	0	137	36	86	9	0	0	131	13	166	20	0	0	199	671	2540
08:45:00	9	150	54	0	0	213	26	47	19	0	0	92	38	80	6	0	0	124	13	159	15	0	0	187	616	2526
BREAK																										
15:00:00	8	74	20	0	0	102	33	93	24	0	0	150	22	105	28	0	0	155	8	50	5	0	0	63	470	
15:15:00	10	82	26	0	0	118	41	103	25	0	0	169	12	111	28	0	0	151	9	53	1	0	0	63	501	
15:30:00	11	73	19	0	0	103	58	96	30	0	0	184	21	112	16	0	0	149	12	69	14	0	0	95	531	
15:45:00	11	72	36	0	0	119	62	106	13	0	0	181	39	145	18	0	0	202	14	91	12	0	0	117	619	2121
16:00:00	8	89	23	0	0	120	67	128	27	0	0	222	23	139	22	0	0	184	17	77	5	0	0	99	625	2276
16:15:00	11	77	35	0	0	123	44	106	25	0	0	175	35	164	32	0	0	231	14	72	2	0	0	88	617	2392
16:30:00	8	87	40	0	0	135	57	143	28	0	0	228	27	154	32	0	0	213	17	70	5	0	0	92	668	2529
16:45:00	6	106	34	0	0	146	39	113	37	0	0	189	40	149	24	0	0	213	18	74	4	0	0	96	644	2554
17:00:00	7	105	42	0	0	154	55	131	28	0	0	214	46	133	25	0	0	204	21	100	7	0	0	128	700	2629
17:15:00	11	98	38	0	0	147	64	142	31	0	0	237	43	152	16	0	0	211	15	121	10	0	0	146	741	2753
17:30:00	3	87	35	0	0	125	41	121	23	0	0	185	50	135	25	0	0	210	18	135	8	0	0	161	681	2766
17:45:00	7	110	41	0	0	158	34	111	31	0	0	176	53	146	17	0	0	216	13	132	4	0	0	149	699	2821
18:00:00	10	81	30	0	0	121	33	84	26	0	1	143	40	144	25	0	1	209	19	82	5	0	0	106	579	2700
18:15:00	6	89	50	0	0	145	48	100	19	1	0	168	24	160	23	0	0	207	12	83	7	0	0	102	622	2581
18:30:00	9	76	22	0	0	107	42	109	20	0	0	171	19	105	16	0	0	140	15	80	4	0	0	99	517	2417
18:45:00	8	67	45	0	0	120	33	94	15	0	0	142	22	74	24	0	0	120	4	53	6	0	0	63	445	2163
Grand Total	194	2806	961	0	0	3961	949	2252	563	1	1	3765	722	2928	453	1	1	4104	486	2758	248	0	0	3492	**15322**	-
Approach%	4.9%	70.8%	24.3%	0%		-	25.2%	59.8%	15%	0%		-	17.6%	71.3%	11%	0%		-	13.9%	79%	7.1%	0%		-	-	-

Totals %	1.3%	18.3%	6.3%	0%	25.9%	6.2%	14.7%	3.7%	0%	24.6%	4.7%	19.1%	3%	0%	26.8%	3.2%	18%	1.6%	0%	22.8%	-	-
Heavy	2	60	15	0	-	20	20	8	0	-	17	71	12	0	-	14	26	1	0	-	-	-
Heavy %	1%	2.1%	1.6%	0%	-	2.1%	0.9%	1.4%	0%	-	2.4%	2.4%	2.6%	0%	-	2.9%	0.9%	0.4%	0%	-	-	-
Bicycles	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycle %	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Spectrum

Turning Movement Count
Location Name: NINTH LINE & BURNHAMTHROPE RD WEST
Date: Thu, Oct 25, 2018 Deployment Lead: Walter Fugaj

Crozier & Associates

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Peak Hour: 07:45 AM - 08:45 AM Weather: Mostly Cloudy (2.8 °C)

Start Time	N Approach NINTH LINE						E Approach BURNHAMTHROPE RD W						S Approach NINTH LINE						W Approach BURNHAMTHROPE RD W						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
07:45:00	7	168	53	0	0	228	27	51	11	0	0	89	20	105	11	0	0	136	35	126	16	0	0	177	630
08:00:00	4	157	37	0	0	198	28	48	24	0	0	100	16	107	4	1	0	128	23	144	22	0	0	189	615
08:15:00	8	140	45	0	0	193	22	43	21	0	0	86	14	92	8	0	0	114	29	179	23	0	0	231	624
08:30:00	14	147	43	0	0	204	38	74	25	0	0	137	36	86	9	0	0	131	13	166	20	0	0	199	671
Grand Total	33	612	178	0	0	823	115	216	81	0	0	412	86	390	32	1	0	509	100	615	81	0	0	796	**2540**
Approach%	4%	74.4%	21.6%	0%		-	27.9%	52.4%	19.7%	0%		-	16.9%	76.6%	6.3%	0.2%		-	12.6%	77.3%	10.2%	0%		-	-
Totals %	1.3%	24.1%	7%	0%		32.4%	4.5%	8.5%	3.2%	0%		16.2%	3.4%	15.4%	1.3%	0%		20%	3.9%	24.2%	3.2%	0%		31.3%	-
PHF	0.59	0.91	0.84	0		0.9	0.76	0.73	0.81	0		0.75	0.6	0.91	0.73	0.25		0.94	0.71	0.86	0.88	0		0.86	-
Heavy	1	11	3	0		15	3	2	1	0		6	3	11	0	0		14	3	2	0	0		5	-
Heavy %	3%	1.8%	1.7%	0%		1.8%	2.6%	0.9%	1.2%	0%		1.5%	3.5%	2.8%	0%	0%		2.8%	3%	0.3%	0%	0%		0.6%	-
Lights	32	601	175	0		808	112	213	80	0		405	83	379	32	0		494	97	613	81	0		791	-
Lights %	97%	98.2%	98.3%	0%		98.2%	97.4%	98.6%	98.8%	0%		98.3%	96.5%	97.2%	100%	0%		97.1%	97%	99.7%	100%	0%		99.4%	-
Single-Unit Trucks	1	8	1	0		10	0	2	0	0		2	1	6	0	0		7	3	1	0	0		4	-
Single-Unit Trucks %	3%	1.3%	0.6%	0%		1.2%	0%	0.9%	0%	0%		0.5%	1.2%	1.5%	0%	0%		1.4%	3%	0.2%	0%	0%		0.5%	-
Buses	0	2	0	0		2	3	0	0	0		3	0	1	0	0		1	0	0	0	0		0	-
Buses %	0%	0.3%	0%	0%		0.2%	2.6%	0%	0%	0%		0.7%	0%	0.3%	0%	0%		0.2%	0%	0%	0%	0%		0%	-
Articulated Trucks	0	1	2	0		3	0	0	1	0		1	2	4	0	0		6	0	1	0	0		1	-
Articulated Trucks %	0%	0.2%	1.1%	0%		0.4%	0%	0%	1.2%	0%		0.2%	2.3%	1%	0%	0%		1.2%	0%	0.2%	0%	0%		0.1%	-
Bicycles on Road	0	0	0	0		0	0	1	0	0		1	0	0	0	1		1	0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.2%	0%	0%	0%	100%		0.2%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-

Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast (7.4 °C)

Start Time	N Approach NINTH LINE						E Approach BURNHAMTHROPE RD W						S Approach NINTH LINE						W Approach BURNHAMTHROPE RD W						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
17:00:00	7	105	42	0	0	154	55	131	28	0	0	214	46	133	25	0	0	204	21	100	7	0	0	128	700
17:15:00	11	98	38	0	0	147	64	142	31	0	0	237	43	152	16	0	0	211	15	121	10	0	0	146	741
17:30:00	3	87	35	0	0	125	41	121	23	0	0	185	50	135	25	0	0	210	18	135	8	0	0	161	681
17:45:00	7	110	41	0	0	158	34	111	31	0	0	176	53	146	17	0	0	216	13	132	4	0	0	149	699
Grand Total	28	400	156	0	0	584	194	505	113	0	0	812	192	566	83	0	0	841	67	488	29	0	0	584	**2821**
Approach%	4.8%	68.5%	26.7%	0%		-	23.9%	62.2%	13.9%	0%		-	22.8%	67.3%	9.9%	0%		-	11.5%	83.6%	5%	0%		-	-
Totals %	1%	14.2%	5.5%	0%		20.7%	6.9%	17.9%	4%	0%		28.8%	6.8%	20.1%	2.9%	0%		29.8%	2.4%	17.3%	1%	0%		20.7%	-
PHF	0.64	0.91	0.93	0		0.92	0.76	0.89	0.91	0		0.86	0.91	0.93	0.83	0		0.97	0.8	0.9	0.73	0		0.91	-
Heavy	0	3	1	0		4	2	5	1	0		8	1	7	1	0		9	0	4	0	0		4	-
Heavy %	0%	0.8%	0.6%	0%		0.7%	1%	1%	0.9%	0%		1%	0.5%	1.2%	1.2%	0%		1.1%	0%	0.8%	0%	0%		0.7%	-
Lights	28	397	155	0		580	192	500	112	0		804	191	559	82	0		832	67	483	29	0		579	-
Lights %	100%	99.3%	99.4%	0%		99.3%	99%	99%	99.1%	0%		99%	99.5%	98.8%	98.8%	0%		98.9%	100%	99%	100%	0%		99.1%	-
Single-Unit Trucks	0	2	1	0		3	1	1	1	0		3	1	4	1	0		6	0	3	0	0		3	-
Single-Unit Trucks %	0%	0.5%	0.6%	0%		0.5%	0.5%	0.2%	0.9%	0%		0.4%	0.5%	0.7%	1.2%	0%		0.7%	0%	0.6%	0%	0%		0.5%	-
Buses	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Buses %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Articulated Trucks	0	1	0	0		1	1	4	0	0		5	0	3	0	0		3	0	1	0	0		1	-
Articulated Trucks %	0%	0.3%	0%	0%		0.2%	0.5%	0.8%	0%	0%		0.6%	0%	0.5%	0%	0%		0.4%	0%	0.2%	0%	0%		0.2%	-
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	1	0	0		1	-
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0.2%	0%	0%		0.2%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-

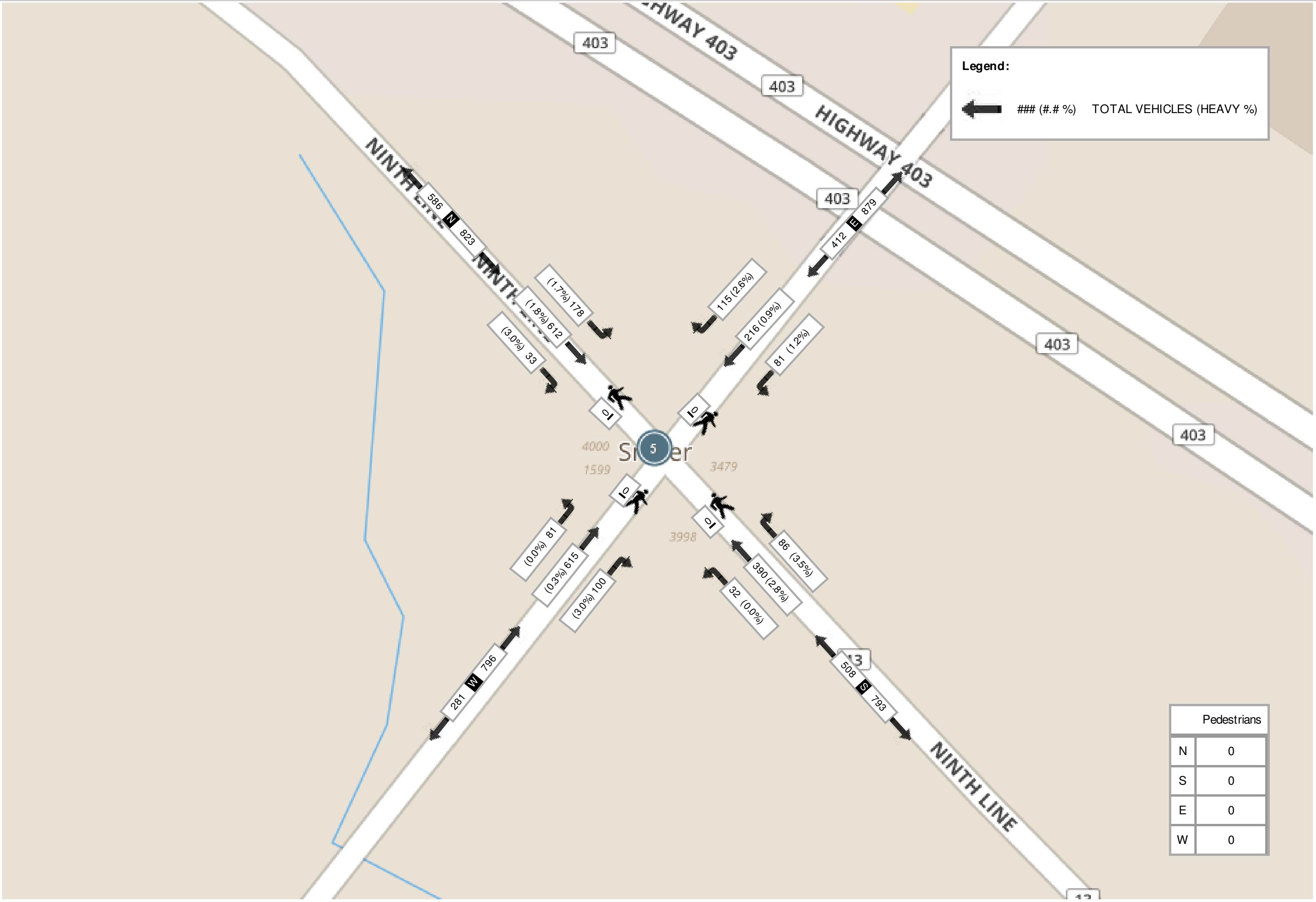
Spectrum

Turning Movement Count
Location Name: NINTH LINE & BURNHAMTHROPE RD WEST
Date: Thu, Oct 25, 2018 Deployment Lead: Walter Fugaj

Crozier & Associates

, ,

Peak Hour: 07:45 AM - 08:45 AM Weather: Mostly Cloudy (2.8 °C)

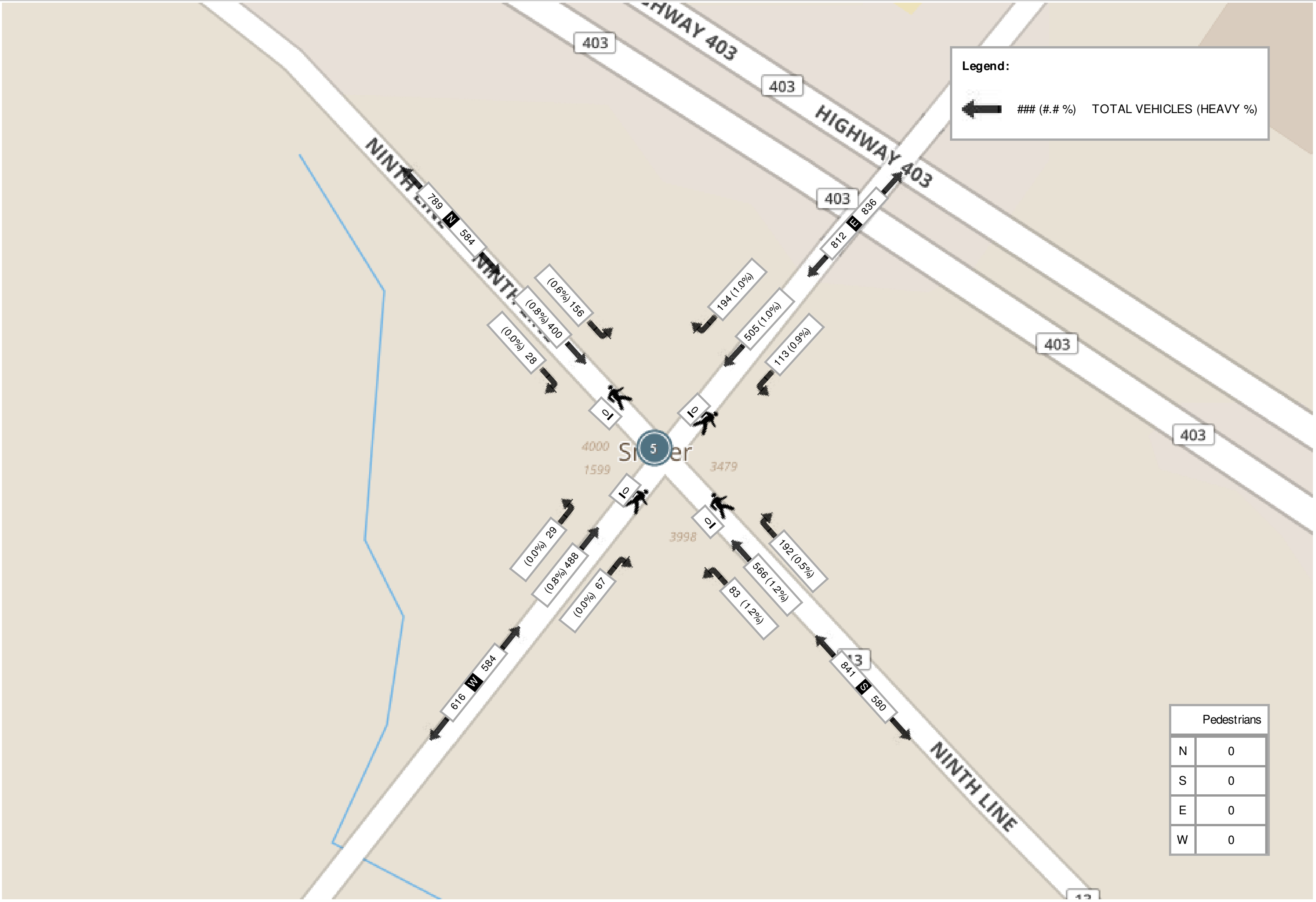


Pedestrians	
N	0
S	0
E	0
W	0

Crozier & Associates

, ,

Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast (7.4 °C)



Pedestrians	
N	0
S	0
E	0
W	0

Turning Movement Count (5 . NINTH LINE & BURNHAMTHROPE RD WEST)

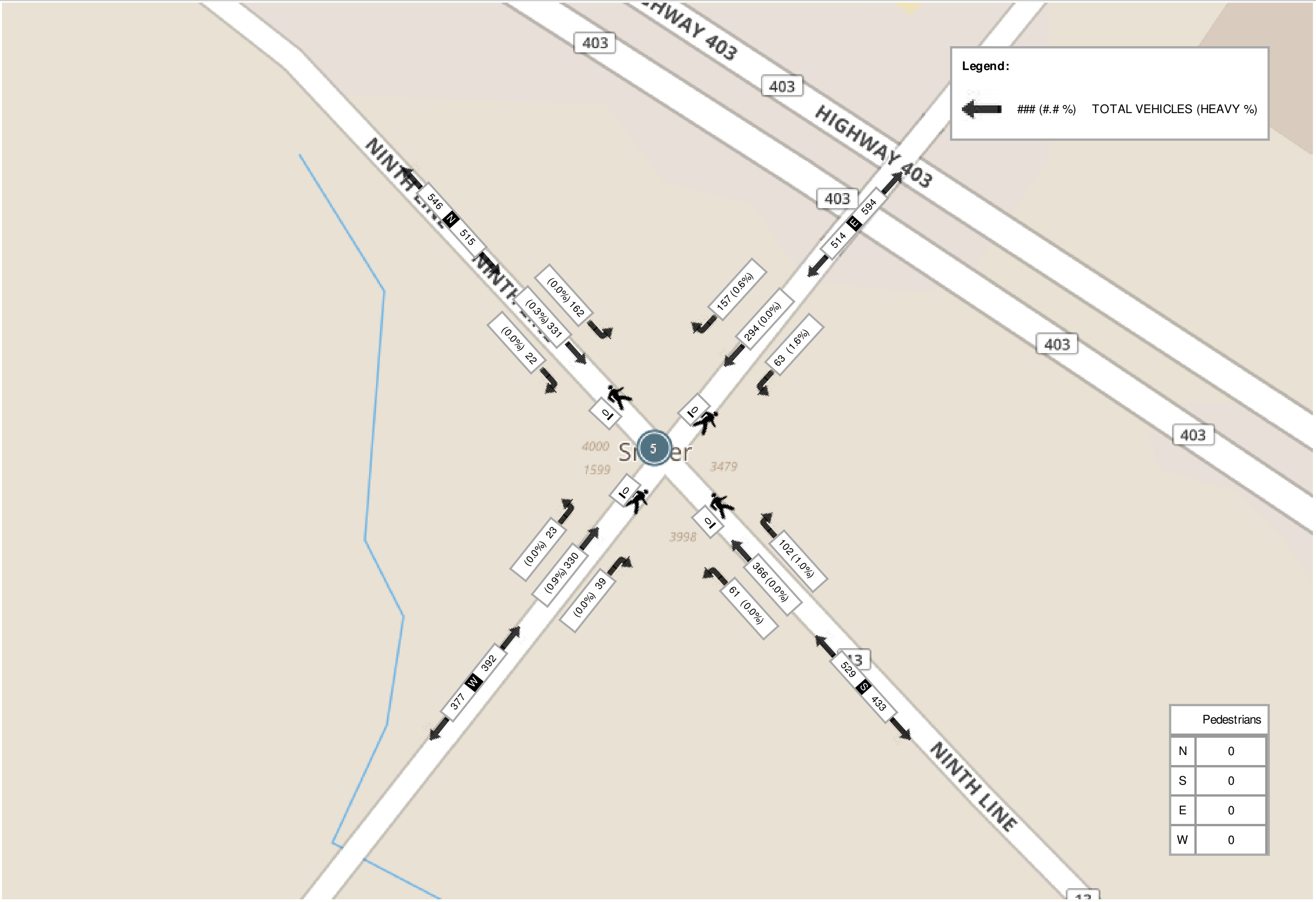
Start Time	N Approach NINTH LINE						E Approach BURNHAMTHROPE RD WEST						S Approach NINTH LINE						W Approach BURNHAMTHROPE RD WEST						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
10:00:00	2	86	38	0	2	126	19	45	12	0	1	76	15	48	9	0	0	72	11	54	8	0	2	73	347	
10:15:00	3	61	40	0	0	104	24	30	9	0	0	63	13	37	9	0	0	59	8	66	6	0	0	80	306	
10:30:00	2	75	35	1	0	113	23	41	9	0	0	73	16	59	12	0	0	87	3	51	6	0	0	60	333	
10:45:00	11	79	48	0	0	138	23	67	17	0	0	107	27	60	17	0	0	104	10	66	4	0	0	80	429	1415
11:00:00	8	55	25	0	0	88	26	44	21	0	0	91	24	56	10	0	0	90	13	62	12	0	0	87	356	1424
11:15:00	6	64	30	0	0	100	29	59	14	0	0	102	17	77	8	0	0	102	3	67	10	0	0	80	384	1502
11:30:00	5	83	33	0	0	121	27	65	10	0	0	102	21	59	17	0	0	97	12	73	4	0	0	89	409	1578
11:45:00	8	63	50	0	0	121	32	59	13	0	0	104	21	66	17	0	0	104	18	68	6	0	0	92	421	1570
12:00:00	8	76	40	0	0	124	31	66	23	0	0	120	18	68	21	0	0	107	24	80	10	0	0	114	465	1679
12:15:00	6	86	50	0	0	142	27	73	15	0	0	115	15	76	10	0	0	101	8	78	3	1	0	90	448	1743
12:30:00	8	99	41	0	0	148	32	55	21	0	0	108	22	75	14	0	0	111	12	78	7	0	0	97	464	1798
12:45:00	12	95	44	0	0	151	38	74	19	0	0	131	30	77	23	0	0	130	10	79	10	0	0	99	511	1888
13:00:00	2	66	35	0	0	103	27	52	22	0	0	101	15	95	19	0	0	129	23	83	8	0	0	114	447	1870
13:15:00	1	77	31	0	0	109	35	72	15	0	0	122	19	74	18	0	0	111	10	74	3	0	0	87	429	1851
13:30:00	4	77	25	0	0	106	27	62	19	0	0	108	15	69	13	0	0	97	8	69	7	0	0	84	395	1782
13:45:00	3	67	32	0	0	102	33	61	12	0	0	106	19	72	12	0	0	103	9	52	7	0	0	68	379	1650
14:00:00	7	84	31	0	0	122	45	74	20	0	0	139	21	108	24	0	0	153	4	72	5	0	0	81	495	1698
14:15:00	7	75	28	0	0	110	25	75	15	0	0	115	17	86	18	0	0	121	7	83	4	0	0	94	440	1709
14:30:00	4	75	37	0	0	116	37	77	16	0	0	130	16	75	20	0	0	111	7	72	9	0	0	88	445	1759
14:45:00	3	71	48	0	0	122	30	55	16	0	0	101	25	74	10	0	0	109	10	83	9	0	0	102	434	1814
15:00:00	3	73	31	0	0	107	31	58	14	0	0	103	21	92	11	0	0	124	10	57	7	0	0	74	408	1727
15:15:00	7	69	33	0	0	109	27	65	17	0	0	109	18	93	25	0	0	136	4	80	11	0	0	95	449	1736
15:30:00	5	73	35	0	0	113	36	74	12	0	0	122	21	84	13	0	0	118	6	77	9	0	0	92	445	1736
15:45:00	7	73	34	0	0	114	30	83	11	0	0	124	29	83	15	0	0	127	9	70	7	0	0	86	451	1753
16:00:00	2	60	37	0	0	99	45	74	16	0	0	135	23	85	13	0	0	121	10	92	6	0	0	108	463	1808
16:15:00	8	109	43	0	0	160	33	73	21	0	0	127	23	98	15	0	0	136	9	71	6	0	0	86	509	1868
16:30:00	4	88	43	0	0	135	36	79	13	0	0	128	23	101	19	0	0	143	8	80	6	0	0	94	500	1923
16:45:00	8	74	39	0	0	121	43	68	13	0	0	124	33	82	14	0	0	129	12	87	5	0	0	104	478	1950
Grand Total	154	2133	1036	1	2	3324	871	1780	435	0	1	3086	577	2129	426	0	0	3132	278	2024	195	1	2	2498	**12040**	-
Approach%	4.6%	64.2%	31.2%	0%		-	28.2%	57.7%	14.1%	0%		-	18.4%	68%	13.6%	0%		-	11.1%	81%	7.8%	0%		-	**-**	-
Totals %	1.3%	17.7%	8.6%	0%		27.6%	7.2%	14.8%	3.6%	0%		25.6%	4.8%	17.7%	3.5%	0%		26%	2.3%	16.8%	1.6%	0%		20.7%	**-**	-

Heavy	0	22	1	0	-	2	5	5	0	-	1	25	3	0	-	2	11	0	0	-	-	-
Heavy %	0%	1%	0.1%	0%	-	0.2%	0.3%	1.1%	0%	-	0.2%	1.2%	0.7%	0%	-	0.7%	0.5%	0%	0%	-	-	-
Bicycles	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycle %	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Peak Hour: 04:00 PM - 05:00 PM Weather: Rain (3.2 °C)

Start Time	N Approach NINTH LINE						E Approach BURNHAMTHROPE RD WEST						S Approach NINTH LINE						W Approach BURNHAMTHROPE RD WEST						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
16:00:00	2	60	37	0	0	99	45	74	16	0	0	135	23	85	13	0	0	121	10	92	6	0	0	108	463
16:15:00	8	109	43	0	0	160	33	73	21	0	0	127	23	98	15	0	0	136	9	71	6	0	0	86	509
16:30:00	4	88	43	0	0	135	36	79	13	0	0	128	23	101	19	0	0	143	8	80	6	0	0	94	500
16:45:00	8	74	39	0	0	121	43	68	13	0	0	124	33	82	14	0	0	129	12	87	5	0	0	104	478
Grand Total	22	331	162	0	0	515	157	294	63	0	0	514	102	366	61	0	0	529	39	330	23	0	0	392	**1950**
Approach%	4.3%	64.3%	31.5%	0%		-	30.5%	57.2%	12.3%	0%		-	19.3%	69.2%	11.5%	0%		-	9.9%	84.2%	5.9%	0%		-	-
Totals %	1.1%	17%	8.3%	0%		26.4%	8.1%	15.1%	3.2%	0%		26.4%	5.2%	18.8%	3.1%	0%		27.1%	2%	16.9%	1.2%	0%		20.1%	-
PHF	0.69	0.76	0.94	0		0.8	0.87	0.93	0.75	0		0.95	0.77	0.91	0.8	0		0.92	0.81	0.9	0.96	0		0.91	-
Heavy	0	1	0	0		1	1	0	1	0		2	1	0	0	0		1	0	3	0	0		3	-
Heavy %	0%	0.3%	0%	0%		0.2%	0.6%	0%	1.6%	0%		0.4%	1%	0%	0%	0%		0.2%	0%	0.9%	0%	0%		0.8%	-
Lights	22	330	162	0		514	156	294	62	0		512	101	366	61	0		528	39	327	23	0		389	-
Lights %	100%	99.7%	100%	0%		99.8%	99.4%	100%	98.4%	0%		99.6%	99%	100%	100%	0%		99.8%	100%	99.1%	100%	0%		99.2%	-
Single-Unit Trucks	0	1	0	0		1	1	0	1	0		2	1	0	0	0		1	0	3	0	0		3	-
Single-Unit Trucks %	0%	0.3%	0%	0%		0.2%	0.6%	0%	1.6%	0%		0.4%	1%	0%	0%	0%		0.2%	0%	0.9%	0%	0%		0.8%	-
Buses	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Buses %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-

Peak Hour: 04:00 PM - 05:00 PM Weather: Rain (3.2 °C)



Pedestrians	
N	0
S	0
E	0
W	0

MISSISSAUGA

File: CA.13.SIG
Signal Timing Request
RT.07.5902
RT.07.5904
RT.07.5903

October 25, 2018

C.F. Crozier & Associates
40 Huron Street, Suite 301
Collingwood, ON, L9Y 4R3

Dear Darren Loro:

Re: Traffic Signal Timing

Please find the attached traffic signal timing for the intersections of:

Dundas Street W at Ninth Line West
Dundas Street W at Highway 403 / Off Ramp - East Terminal
Dundas Street W at Highway 403 / Off Ramp - West Terminal

The side street phases (4, 8) is actuated; meaning a vehicle or pedestrian must be present on the side street before the side street is given a green indication. Vehicle presence on the side street would result in a possible green time of between the minimum and maximum time noted, depending on demand. Similarly, phases (1, 3, 5, 7) are also actuated. Pedestrian "Walk" and flashing "Don't Walk" time on the side street, as noted, would be used in the event that the pedestrian push button is activated. During the side street pedestrian indications, the side street vehicle green is concurrently displayed. Should there be no demand on the actuated phases, the signals would result in a green indication on the major street (2, 6).

Note: All times recorded in seconds, based on full demand.

The time of day plan is used for system control operation. In the event that the coordination pattern has a cycle length, offset and split value identified, the cycle length split and offset values, as noted, would be used. However, when the time of day plan is programed using

'Action' 8, the mode is 'Free', meaning no cycle length, split and offset values are given and the intersection operates using the phase timings provided in the report.

Should you require further information, please contact Ken Moore, at 905-615-3200 ext. 4054.

Sincerely,

Ken Moore
Coordinator, Traffic Systems and ITS
Traffic Signals and Street Lighting
Transportation and Works Department
City of Mississauga
905-615-3200 ext. 4054
Ken.moore@mississauga.ca

c: Javed Khan, Manager, Traffic Signals and Street Lighting
Jim Kartsomanis, Supervisor, Traffic Systems and ITS

JK:kl

Signal Timing Report

Runtime: 10/24/2018 15:31:07

Device: 5902

Region : Mississauga **Signal ID:** 5902 **Location:** DUNDAS STREET E at Ninth Line

Phase	Units	1	2	3	4	5		7	8
Walk	Sec	0	7	0	7	0	7	0	7
Ped Clear	Sec	0	32	0	34	0	32	0	34
Min Green	Sec	7	20	7	10	7	20	7	10
Passage	Sec	3.5	5.5	3.5	3.5	3.5	5.5	3.5	3.5
Maximum 1	Sec	20	55	20	35	20	55	20	35
Maximum 2	Sec	20	60	20	40	20	60	20	40
Yellow Change	Sec	3.0	3.7	3.0	3.7	3.0	3.7	3.0	3.7
Red Clearance	Sec	1.0	2.6	1.0	2.8	2.0	2.6	1.0	2.8
Red Revert	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	Sec	0	0	0	0	0	0	0	0
Time Before	Sec	0	0	0	0	0	0	0	0
Cars Before	Veh	0	0	0	0	0	0	0	0
Time To Reduce	Sec	0	0	0	0	0	0	0	0
Reduce By	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	Sec	0	0	0	0	0	0	0	0
Dynamic Max Step	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[P2] Start Up	Enum	phaseNotOn	redClear	phaseNotOn	phaseNotOn	phaseNotOn	redClear	phaseNotOn	phaseNotOn
[P2] Options	Bit	Enabled Non Lock Det	Enabled Non-Actuated 1 Non Lock Det Min Veh Recall Dual Entry Act Rest In Walk	Enabled Non Lock Det	Enabled Non Lock Det Dual Entry	Enabled Non Lock Det	Enabled Non-Actuated 1 Non Lock Det Min Veh Recall Dual Entry Act Rest In Walk	Enabled Non Lock Det	Enabled Non Lock Det Dual Entry
[P2] Ring	Ring	1	1	1	1	2	2	2	2
[P2] Concurrency	Phase (,)	(5,6)	(5,6)	(7,8)	(7,8)	(1,2)	(1,2)	(3,4)	(3,4)
Coord Pattern	**Units**	**1**	**2**	**3**	**4**	**5**		**7**	**8**
Cycle Time	Sec	160	160	160	0	0	0	0	0
Offset	Sec	10	106	158	0	0	0	0	0
Split	Split	1	2	3	0	0	0	0	0
Sequence	Sequence	1	1	1	0	0	0	0	0
Coord Split	**Units**	**1**	**2**	**3**	**4**	**5**		**7**	**8**
Split 1 - Mode	Enum	none	other	none	none	none	other	none	none
Split 1 - Time	Sec	13	86	18	43	13	86	18	43
Split 1 - Coord	Enum	false	true	false	false	false	true	false	false
Split 2 - Mode	Enum	none	other	phaseOmitted	none	none	other	phaseOmitted	none
Split 2 - Time	Sec	14	85	0	61	14	85	0	61
Split 2 - Coord	Enum	false	true	false	false	false	true	false	false
Split 3 - Mode	Enum	none	other	none	none	none	other	none	none
Split 3 - Time	Sec	13	86	18	43	13	86	18	43
Split 3 - Coord	Enum	false	true	false	false	false	true	false	false
TB Schedule	**Units**	**1**	**2**	**3**	**4**	**5**		**7**	**8**
Month	Bit	JFMAMJJASOND	JFMAMJJASOND	JFMAMJJASOND	J-----------	-F----------	--M---------	----M-------	------J-----
Day of Week	Bit	-MTWTF-	S------	------S	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	12345678901234 56789012345678 901	12345678901234 56789012345678 901	12345678901234 56789012345678 901	1---------------------- --------	------------------9---- --------	----------------------- -------0-	--------------------1-- --------	-2--------------------- -------
Day Plan	Number	1	3	2	3	3	3	3	3
TB Schedule	**Units**	**9**	**10**	**11**	**12**	**13**		**15**	**16**
Month	Bit	-------A----	--------S---	---------O--	-----------D	-----------D	-----------D	0	0
Day of Week	Bit	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	-----6----------------- -------	--3-------------------- --------	-------8--------------- --------	----------------------- 5------	----------------------- -6-----	----------------------- -4-------	0	0
Day Plan	Number	3	3	3	3	3	3	0	0
TB Dayplan	**Units**	**1**	**2**	**3**	**4**	**5**		**7**	**8**
Plan 1 Hour	Hour	0	6	9	15	19	0	0	0
Plan 1 Minute	Min	0	0	30	0	30	0	0	0
Plan 1 Action	Number	8	1	2	3	2	0	0	0
Plan 2 Hour	Hour	0	7	0	0	0	0	0	0
Plan 2 Minute	Min	0	0	0	0	0	0	0	0
Plan 2 Action	Number	8	2	0	0	0	0	0	0
Plan 3 Hour	Hour	0	8	23	0	0	0	0	0
Plan 3 Minute	Min	0	0	0	0	0	0	0	0
Plan 3 Action	Number	8	2	8	0	0	0	0	0
TB Action	**Units**	**1**	**2**	**3**	**4**	**5**		**7**	**8**
Pattern	Enum	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Pattern 7	Free
Aux. Functions	Bit	0	0	0	0	0	0	0	0
Spec. Functions	Bit	0	0	0	0	0	0	0	Special Func 2 Special Func 4

Signal Timing Report

Runtime: 10/24/2018 15:35:45

Device: 5903

Region: Mississauga **Signal ID:** 5903 **Location:** DUNDAS STREET E at Hwy 403 West Terminal

Phase	Units	1	2	3	4	5		7	8
Walk	Sec	0	8	0	0	0	0	0	0
Ped Clear	Sec	0	10	0	0	0	0	0	0
Min Green	Sec	0	8	0	8	0	0	0	0
Passage	Sec	0.0	2.0	0.0	4.0	0.0	0.0	0.0	0.0
Maximum 1	Sec	0	45	0	45	0	0	0	0
Maximum 2	Sec	0	45	0	45	0	0	0	0
Yellow Change	Sec	3.0	5.0	3.0	4.0	3.0	4.0	3.0	4.0
Red Clearance	Sec	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0
Red Revert	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	Sec	0	0	0	0	0	0	0	0
Time Before	Sec	0	0	0	0	0	0	0	0
Cars Before	Veh	0	0	0	0	0	0	0	0
Time To Reduce	Sec	0	0	0	0	0	0	0	0
Reduce By	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	Sec	0	0	0	0	0	0	0	0
Dynamic Max Step	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[P2] Start Up	Enum	other	redClear	other	phaseNotOn	other	other	other	other
[P2] Options	Bit	0	Enabled Non-Actuated 1 Max Veh Recall Ped Recall Act Rest In Walk	0	Enabled Non Lock Det	0	0	0	0
[P2] Ring	Ring	0	1	0	1	0	0	0	0
[P2] Concurrency	Phase (,)	()	()	()	()	()	()	()	()
Coord Pattern	**Units**	**1**	**2**	**3**	**4**	**5**		**7**	**8**
Cycle Time	Sec	160	160	160	0	0	0	0	0
Offset	Sec	14	109	139	0	0	0	0	0
Split	Split	1	2	3	4	5	6	7	8
Sequence	Sequence	1	1	1	1	1	1	1	1
Coord Split	**Units**	**1**	**2**	**3**	**4**	**5**		**7**	**8**
Split 1 - Mode	Enum	none	none	none	none	none	none	none	none
Split 1 - Time	Sec	0	115	0	45	0	0	0	0
Split 1 - Coord	Enum	false	true	false	false	false	false	false	false
Split 2 - Mode	Enum	none	none	none	none	none	none	none	none
Split 2 - Time	Sec	0	102	0	58	0	0	0	0
Split 2 - Coord	Enum	false	true	false	false	false	false	false	false
Split 3 - Mode	Enum	none	none	none	none	none	none	none	none
Split 3 - Time	Sec	0	90	0	70	0	0	0	0
Split 3 - Coord	Enum	false	true	false	false	false	false	false	false
TB Schedule	**Units**	**1**	**2**	**3**	**4**	**5**		**7**	**8**
Month	Bit	JFMAMJJASOND	JFMAMJJASOND	JFMAMJJASOND	J-----------	-F----------	--M---------	----M-------	------J-----
Day of Week	Bit	-MTWTF-	S------	------S	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	123456789012345 678901234567890 1	123456789012345 678901234567890 1	123456789012345 678901234567890 1	1------------------------ ------	------------------9----- -------	------------------------ -----0-	--------------------1---- ------	-2----------------------- ------
Day Plan	Number	1	3	2	3	3	3	3	3
TB Schedule	**Units**	**9**	**10**	**11**	**12**	**13**		**15**	**16**
Month	Bit	-------A----	--------S---	---------O--	-----------D	-----------D	-----------D	0	0
Day of Week	Bit	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	-----6------------------- ------	--3---------------------- ------	-------8----------------- ------	------------------------ 5------	------------------------- 6-----	----------------------- 4-------	0	0
Day Plan	Number	3	3	3	3	3	3	0	0
TB Dayplan	**Units**	**1**	**2**	**3**	**4**	**5**		**7**	**8**
Plan 1 Hour	Hour	0	6	9	15	19	0	0	0
Plan 1 Minute	Min	0	0	30	0	30	0	0	0
Plan 1 Action	Number	8	1	2	3	2	0	0	0
Plan 2 Hour	Hour	0	7	0	0	0	0	0	0
Plan 2 Minute	Min	0	0	0	0	0	0	0	0
Plan 2 Action	Number	8	2	0	0	0	0	0	0
Plan 3 Hour	Hour	0	8	23	0	0	0	0	0
Plan 3 Minute	Min	0	0	0	0	0	0	0	0
Plan 3 Action	Number	8	2	8	0	0	0	0	0
TB Action	**Units**	**1**	**2**	**3**	**4**	**5**		**7**	**8**
Pattern	Enum	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Pattern 7	Free
Aux. Functions	Bit	0	0	0	0	0	0	0	0
Spec. Functions	Bit	0	0	0	0	0	0	0	0

Signal Timing Report

Runtime: 10/24/2018 15:33:28

Device: 5904

Region: Mississauga **Signal ID:** 5904 **Location:** DUNDAS STREET E at Hwy 403 East Terminal

Phase	Units	1	2	3	4	5		7	8
Walk	Sec	0	8	0	0	0	0	0	0
Ped Clear	Sec	0	9	0	0	0	0	0	0
Min Green	Sec	0	8	0	8	0	0	0	0
Passage	Sec	0.0	4.0	0.0	4.0	0.0	0.0	0.0	0.0
Maximum 1	Sec	0	60	0	40	0	0	0	0
Maximum 2	Sec	0	60	0	40	0	0	0	0
Yellow Change	Sec	3.0	5.0	3.0	4.0	3.0	4.0	3.0	4.0
Red Clearance	Sec	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0
Red Revert	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	Sec	0	0	0	0	0	0	0	0
Time Before	Sec	0	0	0	0	0	0	0	0
Cars Before	Veh	0	0	0	0	0	0	0	0
Time To Reduce	Sec	0	0	0	0	0	0	0	0
Reduce By	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	Sec	0	0	0	0	0	0	0	0
Dynamic Max Step	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[P2] Start Up	Enum	other	redClear	other	phaseNotOn	other	other	other	other
[P2] Options	Bit	0	Enabled Non-Actuated 1 Max Veh Recall Ped Recall Act Rest In Walk	0	Enabled Non Lock Det	0	0	0	0
[P2] Ring	Ring	0	1	0	1	0	0	0	0
[P2] Concurrency	Phase (,)	()	()	()	()	()	()	()	()

Coord Pattern	Units	1	2	3	4	5		7	8
Cycle Time	Sec	160	160	160	0	0	0	0	0
Offset	Sec	32	10	50	0	0	0	0	0
Split	Split	1	2	3	4	5	6	7	8
Sequence	Sequence	1	1	1	1	1	1	1	1

Coord Split	Units	1	2	3	4	5		7	8
Split 1 - Mode	Enum	none	none	none	none	none	none	none	none
Split 1 - Time	Sec	0	115	0	45	0	0	0	0
Split 1 - Coord	Enum	false	true	false	false	false	false	false	false
Split 2 - Mode	Enum	none	none	none	none	none	none	none	none
Split 2 - Time	Sec	0	112	0	48	0	0	0	0
Split 2 - Coord	Enum	false	true	false	false	false	false	false	false
Split 3 - Mode	Enum	none	none	none	none	none	none	none	none
Split 3 - Time	Sec	0	107	0	53	0	0	0	0
Split 3 - Coord	Enum	false	true	false	false	false	false	false	false

TB Schedule	Units	1	2	3	4	5		7	8
Month	Bit	JFMAMJJASOND	JFMAMJJASOND	JFMAMJJASOND	J-----------	-F----------	--M---------	----M-------	------J-----
Day of Week	Bit	-MTWTF-	S------	------S	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	123456789012345 678901234567890 1	123456789012345 678901234567890 1	123456789012345 678901234567890 1	1------------------------ ------	------------------9----- -------	------------------------ ------0-	-------------------1---- ------	-2----------------------- ------
Day Plan	Number	1	3	2	3	3	3	3	3

TB Schedule	Units	9	10	11	12	13		15	16
Month	Bit	-------A----	--------S---	---------O--	-----------D	-----------D	-----------D	0	0
Day of Week	Bit	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	-----6------------------- ------	--3--------------------- ------	-------8----------------- ------	------------------------ 5------	------------------------- 6-----	------------------------ 4-------	0	0
Day Plan	Number	3	3	3	3	3	3	0	0

TB Dayplan	Units	1	2	3	4	5		7	8
Plan 1 Hour	Hour	0	6	9	15	19	0	0	0
Plan 1 Minute	Min	0	0	30	0	30	0	0	0
Plan 1 Action	Number	8	1	2	3	2	0	0	0
Plan 2 Hour	Hour	0	7	0	0	0	0	0	0
Plan 2 Minute	Min	0	0	0	0	0	0	0	0
Plan 2 Action	Number	8	2	0	0	0	0	0	0
Plan 3 Hour	Hour	0	8	23	0	0	0	0	0
Plan 3 Minute	Min	0	0	0	0	0	0	0	0
Plan 3 Action	Number	8	2	8	0	0	0	0	0

TB Action	Units	1	2	3	4	5		7	8
Pattern	Enum	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Pattern 7	Free
Aux. Functions	Bit	0	0	0	0	0	0	0	0
Spec. Functions	Bit	0	0	0	0	0	0	0	0

MISSISSAUGA

File: CA.13.SIG
Signal Timing Request
RT.07.5805

October 29, 2018

C.F. Crozier & Associates
40 Huron Street, Suite 301
Collingwood, ON, L9Y 4R3

Dear Darren Loro:

Re: Traffic Signal Timing

Please find the attached traffic signal timing for the intersections of:

Burnhamthorpe Road W at Ninth Line West

The side street phase (4) is actuated; meaning a vehicle or pedestrian must be present on the side street before the side street is given a green indication. Vehicle presence on the side street would result in a possible green time of between the minimum and maximum time noted, depending on demand. Similarly, phase (3) is also actuated. Pedestrian "Walk" and flashing "Don't Walk" time on the side street, as noted, would be used in the event that the pedestrian push button is activated. During the side street pedestrian indications, the side street vehicle green is concurrently displayed. Should there be no demand on the actuated phases, the signals would result in a green indication on the major street (2).

Note: All times recorded in seconds, based on full demand.

The time of day plan is used for system control operation. In the event that the coordination pattern has a cycle length, offset and split value identified, the cycle length split and offset values, as noted, would be used. However, when the time of day plan is programed using 'Action' 8, the mode is 'Free', meaning no cycle length, split and offset values are given and the intersection operates using the phase timings provided in the report.

Should you require further information, please contact Ken Moore, at 905-615-3200 ext. 4054.

Sincerely,

Ken Moore
Coordinator, Traffic Systems and ITS
Traffic Signals and Street Lighting
Transportation and Works Department
City of Mississauga
905-615-3200 ext. 4054
Ken.moore@mississauga.ca

c: Javed Khan, Manager, Traffic Signals and Street Lighting
Jim Kartsomanis, Supervisor, Traffic Systems and ITS

JK:kl

Signal Timing Report

Runtime: 10/29/2018 12:45:31

Device: 5805

Region: Mississauga **Signal ID:** 5805 **Location:** BURNHAMTHORPE ROAD E at Ninth Line

Phase	Units	1	2	3	4	5		7	8
Walk	Sec	0	8	0	9	0	0	0	0
Ped Clear	Sec	0	13	0	17	0	0	0	0
Min Green	Sec	0	8	5	8	0	0	0	0
Passage	Sec	0.0	3.0	2.0	4.0	0.0	0.0	0.0	0.0
Maximum 1	Sec	0	30	10	25	0	0	0	0
Maximum 2	Sec	0	30	10	25	0	0	0	0
Yellow Change	Sec	3.0	4.0	3.0	5.0	3.0	4.0	3.0	4.0
Red Clearance	Sec	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0
Red Revert	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	Sec	0	0	0	0	0	0	0	0
Time Before	Sec	0	0	0	0	0	0	0	0
Cars Before	Veh	0	0	0	0	0	0	0	0
Time To Reduce	Sec	0	0	0	0	0	0	0	0
Reduce By	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	Sec	0	0	0	0	0	0	0	0
Dynamic Max Step	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[P2] Start Up	Enum	other	redClear	phaseNotOn	phaseNotOn	other	other	other	other
[P2] Options	Bit	0	Enabled Non Lock Det Min Veh Recall Max Veh Recall	Enabled Non Lock Det	Enabled Non Lock Det	0	0	0	0
[P2] Ring	Ring	0	1	1	1	0	0	0	0
[P2] Concurrency	Phase (,)	()	()	()	()	()	()	()	()
Coord Pattern	**Units**	**1**	**2**	**3**	**4**	**5**		**7**	**8**
Cycle Time	Sec	115	0	115	0	0	0	0	0
Offset	Sec	32	0	107	0	0	0	0	0
Split	Split	1	2	3	4	5	6	7	8
Sequence	Sequence	1	1	1	1	1	1	1	1
Coord Split	**Units**	**1**	**2**	**3**	**4**	**5**		**7**	**8**
Split 1 - Mode	Enum	none	other	none	none	none	none	none	none
Split 1 - Time	Sec	0	55	21	39	0	0	0	0
Split 1 - Coord	Enum	false	true	false	false	false	false	false	false
Split 2 - Mode	Enum	none	none	none	none	none	none	none	none
Split 2 - Time	Sec	0	0	0	0	0	0	0	0
Split 2 - Coord	Enum	false	true	false	false	false	false	false	false
Split 3 - Mode	Enum	none	other	none	none	none	none	none	none
Split 3 - Time	Sec	0	40	10	65	0	0	0	0
Split 3 - Coord	Enum	false	true	false	false	false	false	false	false
TB Schedule	**Units**	**1**	**2**	**3**	**4**	**5**		**7**	**8**
Month	Bit	JFMAMJJASOND	JFMAMJJASOND	JFMAMJJASOND	J-----------	-F----------	--M---------	----M-------	------J-----
Day of Week	Bit	-MTWTF-	S------	------S	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	123456789012345 678901234567890 1	123456789012345 678901234567890 1	123456789012345 678901234567890 1	1------------------------ ------	------------------9----- -------	----------------------- ------0-	--------------------1---- ------	-2----------------------- ------
Day Plan	Number	1	3	2	3	3	3	3	3
TB Schedule	**Units**	**9**	**10**	**11**	**12**	**13**		**15**	**16**
Month	Bit	-------A----	--------S---	---------O--	-----------D	-----------D	-----------D	0	0
Day of Week	Bit	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	-----6------------------- ------	--3---------------------- ------	-------8----------------- ------	------------------------ 5------	------------------------- 6-----	----------------------- 4-------	0	0
Day Plan	Number	3	3	3	3	3	3	0	0
TB Dayplan	**Units**	**1**	**2**	**3**	**4**	**5**		**7**	**8**
Plan 1 Hour	Hour	0	6	9	15	19	0	0	0
Plan 1 Minute	Min	0	0	30	0	30	0	0	0
Plan 1 Action	Number	8	1	8	3	8	0	0	0
Plan 2 Hour	Hour	0	0	0	0	0	0	0	0
Plan 2 Minute	Min	0	0	0	0	0	0	0	0
Plan 2 Action	Number	8	0	0	0	0	0	0	0
Plan 3 Hour	Hour	0	0	0	0	0	0	0	0
Plan 3 Minute	Min	0	0	0	0	0	0	0	0
Plan 3 Action	Number	8	0	0	0	0	0	0	0
TB Action	**Units**	**1**	**2**	**3**	**4**	**5**		**7**	**8**
Pattern	Enum	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Pattern 7	Free
Aux. Functions	Bit	0	0	0	0	0	0	0	0
Spec. Functions	Bit	0	0	0	0	0	0	0	0

APPENDIX E

Level of Service Definitions

Level of Service Definitions

Two-Way Stop Controlled Intersections

Level of Service	**Control Delay per Vehicle (seconds)**	**Interpretation**
A	≤ 10	EXCELLENT. Large and frequent gaps in traffic on the main roadway. Queuing on the minor street is rare.
B	> 10 and ≤ 15	VERY GOOD. Many gaps exist in traffic on the main roadway. Queuing on the minor street is minimal.
C	> 15 and ≤ 25	GOOD. Fewer gaps exist in traffic on the main roadway. Delay on minor approach becomes more noticeable.
D	> 25 and ≤ 35	FAIR. Infrequent and shorter gaps in traffic on the main roadway. Queue lengths develop on the minor street.
E	> 35 and ≤ 50	POOR. Very infrequent gaps in traffic on the main roadway. Queue lengths become noticeable.
F	> 50	UNSATISFACTORY. Very few gaps in traffic on the main roadway. Excessive delay with significant queue lengths on the minor street.

Adapted from Highway Capacity Manual 2000, Transportation Research Board

Level of Service Definitions

Signalized Intersections

Level of Service	Control Delay per Vehicle (seconds)	Interpretation
A	≤ 10	EXCELLENT. Extremely favourable progression with most vehicles arriving during the green phase. Most vehicles do not stop and short cycle lengths may contribute to low delay.
B	> 10 and ≤ 20	VERY GOOD. Very good progression and/or short cycle lengths with slightly more vehicles stopping than LOS "A" causing slightly higher levels of average delay.
C	> 20 and ≤ 35	GOOD. Fair progression and longer cycle lengths lead to a greater number of vehicles stopping than LOS "B".
D	> 35 and ≤ 55	FAIR. Congestion becomes noticeable with higher average delays resulting from a combination of long cycle lengths, high volume-to-capacity ratios and unfavourable progression.
E	> 55 and ≤ 80	POOR. Lengthy delays values are indicative of poor progression, long cycle lengths and high volume-to-capacity ratios. Individual cycle failures are common with individual movement failures also common.
F	> 80	UNSATISFACTORY. Indicative of oversaturated conditions with vehicular demand greater than the capacity of the intersection.

Adapted from Highway Capacity Manual 2000, Transportation Research Board

APPENDIX F

Detailed Capacity Analysis Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	232	2269	347	110	848	128	120	311	148	199	548	116
Future Volume (vph)	232	2269	347	110	848	128	120	311	148	199	548	116
Ideal Flow (vphpl)	1860	1900	1640	1860	1900	1640	1860	1900	1640	1860	1900	1640
Lane Width	3.3	3.6	3.3	3.3	3.6	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	1.0	5.0	5.0	1.0	5.0	5.0	1.0	5.0	5.0	1.0	5.0	5.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1691	5136	1263	1627	4673	1300	1541	3400	1227	1633	3500	1263
Flt Permitted	0.27	1.00	1.00	0.05	1.00	1.00	0.19	1.00	1.00	0.41	1.00	1.00
Satd. Flow (perm)	484	5136	1263	83	4673	1300	316	3400	1227	708	3500	1263
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)	239	2339	358	113	874	132	124	321	153	205	565	120
RTOR Reduction (vph)	0	0	92	0	0	62	0	0	113	0	0	86
Lane Group Flow (vph)	239	2339	266	113	874	70	124	321	40	205	565	34
Heavy Vehicles (%)	1%	1%	5%	5%	11%	2%	7%	5%	6%	1%	2%	3%
Bus Blockages (#/hr)	0	0	4	0	0	4	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	89.1	80.1	80.1	88.5	79.8	79.8	42.2	29.2	29.2	44.2	30.2	30.2
Effective Green, g (s)	95.1	81.4	81.4	94.5	81.1	81.1	48.2	30.7	30.7	50.2	31.7	31.7
Actuated g/C Ratio	0.62	0.53	0.53	0.62	0.53	0.53	0.32	0.20	0.20	0.33	0.21	0.21
Clearance Time (s)	4.0	6.3	6.3	4.0	6.3	6.3	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Grp Cap (vph)	396	2736	672	169	2480	689	227	683	246	335	726	262
v/s Ratio Prot	c0.05	c0.46		c0.05	0.19		0.06	0.09		c0.07	c0.16	
v/s Ratio Perm	0.33		0.21	0.36		0.05	0.11		0.03	0.13		0.03
v/c Ratio	0.60	0.85	0.40	0.67	0.35	0.10	0.55	0.47	0.16	0.61	0.78	0.13
Uniform Delay, d1	13.4	30.6	21.1	39.0	20.7	17.8	40.2	53.9	50.4	39.7	57.2	49.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.7	3.7	1.7	10.0	0.4	0.3	3.0	0.6	0.4	3.5	5.4	0.3
Delay (s)	16.1	34.3	22.9	49.0	21.1	18.1	43.2	54.5	50.8	43.2	62.7	49.6
Level of Service	B	C	C	D	C	B	D	D	D	D	E	D
Approach Delay (s)		31.4			23.5			51.2			56.4	
Approach LOS		C			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	36.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	152.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2628	533	0	687	679
Future Volume (vph)	0	2628	533	0	687	679
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)		5.0	5.0		5.0	5.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		0.96	0.85
Flt Protected		1.00	1.00		0.96	1.00
Satd. Flow (prot)		5136	4893		3213	1303
Flt Permitted		1.00	1.00		0.96	1.00
Satd. Flow (perm)		5136	4893		3213	1303
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	2738	555	0	716	707
RTOR Reduction (vph)	0	0	0	0	24	289
Lane Group Flow (vph)	0	2738	555	0	954	156
Heavy Vehicles (%)	0%	1%	6%	0%	5%	14%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	2		4	
Permitted Phases						4
Actuated Green, G (s)		108.0	108.0		39.0	39.0
Effective Green, g (s)		110.0	110.0		40.0	40.0
Actuated g/C Ratio		0.69	0.69		0.25	0.25
Clearance Time (s)		7.0	7.0		6.0	6.0
Vehicle Extension (s)		2.0	2.0		4.0	4.0
Lane Grp Cap (vph)		3531	3363		803	325
v/s Ratio Prot		c0.53	0.11		c0.30	
v/s Ratio Perm						0.12
v/c Ratio		0.78	0.17		1.19	0.48
Uniform Delay, d1		16.7	8.8		60.0	51.1
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		1.7	0.1		97.0	1.5
Delay (s)		18.5	8.9		157.0	52.7
Level of Service		B	A		F	D
Approach Delay (s)		18.5	8.9		124.4	
Approach LOS		B	A		F	

Intersection Summary			
HCM 2000 Control Delay	49.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	85.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2297	0	0	567	67	424
Future Volume (vph)	2297	0	0	567	67	424
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)	5.0			5.0	5.0	5.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.89	0.85
Flt Protected	1.00			1.00	0.99	1.00
Satd. Flow (prot)	5036			4848	3207	1457
Flt Permitted	1.00			1.00	0.99	1.00
Satd. Flow (perm)	5036			4848	3207	1457
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2418	0	0	597	71	446
RTOR Reduction (vph)	0	0	0	0	7	7
Lane Group Flow (vph)	2418	0	0	597	287	216
Heavy Vehicles (%)	3%	0%	0%	7%	1%	2%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	4	
Permitted Phases						4
Actuated Green, G (s)	97.3			97.3	27.1	27.1
Effective Green, g (s)	99.3			99.3	28.1	28.1
Actuated g/C Ratio	0.72			0.72	0.20	0.20
Clearance Time (s)	7.0			7.0	6.0	6.0
Vehicle Extension (s)	4.0			4.0	4.0	4.0
Lane Grp Cap (vph)	3639			3503	655	297
v/s Ratio Prot	c0.48			0.12	0.09	
v/s Ratio Perm						c0.15
v/c Ratio	0.66			0.17	0.44	0.73
Uniform Delay, d1	10.2			6.0	47.7	51.1
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.5			0.0	0.6	9.1
Delay (s)	10.7			6.1	48.4	60.2
Level of Service	B			A	D	E
Approach Delay (s)	10.7			6.1	53.5	
Approach LOS	B			A	D	

Intersection Summary			
HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	137.4	Sum of lost time (s)	10.0
Intersection Capacity Utilization	85.8%	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)	0	3	15	680	882	1
Future Volume (Veh/h)	0	3	15	680	882	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	3	16	747	969	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				149		
pX, platoon unblocked	0.92					
vC, conflicting volume	1375	970	970			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1240	970	970			
tC, single (s)	6.8	6.9	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	100	99	98			
cM capacity (veh/h)	153	257	676			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1
Volume Total	3	16	374	374	970
Volume Left	0	16	0	0	0
Volume Right	3	0	0	0	1
cSH	257	676	1700	1700	1700
Volume to Capacity	0.01	0.02	0.22	0.22	0.57
Queue Length 95th (m)	0.3	0.6	0.0	0.0	0.0
Control Delay (s)	19.2	10.5	0.0	0.0	0.0
Lane LOS	C	B			
Approach Delay (s)	19.2	0.2			0.0
Approach LOS	C				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	615	100	19	216	115	32	390	86	178	612	33
Future Volume (vph)	81	615	100	19	216	115	32	390	86	178	612	33
Ideal Flow (vphpl)	1640	1900	1900	1640	1900	1640	1640	1900	1900	1860	1900	1900
Lane Width	3.3	3.5	3.5	3.3	3.5	3.3	3.3	3.5	3.5	3.3	3.5	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0	1.0	5.0	5.0		1.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1506	1832		1491	1860	1308	1506	1775		1675	1827	
Flt Permitted	0.57	1.00		0.08	1.00	1.00	0.23	1.00		0.14	1.00	
Satd. Flow (perm)	905	1832		132	1860	1308	364	1775		255	1827	
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)	85	647	105	20	227	121	34	411	91	187	644	35
RTOR Reduction (vph)	0	5	0	0	0	51	0	7	0	0	2	0
Lane Group Flow (vph)	85	747	0	20	227	70	34	495	0	187	677	0
Heavy Vehicles (%)	0%	0%	3%	1%	1%	3%	0%	3%	3%	2%	2%	3%
Turn Type	Perm	NA		Perm	NA	pm+ov	Perm	NA		pm+pt	NA	
Protected Phases		2			6	3		4		3	8	
Permitted Phases	2			6		6	4			8		
Actuated Green, G (s)	45.7	45.7		45.7	45.7	57.6	31.5	31.5		46.4	46.4	
Effective Green, g (s)	47.7	47.7		47.7	47.7	61.6	34.5	34.5		48.4	49.4	
Actuated g/C Ratio	0.45	0.45		0.45	0.45	0.58	0.32	0.32		0.45	0.46	
Clearance Time (s)	7.0	7.0		7.0	7.0	3.0	8.0	8.0		3.0	8.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	2.0	4.0	4.0		2.0	4.0	
Lane Grp Cap (vph)	403	815		58	828	752	117	571		299	842	
v/s Ratio Prot		c0.41			0.12	0.01		c0.28		0.08	c0.37	
v/s Ratio Perm	0.09			0.15		0.04	0.09			0.20		
v/c Ratio	0.21	0.92		0.34	0.27	0.09	0.29	0.87		0.63	0.80	
Uniform Delay, d1	18.2	27.8		19.5	18.8	10.2	27.1	34.1		21.6	24.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	14.9		3.6	0.2	0.0	1.9	13.5		2.9	5.9	
Delay (s)	18.4	42.7		23.0	18.9	10.2	29.0	47.7		24.5	30.6	
Level of Service	B	D		C	B	B	C	D		C	C	
Approach Delay (s)		40.2			16.3			46.5			29.3	
Approach LOS		D			B			D			C	

Intersection Summary			
HCM 2000 Control Delay	34.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	107.1	Sum of lost time (s)	11.0
Intersection Capacity Utilization	102.6%	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)	104	1439	152	121	2600	144	286	716	671	86	296	230
Future Volume (vph)	104	1439	152	121	2600	144	286	716	671	86	296	230
Ideal Flow (vphpl)	1860	1900	1640	1860	1900	1640	1860	1900	1640	1860	1900	1640
Lane Width	3.3	3.6	3.3	3.3	3.6	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	1.0	5.0	5.0	1.0	5.0	5.0	1.0	5.0	5.0	1.0	5.0	5.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	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	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1691	5036	1283	1675	5136	1313	1617	3535	1211	1633	3535	1301
Flt Permitted	0.05	1.00	1.00	0.11	1.00	1.00	0.45	1.00	1.00	0.12	1.00	1.00
Satd. Flow (perm)	86	5036	1283	197	5136	1313	767	3535	1211	212	3535	1301
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	106	1468	155	123	2653	147	292	731	685	88	302	235
RTOR Reduction (vph)	0	0	66	0	0	38	0	0	135	0	0	96
Lane Group Flow (vph)	106	1468	89	123	2653	109	292	731	550	88	302	139
Confl. Peds. (#/hr)			1	1					1	1		
Heavy Vehicles (%)	1%	3%	2%	2%	1%	1%	2%	1%	6%	1%	1%	0%
Bus Blockages (#/hr)	0	0	4	0	0	4	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	88.4	79.7	79.7	88.6	79.8	79.8	50.5	36.5	36.5	45.1	33.8	33.8
Effective Green, g (s)	94.4	81.0	81.0	94.6	81.1	81.1	54.8	38.0	38.0	51.1	35.3	35.3
Actuated g/C Ratio	0.60	0.52	0.52	0.60	0.52	0.52	0.35	0.24	0.24	0.33	0.22	0.22
Clearance Time (s)	4.0	6.3	6.3	4.0	6.3	6.3	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Grp Cap (vph)	171	2596	661	229	2651	677	359	855	292	198	794	292
v/s Ratio Prot	c0.05	0.29		c0.04	c0.52		c0.09	0.21		0.04	0.09	
v/s Ratio Perm	0.33		0.07	0.28		0.08	0.20		c0.45	0.10		0.11
v/c Ratio	0.62	0.57	0.13	0.54	1.00	0.16	0.81	0.85	1.88	0.44	0.38	0.48
Uniform Delay, d1	40.9	26.0	19.8	17.5	38.0	20.1	43.1	56.9	59.5	40.0	51.6	52.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.9	0.9	0.4	2.7	17.7	0.5	13.5	8.6	410.4	1.9	0.4	1.4
Delay (s)	47.8	26.9	20.2	20.3	55.7	20.6	56.6	65.5	470.0	41.9	52.0	54.3
Level of Service	D	C	C	C	E	C	E	E	F	D	D	D
Approach Delay (s)		27.6			52.4			226.2			51.4	
Approach LOS		C			D			F			D	

Intersection Summary			
HCM 2000 Control Delay	88.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	157.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	98.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2049	1494	0	325	1268
Future Volume (vph)	0	2049	1494	0	325	1268
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)		5.0	5.0		5.0	5.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		0.90	0.85
Flt Protected		1.00	1.00		0.98	1.00
Satd. Flow (prot)		4988	5136		3225	1471
Flt Permitted		1.00	1.00		0.98	1.00
Satd. Flow (perm)		4988	5136		3225	1471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	2134	1556	0	339	1321
RTOR Reduction (vph)	0	0	0	0	12	12
Lane Group Flow (vph)	0	2134	1556	0	988	648
Confl. Peds. (#/hr)	1			1		
Heavy Vehicles (%)	0%	4%	1%	0%	5%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	2		4	
Permitted Phases						4
Actuated Green, G (s)		83.0	83.0		64.0	64.0
Effective Green, g (s)		85.0	85.0		65.0	65.0
Actuated g/C Ratio		0.53	0.53		0.41	0.41
Clearance Time (s)		7.0	7.0		6.0	6.0
Vehicle Extension (s)		2.0	2.0		4.0	4.0
Lane Grp Cap (vph)		2649	2728		1310	597
v/s Ratio Prot		c0.43	0.30		0.31	
v/s Ratio Perm						c0.44
v/c Ratio		0.81	0.57		0.99dr	1.09
Uniform Delay, d1		30.7	25.2		40.7	47.5
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		2.7	0.9		2.7	62.2
Delay (s)		33.5	26.1		43.3	109.7
Level of Service		C	C		D	F
Approach Delay (s)		33.5	26.1		69.7	
Approach LOS		C	C		E	

Intersection Summary			
HCM 2000 Control Delay	42.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	89.5%	ICU Level of Service	E
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1568	0	0	1815	50	385
Future Volume (vph)	1568	0	0	1815	50	385
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)	5.0			5.0	5.0	5.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	0.88	0.85
Flt Protected	1.00			1.00	0.99	1.00
Satd. Flow (prot)	5036			5136	3100	1429
Flt Permitted	1.00			1.00	0.99	1.00
Satd. Flow (perm)	5036			5136	3100	1429
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	1616	0	0	1871	52	397
RTOR Reduction (vph)	0	0	0	0	29	29
Lane Group Flow (vph)	1616	0	0	1871	222	169
Confl. Peds. (#/hr)		5	5			
Heavy Vehicles (%)	3%	0%	0%	1%	8%	4%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	4	
Permitted Phases						4
Actuated Green, G (s)	97.6			97.6	21.9	21.9
Effective Green, g (s)	99.6			99.6	22.9	22.9
Actuated g/C Ratio	0.75			0.75	0.17	0.17
Clearance Time (s)	7.0			7.0	6.0	6.0
Vehicle Extension (s)	4.0			4.0	4.0	4.0
Lane Grp Cap (vph)	3785			3860	535	246
v/s Ratio Prot	0.32			c0.36	0.07	
v/s Ratio Perm						c0.12
v/c Ratio	0.43			0.48	0.42	0.69
Uniform Delay, d1	6.0			6.4	48.8	51.4
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.1			0.1	0.7	8.4
Delay (s)	6.1			6.6	49.5	59.8
Level of Service	A			A	D	E
Approach Delay (s)	6.1			6.6	54.1	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	132.5	Sum of lost time (s)	10.0
Intersection Capacity Utilization	89.5%	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)	1	12	15	965	657	2
Future Volume (Veh/h)	1	12	15	965	657	2
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)	1	13	16	1038	706	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				149		
pX, platoon unblocked	0.80					
vC, conflicting volume	1258	707	708			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	833	707	708			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	97	98			
cM capacity (veh/h)	246	382	900			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1
Volume Total	14	16	519	519	708
Volume Left	1	16	0	0	0
Volume Right	13	0	0	0	2
cSH	368	900	1700	1700	1700
Volume to Capacity	0.04	0.02	0.31	0.31	0.42
Queue Length 95th (m)	0.9	0.4	0.0	0.0	0.0
Control Delay (s)	15.2	9.1	0.0	0.0	0.0
Lane LOS	C	A			
Approach Delay (s)	15.2	0.1			0.0
Approach LOS	C				

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	44.7%	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)	29	488	67	51	505	194	83	566	192	156	400	28
Future Volume (vph)	29	488	67	51	505	194	83	566	192	156	400	28
Ideal Flow (vphpl)	1640	1900	1900	1640	1900	1640	1640	1900	1900	1860	1900	1900
Lane Width	3.3	3.5	3.5	3.3	3.5	3.3	3.3	3.5	3.5	3.3	3.5	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0	1.0	5.0	5.0		1.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1506	1829		1491	1860	1334	1491	1790		1691	1843	
Flt Permitted	0.12	1.00		0.11	1.00	1.00	0.50	1.00		0.10	1.00	
Satd. Flow (perm)	190	1829		178	1860	1334	787	1790		172	1843	
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)	31	514	71	54	532	204	87	596	202	164	421	29
RTOR Reduction (vph)	0	4	0	0	0	122	0	11	0	0	2	0
Lane Group Flow (vph)	31	581	0	54	532	82	87	787	0	164	448	0
Heavy Vehicles (%)	0%	1%	0%	1%	1%	1%	1%	1%	1%	1%	1%	0%
Turn Type	Perm	NA		Perm	NA	pm+ov	Perm	NA		pm+pt	NA	
Protected Phases		2			6	3		4		3	8	
Permitted Phases	2			6		6	4			8		
Actuated Green, G (s)	33.2	33.2		33.2	33.2	40.1	51.3	51.3		61.2	61.2	
Effective Green, g (s)	35.2	35.2		35.2	35.2	44.1	54.3	54.3		63.2	64.2	
Actuated g/C Ratio	0.32	0.32		0.32	0.32	0.40	0.50	0.50		0.58	0.59	
Clearance Time (s)	7.0	7.0		7.0	7.0	3.0	8.0	8.0		3.0	8.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	2.0	4.0	4.0		2.0	4.0	
Lane Grp Cap (vph)	61	588		57	598	537	390	888		222	1081	
v/s Ratio Prot		c0.32			0.29	0.01		c0.44		c0.06	0.24	
v/s Ratio Perm	0.16			0.30		0.05	0.11			0.36		
v/c Ratio	0.51	0.99		0.95	0.89	0.15	0.22	0.89		0.74	0.41	
Uniform Delay, d1	30.1	36.9		36.2	35.3	20.8	15.6	24.8		20.5	12.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.5	33.7		99.1	15.0	0.0	0.4	10.8		10.5	0.4	
Delay (s)	36.6	70.6		135.3	50.3	20.8	16.0	35.6		31.1	12.7	
Level of Service	D	E		F	D	C	B	D		C	B	
Approach Delay (s)		68.9			48.5			33.7			17.6	
Approach LOS		E			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	41.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	109.4	Sum of lost time (s)	11.0
Intersection Capacity Utilization	102.5%	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)	142	1712	209	132	1551	247	146	264	125	171	188	161
Future Volume (vph)	142	1712	209	132	1551	247	146	264	125	171	188	161
Ideal Flow (vphpl)	1860	1900	1640	1860	1900	1640	1640	1900	1640	1640	1900	1640
Lane Width	3.3	3.6	3.3	3.3	3.6	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	1.0	5.0	5.0	1.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1708	5136	1324	1675	5136	1311	1440	3535	1301	1426	3500	1301
Flt Permitted	0.10	1.00	1.00	0.08	1.00	1.00	0.61	1.00	1.00	0.52	1.00	1.00
Satd. Flow (perm)	186	5136	1324	139	5136	1311	922	3535	1301	783	3500	1301
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)	146	1765	215	136	1599	255	151	272	129	176	194	166
RTOR Reduction (vph)	0	0	67	0	0	82	0	0	95	0	0	99
Lane Group Flow (vph)	146	1765	148	136	1599	173	151	272	34	176	194	67
Heavy Vehicles (%)	0%	1%	1%	2%	1%	2%	1%	1%	0%	2%	2%	0%
Bus Blockages (#/hr)	0	0	2	0	0	2	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	88.6	79.4	79.4	88.8	79.5	79.5	35.9	35.9	35.9	35.9	35.9	35.9
Effective Green, g (s)	94.6	80.7	80.7	94.8	80.8	80.8	37.4	37.4	37.4	37.4	37.4	37.4
Actuated g/C Ratio	0.67	0.57	0.57	0.67	0.57	0.57	0.26	0.26	0.26	0.26	0.26	0.26
Clearance Time (s)	4.0	6.3	6.3	4.0	6.3	6.3	6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Grp Cap (vph)	255	2931	755	226	2934	749	243	935	344	207	925	344
v/s Ratio Prot	0.05	c0.34		c0.05	0.31			0.08			0.06	
v/s Ratio Perm	0.33		0.11	0.35		0.13	0.16		0.03	c0.22		0.05
v/c Ratio	0.57	0.60	0.20	0.60	0.54	0.23	0.62	0.29	0.10	0.85	0.21	0.19
Uniform Delay, d1	13.1	19.9	14.7	16.5	18.9	15.0	45.8	41.4	39.3	49.3	40.5	40.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.3	0.9	0.6	4.7	0.7	0.7	5.1	0.2	0.1	27.4	0.1	0.3
Delay (s)	16.4	20.8	15.3	21.2	19.6	15.7	50.9	41.6	39.4	76.7	40.6	40.6
Level of Service	B	C	B	C	B	B	D	D	D	E	D	D
Approach Delay (s)		19.9			19.2			43.6			52.5	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	141.4	Sum of lost time (s)	11.0
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1915	1355	0	304	612
Future Volume (vph)	0	1915	1355	0	304	612
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)		5.0	5.0		5.0	5.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		0.92	0.85
Flt Protected		1.00	1.00		0.98	1.00
Satd. Flow (prot)		5136	5136		3329	1471
Flt Permitted		1.00	1.00		0.98	1.00
Satd. Flow (perm)		5136	5136		3329	1471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	1995	1411	0	317	638
RTOR Reduction (vph)	0	0	0	0	36	36
Lane Group Flow (vph)	0	1995	1411	0	600	283
Heavy Vehicles (%)	0%	1%	1%	0%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	2		4	
Permitted Phases						4
Actuated Green, G (s)		95.4	95.4		35.5	35.5
Effective Green, g (s)		97.4	97.4		36.5	36.5
Actuated g/C Ratio		0.68	0.68		0.25	0.25
Clearance Time (s)		7.0	7.0		6.0	6.0
Vehicle Extension (s)		2.0	2.0		4.0	4.0
Lane Grp Cap (vph)		3476	3476		844	373
v/s Ratio Prot		c0.39	0.27		0.18	
v/s Ratio Perm						c0.19
v/c Ratio		0.57	0.41		0.71	0.76
Uniform Delay, d1		12.3	10.4		48.9	49.6
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.7	0.4		3.0	9.1
Delay (s)		13.0	10.7		51.9	58.8
Level of Service		B	B		D	E
Approach Delay (s)		13.0	10.7		54.2	
Approach LOS		B	B		D	

Intersection Summary			
HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	143.9	Sum of lost time (s)	10.0
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1597	0	0	1665	92	456
Future Volume (vph)	1597	0	0	1665	92	456
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)	5.0			5.0	5.0	5.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.89	0.85
Flt Protected	1.00			1.00	0.99	1.00
Satd. Flow (prot)	5136			5136	3240	1471
Flt Permitted	1.00			1.00	0.99	1.00
Satd. Flow (perm)	5136			5136	3240	1471
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	1646	0	0	1716	95	470
RTOR Reduction (vph)	0	0	0	0	32	32
Lane Group Flow (vph)	1646	0	0	1716	298	203
Heavy Vehicles (%)	1%	0%	0%	1%	2%	1%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	4	
Permitted Phases						4
Actuated Green, G (s)	99.5			99.5	25.4	25.4
Effective Green, g (s)	101.5			101.5	26.4	26.4
Actuated g/C Ratio	0.74			0.74	0.19	0.19
Clearance Time (s)	7.0			7.0	6.0	6.0
Vehicle Extension (s)	4.0			4.0	4.0	4.0
Lane Grp Cap (vph)	3780			3780	620	281
v/s Ratio Prot	0.32			c0.33	0.09	
v/s Ratio Perm						c0.14
v/c Ratio	0.44			0.45	0.48	0.72
Uniform Delay, d1	7.1			7.2	49.6	52.3
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.1			0.1	0.8	9.4
Delay (s)	7.2			7.3	50.4	61.7
Level of Service	A			A	D	E
Approach Delay (s)	7.2			7.3	55.1	
Approach LOS	A			A	E	

Intersection Summary			
HCM 2000 Control Delay	14.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	137.9	Sum of lost time (s)	10.0
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	64	131	508	460	19
Future Volume (Veh/h)	7	64	131	508	460	19
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	7	67	136	529	479	20
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				149		
pX, platoon unblocked	0.96					
vC, conflicting volume	1026	489	499			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	938	489	499			
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	87	87			
cM capacity (veh/h)	223	530	1075			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1
Volume Total	74	136	264	264	499
Volume Left	7	136	0	0	0
Volume Right	67	0	0	0	20
cSH	469	1075	1700	1700	1700
Volume to Capacity	0.16	0.13	0.16	0.16	0.29
Queue Length 95th (m)	4.4	3.5	0.0	0.0	0.0
Control Delay (s)	14.1	8.8	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	14.1	1.8			0.0
Approach LOS	B				

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	47.0%	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)	23	330	39	63	294	157	61	366	102	162	331	22
Future Volume (vph)	23	330	39	63	294	157	61	366	102	162	331	22
Ideal Flow (vphpl)	1640	1900	1900	1640	1900	1640	1640	1900	1900	1640	1900	1900
Lane Width	3.3	3.5	3.5	3.3	3.5	3.3	3.3	3.5	3.5	3.3	3.5	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1506	1833		1477	1879	1334	1506	1814		1506	1861	
Flt Permitted	0.53	1.00		0.43	1.00	1.00	0.49	1.00		0.37	1.00	
Satd. Flow (perm)	846	1833		669	1879	1334	782	1814		585	1861	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	24	344	41	66	306	164	64	381	106	169	345	23
RTOR Reduction (vph)	0	9	0	0	0	106	0	16	0	0	4	0
Lane Group Flow (vph)	24	376	0	66	306	58	64	471	0	169	364	0
Heavy Vehicles (%)	0%	1%	0%	2%	0%	1%	0%	0%	1%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6		6	4			8		
Actuated Green, G (s)	14.5	14.5		14.5	14.5	14.5	17.1	17.1		17.1	17.1	
Effective Green, g (s)	16.5	16.5		16.5	16.5	16.5	20.1	20.1		20.1	20.1	
Actuated g/C Ratio	0.35	0.35		0.35	0.35	0.35	0.43	0.43		0.43	0.43	
Clearance Time (s)	7.0	7.0		7.0	7.0	7.0	8.0	8.0		8.0	8.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	299	649		236	665	472	337	782		252	802	
v/s Ratio Prot		c0.21			0.16			0.26			0.20	
v/s Ratio Perm	0.03			0.10		0.04	0.08			c0.29		
v/c Ratio	0.08	0.58		0.28	0.46	0.12	0.19	0.60		0.67	0.45	
Uniform Delay, d1	10.0	12.2		10.8	11.6	10.2	8.2	10.2		10.6	9.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	1.3		0.7	0.5	0.1	0.4	1.5		7.5	0.6	
Delay (s)	10.1	13.5		11.4	12.1	10.3	8.6	11.7		18.1	9.9	
Level of Service	B	B		B	B	B	A	B		B	A	
Approach Delay (s)		13.3			11.5			11.3			12.5	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	12.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	46.6	Sum of lost time (s)	10.0
Intersection Capacity Utilization	78.9%	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)	244	2385	365	126	936	141	124	319	152	211	576	122
Future Volume (vph)	244	2385	365	126	936	141	124	319	152	211	576	122
Ideal Flow (vphpl)	1860	1900	1640	1860	1900	1640	1860	1900	1860	1860	1900	1640
Lane Width	3.3	3.6	3.3	3.3	3.6	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	1.0	5.0	5.0	1.0	5.0	5.0	1.0	5.0	1.0	1.0	5.0	5.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1691	5136	1263	1627	4673	1300	1541	3400	1392	1633	3500	1263
Flt Permitted	0.23	1.00	1.00	0.05	1.00	1.00	0.23	1.00	1.00	0.38	1.00	1.00
Satd. Flow (perm)	409	5136	1263	93	4673	1300	380	3400	1392	655	3500	1263
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)	252	2459	376	130	965	145	128	329	157	218	594	126
RTOR Reduction (vph)	0	0	89	0	0	74	0	0	76	0	0	90
Lane Group Flow (vph)	252	2459	287	130	965	71	128	329	81	218	594	36
Heavy Vehicles (%)	1%	1%	5%	5%	11%	2%	7%	5%	6%	1%	2%	3%
Bus Blockages (#/hr)	0	0	4	0	0	4	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	90.0	77.1	77.1	79.6	70.7	70.7	33.5	24.5	33.4	44.1	31.1	31.1
Effective Green, g (s)	93.0	78.4	78.4	85.6	72.0	72.0	39.5	26.0	39.4	47.1	32.6	32.6
Actuated g/C Ratio	0.63	0.53	0.53	0.58	0.49	0.49	0.27	0.18	0.27	0.32	0.22	0.22
Clearance Time (s)	4.0	6.3	6.3	4.0	6.3	6.3	4.0	6.5	4.0	4.0	6.5	6.5
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Grp Cap (vph)	418	2741	674	178	2290	637	197	601	373	333	776	280
v/s Ratio Prot	c0.07	c0.48		c0.06	0.21		0.05	0.10	0.02	c0.08	c0.17	
v/s Ratio Perm	0.31		0.23	0.37		0.05	0.12		0.04	0.13		0.03
v/c Ratio	0.60	0.90	0.43	0.73	0.42	0.11	0.65	0.55	0.22	0.65	0.77	0.13
Uniform Delay, d1	13.0	30.6	20.7	39.1	24.1	20.2	43.5	55.1	41.8	39.5	53.6	45.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.6	5.2	2.0	14.7	0.6	0.4	7.5	1.1	0.3	4.8	4.7	0.2
Delay (s)	15.6	35.8	22.6	53.8	24.6	20.6	51.0	56.2	42.1	44.2	58.2	46.0
Level of Service	B	D	C	D	C	C	D	E	D	D	E	D
Approach Delay (s)		32.5			27.2			51.5			53.3	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	36.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	146.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2762	588	0	777	768
Future Volume (vph)	0	2762	588	0	777	768
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)		5.0	5.0		5.0	5.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		0.96	0.85
Flt Protected		1.00	1.00		0.96	1.00
Satd. Flow (prot)		5136	4893		3213	1303
Flt Permitted		1.00	1.00		0.96	1.00
Satd. Flow (perm)		5136	4893		3213	1303
Peak-hour factor, PHF	0.25	0.96	0.96	0.25	0.96	0.96
Adj. Flow (vph)	0	2877	612	0	809	800
RTOR Reduction (vph)	0	0	0	0	25	159
Lane Group Flow (vph)	0	2877	613	0	1080	345
Heavy Vehicles (%)	0%	1%	6%	0%	5%	14%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	2		4	
Permitted Phases						4
Actuated Green, G (s)		86.1	86.1		58.0	58.0
Effective Green, g (s)		88.1	88.1		59.0	59.0
Actuated g/C Ratio		0.56	0.56		0.38	0.38
Clearance Time (s)		7.0	7.0		6.0	6.0
Vehicle Extension (s)		2.0	2.0		4.0	4.0
Lane Grp Cap (vph)		2880	2743		1206	489
v/s Ratio Prot		c0.56	0.13		c0.34	
v/s Ratio Perm						0.26
v/c Ratio		1.00	0.22		0.90	0.71
Uniform Delay, d1		34.5	17.3		46.2	41.7
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		16.5	0.2		9.1	4.9
Delay (s)		51.0	17.5		55.2	46.6
Level of Service		D	B		E	D
Approach Delay (s)		51.0	17.5		52.5	
Approach LOS		D	B		D	

Intersection Summary			
HCM 2000 Control Delay	47.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	157.1	Sum of lost time (s)	10.0
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑	↰↰	↱
Traffic Volume (vph)	2414	0	0	626	76	480
Future Volume (vph)	2414	0	0	626	76	480
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)	5.0			5.0	5.0	5.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.89	0.85
Flt Protected	1.00			1.00	0.99	1.00
Satd. Flow (prot)	5036			4848	3207	1457
Flt Permitted	1.00			1.00	0.99	1.00
Satd. Flow (perm)	5036			4848	3207	1457
Peak-hour factor, PHF	0.95	0.25	0.25	0.95	0.95	0.95
Adj. Flow (vph)	2541	0	0	659	80	505
RTOR Reduction (vph)	0	0	0	0	3	3
Lane Group Flow (vph)	2541	0	0	659	330	249
Heavy Vehicles (%)	3%	0%	0%	7%	1%	2%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	4	
Permitted Phases						4
Actuated Green, G (s)	96.0			96.0	30.4	30.4
Effective Green, g (s)	98.0			98.0	31.4	31.4
Actuated g/C Ratio	0.70			0.70	0.23	0.23
Clearance Time (s)	7.0			7.0	6.0	6.0
Vehicle Extension (s)	4.0			4.0	4.0	4.0
Lane Grp Cap (vph)	3540			3408	722	328
v/s Ratio Prot	c0.50			0.14	0.10	
v/s Ratio Perm						c0.17
v/c Ratio	0.72			0.19	0.46	0.76
Uniform Delay, d1	12.4			7.1	46.6	50.5
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.8			0.0	0.6	10.3
Delay (s)	13.2			7.2	47.3	60.7
Level of Service	B			A	D	E
Approach Delay (s)	13.2			7.2	53.1	
Approach LOS	B			A	D	

Intersection Summary			
HCM 2000 Control Delay	18.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	139.4	Sum of lost time (s)	10.0
Intersection Capacity Utilization	91.9%	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)	0	3	15	697	927	1
Future Volume (Veh/h)	0	3	15	697	927	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	3	16	766	1019	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				149		
pX, platoon unblocked	0.92					
vC, conflicting volume	1434	1020	1020			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1295	1020	1020			
tC, single (s)	6.8	6.9	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	100	99	98			
cM capacity (veh/h)	140	238	647			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1
Volume Total	3	16	383	383	1020
Volume Left	0	16	0	0	0
Volume Right	3	0	0	0	1
cSH	238	647	1700	1700	1700
Volume to Capacity	0.01	0.02	0.23	0.23	0.60
Queue Length 95th (m)	0.3	0.6	0.0	0.0	0.0
Control Delay (s)	20.3	10.7	0.0	0.0	0.0
Lane LOS	C	B			
Approach Delay (s)	20.3	0.2			0.0
Approach LOS	C				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	58.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	1628	172	127	2733	151	312	771	723	89	303	236
Future Volume (vph)	123	1628	172	127	2733	151	312	771	723	89	303	236
Ideal Flow (vphpl)	1860	1900	1640	1860	1900	1640	1860	1900	1860	1860	1900	1640
Lane Width	3.3	3.6	3.3	3.3	3.6	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	1.0	5.0	5.0	1.0	5.0	5.0	1.0	5.0	1.0	1.0	5.0	5.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	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	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1691	5036	1283	1675	5136	1313	1617	3535	1381	1633	3535	1301
Flt Permitted	0.07	1.00	1.00	0.07	1.00	1.00	0.45	1.00	1.00	0.15	1.00	1.00
Satd. Flow (perm)	120	5036	1283	117	5136	1313	761	3535	1381	266	3535	1301
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	126	1661	176	130	2789	154	318	787	738	91	309	241
RTOR Reduction (vph)	0	0	81	0	0	53	0	0	27	0	0	102
Lane Group Flow (vph)	126	1661	95	130	2789	101	318	787	711	91	309	139
Confl. Peds. (#/hr)			1	1					1	1		
Heavy Vehicles (%)	1%	3%	2%	2%	1%	1%	2%	1%	6%	1%	1%	0%
Bus Blockages (#/hr)	0	0	4	0	0	4	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	63.8	56.3	56.3	84.3	72.8	72.8	50.7	39.2	63.2	39.2	31.7	31.7
Effective Green, g (s)	69.8	57.6	57.6	87.3	74.1	74.1	53.7	40.7	69.2	45.2	33.2	33.2
Actuated g/C Ratio	0.47	0.39	0.39	0.59	0.50	0.50	0.36	0.28	0.47	0.31	0.22	0.22
Clearance Time (s)	4.0	6.3	6.3	4.0	6.3	6.3	4.0	6.5	4.0	4.0	6.5	6.5
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Grp Cap (vph)	168	1962	500	353	2574	658	380	973	646	178	794	292
v/s Ratio Prot	0.05	0.33		0.07	c0.54		c0.10	0.22	c0.20	0.04	0.09	
v/s Ratio Perm	0.30		0.07	0.15		0.08	0.20		0.31	0.12		0.11
v/c Ratio	0.75	0.85	0.19	0.37	1.08	0.15	0.84	0.81	1.10	0.51	0.39	0.47
Uniform Delay, d1	35.0	41.1	29.7	25.1	36.9	19.9	39.5	49.9	39.3	39.2	48.7	49.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	17.5	4.7	0.8	0.8	45.1	0.5	15.1	5.2	66.4	2.9	0.4	1.4
Delay (s)	52.5	45.8	30.6	25.8	82.0	20.4	54.5	55.1	105.7	42.1	49.1	51.2
Level of Service	D	D	C	C	F	C	D	E	F	D	D	D
Approach Delay (s)		44.9			76.5			75.2			48.9	
Approach LOS		D			E			E			D	

Intersection Summary			
HCM 2000 Control Delay	65.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	147.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	102.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2318	1570	0	368	1435
Future Volume (vph)	0	2318	1570	0	368	1435
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)		5.0	5.0		5.0	5.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		0.90	0.85
Flt Protected		1.00	1.00		0.98	1.00
Satd. Flow (prot)		4988	5136		3225	1471
Flt Permitted		1.00	1.00		0.98	1.00
Satd. Flow (perm)		4988	5136		3225	1471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	2415	1635	0	383	1495
RTOR Reduction (vph)	0	0	0	0	3	3
Lane Group Flow (vph)	0	2415	1635	0	1128	744
Confl. Peds. (#/hr)	1			1		
Heavy Vehicles (%)	0%	4%	1%	0%	5%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	2		4	
Permitted Phases						4
Actuated Green, G (s)		67.0	67.0		80.0	80.0
Effective Green, g (s)		69.0	69.0		81.0	81.0
Actuated g/C Ratio		0.43	0.43		0.51	0.51
Clearance Time (s)		7.0	7.0		6.0	6.0
Vehicle Extension (s)		2.0	2.0		4.0	4.0
Lane Grp Cap (vph)		2151	2214		1632	744
v/s Ratio Prot		c0.48	0.32		0.35	
v/s Ratio Perm						c0.51
v/c Ratio		1.12	0.74		0.91dr	1.00
Uniform Delay, d1		45.5	38.0		30.0	39.5
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		62.0	2.3		1.4	33.0
Delay (s)		107.5	40.2		31.4	72.5
Level of Service		F	D		C	E
Approach Delay (s)		107.5	40.2		47.7	
Approach LOS		F	D		D	

Intersection Summary			
HCM 2000 Control Delay	70.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	97.9%	ICU Level of Service	F
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑	↰↰	↱
Traffic Volume (vph)	1774	0	0	1908	57	436
Future Volume (vph)	1774	0	0	1908	57	436
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)	5.0			5.0	5.0	5.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	0.88	0.85
Flt Protected	1.00			1.00	0.99	1.00
Satd. Flow (prot)	5036			5136	3101	1429
Flt Permitted	1.00			1.00	0.99	1.00
Satd. Flow (perm)	5036			5136	3101	1429
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	1829	0	0	1967	59	449
RTOR Reduction (vph)	0	0	0	0	14	14
Lane Group Flow (vph)	1829	0	0	1967	270	210
Confl. Peds. (#/hr)		5	5			
Heavy Vehicles (%)	3%	0%	0%	1%	8%	4%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	4	
Permitted Phases						4
Actuated Green, G (s)	95.3			95.3	25.7	25.7
Effective Green, g (s)	97.3			97.3	26.7	26.7
Actuated g/C Ratio	0.73			0.73	0.20	0.20
Clearance Time (s)	7.0			7.0	6.0	6.0
Vehicle Extension (s)	4.0			4.0	4.0	4.0
Lane Grp Cap (vph)	3656			3729	617	284
v/s Ratio Prot	0.36			c0.38	0.09	
v/s Ratio Perm						c0.15
v/c Ratio	0.50			0.53	0.44	0.74
Uniform Delay, d1	7.9			8.1	47.1	50.4
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.1			0.2	0.7	10.6
Delay (s)	8.0			8.3	47.8	61.0
Level of Service	A			A	D	E
Approach Delay (s)	8.0			8.3	53.6	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	134.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	97.9%	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)	1	12	15	1040	674	2
Future Volume (Veh/h)	1	12	15	1040	674	2
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)	1	13	16	1118	725	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				149		
pX, platoon unblocked	0.79					
vC, conflicting volume	1317	726	727			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	879	726	727			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	97	98			
cM capacity (veh/h)	227	372	886			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1
Volume Total	14	16	559	559	727
Volume Left	1	16	0	0	0
Volume Right	13	0	0	0	2
cSH	355	886	1700	1700	1700
Volume to Capacity	0.04	0.02	0.33	0.33	0.43
Queue Length 95th (m)	1.0	0.4	0.0	0.0	0.0
Control Delay (s)	15.5	9.1	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	0.2		
Intersection Capacity Utilization	45.6%	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 (vph)	161	1937	236	139	1630	260	157	284	135	175	193	165
Future Volume (vph)	161	1937	236	139	1630	260	157	284	135	175	193	165
Ideal Flow (vphpl)	1860	1900	1640	1860	1900	1640	1640	1900	1640	1640	1900	1640
Lane Width	3.3	3.6	3.3	3.3	3.6	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	1.0	5.0	5.0	1.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1708	5136	1324	1675	5136	1311	1440	3535	1301	1426	3500	1301
Flt Permitted	0.08	1.00	1.00	0.05	1.00	1.00	0.61	1.00	1.00	0.50	1.00	1.00
Satd. Flow (perm)	146	5136	1324	92	5136	1311	917	3535	1301	758	3500	1301
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)	166	1997	243	143	1680	268	162	293	139	180	199	170
RTOR Reduction (vph)	0	0	68	0	0	82	0	0	101	0	0	123
Lane Group Flow (vph)	166	1997	175	143	1680	186	162	293	38	180	199	47
Heavy Vehicles (%)	0%	1%	1%	2%	1%	2%	1%	1%	0%	2%	2%	0%
Bus Blockages (#/hr)	0	0	2	0	0	2	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	89.0	75.5	75.5	85.2	73.6	73.6	37.3	37.3	37.3	37.3	37.3	37.3
Effective Green, g (s)	94.1	76.8	76.8	91.2	74.9	74.9	38.8	38.8	38.8	38.8	38.8	38.8
Actuated g/C Ratio	0.67	0.54	0.54	0.65	0.53	0.53	0.27	0.27	0.27	0.27	0.27	0.27
Clearance Time (s)	4.0	6.3	6.3	4.0	6.3	6.3	6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Grp Cap (vph)	279	2793	720	223	2724	695	251	971	357	208	961	357
v/s Ratio Prot	c0.07	c0.39		c0.07	0.33			0.08			0.06	
v/s Ratio Perm	0.33		0.13	0.35		0.14	0.18		0.03	c0.24		0.04
v/c Ratio	0.59	0.72	0.24	0.64	0.62	0.27	0.65	0.30	0.11	0.87	0.21	0.13
Uniform Delay, d1	22.1	24.0	16.9	34.4	23.1	18.1	45.1	40.5	38.3	48.7	39.4	38.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.6	1.6	0.8	6.4	1.1	0.9	5.8	0.2	0.2	29.7	0.1	0.2
Delay (s)	25.7	25.6	17.7	40.8	24.2	19.1	51.0	40.7	38.4	78.4	39.5	38.7
Level of Service	C	C	B	D	C	B	D	D	D	E	D	D
Approach Delay (s)		24.8			24.7			43.0			52.0	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	29.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	141.2	Sum of lost time (s)	11.0
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 (vph)	0	2167	1424	0	344	692
Future Volume (vph)	0	2167	1424	0	344	692
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)		5.0	5.0		5.0	5.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		0.92	0.85
Flt Protected		1.00	1.00		0.98	1.00
Satd. Flow (prot)		5136	5136		3329	1471
Flt Permitted		1.00	1.00		0.98	1.00
Satd. Flow (perm)		5136	5136		3329	1471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	2257	1483	0	358	721
RTOR Reduction (vph)	0	0	0	0	25	25
Lane Group Flow (vph)	0	2257	1483	0	694	335
Heavy Vehicles (%)	0%	1%	1%	0%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	2		4	
Permitted Phases						4
Actuated Green, G (s)		91.4	91.4		40.6	40.6
Effective Green, g (s)		93.4	93.4		41.6	41.6
Actuated g/C Ratio		0.64	0.64		0.29	0.29
Clearance Time (s)		7.0	7.0		6.0	6.0
Vehicle Extension (s)		2.0	2.0		4.0	4.0
Lane Grp Cap (vph)		3308	3308		955	422
v/s Ratio Prot		c0.44	0.29		0.21	
v/s Ratio Perm						c0.23
v/c Ratio		0.68	0.45		0.73	0.79
Uniform Delay, d1		16.4	12.9		46.6	47.7
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		1.2	0.4		3.0	10.4
Delay (s)		17.5	13.4		49.6	58.2
Level of Service		B	B		D	E
Approach Delay (s)		17.5	13.4		52.4	
Approach LOS		B	B		D	

Intersection Summary			
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑	↰↰	↱
Traffic Volume (vph)	1807	0	0	1750	104	516
Future Volume (vph)	1807	0	0	1750	104	516
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)	5.0			5.0	5.0	5.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.89	0.85
Flt Protected	1.00			1.00	0.99	1.00
Satd. Flow (prot)	5136			5136	3240	1471
Flt Permitted	1.00			1.00	0.99	1.00
Satd. Flow (perm)	5136			5136	3240	1471
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	1863	0	0	1804	107	532
RTOR Reduction (vph)	0	0	0	0	12	12
Lane Group Flow (vph)	1863	0	0	1804	361	254
Heavy Vehicles (%)	1%	0%	0%	1%	2%	1%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	4	
Permitted Phases						4
Actuated Green, G (s)	93.3			93.3	29.9	29.9
Effective Green, g (s)	95.3			95.3	30.9	30.9
Actuated g/C Ratio	0.70			0.70	0.23	0.23
Clearance Time (s)	7.0			7.0	6.0	6.0
Vehicle Extension (s)	4.0			4.0	4.0	4.0
Lane Grp Cap (vph)	3593			3593	735	333
v/s Ratio Prot	c0.36			0.35	0.11	
v/s Ratio Perm						c0.17
v/c Ratio	0.52			0.50	0.49	0.76
Uniform Delay, d1	9.6			9.5	45.8	49.2
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.2			0.2	0.7	10.6
Delay (s)	9.8			9.6	46.5	59.8
Level of Service	A			A	D	E
Approach Delay (s)	9.8			9.6	52.1	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	136.2	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.3%	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)	7	66	134	547	472	19
Future Volume (Veh/h)	7	66	134	547	472	19
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	7	69	140	570	492	20
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				149		
pX, platoon unblocked	0.95					
vC, conflicting volume	1067	502	512			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	973	502	512			
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	87	87			
cM capacity (veh/h)	210	520	1064			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1
Volume Total	76	140	285	285	512
Volume Left	7	140	0	0	0
Volume Right	69	0	0	0	20
cSH	458	1064	1700	1700	1700
Volume to Capacity	0.17	0.13	0.17	0.17	0.30
Queue Length 95th (m)	4.7	3.6	0.0	0.0	0.0
Control Delay (s)	14.4	8.9	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	14.4	1.8			0.0
Approach LOS	B				

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	47.9%	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 (vph)	250	2445	374	130	960	145	141	427	168	238	735	135
Future Volume (vph)	250	2445	374	130	960	145	141	427	168	238	735	135
Ideal Flow (vphpl)	1860	1900	1640	1860	1900	1640	1860	1900	1860	1860	1900	1640
Lane Width	3.3	3.6	3.3	3.3	3.6	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	1.0	5.0	5.0	1.0	5.0	5.0	1.0	5.0	1.0	1.0	5.0	5.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1691	5136	1263	1627	4673	1300	1541	3400	1392	1633	3500	1263
Flt Permitted	0.22	1.00	1.00	0.05	1.00	1.00	0.12	1.00	1.00	0.34	1.00	1.00
Satd. Flow (perm)	386	5136	1263	90	4673	1300	195	3400	1392	580	3500	1263
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)	258	2521	386	134	990	149	145	440	173	245	758	139
RTOR Reduction (vph)	0	0	92	0	0	78	0	0	52	0	0	77
Lane Group Flow (vph)	258	2521	294	134	990	71	145	440	121	245	758	62
Heavy Vehicles (%)	1%	1%	5%	5%	11%	2%	7%	5%	6%	1%	2%	3%
Bus Blockages (#/hr)	0	0	4	0	0	4	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	93.3	81.3	81.3	80.9	72.9	72.9	45.6	37.6	45.6	47.6	38.6	38.6
Effective Green, g (s)	96.3	82.6	82.6	86.9	74.2	74.2	51.6	39.1	51.6	53.6	40.1	40.1
Actuated g/C Ratio	0.61	0.53	0.53	0.55	0.47	0.47	0.33	0.25	0.33	0.34	0.26	0.26
Clearance Time (s)	4.0	6.3	6.3	4.0	6.3	6.3	4.0	6.5	4.0	4.0	6.5	6.5
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Grp Cap (vph)	398	2707	665	157	2212	615	158	848	458	279	895	323
v/s Ratio Prot	0.08	c0.49		c0.06	0.21		c0.06	0.13	0.02	c0.07	c0.22	
v/s Ratio Perm	0.32		0.23	0.41		0.05	0.24		0.07	0.23		0.05
v/c Ratio	0.65	0.93	0.44	0.85	0.45	0.11	0.92	0.52	0.26	0.88	0.85	0.19
Uniform Delay, d1	15.6	34.4	22.8	45.7	27.6	23.0	42.0	50.7	38.6	45.8	55.4	45.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.8	7.3	2.1	34.3	0.7	0.4	48.2	0.6	0.4	25.7	7.7	0.3
Delay (s)	19.4	41.7	25.0	80.0	28.2	23.3	90.3	51.3	39.0	71.5	63.0	45.9
Level of Service	B	D	C	E	C	C	F	D	D	E	E	D
Approach Delay (s)		37.8			33.1			56.0			62.8	
Approach LOS		D			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	43.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	156.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	97.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2832	603	0	879	869
Future Volume (vph)	0	2832	603	0	879	869
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)		5.0	5.0		5.0	5.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		0.96	0.85
Flt Protected		1.00	1.00		0.96	1.00
Satd. Flow (prot)		5136	4893		3213	1303
Flt Permitted		1.00	1.00		0.96	1.00
Satd. Flow (perm)		5136	4893		3213	1303
Peak-hour factor, PHF	0.25	0.96	0.96	0.25	0.96	0.96
Adj. Flow (vph)	0	2950	628	0	916	905
RTOR Reduction (vph)	0	0	0	0	25	163
Lane Group Flow (vph)	0	2950	628	0	1226	407
Heavy Vehicles (%)	0%	1%	6%	0%	5%	14%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	2		4	
Permitted Phases						4
Actuated Green, G (s)		89.0	89.0		58.0	58.0
Effective Green, g (s)		91.0	91.0		59.0	59.0
Actuated g/C Ratio		0.57	0.57		0.37	0.37
Clearance Time (s)		7.0	7.0		6.0	6.0
Vehicle Extension (s)		2.0	2.0		4.0	4.0
Lane Grp Cap (vph)		2921	2782		1184	480
v/s Ratio Prot		c0.57	0.13		c0.38	
v/s Ratio Perm						0.31
v/c Ratio		1.01	0.23		1.04	0.85
Uniform Delay, d1		34.5	17.1		50.5	46.4
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		19.1	0.2		35.9	13.5
Delay (s)		53.6	17.3		86.4	59.8
Level of Service		D	B		F	E
Approach Delay (s)		53.6	17.3		78.1	
Approach LOS		D	B		E	

Intersection Summary			
HCM 2000 Control Delay	57.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	97.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2475	0	0	642	86	543
Future Volume (vph)	2475	0	0	642	86	543
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)	5.0			5.0	5.0	5.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.89	0.85
Flt Protected	1.00			1.00	0.99	1.00
Satd. Flow (prot)	5036			4848	3207	1457
Flt Permitted	1.00			1.00	0.99	1.00
Satd. Flow (perm)	5036			4848	3207	1457
Peak-hour factor, PHF	0.95	0.25	0.25	0.95	0.95	0.95
Adj. Flow (vph)	2605	0	0	676	91	572
RTOR Reduction (vph)	0	0	0	0	3	3
Lane Group Flow (vph)	2605	0	0	676	374	283
Heavy Vehicles (%)	3%	0%	0%	7%	1%	2%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	4	
Permitted Phases						4
Actuated Green, G (s)	100.3			100.3	34.5	34.5
Effective Green, g (s)	102.3			102.3	35.5	35.5
Actuated g/C Ratio	0.69			0.69	0.24	0.24
Clearance Time (s)	7.0			7.0	6.0	6.0
Vehicle Extension (s)	4.0			4.0	4.0	4.0
Lane Grp Cap (vph)	3485			3355	770	349
v/s Ratio Prot	c0.52			0.14	0.12	
v/s Ratio Perm						c0.19
v/c Ratio	0.75			0.20	0.49	0.81
Uniform Delay, d1	14.5			8.1	48.3	53.0
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	1.0			0.0	0.7	13.9
Delay (s)	15.5			8.2	49.0	66.9
Level of Service	B			A	D	E
Approach Delay (s)	15.5			8.2	56.7	
Approach LOS	B			A	E	

Intersection Summary			
HCM 2000 Control Delay	21.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	147.8	Sum of lost time (s)	10.0
Intersection Capacity Utilization	97.2%	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)	0	3	15	933	1183	1
Future Volume (Veh/h)	0	3	15	933	1183	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	3	16	1025	1300	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				149		
pX, platoon unblocked	0.89					
vC, conflicting volume	1845	650	1301			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1708	650	1301			
tC, single (s)	6.8	6.9	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	100	99	97			
cM capacity (veh/h)	72	416	502			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	3	16	512	512	867	434
Volume Left	0	16	0	0	0	0
Volume Right	3	0	0	0	0	1
cSH	416	502	1700	1700	1700	1700
Volume to Capacity	0.01	0.03	0.30	0.30	0.51	0.26
Queue Length 95th (m)	0.2	0.8	0.0	0.0	0.0	0.0
Control Delay (s)	13.7	12.4	0.0	0.0	0.0	0.0
Lane LOS	B	B				
Approach Delay (s)	13.7	0.2			0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	42.7%	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)	127	1669	176	133	2872	159	349	1032	798	103	425	261
Future Volume (vph)	127	1669	176	133	2872	159	349	1032	798	103	425	261
Ideal Flow (vphpl)	1860	1900	1640	1860	1900	1640	1860	1900	1860	1860	1900	1640
Lane Width	3.3	3.6	3.3	3.3	3.6	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	1.0	5.0	5.0	1.0	5.0	5.0	1.0	5.0	1.0	1.0	5.0	5.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	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	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1691	5036	1283	1675	5136	1313	1617	3535	1380	1633	3535	1301
Flt Permitted	0.07	1.00	1.00	0.07	1.00	1.00	0.36	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	120	5036	1283	117	5136	1313	619	3535	1380	151	3535	1301
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	130	1703	180	136	2931	162	356	1053	814	105	434	266
RTOR Reduction (vph)	0	0	85	0	0	57	0	0	25	0	0	95
Lane Group Flow (vph)	130	1703	95	136	2931	105	356	1053	789	105	434	171
Confl. Peds. (#/hr)			1	1					1	1		
Heavy Vehicles (%)	1%	3%	2%	2%	1%	1%	2%	1%	6%	1%	1%	0%
Bus Blockages (#/hr)	0	0	4	0	0	4	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	63.7	56.2	56.2	84.2	72.7	72.7	61.5	50.0	74.0	50.0	42.5	42.5
Effective Green, g (s)	69.7	57.5	57.5	87.2	74.0	74.0	64.5	51.5	80.0	56.0	44.0	44.0
Actuated g/C Ratio	0.44	0.36	0.36	0.55	0.47	0.47	0.41	0.32	0.50	0.35	0.28	0.28
Clearance Time (s)	4.0	6.3	6.3	4.0	6.3	6.3	4.0	6.5	4.0	4.0	6.5	6.5
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Grp Cap (vph)	156	1826	465	329	2397	613	365	1148	696	151	981	361
v/s Ratio Prot	0.05	0.34		0.07	c0.57		c0.11	0.30	c0.19	0.05	0.12	
v/s Ratio Perm	0.31		0.07	0.16		0.08	0.29		0.38	0.20		0.13
v/c Ratio	0.83	0.93	0.20	0.41	1.22	0.17	0.98	0.92	1.13	0.70	0.44	0.47
Uniform Delay, d1	40.0	48.6	34.8	31.3	42.2	24.5	42.0	51.5	39.2	40.0	47.1	47.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	30.6	10.2	1.0	1.0	104.2	0.6	40.3	11.6	77.3	13.5	0.4	1.2
Delay (s)	70.6	58.8	35.8	32.3	146.5	25.1	82.3	63.0	116.6	53.5	47.5	48.8
Level of Service	E	E	D	C	F	C	F	E	F	D	D	D
Approach Delay (s)		57.5			135.6			85.7			48.7	
Approach LOS		E			F			F			D	

Intersection Summary			
HCM 2000 Control Delay	94.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	158.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	112.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2377	1650	0	416	1624
Future Volume (vph)	0	2377	1650	0	416	1624
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)		5.0	5.0		5.0	5.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		0.90	0.85
Flt Protected		1.00	1.00		0.98	1.00
Satd. Flow (prot)		4988	5136		3225	1471
Flt Permitted		1.00	1.00		0.98	1.00
Satd. Flow (perm)		4988	5136		3225	1471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	2476	1719	0	433	1692
RTOR Reduction (vph)	0	0	0	0	2	2
Lane Group Flow (vph)	0	2476	1719	0	1277	844
Confl. Peds. (#/hr)	1			1		
Heavy Vehicles (%)	0%	4%	1%	0%	5%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	2		4	
Permitted Phases						4
Actuated Green, G (s)		67.0	67.0		80.0	80.0
Effective Green, g (s)		69.0	69.0		81.0	81.0
Actuated g/C Ratio		0.43	0.43		0.51	0.51
Clearance Time (s)		7.0	7.0		6.0	6.0
Vehicle Extension (s)		2.0	2.0		4.0	4.0
Lane Grp Cap (vph)		2151	2214		1632	744
v/s Ratio Prot		c0.50	0.33		0.40	
v/s Ratio Perm						c0.57
v/c Ratio		1.15	0.78		1.03dr	1.13
Uniform Delay, d1		45.5	38.9		32.3	39.5
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		73.9	2.7		2.7	76.6
Delay (s)		119.4	41.7		35.0	116.1
Level of Service		F	D		C	F
Approach Delay (s)		119.4	41.7		67.3	
Approach LOS		F	D		E	

Intersection Summary			
HCM 2000 Control Delay	80.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	107.3%	ICU Level of Service	G
Analysis Period (min)	15		
dr Defacto Right Lane. Recode with 1 though lane as a right lane.			
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1819	0	0	2005	64	493
Future Volume (vph)	1819	0	0	2005	64	493
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)	5.0			5.0	5.0	5.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	0.88	0.85
Flt Protected	1.00			1.00	0.99	1.00
Satd. Flow (prot)	5036			5136	3100	1429
Flt Permitted	1.00			1.00	0.99	1.00
Satd. Flow (perm)	5036			5136	3100	1429
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	1875	0	0	2067	66	508
RTOR Reduction (vph)	0	0	0	0	12	12
Lane Group Flow (vph)	1875	0	0	2067	308	242
Confl. Peds. (#/hr)		5	5			
Heavy Vehicles (%)	3%	0%	0%	1%	8%	4%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	4	
Permitted Phases						4
Actuated Green, G (s)	95.3			95.3	29.3	29.3
Effective Green, g (s)	97.3			97.3	30.3	30.3
Actuated g/C Ratio	0.71			0.71	0.22	0.22
Clearance Time (s)	7.0			7.0	6.0	6.0
Vehicle Extension (s)	4.0			4.0	4.0	4.0
Lane Grp Cap (vph)	3561			3631	682	314
v/s Ratio Prot	0.37			c0.40	0.10	
v/s Ratio Perm						c0.17
v/c Ratio	0.53			0.57	0.45	0.77
Uniform Delay, d1	9.4			9.9	46.4	50.4
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.2			0.3	0.6	11.4
Delay (s)	9.6			10.1	47.1	61.8
Level of Service	A			B	D	E
Approach Delay (s)	9.6			10.1	53.6	
Approach LOS	A			B	D	

Intersection Summary			
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	137.6	Sum of lost time (s)	10.0
Intersection Capacity Utilization	107.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	12	15	1392	945	2
Future Volume (Veh/h)	1	12	15	1392	945	2
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)	1	13	16	1497	1016	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				149		
pX, platoon unblocked	0.71					
vC, conflicting volume	1798	509	1018			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1311	509	1018			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	97	98			
cM capacity (veh/h)	106	515	689			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	14	16	748	748	677	341
Volume Left	1	16	0	0	0	0
Volume Right	13	0	0	0	0	2
cSH	404	689	1700	1700	1700	1700
Volume to Capacity	0.03	0.02	0.44	0.44	0.40	0.20
Queue Length 95th (m)	0.9	0.6	0.0	0.0	0.0	0.0
Control Delay (s)	14.2	10.3	0.0	0.0	0.0	0.0
Lane LOS	B	B				
Approach Delay (s)	14.2	0.1			0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	48.5%	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)	165	1986	242	146	1713	273	173	380	149	193	271	182
Future Volume (vph)	165	1986	242	146	1713	273	173	380	149	193	271	182
Ideal Flow (vphpl)	1860	1900	1640	1860	1900	1640	1640	1900	1640	1640	1900	1640
Lane Width	3.3	3.6	3.3	3.3	3.6	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	1.0	5.0	5.0	1.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1708	5136	1324	1675	5136	1311	1440	3535	1301	1426	3500	1301
Flt Permitted	0.06	1.00	1.00	0.05	1.00	1.00	0.54	1.00	1.00	0.44	1.00	1.00
Satd. Flow (perm)	108	5136	1324	95	5136	1311	811	3535	1301	655	3500	1301
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)	170	2047	249	151	1766	281	178	392	154	199	279	188
RTOR Reduction (vph)	0	0	72	0	0	87	0	0	103	0	0	110
Lane Group Flow (vph)	170	2047	178	151	1766	194	178	392	51	199	279	78
Heavy Vehicles (%)	0%	1%	1%	2%	1%	2%	1%	1%	0%	2%	2%	0%
Bus Blockages (#/hr)	0	0	2	0	0	2	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	85.1	72.4	72.4	82.1	70.9	70.9	47.0	47.0	47.0	47.0	47.0	47.0
Effective Green, g (s)	90.6	73.7	73.7	88.1	72.2	72.2	48.5	48.5	48.5	48.5	48.5	48.5
Actuated g/C Ratio	0.61	0.50	0.50	0.60	0.49	0.49	0.33	0.33	0.33	0.33	0.33	0.33
Clearance Time (s)	4.0	6.3	6.3	4.0	6.3	6.3	6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Grp Cap (vph)	236	2568	662	208	2515	642	266	1163	428	215	1151	428
v/s Ratio Prot	c0.08	c0.40		c0.07	0.34			0.11			0.08	
v/s Ratio Perm	0.37		0.13	0.36		0.15	0.22		0.04	c0.30		0.06
v/c Ratio	0.72	0.80	0.27	0.73	0.70	0.30	0.67	0.34	0.12	0.93	0.24	0.18
Uniform Delay, d1	37.3	30.6	21.3	39.5	29.2	22.5	42.5	37.3	34.5	47.7	36.1	35.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.7	2.7	1.0	12.3	1.7	1.2	6.5	0.2	0.1	41.4	0.1	0.2
Delay (s)	48.0	33.3	22.3	51.8	30.9	23.7	49.1	37.5	34.7	89.1	36.2	35.5
Level of Service	D	C	C	D	C	C	D	D	C	F	D	D
Approach Delay (s)		33.2			31.4			39.8			51.8	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	35.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	147.4	Sum of lost time (s)	11.0
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2222	1497	0	389	783
Future Volume (vph)	0	2222	1497	0	389	783
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)		5.0	5.0		5.0	5.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		0.92	0.85
Flt Protected		1.00	1.00		0.98	1.00
Satd. Flow (prot)		5136	5136		3329	1471
Flt Permitted		1.00	1.00		0.98	1.00
Satd. Flow (perm)		5136	5136		3329	1471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	2315	1559	0	405	816
RTOR Reduction (vph)	0	0	0	0	17	17
Lane Group Flow (vph)	0	2315	1559	0	796	391
Heavy Vehicles (%)	0%	1%	1%	0%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	2		4	
Permitted Phases						4
Actuated Green, G (s)		88.4	88.4		46.5	46.5
Effective Green, g (s)		90.4	90.4		47.5	47.5
Actuated g/C Ratio		0.61	0.61		0.32	0.32
Clearance Time (s)		7.0	7.0		6.0	6.0
Vehicle Extension (s)		2.0	2.0		4.0	4.0
Lane Grp Cap (vph)		3139	3139		1069	472
v/s Ratio Prot		c0.45	0.30		0.24	
v/s Ratio Perm						c0.27
v/c Ratio		0.74	0.50		0.74	0.83
Uniform Delay, d1		20.4	16.0		44.8	46.4
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		1.6	0.6		3.0	11.9
Delay (s)		21.9	16.6		47.8	58.4
Level of Service		C	B		D	E
Approach Delay (s)		21.9	16.6		51.4	
Approach LOS		C	B		D	

Intersection Summary			
HCM 2000 Control Delay	27.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	147.9	Sum of lost time (s)	10.0
Intersection Capacity Utilization	70.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑	↰↰	↱
Traffic Volume (vph)	1853	0	0	1839	118	584
Future Volume (vph)	1853	0	0	1839	118	584
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)	5.0			5.0	5.0	5.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.89	0.85
Flt Protected	1.00			1.00	0.99	1.00
Satd. Flow (prot)	5136			5136	3240	1471
Flt Permitted	1.00			1.00	0.99	1.00
Satd. Flow (perm)	5136			5136	3240	1471
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	1910	0	0	1896	122	602
RTOR Reduction (vph)	0	0	0	0	9	9
Lane Group Flow (vph)	1910	0	0	1896	414	292
Heavy Vehicles (%)	1%	0%	0%	1%	2%	1%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	4	
Permitted Phases						4
Actuated Green, G (s)	91.4			91.4	33.8	33.8
Effective Green, g (s)	93.4			93.4	34.8	34.8
Actuated g/C Ratio	0.68			0.68	0.25	0.25
Clearance Time (s)	7.0			7.0	6.0	6.0
Vehicle Extension (s)	4.0			4.0	4.0	4.0
Lane Grp Cap (vph)	3471			3471	815	370
v/s Ratio Prot	c0.37			0.37	0.13	
v/s Ratio Perm						c0.20
v/c Ratio	0.55			0.55	0.51	0.79
Uniform Delay, d1	11.6			11.5	44.4	48.3
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.2			0.2	0.7	11.3
Delay (s)	11.8			11.7	45.0	59.5
Level of Service	B			B	D	E
Approach Delay (s)	11.8			11.7	51.1	
Approach LOS	B			B	D	

Intersection Summary			
HCM 2000 Control Delay	18.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	138.2	Sum of lost time (s)	10.0
Intersection Capacity Utilization	70.6%	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)	7	68	137	732	662	19
Future Volume (Veh/h)	7	68	137	732	662	19
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	7	71	143	762	690	20
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				149		
pX, platoon unblocked	0.93					
vC, conflicting volume	1367	355	710			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1242	355	710			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	89	84			
cM capacity (veh/h)	132	647	899			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	78	143	381	381	460	250
Volume Left	7	143	0	0	0	0
Volume Right	71	0	0	0	0	20
cSH	480	899	1700	1700	1700	1700
Volume to Capacity	0.16	0.16	0.22	0.22	0.27	0.15
Queue Length 95th (m)	4.6	4.5	0.0	0.0	0.0	0.0
Control Delay (s)	14.0	9.8	0.0	0.0	0.0	0.0
Lane LOS	B	A				
Approach Delay (s)	14.0	1.5			0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	41.1%	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)	256	2507	383	134	984	149	116	571	185	267	938	149
Future Volume (vph)	256	2507	383	134	984	149	116	571	185	267	938	149
Ideal Flow (vphpl)	1860	1900	1640	1860	1900	1640	1860	1900	1860	1860	1900	1640
Lane Width	3.3	3.6	3.3	3.3	3.6	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	1.0	5.0	5.0	1.0	5.0	5.0	1.0	5.0	1.0	1.0	5.0	5.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1691	5136	1263	1627	4673	1300	1541	3400	1392	1633	3500	1263
Flt Permitted	0.20	1.00	1.00	0.06	1.00	1.00	0.10	1.00	1.00	0.21	1.00	1.00
Satd. Flow (perm)	351	5136	1263	96	4673	1300	161	3400	1392	358	3500	1263
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)	264	2585	395	138	1014	154	120	589	191	275	967	154
RTOR Reduction (vph)	0	0	98	0	0	87	0	0	70	0	0	74
Lane Group Flow (vph)	264	2585	297	138	1014	67	120	589	121	275	967	80
Heavy Vehicles (%)	1%	1%	5%	5%	11%	2%	7%	5%	6%	1%	2%	3%
Bus Blockages (#/hr)	0	0	4	0	0	4	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	90.0	77.0	77.0	77.2	68.2	68.2	46.2	37.2	46.2	57.2	44.2	44.2
Effective Green, g (s)	93.0	78.3	78.3	83.2	69.5	69.5	52.2	38.7	52.2	60.2	45.7	45.7
Actuated g/C Ratio	0.58	0.49	0.49	0.52	0.43	0.43	0.33	0.24	0.33	0.38	0.29	0.29
Clearance Time (s)	4.0	6.3	6.3	4.0	6.3	6.3	4.0	6.5	4.0	4.0	6.5	6.5
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Grp Cap (vph)	378	2513	618	164	2029	564	156	822	454	286	999	360
v/s Ratio Prot	0.09	c0.50		c0.06	0.22		0.06	0.17	0.02	c0.11	c0.28	
v/s Ratio Perm	0.31		0.24	0.37		0.05	0.19		0.07	0.25		0.06
v/c Ratio	0.70	1.03	0.48	0.84	0.50	0.12	0.77	0.72	0.27	0.96	0.97	0.22
Uniform Delay, d1	19.3	40.9	27.3	46.8	32.7	27.0	43.3	55.6	39.8	41.0	56.4	43.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.8	25.8	2.7	31.0	0.9	0.4	20.7	3.1	0.4	42.8	21.0	0.4
Delay (s)	25.0	66.6	30.0	77.8	33.6	27.4	64.0	58.7	40.1	83.8	77.4	44.0
Level of Service	C	E	C	E	C	C	E	E	D	F	E	D
Approach Delay (s)		58.8			37.5			55.5			74.9	
Approach LOS		E			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	57.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	103.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2904	618	0	995	983
Future Volume (vph)	0	2904	618	0	995	983
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)		5.0	5.0		5.0	5.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		0.96	0.85
Flt Protected		1.00	1.00		0.96	1.00
Satd. Flow (prot)		5136	4893		3213	1303
Flt Permitted		1.00	1.00		0.96	1.00
Satd. Flow (perm)		5136	4893		3213	1303
Peak-hour factor, PHF	0.25	0.96	0.96	0.25	0.96	0.96
Adj. Flow (vph)	0	3025	644	0	1036	1024
RTOR Reduction (vph)	0	0	0	0	25	145
Lane Group Flow (vph)	0	3025	644	0	1391	500
Heavy Vehicles (%)	0%	1%	6%	0%	5%	14%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	2		4	
Permitted Phases						4
Actuated Green, G (s)		86.0	86.0		61.0	61.0
Effective Green, g (s)		88.0	88.0		62.0	62.0
Actuated g/C Ratio		0.55	0.55		0.39	0.39
Clearance Time (s)		7.0	7.0		6.0	6.0
Vehicle Extension (s)		2.0	2.0		4.0	4.0
Lane Grp Cap (vph)		2824	2691		1245	504
v/s Ratio Prot		c0.59	0.13		c0.43	
v/s Ratio Perm						0.38
v/c Ratio		1.07	0.24		1.12	0.99
Uniform Delay, d1		36.0	18.7		49.0	48.7
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		39.8	0.2		64.0	37.8
Delay (s)		75.8	18.9		113.0	86.6
Level of Service		E	B		F	F
Approach Delay (s)		75.8	18.9		104.7	
Approach LOS		E	B		F	

Intersection Summary			
HCM 2000 Control Delay	79.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	103.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑	↰↰	↱
Traffic Volume (vph)	2537	0	0	658	97	614
Future Volume (vph)	2537	0	0	658	97	614
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)	5.0			5.0	5.0	5.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.89	0.85
Flt Protected	1.00			1.00	0.99	1.00
Satd. Flow (prot)	5036			4848	3206	1457
Flt Permitted	1.00			1.00	0.99	1.00
Satd. Flow (perm)	5036			4848	3206	1457
Peak-hour factor, PHF	0.95	0.25	0.25	0.95	0.95	0.95
Adj. Flow (vph)	2671	0	0	693	102	646
RTOR Reduction (vph)	0	0	0	0	2	2
Lane Group Flow (vph)	2671	0	0	693	423	321
Heavy Vehicles (%)	3%	0%	0%	7%	1%	2%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	4	
Permitted Phases						4
Actuated Green, G (s)	99.3			99.3	38.6	38.6
Effective Green, g (s)	101.3			101.3	39.6	39.6
Actuated g/C Ratio	0.67			0.67	0.26	0.26
Clearance Time (s)	7.0			7.0	6.0	6.0
Vehicle Extension (s)	4.0			4.0	4.0	4.0
Lane Grp Cap (vph)	3380			3254	841	382
v/s Ratio Prot	c0.53			0.14	0.13	
v/s Ratio Perm						c0.22
v/c Ratio	0.79			0.21	0.50	0.84
Uniform Delay, d1	17.4			9.5	47.3	52.6
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	1.4			0.0	0.6	15.5
Delay (s)	18.8			9.6	47.9	68.1
Level of Service	B			A	D	E
Approach Delay (s)	18.8			9.6	56.7	
Approach LOS	B			A	E	

Intersection Summary			
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	150.9	Sum of lost time (s)	10.0
Intersection Capacity Utilization	103.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	3	15	1249	1510	1
Future Volume (Veh/h)	0	3	15	1249	1510	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	3	16	1373	1659	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				149		
pX, platoon unblocked	0.85					
vC, conflicting volume	2378	830	1660			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2264	830	1660			
tC, single (s)	6.8	6.9	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	100	99	96			
cM capacity (veh/h)	29	317	362			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	3	16	686	686	1106	554
Volume Left	0	16	0	0	0	0
Volume Right	3	0	0	0	0	1
cSH	317	362	1700	1700	1700	1700
Volume to Capacity	0.01	0.04	0.40	0.40	0.65	0.33
Queue Length 95th (m)	0.2	1.1	0.0	0.0	0.0	0.0
Control Delay (s)	16.4	15.4	0.0	0.0	0.0	0.0
Lane LOS	C	C				
Approach Delay (s)	16.4	0.2			0.0	
Approach LOS	C					

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	51.8%	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 (vph)	131	1711	180	140	3019	167	390	1381	881	118	596	288
Future Volume (vph)	131	1711	180	140	3019	167	390	1381	881	118	596	288
Ideal Flow (vphpl)	1860	1900	1640	1860	1900	1640	1860	1900	1860	1860	1900	1640
Lane Width	3.3	3.6	3.3	3.3	3.6	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	1.0	5.0	5.0	1.0	5.0	5.0	1.0	5.0	1.0	1.0	5.0	5.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	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	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1691	5036	1283	1675	5136	1313	1617	3535	1380	1633	3535	1301
Flt Permitted	0.07	1.00	1.00	0.07	1.00	1.00	0.24	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	120	5036	1283	117	5136	1313	407	3535	1380	146	3535	1301
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	134	1746	184	143	3081	170	398	1409	899	120	608	294
RTOR Reduction (vph)	0	0	85	0	0	57	0	0	25	0	0	94
Lane Group Flow (vph)	134	1746	99	143	3081	113	398	1409	874	120	608	200
Confl. Peds. (#/hr)			1	1					1	1		
Heavy Vehicles (%)	1%	3%	2%	2%	1%	1%	2%	1%	6%	1%	1%	0%
Bus Blockages (#/hr)	0	0	4	0	0	4	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	63.7	56.2	56.2	84.2	72.7	72.7	63.0	51.5	75.5	51.5	44.0	44.0
Effective Green, g (s)	69.7	57.5	57.5	87.2	74.0	74.0	66.0	53.0	81.5	57.5	45.5	45.5
Actuated g/C Ratio	0.44	0.36	0.36	0.55	0.46	0.46	0.41	0.33	0.51	0.36	0.28	0.28
Clearance Time (s)	4.0	6.3	6.3	4.0	6.3	6.3	4.0	6.5	4.0	4.0	6.5	6.5
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Grp Cap (vph)	155	1809	461	326	2375	607	304	1170	702	150	1005	369
v/s Ratio Prot	0.06	0.35		0.07	c0.60		c0.15	0.40	c0.21	0.05	0.17	
v/s Ratio Perm	0.32		0.08	0.16		0.09	0.39		0.42	0.23		0.15
v/c Ratio	0.86	0.97	0.21	0.44	1.30	0.19	1.31	1.20	1.25	0.80	0.60	0.54
Uniform Delay, d1	41.7	50.3	35.6	33.7	43.0	25.3	40.4	53.5	39.2	41.6	49.5	48.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	36.8	14.4	1.1	1.1	137.0	0.7	160.8	100.2	122.3	26.1	1.1	1.8
Delay (s)	78.5	64.6	36.6	34.8	180.0	26.0	201.3	153.7	161.6	67.7	50.6	50.2
Level of Service	E	E	D	C	F	C	F	F	F	E	D	D
Approach Delay (s)		63.0			166.2			163.3			52.5	
Approach LOS		E			F			F			D	

Intersection Summary			
HCM 2000 Control Delay	129.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	125.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2437	1734	0	471	1837
Future Volume (vph)	0	2437	1734	0	471	1837
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)		5.0	5.0		5.0	5.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		0.90	0.85
Flt Protected		1.00	1.00		0.98	1.00
Satd. Flow (prot)		4988	5136		3225	1471
Flt Permitted		1.00	1.00		0.98	1.00
Satd. Flow (perm)		4988	5136		3225	1471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	2539	1806	0	491	1914
RTOR Reduction (vph)	0	0	0	0	1	1
Lane Group Flow (vph)	0	2539	1806	0	1447	956
Confl. Peds. (#/hr)	1			1		
Heavy Vehicles (%)	0%	4%	1%	0%	5%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	2		4	
Permitted Phases						4
Actuated Green, G (s)		67.0	67.0		80.0	80.0
Effective Green, g (s)		69.0	69.0		81.0	81.0
Actuated g/C Ratio		0.43	0.43		0.51	0.51
Clearance Time (s)		7.0	7.0		6.0	6.0
Vehicle Extension (s)		2.0	2.0		4.0	4.0
Lane Grp Cap (vph)		2151	2214		1632	744
v/s Ratio Prot		c0.51	0.35		0.45	
v/s Ratio Perm						c0.65
v/c Ratio		1.18	0.82		1.17dr	1.28
Uniform Delay, d1		45.5	39.9		35.4	39.5
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		86.3	3.5		6.4	138.1
Delay (s)		131.8	43.4		41.7	177.6
Level of Service		F	D		D	F
Approach Delay (s)		131.8	43.4		95.8	
Approach LOS		F	D		F	

Intersection Summary			
HCM 2000 Control Delay	95.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	117.7%	ICU Level of Service	H
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1865	0	0	2107	72	558
Future Volume (vph)	1865	0	0	2107	72	558
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)	5.0			5.0	5.0	5.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	0.88	0.85
Flt Protected	1.00			1.00	0.99	1.00
Satd. Flow (prot)	5036			5136	3100	1429
Flt Permitted	1.00			1.00	0.99	1.00
Satd. Flow (perm)	5036			5136	3100	1429
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	1923	0	0	2172	74	575
RTOR Reduction (vph)	0	0	0	0	11	11
Lane Group Flow (vph)	1923	0	0	2172	351	276
Confl. Peds. (#/hr)		5	5			
Heavy Vehicles (%)	3%	0%	0%	1%	8%	4%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	4	
Permitted Phases						4
Actuated Green, G (s)	95.4			95.4	33.7	33.7
Effective Green, g (s)	97.4			97.4	34.7	34.7
Actuated g/C Ratio	0.69			0.69	0.24	0.24
Clearance Time (s)	7.0			7.0	6.0	6.0
Vehicle Extension (s)	4.0			4.0	4.0	4.0
Lane Grp Cap (vph)	3451			3520	757	348
v/s Ratio Prot	0.38			c0.42	0.11	
v/s Ratio Perm						c0.19
v/c Ratio	0.56			0.62	0.46	0.79
Uniform Delay, d1	11.4			12.2	45.8	50.4
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.2			0.4	0.6	12.4
Delay (s)	11.6			12.6	46.4	62.8
Level of Service	B			B	D	E
Approach Delay (s)	11.6			12.6	53.6	
Approach LOS	B			B	D	

Intersection Summary			
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	142.1	Sum of lost time (s)	10.0
Intersection Capacity Utilization	117.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	12	15	1863	1325	2
Future Volume (Veh/h)	1	12	15	1863	1325	2
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)	1	13	16	2003	1425	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				149		
pX, platoon unblocked	0.67					
vC, conflicting volume	2460	714	1427			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2197	714	1427			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	97	97			
cM capacity (veh/h)	26	379	483			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	14	16	1002	1002	950	477
Volume Left	1	16	0	0	0	0
Volume Right	13	0	0	0	0	2
cSH	191	483	1700	1700	1700	1700
Volume to Capacity	0.07	0.03	0.59	0.59	0.56	0.28
Queue Length 95th (m)	1.9	0.8	0.0	0.0	0.0	0.0
Control Delay (s)	25.4	12.7	0.0	0.0	0.0	0.0
Lane LOS	D	B				
Approach Delay (s)	25.4	0.1			0.0	
Approach LOS	D					

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	169	2036	248	153	1800	287	191	509	165	213	380	201
Future Volume (vph)	169	2036	248	153	1800	287	191	509	165	213	380	201
Ideal Flow (vphpl)	1860	1900	1640	1860	1900	1640	1640	1900	1640	1640	1900	1640
Lane Width	3.3	3.6	3.3	3.3	3.6	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	1.0	5.0	5.0	1.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1708	5136	1324	1675	5136	1311	1440	3535	1301	1426	3500	1301
Flt Permitted	0.06	1.00	1.00	0.06	1.00	1.00	0.46	1.00	1.00	0.37	1.00	1.00
Satd. Flow (perm)	103	5136	1324	102	5136	1311	701	3535	1301	558	3500	1301
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)	174	2099	256	158	1856	296	197	525	170	220	392	207
RTOR Reduction (vph)	0	0	76	0	0	94	0	0	79	0	0	79
Lane Group Flow (vph)	174	2099	180	158	1856	202	197	525	91	220	392	128
Heavy Vehicles (%)	0%	1%	1%	2%	1%	2%	1%	1%	0%	2%	2%	0%
Bus Blockages (#/hr)	0	0	2	0	0	2	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	80.7	68.9	68.9	75.1	66.1	66.1	62.2	62.2	62.2	62.2	62.2	62.2
Effective Green, g (s)	84.9	70.2	70.2	81.1	67.4	67.4	63.7	63.7	63.7	63.7	63.7	63.7
Actuated g/C Ratio	0.54	0.45	0.45	0.52	0.43	0.43	0.41	0.41	0.41	0.41	0.41	0.41
Clearance Time (s)	4.0	6.3	6.3	4.0	6.3	6.3	6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Grp Cap (vph)	207	2297	592	173	2206	563	284	1435	528	226	1420	528
v/s Ratio Prot	c0.08	c0.41		c0.07	0.36			0.15			0.11	
v/s Ratio Perm	0.38		0.14	0.40		0.15	0.28		0.07	c0.39		0.10
v/c Ratio	0.84	0.91	0.30	0.91	0.84	0.36	0.69	0.37	0.17	0.97	0.28	0.24
Uniform Delay, d1	46.4	40.5	27.7	46.9	40.0	30.2	38.5	32.5	29.8	45.8	31.2	30.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	25.8	7.0	1.3	44.7	4.1	1.8	7.4	0.2	0.2	52.1	0.1	0.3
Delay (s)	72.2	47.6	29.0	91.6	44.1	32.0	45.9	32.7	29.9	97.9	31.3	31.0
Level of Service	E	D	C	F	D	C	D	C	C	F	C	C
Approach Delay (s)		47.4			45.8			35.1			49.1	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	45.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	156.9	Sum of lost time (s)	11.0
Intersection Capacity Utilization	91.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2278	1573	0	440	886
Future Volume (vph)	0	2278	1573	0	440	886
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)		5.0	5.0		5.0	5.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		0.92	0.85
Flt Protected		1.00	1.00		0.98	1.00
Satd. Flow (prot)		5136	5136		3329	1471
Flt Permitted		1.00	1.00		0.98	1.00
Satd. Flow (perm)		5136	5136		3329	1471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	2373	1639	0	458	923
RTOR Reduction (vph)	0	0	0	0	12	12
Lane Group Flow (vph)	0	2373	1639	0	908	449
Heavy Vehicles (%)	0%	1%	1%	0%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	2		4	
Permitted Phases						4
Actuated Green, G (s)		85.3	85.3		52.5	52.5
Effective Green, g (s)		87.3	87.3		53.5	53.5
Actuated g/C Ratio		0.58	0.58		0.35	0.35
Clearance Time (s)		7.0	7.0		6.0	6.0
Vehicle Extension (s)		2.0	2.0		4.0	4.0
Lane Grp Cap (vph)		2973	2973		1181	521
v/s Ratio Prot		c0.46	0.32		0.27	
v/s Ratio Perm						c0.31
v/c Ratio		0.80	0.55		0.77	0.86
Uniform Delay, d1		24.9	19.6		43.2	45.2
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		2.3	0.7		3.3	14.2
Delay (s)		27.2	20.4		46.4	59.4
Level of Service		C	C		D	E
Approach Delay (s)		27.2	20.4		50.8	
Approach LOS		C	C		D	

Intersection Summary			
HCM 2000 Control Delay	31.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	150.8	Sum of lost time (s)	10.0
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1900	0	0	1933	134	661
Future Volume (vph)	1900	0	0	1933	134	661
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)	5.0			5.0	5.0	5.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.89	0.85
Flt Protected	1.00			1.00	0.99	1.00
Satd. Flow (prot)	5136			5136	3240	1471
Flt Permitted	1.00			1.00	0.99	1.00
Satd. Flow (perm)	5136			5136	3240	1471
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	1959	0	0	1993	138	681
RTOR Reduction (vph)	0	0	0	0	6	6
Lane Group Flow (vph)	1959	0	0	1993	473	334
Heavy Vehicles (%)	1%	0%	0%	1%	2%	1%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	4	
Permitted Phases						4
Actuated Green, G (s)	88.5			88.5	38.2	38.2
Effective Green, g (s)	90.5			90.5	39.2	39.2
Actuated g/C Ratio	0.65			0.65	0.28	0.28
Clearance Time (s)	7.0			7.0	6.0	6.0
Vehicle Extension (s)	4.0			4.0	4.0	4.0
Lane Grp Cap (vph)	3327			3327	909	412
v/s Ratio Prot	0.38			c0.39	0.15	
v/s Ratio Perm						c0.23
v/c Ratio	0.59			0.60	0.52	0.81
Uniform Delay, d1	14.0			14.2	42.3	46.8
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.3			0.3	0.7	11.8
Delay (s)	14.3			14.5	43.0	58.5
Level of Service	B			B	D	E
Approach Delay (s)	14.3			14.5	49.4	
Approach LOS	B			B	D	

Intersection Summary			
HCM 2000 Control Delay	20.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	139.7	Sum of lost time (s)	10.0
Intersection Capacity Utilization	75.3%	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)	7	70	140	980	928	19
Future Volume (Veh/h)	7	70	140	980	928	19
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	7	73	146	1021	967	20
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				149		
pX, platoon unblocked	0.91					
vC, conflicting volume	1780	494	987			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1652	494	987			
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	86	79			
cM capacity (veh/h)	66	527	708			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	80	146	510	510	645	342
Volume Left	7	146	0	0	0	0
Volume Right	73	0	0	0	0	20
cSH	326	708	1700	1700	1700	1700
Volume to Capacity	0.25	0.21	0.30	0.30	0.38	0.20
Queue Length 95th (m)	7.6	6.2	0.0	0.0	0.0	0.0
Control Delay (s)	19.6	11.4	0.0	0.0	0.0	0.0
Lane LOS	C	B				
Approach Delay (s)	19.6	1.4			0.0	
Approach LOS	C					

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	48.7%	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)	248	2385	365	172	938	141	168	324	152	262	576	122
Future Volume (vph)	248	2385	365	172	938	141	168	324	152	262	576	122
Ideal Flow (vphpl)	1860	1900	1640	1860	1900	1640	1860	1900	1860	1860	1900	1640
Lane Width	3.3	3.6	3.3	3.3	3.6	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	1.0	5.0	5.0	1.0	5.0	5.0	1.0	5.0	1.0	1.0	5.0	5.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1691	5136	1263	1627	4673	1300	1541	3400	1392	1633	3500	1263
Flt Permitted	0.23	1.00	1.00	0.05	1.00	1.00	0.24	1.00	1.00	0.37	1.00	1.00
Satd. Flow (perm)	406	5136	1263	93	4673	1300	389	3400	1392	631	3500	1263
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)	256	2459	376	177	967	145	173	334	157	270	594	126
RTOR Reduction (vph)	0	0	90	0	0	75	0	0	75	0	0	90
Lane Group Flow (vph)	256	2459	286	177	967	70	173	334	82	270	594	36
Heavy Vehicles (%)	1%	1%	5%	5%	11%	2%	7%	5%	6%	1%	2%	3%
Bus Blockages (#/hr)	0	0	4	0	0	4	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	90.4	75.4	75.4	81.7	70.7	70.7	33.5	23.9	34.9	44.9	31.3	31.3
Effective Green, g (s)	93.4	76.7	76.7	87.7	72.0	72.0	39.5	25.4	40.9	47.9	32.8	32.8
Actuated g/C Ratio	0.63	0.52	0.52	0.59	0.49	0.49	0.27	0.17	0.28	0.32	0.22	0.22
Clearance Time (s)	4.0	6.3	6.3	4.0	6.3	6.3	4.0	6.5	4.0	4.0	6.5	6.5
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Grp Cap (vph)	418	2659	654	200	2271	632	201	583	384	339	775	279
v/s Ratio Prot	c0.08	c0.48		c0.08	0.21		c0.07	0.10	0.02	c0.11	0.17	
v/s Ratio Perm	0.31		0.23	0.44		0.05	c0.16		0.04	0.15		0.03
v/c Ratio	0.61	0.92	0.44	0.89	0.43	0.11	0.86	0.57	0.21	0.80	0.77	0.13
Uniform Delay, d1	13.4	33.0	22.2	47.1	24.7	20.7	46.5	56.4	41.2	41.0	54.1	46.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.8	6.9	2.1	34.4	0.6	0.4	29.8	1.5	0.3	12.5	4.7	0.3
Delay (s)	16.2	39.9	24.4	81.6	25.2	21.0	76.3	57.8	41.5	53.6	58.8	46.5
Level of Service	B	D	C	F	C	C	E	E	D	D	E	D
Approach Delay (s)		36.1			32.5			58.8			55.8	
Approach LOS		D			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	41.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	148.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	96.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2767	599	0	777	781
Future Volume (vph)	0	2767	599	0	777	781
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)		5.0	5.0		5.0	5.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		0.96	0.85
Flt Protected		1.00	1.00		0.96	1.00
Satd. Flow (prot)		5136	4893		3211	1303
Flt Permitted		1.00	1.00		0.96	1.00
Satd. Flow (perm)		5136	4893		3211	1303
Peak-hour factor, PHF	0.25	0.96	0.96	0.25	0.96	0.96
Adj. Flow (vph)	0	2882	624	0	809	814
RTOR Reduction (vph)	0	0	0	0	26	155
Lane Group Flow (vph)	0	2882	624	0	1084	358
Heavy Vehicles (%)	0%	1%	6%	0%	5%	14%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	2		4	
Permitted Phases						4
Actuated Green, G (s)		86.1	86.1		58.2	58.2
Effective Green, g (s)		88.1	88.1		59.2	59.2
Actuated g/C Ratio		0.56	0.56		0.38	0.38
Clearance Time (s)		7.0	7.0		6.0	6.0
Vehicle Extension (s)		2.0	2.0		4.0	4.0
Lane Grp Cap (vph)		2876	2740		1208	490
v/s Ratio Prot		c0.56	0.13		c0.34	
v/s Ratio Perm						0.27
v/c Ratio		1.00	0.23		0.90	0.73
Uniform Delay, d1		34.6	17.4		46.2	42.2
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		17.3	0.2		9.2	5.9
Delay (s)		51.9	17.6		55.4	48.1
Level of Service		D	B		E	D
Approach Delay (s)		51.9	17.6		53.1	
Approach LOS		D	B		D	

Intersection Summary			
HCM 2000 Control Delay	48.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	157.3	Sum of lost time (s)	10.0
Intersection Capacity Utilization	92.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑	↰↰	↱
Traffic Volume (vph)	2417	0	0	633	80	480
Future Volume (vph)	2417	0	0	633	80	480
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)	5.0			5.0	5.0	5.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.89	0.85
Flt Protected	1.00			1.00	0.99	1.00
Satd. Flow (prot)	5036			4848	3210	1457
Flt Permitted	1.00			1.00	0.99	1.00
Satd. Flow (perm)	5036			4848	3210	1457
Peak-hour factor, PHF	0.95	0.25	0.25	0.95	0.95	0.95
Adj. Flow (vph)	2544	0	0	666	84	505
RTOR Reduction (vph)	0	0	0	0	3	3
Lane Group Flow (vph)	2544	0	0	666	334	249
Heavy Vehicles (%)	3%	0%	0%	7%	1%	2%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	4	
Permitted Phases						4
Actuated Green, G (s)	96.3			96.3	30.4	30.4
Effective Green, g (s)	98.3			98.3	31.4	31.4
Actuated g/C Ratio	0.70			0.70	0.22	0.22
Clearance Time (s)	7.0			7.0	6.0	6.0
Vehicle Extension (s)	4.0			4.0	4.0	4.0
Lane Grp Cap (vph)	3543			3411	721	327
v/s Ratio Prot	c0.51			0.14	0.10	
v/s Ratio Perm						c0.17
v/c Ratio	0.72			0.20	0.46	0.76
Uniform Delay, d1	12.4			7.1	46.9	50.6
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.8			0.0	0.6	10.6
Delay (s)	13.2			7.1	47.5	61.2
Level of Service	B			A	D	E
Approach Delay (s)	13.2			7.1	53.4	
Approach LOS	B			A	D	

Intersection Summary			
HCM 2000 Control Delay	18.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	139.7	Sum of lost time (s)	10.0
Intersection Capacity Utilization	92.1%	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 (veh/h)	0	0	3	7	0	5	15	697	9	4	927	1
Future Volume (Veh/h)	0	0	3	7	0	5	15	697	9	4	927	1
Sign Control		Stop			Stop			Free			Free	
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)	0	0	3	8	0	5	16	766	10	4	1019	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (m)								149				
pX, platoon unblocked	0.92	0.92		0.92	0.92	0.92				0.92		
vC, conflicting volume	1448	1836	1020	1833	1831	388	1020			776		
vC1, stage 1 conf vol	1028	1028		803	803							
vC2, stage 2 conf vol	420	808		1030	1028							
vCu, unblocked vol	1306	1729	1020	1726	1724	149	1020			573		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	100	100	99	96	100	99	98			100		
cM capacity (veh/h)	241	255	238	199	247	798	647			913		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	3	13	16	511	265	4	1020
Volume Left	0	8	16	0	0	4	0
Volume Right	3	5	0	0	10	0	1
cSH	238	279	647	1700	1700	913	1700
Volume to Capacity	0.01	0.05	0.02	0.30	0.16	0.00	0.60
Queue Length 95th (m)	0.3	1.2	0.6	0.0	0.0	0.1	0.0
Control Delay (s)	20.3	18.5	10.7	0.0	0.0	9.0	0.0
Lane LOS	C	C	B			A	
Approach Delay (s)	20.3	18.5	0.2			0.0	
Approach LOS	C	C					

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	62.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2803	1248	24	0	4
Future Volume (Veh/h)	0	2803	1248	24	0	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)	0	3047	1357	26	0	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		184	172			
pX, platoon unblocked	0.95				0.57	0.95
vC, conflicting volume	1383				2386	465
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1206				137	236
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	544				478	725

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	1016	1016	1016	543	543	297	4
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	26	4
cSH	1700	1700	1700	1700	1700	1700	725
Volume to Capacity	0.60	0.60	0.60	0.32	0.32	0.17	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	10.0
Lane LOS							A
Approach Delay (s)	0.0			0.0			10.0
Approach LOS							A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	57.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	1628	172	133	2737	151	356	775	723	151	303	236
Future Volume (vph)	170	1628	172	133	2737	151	356	775	723	151	303	236
Ideal Flow (vphpl)	1860	1900	1640	1860	1900	1640	1860	1900	1860	1860	1900	1640
Lane Width	3.3	3.6	3.3	3.3	3.6	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	1.0	5.0	5.0	1.0	5.0	5.0	1.0	5.0	1.0	1.0	5.0	5.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	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	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1691	5036	1283	1675	5136	1313	1617	3535	1381	1633	3535	1301
Flt Permitted	0.07	1.00	1.00	0.07	1.00	1.00	0.40	1.00	1.00	0.20	1.00	1.00
Satd. Flow (perm)	119	5036	1283	116	5136	1313	686	3535	1381	337	3535	1301
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	173	1661	176	136	2793	154	363	791	738	154	309	241
RTOR Reduction (vph)	0	0	81	0	0	52	0	0	27	0	0	109
Lane Group Flow (vph)	173	1661	95	136	2793	102	363	791	711	154	309	132
Confl. Peds. (#/hr)			1	1					1	1		
Heavy Vehicles (%)	1%	3%	2%	2%	1%	1%	2%	1%	6%	1%	1%	0%
Bus Blockages (#/hr)	0	0	4	0	0	4	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	62.8	56.8	56.8	83.8	73.8	73.8	51.5	39.5	62.5	32.5	24.5	24.5
Effective Green, g (s)	68.8	58.1	58.1	86.8	75.1	75.1	54.5	41.0	68.5	38.5	26.0	26.0
Actuated g/C Ratio	0.46	0.39	0.39	0.59	0.51	0.51	0.37	0.28	0.46	0.26	0.18	0.18
Clearance Time (s)	4.0	6.3	6.3	4.0	6.3	6.3	4.0	6.5	4.0	4.0	6.5	6.5
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Grp Cap (vph)	150	1975	503	341	2604	665	415	978	638	183	620	228
v/s Ratio Prot	c0.07	0.33		0.07	0.54		c0.15	0.22	c0.20	0.06	0.09	
v/s Ratio Perm	c0.46		0.07	0.16		0.08	0.17		0.32	0.16		0.10
v/c Ratio	1.15	0.84	0.19	0.40	1.07	0.15	0.87	0.81	1.11	0.84	0.50	0.58
Uniform Delay, d1	42.0	40.8	29.5	27.0	36.5	19.5	38.8	49.9	39.8	45.9	55.2	56.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	120.6	4.5	0.8	0.9	40.8	0.5	18.5	5.1	71.4	28.5	0.7	3.8
Delay (s)	162.7	45.3	30.4	28.0	77.3	20.0	57.4	55.0	111.2	74.4	55.9	59.9
Level of Service	F	D	C	C	E	B	E	E	F	E	E	E
Approach Delay (s)		54.1			72.3			77.4			61.3	
Approach LOS		D			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	67.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	148.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	107.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2332	1578	0	368	1444
Future Volume (vph)	0	2332	1578	0	368	1444
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)		5.0	5.0		5.0	5.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		0.90	0.85
Flt Protected		1.00	1.00		0.98	1.00
Satd. Flow (prot)		4988	5136		3225	1471
Flt Permitted		1.00	1.00		0.98	1.00
Satd. Flow (perm)		4988	5136		3225	1471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	2429	1644	0	383	1504
RTOR Reduction (vph)	0	0	0	0	5	5
Lane Group Flow (vph)	0	2429	1644	0	1130	747
Confl. Peds. (#/hr)	1			1		
Heavy Vehicles (%)	0%	4%	1%	0%	5%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	2		4	
Permitted Phases						4
Actuated Green, G (s)		75.0	75.0		72.0	72.0
Effective Green, g (s)		77.0	77.0		73.0	73.0
Actuated g/C Ratio		0.48	0.48		0.46	0.46
Clearance Time (s)		7.0	7.0		6.0	6.0
Vehicle Extension (s)		2.0	2.0		4.0	4.0
Lane Grp Cap (vph)		2400	2471		1471	671
v/s Ratio Prot		c0.49	0.32		0.35	
v/s Ratio Perm						c0.51
v/c Ratio		1.01	0.67		1.01dr	1.11
Uniform Delay, d1		41.5	31.7		36.4	43.5
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		21.4	1.4		2.6	69.9
Delay (s)		62.9	33.1		39.0	113.4
Level of Service		E	C		D	F
Approach Delay (s)		62.9	33.1		68.7	
Approach LOS		E	C		E	

Intersection Summary			
HCM 2000 Control Delay	56.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	98.4%	ICU Level of Service	F
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1782	0	0	1913	60	436
Future Volume (vph)	1782	0	0	1913	60	436
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)	5.0			5.0	5.0	5.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	0.88	0.85
Flt Protected	1.00			1.00	0.99	1.00
Satd. Flow (prot)	5036			5136	3103	1429
Flt Permitted	1.00			1.00	0.99	1.00
Satd. Flow (perm)	5036			5136	3103	1429
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	1837	0	0	1972	62	449
RTOR Reduction (vph)	0	0	0	0	14	14
Lane Group Flow (vph)	1837	0	0	1972	273	210
Confl. Peds. (#/hr)		5	5			
Heavy Vehicles (%)	3%	0%	0%	1%	8%	4%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	4	
Permitted Phases						4
Actuated Green, G (s)	96.3			96.3	25.7	25.7
Effective Green, g (s)	98.3			98.3	26.7	26.7
Actuated g/C Ratio	0.73			0.73	0.20	0.20
Clearance Time (s)	7.0			7.0	6.0	6.0
Vehicle Extension (s)	4.0			4.0	4.0	4.0
Lane Grp Cap (vph)	3666			3739	613	282
v/s Ratio Prot	0.36			c0.38	0.09	
v/s Ratio Perm						c0.15
v/c Ratio	0.50			0.53	0.44	0.74
Uniform Delay, d1	7.9			8.1	47.6	50.9
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.1			0.2	0.7	10.7
Delay (s)	8.0			8.3	48.3	61.7
Level of Service	A			A	D	E
Approach Delay (s)	8.0			8.3	54.2	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	98.4%	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 (veh/h)	1	0	12	18	0	13	15	1040	7	3	674	2
Future Volume (Veh/h)	1	0	12	18	0	13	15	1040	7	3	674	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	1	0	13	19	0	14	16	1118	8	3	725	2
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (m)								149				
pX, platoon unblocked	0.79	0.79		0.79	0.79	0.79				0.79		
vC, conflicting volume	1337	1890	726	1898	1887	563	727			1126		
vC1, stage 1 conf vol	732	732		1154	1154							
vC2, stage 2 conf vol	605	1158		744	733							
vCu, unblocked vol	902	1600	726	1610	1596	0	727			636		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	92	100	98	98			100		
cM capacity (veh/h)	358	273	372	232	272	859	886			748		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	14	33	16	745	381	3	727
Volume Left	1	19	16	0	0	3	0
Volume Right	13	14	0	0	8	0	2
cSH	371	337	886	1700	1700	748	1700
Volume to Capacity	0.04	0.10	0.02	0.44	0.22	0.00	0.43
Queue Length 95th (m)	0.9	2.6	0.4	0.0	0.0	0.1	0.0
Control Delay (s)	15.1	16.9	9.1	0.0	0.0	9.8	0.0
Lane LOS	C	C	A			A	
Approach Delay (s)	15.1	16.9	0.1			0.0	
Approach LOS	C	C					

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2552	3011	17	0	10
Future Volume (Veh/h)	0	2552	3011	17	0	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)	0	2774	3273	18	0	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		184	172			
pX, platoon unblocked	0.75				0.82	0.75
vC, conflicting volume	3291				4207	1100
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2897				2130	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	94				35	818

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	925	925	925	1309	1309	673	11
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	18	11
cSH	1700	1700	1700	1700	1700	1700	818
Volume to Capacity	0.54	0.54	0.54	0.77	0.77	0.40	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	9.5
Lane LOS							A
Approach Delay (s)	0.0			0.0			9.5
Approach LOS							A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	166	1937	236	146	1635	260	157	291	135	197	193	165
Future Volume (vph)	166	1937	236	146	1635	260	157	291	135	197	193	165
Ideal Flow (vphpl)	1860	1900	1640	1860	1900	1640	1640	1900	1640	1860	1900	1640
Lane Width	3.3	3.6	3.3	3.3	3.6	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	1.0	5.0	5.0	1.0	5.0	5.0	5.0	5.0	5.0	1.0	5.0	5.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1708	5136	1324	1675	5136	1311	1440	3535	1301	1617	3500	1301
Flt Permitted	0.07	1.00	1.00	0.05	1.00	1.00	0.63	1.00	1.00	0.45	1.00	1.00
Satd. Flow (perm)	129	5136	1324	95	5136	1311	950	3535	1301	765	3500	1301
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)	171	1997	243	151	1686	268	162	300	139	203	199	170
RTOR Reduction (vph)	0	0	71	0	0	82	0	0	109	0	0	118
Lane Group Flow (vph)	171	1997	172	151	1686	186	162	300	30	203	199	52
Heavy Vehicles (%)	0%	1%	1%	2%	1%	2%	1%	1%	0%	2%	2%	0%
Bus Blockages (#/hr)	0	0	2	0	0	2	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6			4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	90.8	75.2	75.2	83.6	71.6	71.6	30.0	30.0	30.0	43.1	43.1	43.1
Effective Green, g (s)	94.2	76.5	76.5	89.6	72.9	72.9	31.5	31.5	31.5	46.1	44.6	44.6
Actuated g/C Ratio	0.64	0.52	0.52	0.61	0.50	0.50	0.21	0.21	0.21	0.31	0.30	0.30
Clearance Time (s)	4.0	6.3	6.3	4.0	6.3	6.3	6.5	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.0	3.5	3.5
Lane Grp Cap (vph)	282	2670	688	218	2545	649	203	756	278	309	1061	394
v/s Ratio Prot	c0.08	c0.39		c0.07	0.33			0.08		c0.05	0.06	
v/s Ratio Perm	0.31		0.13	0.35		0.14	c0.17		0.02	0.15		0.04
v/c Ratio	0.61	0.75	0.25	0.69	0.66	0.29	0.80	0.40	0.11	0.66	0.19	0.13
Uniform Delay, d1	29.6	27.7	19.5	38.0	27.9	21.8	54.8	49.6	46.5	41.0	37.9	37.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.8	2.0	0.9	9.5	1.4	1.1	19.7	0.4	0.2	5.0	0.1	0.2
Delay (s)	33.4	29.7	20.3	47.5	29.2	22.9	74.5	50.0	46.7	46.0	38.0	37.4
Level of Service	C	C	C	D	C	C	E	D	D	D	D	D
Approach Delay (s)		29.0			29.7			55.9			40.6	
Approach LOS		C			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	33.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	147.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2184	1438	0	344	708
Future Volume (vph)	0	2184	1438	0	344	708
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)		5.0	5.0		5.0	5.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		0.92	0.85
Flt Protected		1.00	1.00		0.98	1.00
Satd. Flow (prot)		5136	5136		3327	1471
Flt Permitted		1.00	1.00		0.98	1.00
Satd. Flow (perm)		5136	5136		3327	1471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	2275	1498	0	358	738
RTOR Reduction (vph)	0	0	0	0	25	25
Lane Group Flow (vph)	0	2275	1498	0	702	344
Heavy Vehicles (%)	0%	1%	1%	0%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	2		4	
Permitted Phases						4
Actuated Green, G (s)		92.4	92.4		41.5	41.5
Effective Green, g (s)		94.4	94.4		42.5	42.5
Actuated g/C Ratio		0.64	0.64		0.29	0.29
Clearance Time (s)		7.0	7.0		6.0	6.0
Vehicle Extension (s)		2.0	2.0		4.0	4.0
Lane Grp Cap (vph)		3300	3300		962	425
v/s Ratio Prot		c0.44	0.29		0.21	
v/s Ratio Perm						c0.23
v/c Ratio		0.69	0.45		0.73	0.81
Uniform Delay, d1		16.8	13.2		47.0	48.4
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		1.2	0.5		3.0	11.4
Delay (s)		18.0	13.7		50.0	59.9
Level of Service		B	B		D	E
Approach Delay (s)		18.0	13.7		53.3	
Approach LOS		B	B		D	

Intersection Summary			
HCM 2000 Control Delay	24.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	146.9	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1817	0	0	1759	109	516
Future Volume (vph)	1817	0	0	1759	109	516
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)	5.0			5.0	5.0	5.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.89	0.85
Flt Protected	1.00			1.00	0.99	1.00
Satd. Flow (prot)	5136			5136	3243	1471
Flt Permitted	1.00			1.00	0.99	1.00
Satd. Flow (perm)	5136			5136	3243	1471
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	1873	0	0	1813	112	532
RTOR Reduction (vph)	0	0	0	0	12	12
Lane Group Flow (vph)	1873	0	0	1813	366	254
Heavy Vehicles (%)	1%	0%	0%	1%	2%	1%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	4	
Permitted Phases						4
Actuated Green, G (s)	93.3			93.3	29.9	29.9
Effective Green, g (s)	95.3			95.3	30.9	30.9
Actuated g/C Ratio	0.70			0.70	0.23	0.23
Clearance Time (s)	7.0			7.0	6.0	6.0
Vehicle Extension (s)	4.0			4.0	4.0	4.0
Lane Grp Cap (vph)	3593			3593	735	333
v/s Ratio Prot	c0.36			0.35	0.11	
v/s Ratio Perm						c0.17
v/c Ratio	0.52			0.50	0.50	0.76
Uniform Delay, d1	9.7			9.5	45.9	49.2
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.2			0.2	0.7	10.6
Delay (s)	9.8			9.6	46.6	59.8
Level of Service	A			A	D	E
Approach Delay (s)	9.8			9.6	52.1	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	136.2	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
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 (veh/h)	7	0	66	22	0	15	134	547	12	5	472	19
Future Volume (Veh/h)	7	0	66	22	0	15	134	547	12	5	472	19
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	7	0	69	23	0	16	140	570	12	5	492	20
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (m)								149				
pX, platoon unblocked	0.94	0.94		0.94	0.94	0.94				0.94		
vC, conflicting volume	1093	1374	502	1427	1378	291	512			582		
vC1, stage 1 conf vol	512	512		856	856							
vC2, stage 2 conf vol	581	862		571	522							
vCu, unblocked vol	981	1279	502	1335	1283	132	512			440		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	87	89	100	98	87			100		
cM capacity (veh/h)	369	303	520	213	282	843	1064			1054		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	76	39	140	380	202	5	512
Volume Left	7	23	140	0	0	5	0
Volume Right	69	16	0	0	12	0	20
cSH	501	308	1064	1700	1700	1054	1700
Volume to Capacity	0.15	0.13	0.13	0.22	0.12	0.00	0.30
Queue Length 95th (m)	4.2	3.4	3.6	0.0	0.0	0.1	0.0
Control Delay (s)	13.5	18.4	8.9	0.0	0.0	8.4	0.0
Lane LOS	B	C	A			A	
Approach Delay (s)	13.5	18.4	1.7			0.1	
Approach LOS	B	C					

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	51.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2294	2028	30	0	12
Future Volume (Veh/h)	0	2294	2028	30	0	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)	0	2493	2204	33	0	13
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		184	172			
pX, platoon unblocked	0.85				0.76	0.85
vC, conflicting volume	2237				3052	751
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1846				1296	104
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	98
cM capacity (veh/h)	277				117	794

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	831	831	831	882	882	474	13
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	33	13
cSH	1700	1700	1700	1700	1700	1700	794
Volume to Capacity	0.49	0.49	0.49	0.52	0.52	0.28	0.02
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	9.6
Lane LOS							A
Approach Delay (s)	0.0			0.0			9.6
Approach LOS							A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	49.9%	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 (vph)	254	2445	374	176	962	145	141	432	168	289	735	135
Future Volume (vph)	254	2445	374	176	962	145	141	432	168	289	735	135
Ideal Flow (vphpl)	1860	1900	1640	1860	1900	1640	1860	1900	1860	1860	1900	1640
Lane Width	3.3	3.6	3.3	3.3	3.6	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	1.0	5.0	5.0	1.0	5.0	5.0	1.0	5.0	1.0	1.0	5.0	5.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1691	5136	1263	1627	4673	1300	1541	3400	1392	1633	3500	1263
Flt Permitted	0.21	1.00	1.00	0.06	1.00	1.00	0.15	1.00	1.00	0.29	1.00	1.00
Satd. Flow (perm)	374	5136	1263	95	4673	1300	241	3400	1392	507	3500	1263
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)	262	2521	386	181	992	149	145	445	173	298	758	139
RTOR Reduction (vph)	0	0	95	0	0	82	0	0	72	0	0	77
Lane Group Flow (vph)	262	2521	291	181	992	67	145	445	101	298	758	62
Heavy Vehicles (%)	1%	1%	5%	5%	11%	2%	7%	5%	6%	1%	2%	3%
Bus Blockages (#/hr)	0	0	4	0	0	4	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	90.3	75.3	75.3	80.1	69.1	69.1	41.1	31.5	42.5	52.5	38.9	38.9
Effective Green, g (s)	93.3	76.6	76.6	86.1	70.4	70.4	47.1	33.0	48.5	55.5	40.4	40.4
Actuated g/C Ratio	0.60	0.49	0.49	0.55	0.45	0.45	0.30	0.21	0.31	0.36	0.26	0.26
Clearance Time (s)	4.0	6.3	6.3	4.0	6.3	6.3	4.0	6.5	4.0	4.0	6.5	6.5
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Grp Cap (vph)	395	2528	621	190	2114	588	178	721	433	325	908	327
v/s Ratio Prot	c0.09	c0.49		c0.09	0.21		0.07	0.13	0.02	c0.12	c0.22	
v/s Ratio Perm	0.31		0.23	0.44		0.05	0.18		0.05	0.21		0.05
v/c Ratio	0.66	1.00	0.47	0.95	0.47	0.11	0.81	0.62	0.23	0.92	0.83	0.19
Uniform Delay, d1	16.9	39.4	26.1	51.4	29.6	24.6	43.5	55.6	39.8	42.0	54.4	44.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.3	17.3	2.5	51.7	0.8	0.4	24.6	1.7	0.3	29.8	6.9	0.3
Delay (s)	21.2	56.7	28.6	103.1	30.4	25.0	68.1	57.2	40.1	71.8	61.3	45.2
Level of Service	C	E	C	F	C	C	E	E	D	E	E	D
Approach Delay (s)		50.3			39.7			55.4			62.0	
Approach LOS		D			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	50.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	155.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	100.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2837	614	0	879	882
Future Volume (vph)	0	2837	614	0	879	882
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)		5.0	5.0		5.0	5.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		0.96	0.85
Flt Protected		1.00	1.00		0.96	1.00
Satd. Flow (prot)		5136	4893		3211	1303
Flt Permitted		1.00	1.00		0.96	1.00
Satd. Flow (perm)		5136	4893		3211	1303
Peak-hour factor, PHF	0.25	0.96	0.96	0.25	0.96	0.96
Adj. Flow (vph)	0	2955	640	0	916	919
RTOR Reduction (vph)	0	0	0	0	25	146
Lane Group Flow (vph)	0	2955	640	0	1231	433
Heavy Vehicles (%)	0%	1%	6%	0%	5%	14%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	2		4	
Permitted Phases						4
Actuated Green, G (s)		86.0	86.0		61.0	61.0
Effective Green, g (s)		88.0	88.0		62.0	62.0
Actuated g/C Ratio		0.55	0.55		0.39	0.39
Clearance Time (s)		7.0	7.0		6.0	6.0
Vehicle Extension (s)		2.0	2.0		4.0	4.0
Lane Grp Cap (vph)		2824	2691		1244	504
v/s Ratio Prot		c0.58	0.13		c0.38	
v/s Ratio Perm						0.33
v/c Ratio		1.05	0.24		0.99	0.86
Uniform Delay, d1		36.0	18.6		48.7	45.0
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		30.7	0.2		22.8	14.0
Delay (s)		66.7	18.8		71.4	59.0
Level of Service		E	B		E	E
Approach Delay (s)		66.7	18.8		67.5	
Approach LOS		E	B		E	

Intersection Summary			
HCM 2000 Control Delay	61.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	97.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑	↰↰	↱
Traffic Volume (vph)	2478	0	0	649	90	543
Future Volume (vph)	2478	0	0	649	90	543
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)	5.0			5.0	5.0	5.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.89	0.85
Flt Protected	1.00			1.00	0.99	1.00
Satd. Flow (prot)	5036			4848	3210	1457
Flt Permitted	1.00			1.00	0.99	1.00
Satd. Flow (perm)	5036			4848	3210	1457
Peak-hour factor, PHF	0.95	0.25	0.25	0.95	0.95	0.95
Adj. Flow (vph)	2608	0	0	683	95	572
RTOR Reduction (vph)	0	0	0	0	2	2
Lane Group Flow (vph)	2608	0	0	683	379	284
Heavy Vehicles (%)	3%	0%	0%	7%	1%	2%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	4	
Permitted Phases						4
Actuated Green, G (s)	98.1			98.1	34.6	34.6
Effective Green, g (s)	100.1			100.1	35.6	35.6
Actuated g/C Ratio	0.69			0.69	0.24	0.24
Clearance Time (s)	7.0			7.0	6.0	6.0
Vehicle Extension (s)	4.0			4.0	4.0	4.0
Lane Grp Cap (vph)	3459			3330	784	356
v/s Ratio Prot	c0.52			0.14	0.12	
v/s Ratio Perm						c0.19
v/c Ratio	0.75			0.21	0.48	0.80
Uniform Delay, d1	14.8			8.3	47.2	51.7
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	1.0			0.0	0.6	12.3
Delay (s)	15.8			8.3	47.8	64.0
Level of Service	B			A	D	E
Approach Delay (s)	15.8			8.3	54.8	
Approach LOS	B			A	D	

Intersection Summary			
HCM 2000 Control Delay	21.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	145.7	Sum of lost time (s)	10.0
Intersection Capacity Utilization	97.5%	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 (veh/h)	0	0	3	7	0	5	15	933	9	4	1183	1
Future Volume (Veh/h)	0	0	3	7	0	5	15	933	9	4	1183	1
Sign Control		Stop			Stop			Free			Free	
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)	0	0	3	8	0	5	16	1025	10	4	1300	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (m)								149				
pX, platoon unblocked	0.89	0.89		0.89	0.89	0.89				0.89		
vC, conflicting volume	1858	2376	650	1723	2371	518	1301			1035		
vC1, stage 1 conf vol	1308	1308		1062	1062							
vC2, stage 2 conf vol	550	1067		661	1309							
vCu, unblocked vol	1712	2296	650	1560	2291	200	1301			784		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	100	100	99	97	100	99	97			99		
cM capacity (veh/h)	162	182	416	236	174	716	502			736		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	3	13	16	683	352	4	867	434
Volume Left	0	8	16	0	0	4	0	0
Volume Right	3	5	0	0	10	0	0	1
cSH	416	318	502	1700	1700	736	1700	1700
Volume to Capacity	0.01	0.04	0.03	0.40	0.21	0.01	0.51	0.26
Queue Length 95th (m)	0.2	1.0	0.8	0.0	0.0	0.1	0.0	0.0
Control Delay (s)	13.7	16.8	12.4	0.0	0.0	9.9	0.0	0.0
Lane LOS	B	C	B			A		
Approach Delay (s)	13.7	16.8	0.2			0.0		
Approach LOS	B	C						

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2874	1280	24	0	4
Future Volume (Veh/h)	0	2874	1280	24	0	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)	0	3124	1391	26	0	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		184	172			
pX, platoon unblocked	0.95				0.54	0.95
vC, conflicting volume	1417				2445	477
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1241				47	246
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	527				520	713

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	1041	1041	1041	556	556	304	4
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	26	4
cSH	1700	1700	1700	1700	1700	1700	713
Volume to Capacity	0.61	0.61	0.61	0.33	0.33	0.18	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	10.1
Lane LOS							B
Approach Delay (s)	0.0			0.0			10.1
Approach LOS							B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	58.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	1669	176	139	2876	159	393	1036	798	121	425	261
Future Volume (vph)	130	1669	176	139	2876	159	393	1036	798	121	425	261
Ideal Flow (vphpl)	1860	1900	1640	1860	1900	1640	1860	1900	1860	1860	1900	1640
Lane Width	3.3	3.6	3.3	3.3	3.6	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	1.0	5.0	5.0	1.0	5.0	5.0	1.0	5.0	1.0	1.0	5.0	5.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	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	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1691	5036	1283	1675	5136	1313	1617	3535	1380	1633	3535	1301
Flt Permitted	0.07	1.00	1.00	0.07	1.00	1.00	0.32	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	119	5036	1283	116	5136	1313	552	3535	1380	180	3535	1301
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	133	1703	180	142	2935	162	401	1057	814	123	434	266
RTOR Reduction (vph)	0	0	84	0	0	56	0	0	25	0	0	102
Lane Group Flow (vph)	133	1703	96	142	2935	106	401	1057	789	123	434	164
Confl. Peds. (#/hr)			1	1					1	1		
Heavy Vehicles (%)	1%	3%	2%	2%	1%	1%	2%	1%	6%	1%	1%	0%
Bus Blockages (#/hr)	0	0	4	0	0	4	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	62.7	56.7	56.7	83.7	73.7	73.7	62.1	50.1	73.1	43.1	35.1	35.1
Effective Green, g (s)	68.7	58.0	58.0	86.7	75.0	75.0	65.1	51.6	79.1	49.1	36.6	36.6
Actuated g/C Ratio	0.43	0.37	0.37	0.55	0.47	0.47	0.41	0.33	0.50	0.31	0.23	0.23
Clearance Time (s)	4.0	6.3	6.3	4.0	6.3	6.3	4.0	6.5	4.0	4.0	6.5	6.5
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Grp Cap (vph)	140	1841	469	318	2428	620	401	1150	688	156	815	300
v/s Ratio Prot	0.05	0.34		0.07	c0.57		c0.16	0.30	c0.19	0.05	0.12	
v/s Ratio Perm	0.35		0.07	0.17		0.08	0.25		0.38	0.19		0.13
v/c Ratio	0.95	0.93	0.20	0.45	1.21	0.17	1.00	0.92	1.15	0.79	0.53	0.55
Uniform Delay, d1	42.0	48.2	34.5	33.2	41.8	24.0	40.6	51.5	39.8	43.9	53.5	53.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	60.6	9.4	1.0	1.2	98.1	0.6	44.9	11.8	82.4	23.2	0.8	2.3
Delay (s)	102.6	57.6	35.5	34.3	139.9	24.6	85.5	63.2	122.2	67.1	54.3	56.0
Level of Service	F	E	D	C	F	C	F	E	F	E	D	E
Approach Delay (s)		58.6			129.5			88.3			56.7	
Approach LOS		E			F			F			E	

Intersection Summary			
HCM 2000 Control Delay	94.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	158.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	113.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2391	1658	0	416	1633
Future Volume (vph)	0	2391	1658	0	416	1633
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)		5.0	5.0		5.0	5.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		0.90	0.85
Flt Protected		1.00	1.00		0.98	1.00
Satd. Flow (prot)		4988	5136		3225	1471
Flt Permitted		1.00	1.00		0.98	1.00
Satd. Flow (perm)		4988	5136		3225	1471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	2491	1727	0	433	1701
RTOR Reduction (vph)	0	0	0	0	4	4
Lane Group Flow (vph)	0	2491	1727	0	1280	846
Confl. Peds. (#/hr)	1			1		
Heavy Vehicles (%)	0%	4%	1%	0%	5%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	2		4	
Permitted Phases						4
Actuated Green, G (s)		75.0	75.0		72.0	72.0
Effective Green, g (s)		77.0	77.0		73.0	73.0
Actuated g/C Ratio		0.48	0.48		0.46	0.46
Clearance Time (s)		7.0	7.0		6.0	6.0
Vehicle Extension (s)		2.0	2.0		4.0	4.0
Lane Grp Cap (vph)		2400	2471		1471	671
v/s Ratio Prot		c0.50	0.34		0.40	
v/s Ratio Perm						c0.57
v/c Ratio		1.04	0.70		1.15dr	1.26
Uniform Delay, d1		41.5	32.4		39.2	43.5
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		29.1	1.7		6.0	128.9
Delay (s)		70.6	34.1		45.2	172.4
Level of Service		E	C		D	F
Approach Delay (s)		70.6	34.1		95.9	
Approach LOS		E	C		F	

Intersection Summary			
HCM 2000 Control Delay	69.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	107.8%	ICU Level of Service	G
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1827	0	0	2010	67	493
Future Volume (vph)	1827	0	0	2010	67	493
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)	5.0			5.0	5.0	5.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	0.88	0.85
Flt Protected	1.00			1.00	0.99	1.00
Satd. Flow (prot)	5036			5136	3102	1429
Flt Permitted	1.00			1.00	0.99	1.00
Satd. Flow (perm)	5036			5136	3102	1429
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	1884	0	0	2072	69	508
RTOR Reduction (vph)	0	0	0	0	12	12
Lane Group Flow (vph)	1884	0	0	2072	311	242
Confl. Peds. (#/hr)		5	5			
Heavy Vehicles (%)	3%	0%	0%	1%	8%	4%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	4	
Permitted Phases						4
Actuated Green, G (s)	96.3			96.3	29.5	29.5
Effective Green, g (s)	98.3			98.3	30.5	30.5
Actuated g/C Ratio	0.71			0.71	0.22	0.22
Clearance Time (s)	7.0			7.0	6.0	6.0
Vehicle Extension (s)	4.0			4.0	4.0	4.0
Lane Grp Cap (vph)	3566			3637	681	314
v/s Ratio Prot	0.37			c0.40	0.10	
v/s Ratio Perm						c0.17
v/c Ratio	0.53			0.57	0.46	0.77
Uniform Delay, d1	9.4			9.9	47.0	50.8
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.2			0.3	0.7	11.4
Delay (s)	9.6			10.2	47.6	62.3
Level of Service	A			B	D	E
Approach Delay (s)	9.6			10.2	54.1	
Approach LOS	A			B	D	

Intersection Summary			
HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	138.8	Sum of lost time (s)	10.0
Intersection Capacity Utilization	107.8%	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 (veh/h)	1	0	12	18	0	13	15	1392	7	3	945	2
Future Volume (Veh/h)	1	0	12	18	0	13	15	1392	7	3	945	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	1	0	13	19	0	14	16	1497	8	3	1016	2
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (m)								149				
pX, platoon unblocked	0.71	0.71		0.71	0.71	0.71				0.71		
vC, conflicting volume	1818	2560	509	2060	2557	752	1018			1505		
vC1, stage 1 conf vol	1023	1023		1533	1533							
vC2, stage 2 conf vol	794	1537		527	1024							
vCu, unblocked vol	1336	2381	509	1677	2377	0	1018			896		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	89	100	98	98			99		
cM capacity (veh/h)	238	179	515	180	178	770	689			535		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	14	33	16	998	507	3	677	341
Volume Left	1	19	16	0	0	3	0	0
Volume Right	13	14	0	0	8	0	0	2
cSH	475	267	689	1700	1700	535	1700	1700
Volume to Capacity	0.03	0.12	0.02	0.59	0.30	0.01	0.40	0.20
Queue Length 95th (m)	0.7	3.3	0.6	0.0	0.0	0.1	0.0	0.0
Control Delay (s)	12.8	20.4	10.3	0.0	0.0	11.8	0.0	0.0
Lane LOS	B	C	B			B		
Approach Delay (s)	12.8	20.4	0.1			0.0		
Approach LOS	B	C						

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	53.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2616	3165	17	0	10
Future Volume (Veh/h)	0	2616	3165	17	0	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)	0	2843	3440	18	0	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		184	172			
pX, platoon unblocked	0.74				0.81	0.74
vC, conflicting volume	3458				4397	1156
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3082				2158	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	77				33	797

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	948	948	948	1376	1376	706	11
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	18	11
cSH	1700	1700	1700	1700	1700	1700	797
Volume to Capacity	0.56	0.56	0.56	0.81	0.81	0.42	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	9.6
Lane LOS							A
Approach Delay (s)	0.0			0.0			9.6
Approach LOS							A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	1986	242	153	1718	273	173	387	149	215	271	182
Future Volume (vph)	170	1986	242	153	1718	273	173	387	149	215	271	182
Ideal Flow (vphpl)	1860	1900	1640	1860	1900	1640	1640	1900	1640	1860	1900	1640
Lane Width	3.3	3.6	3.3	3.3	3.6	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	1.0	5.0	5.0	1.0	5.0	5.0	5.0	5.0	5.0	1.0	5.0	5.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1708	5136	1324	1675	5136	1311	1440	3535	1301	1617	3500	1301
Flt Permitted	0.06	1.00	1.00	0.05	1.00	1.00	0.58	1.00	1.00	0.37	1.00	1.00
Satd. Flow (perm)	100	5136	1324	95	5136	1311	880	3535	1301	626	3500	1301
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)	175	2047	249	158	1771	281	178	399	154	222	279	188
RTOR Reduction (vph)	0	0	73	0	0	85	0	0	117	0	0	127
Lane Group Flow (vph)	175	2047	176	158	1771	196	178	399	37	222	279	61
Heavy Vehicles (%)	0%	1%	1%	2%	1%	2%	1%	1%	0%	2%	2%	0%
Bus Blockages (#/hr)	0	0	2	0	0	2	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6			4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	91.3	75.9	75.9	82.8	71.4	71.4	35.0	35.0	35.0	48.0	48.0	48.0
Effective Green, g (s)	94.3	77.2	77.2	88.8	72.7	72.7	36.5	36.5	36.5	51.0	49.5	49.5
Actuated g/C Ratio	0.62	0.51	0.51	0.58	0.48	0.48	0.24	0.24	0.24	0.34	0.33	0.33
Clearance Time (s)	4.0	6.3	6.3	4.0	6.3	6.3	6.5	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.0	3.5	3.5
Lane Grp Cap (vph)	261	2606	672	205	2454	626	211	848	312	288	1139	423
v/s Ratio Prot	c0.08	c0.40		c0.07	0.34			0.11		c0.06	0.08	
v/s Ratio Perm	0.33		0.13	0.38		0.15	c0.20		0.03	0.20		0.05
v/c Ratio	0.67	0.79	0.26	0.77	0.72	0.31	0.84	0.47	0.12	0.77	0.24	0.14
Uniform Delay, d1	40.0	30.7	21.3	42.3	31.6	24.4	55.1	49.5	45.2	42.4	37.6	36.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.9	2.5	0.9	16.7	1.9	1.3	25.7	0.5	0.2	12.0	0.1	0.2
Delay (s)	46.9	33.1	22.2	59.0	33.5	25.7	80.8	50.0	45.4	54.5	37.7	36.5
Level of Service	D	C	C	E	C	C	F	D	D	D	D	D
Approach Delay (s)		33.0			34.3			56.5			42.8	
Approach LOS		C			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	37.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	152.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2239	1511	0	389	799
Future Volume (vph)	0	2239	1511	0	389	799
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)		5.0	5.0		5.0	5.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		0.92	0.85
Flt Protected		1.00	1.00		0.98	1.00
Satd. Flow (prot)		5136	5136		3328	1471
Flt Permitted		1.00	1.00		0.98	1.00
Satd. Flow (perm)		5136	5136		3328	1471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	2332	1574	0	405	832
RTOR Reduction (vph)	0	0	0	0	16	16
Lane Group Flow (vph)	0	2332	1574	0	805	400
Heavy Vehicles (%)	0%	1%	1%	0%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	2		4	
Permitted Phases						4
Actuated Green, G (s)		88.4	88.4		47.3	47.3
Effective Green, g (s)		90.4	90.4		48.3	48.3
Actuated g/C Ratio		0.61	0.61		0.32	0.32
Clearance Time (s)		7.0	7.0		6.0	6.0
Vehicle Extension (s)		2.0	2.0		4.0	4.0
Lane Grp Cap (vph)		3122	3122		1080	477
v/s Ratio Prot		c0.45	0.31		0.24	
v/s Ratio Perm						c0.27
v/c Ratio		0.75	0.50		0.75	0.84
Uniform Delay, d1		20.9	16.5		44.7	46.6
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		1.7	0.6		3.0	12.7
Delay (s)		22.6	17.1		47.7	59.3
Level of Service		C	B		D	E
Approach Delay (s)		22.6	17.1		51.6	
Approach LOS		C	B		D	

Intersection Summary			
HCM 2000 Control Delay	27.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	148.7	Sum of lost time (s)	10.0
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1863	0	0	1848	123	584
Future Volume (vph)	1863	0	0	1848	123	584
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)	5.0			5.0	5.0	5.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.89	0.85
Flt Protected	1.00			1.00	0.99	1.00
Satd. Flow (prot)	5136			5136	3243	1471
Flt Permitted	1.00			1.00	0.99	1.00
Satd. Flow (perm)	5136			5136	3243	1471
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	1921	0	0	1905	127	602
RTOR Reduction (vph)	0	0	0	0	9	9
Lane Group Flow (vph)	1921	0	0	1905	419	292
Heavy Vehicles (%)	1%	0%	0%	1%	2%	1%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	4	
Permitted Phases						4
Actuated Green, G (s)	91.4			91.4	33.8	33.8
Effective Green, g (s)	93.4			93.4	34.8	34.8
Actuated g/C Ratio	0.68			0.68	0.25	0.25
Clearance Time (s)	7.0			7.0	6.0	6.0
Vehicle Extension (s)	4.0			4.0	4.0	4.0
Lane Grp Cap (vph)	3471			3471	816	370
v/s Ratio Prot	c0.37			0.37	0.13	
v/s Ratio Perm						c0.20
v/c Ratio	0.55			0.55	0.51	0.79
Uniform Delay, d1	11.6			11.5	44.4	48.3
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.2			0.2	0.7	11.3
Delay (s)	11.8			11.8	45.2	59.5
Level of Service	B			B	D	E
Approach Delay (s)	11.8			11.8	51.1	
Approach LOS	B			B	D	

Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	138.2	Sum of lost time (s)	10.0
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
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 (veh/h)	7	0	68	22	0	15	137	732	12	5	662	19
Future Volume (Veh/h)	7	0	68	22	0	15	137	732	12	5	662	19
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	7	0	71	23	0	16	143	762	12	5	690	20
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (m)								149				
pX, platoon unblocked	0.92	0.92		0.92	0.92	0.92				0.92		
vC, conflicting volume	1393	1770	355	1480	1774	387	710			774		
vC1, stage 1 conf vol	710	710		1054	1054							
vC2, stage 2 conf vol	683	1060		426	720							
vCu, unblocked vol	1244	1656	355	1339	1660	145	710			568		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	89	89	100	98	84			99		
cM capacity (veh/h)	295	235	647	208	208	802	899			916		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	78	39	143	508	266	5	460	250
Volume Left	7	23	143	0	0	5	0	0
Volume Right	71	16	0	0	12	0	0	20
cSH	585	299	899	1700	1700	916	1700	1700
Volume to Capacity	0.13	0.13	0.16	0.30	0.16	0.01	0.27	0.15
Queue Length 95th (m)	3.7	3.6	4.5	0.0	0.0	0.1	0.0	0.0
Control Delay (s)	12.1	18.9	9.8	0.0	0.0	9.0	0.0	0.0
Lane LOS	B	C	A			A		
Approach Delay (s)	12.1	18.9	1.5			0.1		
Approach LOS	B	C						

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	44.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2351	2113	30	0	12
Future Volume (Veh/h)	0	2351	2113	30	0	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)	0	2555	2297	33	0	13
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		184	172			
pX, platoon unblocked	0.83				0.75	0.83
vC, conflicting volume	2330				3165	782
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1880				1189	12
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	261				136	883

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	852	852	852	919	919	492	13
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	33	13
cSH	1700	1700	1700	1700	1700	1700	883
Volume to Capacity	0.50	0.50	0.50	0.54	0.54	0.29	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	9.1
Lane LOS							A
Approach Delay (s)	0.0			0.0			9.1
Approach LOS							A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	51.5%	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)	260	2507	383	180	986	149	160	576	185	274	938	149
Future Volume (vph)	260	2507	383	180	986	149	160	576	185	274	938	149
Ideal Flow (vphpl)	1860	1900	1640	1860	1900	1640	1860	1900	1860	1860	1900	1640
Lane Width	3.3	3.6	3.3	3.3	3.6	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	1.0	5.0	5.0	1.0	5.0	5.0	1.0	5.0	1.0	1.0	5.0	5.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1691	5136	1263	1627	4673	1300	1541	3400	1392	1633	3500	1263
Flt Permitted	0.20	1.00	1.00	0.06	1.00	1.00	0.10	1.00	1.00	0.20	1.00	1.00
Satd. Flow (perm)	350	5136	1263	96	4673	1300	166	3400	1392	335	3500	1263
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)	268	2585	395	186	1016	154	165	594	191	282	967	154
RTOR Reduction (vph)	0	0	98	0	0	86	0	0	70	0	0	75
Lane Group Flow (vph)	268	2585	297	186	1016	68	165	594	121	282	967	79
Heavy Vehicles (%)	1%	1%	5%	5%	11%	2%	7%	5%	6%	1%	2%	3%
Bus Blockages (#/hr)	0	0	4	0	0	4	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	90.2	75.2	75.2	79.1	68.1	68.1	45.6	36.0	47.0	57.0	43.4	43.4
Effective Green, g (s)	93.2	76.5	76.5	85.1	69.4	69.4	51.6	37.5	53.0	60.0	44.9	44.9
Actuated g/C Ratio	0.58	0.48	0.48	0.53	0.43	0.43	0.32	0.23	0.33	0.38	0.28	0.28
Clearance Time (s)	4.0	6.3	6.3	4.0	6.3	6.3	4.0	6.5	4.0	4.0	6.5	6.5
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Grp Cap (vph)	380	2455	603	185	2026	563	161	796	461	287	982	354
v/s Ratio Prot	c0.09	c0.50		c0.09	0.22		c0.08	0.17	0.02	c0.12	0.28	
v/s Ratio Perm	0.32		0.24	0.45		0.05	c0.25		0.06	0.24		0.06
v/c Ratio	0.71	1.05	0.49	1.01	0.50	0.12	1.02	0.75	0.26	0.98	0.98	0.22
Uniform Delay, d1	19.3	41.8	28.5	53.6	32.8	27.1	45.1	56.8	39.2	41.1	57.2	44.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.1	34.0	2.9	67.6	0.9	0.4	77.6	4.0	0.4	48.1	24.9	0.4
Delay (s)	25.4	75.8	31.4	121.2	33.7	27.5	122.7	60.8	39.6	89.3	82.1	44.6
Level of Service	C	E	C	F	C	C	F	E	D	F	F	D
Approach Delay (s)		66.2			45.0			67.3			79.4	
Approach LOS		E			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	64.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	108.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2909	629	0	995	996
Future Volume (vph)	0	2909	629	0	995	996
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)		5.0	5.0		5.0	5.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		0.96	0.85
Flt Protected		1.00	1.00		0.96	1.00
Satd. Flow (prot)		5136	4893		3211	1303
Flt Permitted		1.00	1.00		0.96	1.00
Satd. Flow (perm)		5136	4893		3211	1303
Peak-hour factor, PHF	0.25	0.96	0.96	0.25	0.96	0.96
Adj. Flow (vph)	0	3030	655	0	1036	1038
RTOR Reduction (vph)	0	0	0	0	25	141
Lane Group Flow (vph)	0	3030	655	0	1395	513
Heavy Vehicles (%)	0%	1%	6%	0%	5%	14%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	2		4	
Permitted Phases						4
Actuated Green, G (s)		86.0	86.0		61.0	61.0
Effective Green, g (s)		88.0	88.0		62.0	62.0
Actuated g/C Ratio		0.55	0.55		0.39	0.39
Clearance Time (s)		7.0	7.0		6.0	6.0
Vehicle Extension (s)		2.0	2.0		4.0	4.0
Lane Grp Cap (vph)		2824	2691		1244	504
v/s Ratio Prot		c0.59	0.13		c0.43	
v/s Ratio Perm						0.39
v/c Ratio		1.07	0.24		1.12	1.02
Uniform Delay, d1		36.0	18.7		49.0	49.0
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		40.4	0.2		65.7	44.4
Delay (s)		76.4	18.9		114.7	93.4
Level of Service		E	B		F	F
Approach Delay (s)		76.4	18.9		108.0	
Approach LOS		E	B		F	

Intersection Summary			
HCM 2000 Control Delay	81.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	103.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2540	0	0	665	101	614
Future Volume (vph)	2540	0	0	665	101	614
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)	5.0			5.0	5.0	5.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.89	0.85
Flt Protected	1.00			1.00	0.99	1.00
Satd. Flow (prot)	5036			4848	3209	1457
Flt Permitted	1.00			1.00	0.99	1.00
Satd. Flow (perm)	5036			4848	3209	1457
Peak-hour factor, PHF	0.95	0.25	0.25	0.95	0.95	0.95
Adj. Flow (vph)	2674	0	0	700	106	646
RTOR Reduction (vph)	0	0	0	0	2	2
Lane Group Flow (vph)	2674	0	0	700	427	321
Heavy Vehicles (%)	3%	0%	0%	7%	1%	2%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	4	
Permitted Phases						4
Actuated Green, G (s)	99.3			99.3	38.6	38.6
Effective Green, g (s)	101.3			101.3	39.6	39.6
Actuated g/C Ratio	0.67			0.67	0.26	0.26
Clearance Time (s)	7.0			7.0	6.0	6.0
Vehicle Extension (s)	4.0			4.0	4.0	4.0
Lane Grp Cap (vph)	3380			3254	842	382
v/s Ratio Prot	c0.53			0.14	0.13	
v/s Ratio Perm						c0.22
v/c Ratio	0.79			0.22	0.51	0.84
Uniform Delay, d1	17.4			9.5	47.3	52.6
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	1.4			0.0	0.7	15.5
Delay (s)	18.8			9.6	48.0	68.1
Level of Service	B			A	D	E
Approach Delay (s)	18.8			9.6	56.6	
Approach LOS	B			A	E	

Intersection Summary			
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	150.9	Sum of lost time (s)	10.0
Intersection Capacity Utilization	103.4%	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 (veh/h)	0	0	3	7	0	5	15	1249	9	4	1510	1
Future Volume (Veh/h)	0	0	3	7	0	5	15	1249	9	4	1510	1
Sign Control		Stop			Stop			Free			Free	
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)	0	0	3	8	0	5	16	1373	10	4	1659	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (m)								149				
pX, platoon unblocked	0.84	0.84		0.84	0.84	0.84				0.84		
vC, conflicting volume	2391	3082	830	2250	3078	692	1660			1383		
vC1, stage 1 conf vol	1668	1668		1410	1410							
vC2, stage 2 conf vol	724	1415		840	1668							
vCu, unblocked vol	2277	3098	830	2110	3093	258	1660			1079		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	100	100	99	95	100	99	96			99		
cM capacity (veh/h)	97	118	317	150	110	624	362			540		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	3	13	16	915	468	4	1106	554
Volume Left	0	8	16	0	0	4	0	0
Volume Right	3	5	0	0	10	0	0	1
cSH	317	212	362	1700	1700	540	1700	1700
Volume to Capacity	0.01	0.06	0.04	0.54	0.28	0.01	0.65	0.33
Queue Length 95th (m)	0.2	1.6	1.1	0.0	0.0	0.2	0.0	0.0
Control Delay (s)	16.4	23.1	15.4	0.0	0.0	11.7	0.0	0.0
Lane LOS	C	C	C			B		
Approach Delay (s)	16.4	23.1	0.2			0.0		
Approach LOS	C	C						

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2946	1312	24	0	4
Future Volume (Veh/h)	0	2946	1312	24	0	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)	0	3202	1426	26	0	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		184	172			
pX, platoon unblocked	0.95				0.55	0.95
vC, conflicting volume	1452				2506	488
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1285				274	268
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	508				384	692

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	1067	1067	1067	570	570	311	4
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	26	4
cSH	1700	1700	1700	1700	1700	1700	692
Volume to Capacity	0.63	0.63	0.63	0.34	0.34	0.18	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	10.2
Lane LOS							B
Approach Delay (s)	0.0			0.0			10.2
Approach LOS							B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	178	1711	180	146	3023	167	390	1385	881	136	596	288
Future Volume (vph)	178	1711	180	146	3023	167	390	1385	881	136	596	288
Ideal Flow (vphpl)	1860	1900	1640	1860	1900	1640	1860	1900	1860	1860	1900	1640
Lane Width	3.3	3.6	3.3	3.3	3.6	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	1.0	5.0	5.0	1.0	5.0	5.0	1.0	5.0	1.0	1.0	5.0	5.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	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	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1691	5036	1283	1675	5136	1313	1617	3535	1380	1633	3535	1301
Flt Permitted	0.07	1.00	1.00	0.07	1.00	1.00	0.19	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	119	5036	1283	116	5136	1313	321	3535	1380	174	3535	1301
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	182	1746	184	149	3085	170	398	1413	899	139	608	294
RTOR Reduction (vph)	0	0	85	0	0	56	0	0	25	0	0	101
Lane Group Flow (vph)	182	1746	99	149	3085	114	398	1413	874	139	608	193
Confl. Peds. (#/hr)			1	1					1	1		
Heavy Vehicles (%)	1%	3%	2%	2%	1%	1%	2%	1%	6%	1%	1%	0%
Bus Blockages (#/hr)	0	0	4	0	0	4	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4	1	3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	62.7	56.7	56.7	83.7	73.7	73.7	63.5	51.5	74.5	44.5	36.5	36.5
Effective Green, g (s)	68.7	58.0	58.0	86.7	75.0	75.0	66.5	53.0	80.5	50.5	38.0	38.0
Actuated g/C Ratio	0.43	0.36	0.36	0.54	0.47	0.47	0.42	0.33	0.50	0.32	0.24	0.24
Clearance Time (s)	4.0	6.3	6.3	4.0	6.3	6.3	4.0	6.5	4.0	4.0	6.5	6.5
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Grp Cap (vph)	139	1825	465	316	2407	615	344	1170	694	155	839	308
v/s Ratio Prot	c0.07	0.35		0.08	0.60		c0.19	0.40	c0.20	0.06	0.17	
v/s Ratio Perm	c0.49		0.08	0.18		0.09	0.29		0.43	0.22		0.15
v/c Ratio	1.31	0.96	0.21	0.47	1.28	0.18	1.16	1.21	1.26	0.90	0.72	0.63
Uniform Delay, d1	44.2	49.8	35.2	35.5	42.5	24.7	39.7	53.5	39.8	45.2	56.2	54.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	181.3	13.1	1.0	1.3	130.1	0.7	98.3	101.7	128.3	43.8	3.2	4.2
Delay (s)	225.5	62.8	36.3	36.8	172.6	25.4	138.0	155.2	168.0	89.1	59.4	58.8
Level of Service	F	E	D	D	F	C	F	F	F	F	E	E
Approach Delay (s)		74.5			159.3			156.9			63.2	
Approach LOS		E			F			F			E	

Intersection Summary			
HCM 2000 Control Delay	128.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.29		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	129.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2451	1742	0	471	1846
Future Volume (vph)	0	2451	1742	0	471	1846
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)		5.0	5.0		5.0	5.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		0.90	0.85
Flt Protected		1.00	1.00		0.98	1.00
Satd. Flow (prot)		4988	5136		3225	1471
Flt Permitted		1.00	1.00		0.98	1.00
Satd. Flow (perm)		4988	5136		3225	1471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	2553	1815	0	491	1923
RTOR Reduction (vph)	0	0	0	0	3	3
Lane Group Flow (vph)	0	2553	1815	0	1450	958
Confl. Peds. (#/hr)	1			1		
Heavy Vehicles (%)	0%	4%	1%	0%	5%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	2		4	
Permitted Phases						4
Actuated Green, G (s)		75.0	75.0		72.0	72.0
Effective Green, g (s)		77.0	77.0		73.0	73.0
Actuated g/C Ratio		0.48	0.48		0.46	0.46
Clearance Time (s)		7.0	7.0		6.0	6.0
Vehicle Extension (s)		2.0	2.0		4.0	4.0
Lane Grp Cap (vph)		2400	2471		1471	671
v/s Ratio Prot		c0.51	0.35		0.45	
v/s Ratio Perm						c0.65
v/c Ratio		1.06	0.73		1.30dr	1.43
Uniform Delay, d1		41.5	33.3		43.0	43.5
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		38.1	2.0		19.9	200.9
Delay (s)		79.6	35.3		62.9	244.4
Level of Service		E	D		E	F
Approach Delay (s)		79.6	35.3		135.2	
Approach LOS		E	D		F	

Intersection Summary			
HCM 2000 Control Delay	87.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	118.2%	ICU Level of Service	H
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑	↰↰	↱
Traffic Volume (vph)	1873	0	0	2112	75	558
Future Volume (vph)	1873	0	0	2112	75	558
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)	5.0			5.0	5.0	5.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	0.88	0.85
Flt Protected	1.00			1.00	0.99	1.00
Satd. Flow (prot)	5036			5136	3101	1429
Flt Permitted	1.00			1.00	0.99	1.00
Satd. Flow (perm)	5036			5136	3101	1429
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	1931	0	0	2177	77	575
RTOR Reduction (vph)	0	0	0	0	11	11
Lane Group Flow (vph)	1931	0	0	2177	354	276
Confl. Peds. (#/hr)		5	5			
Heavy Vehicles (%)	3%	0%	0%	1%	8%	4%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	4	
Permitted Phases						4
Actuated Green, G (s)	96.4			96.4	34.0	34.0
Effective Green, g (s)	98.4			98.4	35.0	35.0
Actuated g/C Ratio	0.69			0.69	0.24	0.24
Clearance Time (s)	7.0			7.0	6.0	6.0
Vehicle Extension (s)	4.0			4.0	4.0	4.0
Lane Grp Cap (vph)	3455			3524	756	348
v/s Ratio Prot	0.38			c0.42	0.11	
v/s Ratio Perm						c0.19
v/c Ratio	0.56			0.62	0.47	0.79
Uniform Delay, d1	11.5			12.3	46.3	50.8
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.2			0.4	0.6	12.4
Delay (s)	11.7			12.6	46.9	63.3
Level of Service	B			B	D	E
Approach Delay (s)	11.7			12.6	54.1	
Approach LOS	B			B	D	

Intersection Summary			
HCM 2000 Control Delay	17.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	143.4	Sum of lost time (s)	10.0
Intersection Capacity Utilization	118.2%	ICU Level of Service	H
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 (veh/h)	1	0	12	18	0	13	15	1863	7	3	1325	2
Future Volume (Veh/h)	1	0	12	18	0	13	15	1863	7	3	1325	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	1	0	13	19	0	14	16	2003	8	3	1425	2
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (m)								149				
pX, platoon unblocked	0.67	0.67		0.67	0.67	0.67				0.67		
vC, conflicting volume	2480	3475	714	2770	3472	1006	1427			2011		
vC1, stage 1 conf vol	1432	1432		2039	2039							
vC2, stage 2 conf vol	1048	2043		732	1433							
vCu, unblocked vol	2227	3705	714	2659	3701	38	1427			1531		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	97	73	100	98	97			99		
cM capacity (veh/h)	134	88	379	71	88	690	483			290		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	14	33	16	1335	676	3	950	477
Volume Left	1	19	16	0	0	3	0	0
Volume Right	13	14	0	0	8	0	0	2
cSH	335	115	483	1700	1700	290	1700	1700
Volume to Capacity	0.04	0.29	0.03	0.79	0.40	0.01	0.56	0.28
Queue Length 95th (m)	1.0	8.8	0.8	0.0	0.0	0.3	0.0	0.0
Control Delay (s)	16.2	48.7	12.7	0.0	0.0	17.5	0.0	0.0
Lane LOS	C	E	B			C		
Approach Delay (s)	16.2	48.7	0.1			0.0		
Approach LOS	C	E						

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2682	3326	17	0	10
Future Volume (Veh/h)	0	2682	3326	17	0	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)	0	2915	3615	18	0	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		184	172			
pX, platoon unblocked	0.72				0.80	0.72
vC, conflicting volume	3633				4596	1214
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3289				2228	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	62				29	776

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	972	972	972	1446	1446	741	11
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	18	11
cSH	1700	1700	1700	1700	1700	1700	776
Volume to Capacity	0.57	0.57	0.57	0.85	0.85	0.44	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	9.7
Lane LOS							A
Approach Delay (s)	0.0			0.0			9.7
Approach LOS							A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	174	2036	248	160	1805	287	191	516	165	235	380	201
Future Volume (vph)	174	2036	248	160	1805	287	191	516	165	235	380	201
Ideal Flow (vphpl)	1860	1900	1640	1860	1900	1640	1640	1900	1640	1860	1900	1640
Lane Width	3.3	3.6	3.3	3.3	3.6	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	1.0	5.0	5.0	1.0	5.0	5.0	5.0	5.0	5.0	1.0	5.0	5.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1708	5136	1324	1675	5136	1311	1440	3535	1301	1617	3500	1301
Flt Permitted	0.05	1.00	1.00	0.06	1.00	1.00	0.52	1.00	1.00	0.29	1.00	1.00
Satd. Flow (perm)	98	5136	1324	98	5136	1311	789	3535	1301	486	3500	1301
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)	179	2099	256	165	1861	296	197	532	170	242	392	207
RTOR Reduction (vph)	0	0	76	0	0	90	0	0	111	0	0	132
Lane Group Flow (vph)	179	2099	180	165	1861	206	197	532	59	242	392	75
Heavy Vehicles (%)	0%	1%	1%	2%	1%	2%	1%	1%	0%	2%	2%	0%
Bus Blockages (#/hr)	0	0	2	0	0	2	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6			4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	88.8	73.9	73.9	80.0	69.1	69.1	41.3	41.3	41.3	54.3	54.3	54.3
Effective Green, g (s)	91.8	75.2	75.2	86.0	70.4	70.4	42.8	42.8	42.8	57.3	55.8	55.8
Actuated g/C Ratio	0.59	0.48	0.48	0.55	0.45	0.45	0.27	0.27	0.27	0.37	0.36	0.36
Clearance Time (s)	4.0	6.3	6.3	4.0	6.3	6.3	6.5	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.5	5.5	5.5	3.5	5.5	5.5	3.5	3.5	3.5	3.0	3.5	3.5
Lane Grp Cap (vph)	250	2477	638	194	2319	592	216	970	357	265	1252	465
v/s Ratio Prot	c0.09	c0.41		c0.08	0.36			0.15		c0.07	0.11	
v/s Ratio Perm	0.33		0.14	0.39		0.16	c0.25		0.05	0.26		0.06
v/c Ratio	0.72	0.85	0.28	0.85	0.80	0.35	0.91	0.55	0.17	0.91	0.31	0.16
Uniform Delay, d1	44.2	35.3	24.2	46.0	36.8	27.8	54.7	48.3	43.0	43.6	36.2	34.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.7	3.8	1.1	28.8	3.0	1.6	38.4	0.7	0.3	33.1	0.2	0.2
Delay (s)	53.9	39.1	25.3	74.8	39.8	29.4	93.1	49.0	43.2	76.7	36.4	34.3
Level of Service	D	D	C	E	D	C	F	D	D	E	D	C
Approach Delay (s)		38.8			41.0			57.6			47.5	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	43.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	155.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2295	1587	0	440	902
Future Volume (vph)	0	2295	1587	0	440	902
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)		5.0	5.0		5.0	5.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		0.92	0.85
Flt Protected		1.00	1.00		0.98	1.00
Satd. Flow (prot)		5136	5136		3328	1471
Flt Permitted		1.00	1.00		0.98	1.00
Satd. Flow (perm)		5136	5136		3328	1471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	2391	1653	0	458	940
RTOR Reduction (vph)	0	0	0	0	12	12
Lane Group Flow (vph)	0	2391	1653	0	916	458
Heavy Vehicles (%)	0%	1%	1%	0%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	2		4	
Permitted Phases						4
Actuated Green, G (s)		86.3	86.3		53.4	53.4
Effective Green, g (s)		88.3	88.3		54.4	54.4
Actuated g/C Ratio		0.58	0.58		0.36	0.36
Clearance Time (s)		7.0	7.0		6.0	6.0
Vehicle Extension (s)		2.0	2.0		4.0	4.0
Lane Grp Cap (vph)		2969	2969		1185	524
v/s Ratio Prot		c0.47	0.32		0.28	
v/s Ratio Perm						c0.31
v/c Ratio		0.81	0.56		0.77	0.87
Uniform Delay, d1		25.4	20.0		43.7	46.0
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		2.4	0.8		3.4	15.4
Delay (s)		27.9	20.8		47.1	61.4
Level of Service		C	C		D	E
Approach Delay (s)		27.9	20.8		51.9	
Approach LOS		C	C		D	

Intersection Summary			
HCM 2000 Control Delay	31.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	152.7	Sum of lost time (s)	10.0
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1914	0	0	1942	139	661
Future Volume (vph)	1914	0	0	1942	139	661
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.6	3.7	3.7
Total Lost time (s)	5.0			5.0	5.0	5.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.89	0.85
Flt Protected	1.00			1.00	0.99	1.00
Satd. Flow (prot)	5136			5136	3243	1471
Flt Permitted	1.00			1.00	0.99	1.00
Satd. Flow (perm)	5136			5136	3243	1471
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	1973	0	0	2002	143	681
RTOR Reduction (vph)	0	0	0	0	6	6
Lane Group Flow (vph)	1973	0	0	2002	478	334
Heavy Vehicles (%)	1%	0%	0%	1%	2%	1%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	4	
Permitted Phases						4
Actuated Green, G (s)	88.5			88.5	38.2	38.2
Effective Green, g (s)	90.5			90.5	39.2	39.2
Actuated g/C Ratio	0.65			0.65	0.28	0.28
Clearance Time (s)	7.0			7.0	6.0	6.0
Vehicle Extension (s)	4.0			4.0	4.0	4.0
Lane Grp Cap (vph)	3327			3327	909	412
v/s Ratio Prot	0.38			c0.39	0.15	
v/s Ratio Perm						c0.23
v/c Ratio	0.59			0.60	0.53	0.81
Uniform Delay, d1	14.1			14.2	42.4	46.8
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.3			0.4	0.7	11.8
Delay (s)	14.4			14.6	43.1	58.5
Level of Service	B			B	D	E
Approach Delay (s)	14.4			14.6	49.5	
Approach LOS	B			B	D	

Intersection Summary			
HCM 2000 Control Delay	20.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	139.7	Sum of lost time (s)	10.0
Intersection Capacity Utilization	76.2%	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 (veh/h)	7	0	70	22	0	15	140	980	12	5	928	19
Future Volume (Veh/h)	7	0	70	22	0	15	140	980	12	5	928	19
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	7	0	73	23	0	16	146	1021	12	5	967	20
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (m)								149				
pX, platoon unblocked	0.88	0.88		0.88	0.88	0.88				0.88		
vC, conflicting volume	1806	2312	494	1886	2316	516	987			1033		
vC1, stage 1 conf vol	987	987		1319	1319							
vC2, stage 2 conf vol	818	1325		566	997							
vCu, unblocked vol	1643	2219	494	1734	2223	179	987			766		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	86	83	100	98	79			99		
cM capacity (veh/h)	210	163	527	136	130	733	708			742		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	80	39	146	681	352	5	645	342
Volume Left	7	23	146	0	0	5	0	0
Volume Right	73	16	0	0	12	0	0	20
cSH	465	205	708	1700	1700	742	1700	1700
Volume to Capacity	0.17	0.19	0.21	0.40	0.21	0.01	0.38	0.20
Queue Length 95th (m)	4.9	5.5	6.2	0.0	0.0	0.2	0.0	0.0
Control Delay (s)	14.3	26.7	11.4	0.0	0.0	9.9	0.0	0.0
Lane LOS	B	D	B			A		
Approach Delay (s)	14.3	26.7	1.4			0.0		
Approach LOS	B	D						

Intersection Summary			
Average Delay	1.7		
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)	0	2410	2240	30	0	12
Future Volume (Veh/h)	0	2410	2240	30	0	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)	0	2620	2435	33	0	13
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		184	172			
pX, platoon unblocked	0.80				0.73	0.80
vC, conflicting volume	2468				3325	828
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1967				1079	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	234				156	870

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	873	873	873	974	974	520	13
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	33	13
cSH	1700	1700	1700	1700	1700	1700	870
Volume to Capacity	0.51	0.51	0.51	0.57	0.57	0.31	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	9.2
Lane LOS							A
Approach Delay (s)	0.0			0.0			9.2
Approach LOS							A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection: 1: Ninth Line & Dundas Street East

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	T
Maximum Queue (m)	161.2	203.3	198.9	181.2	135.0	52.5	74.0	85.5	81.0	21.2	39.5	70.5
Average Queue (m)	70.4	144.9	136.0	116.6	54.5	23.5	29.9	42.6	49.8	8.9	21.8	42.4
95th Queue (m)	144.6	187.5	181.9	166.5	123.9	43.4	52.6	65.2	70.3	18.8	36.0	62.3
Link Distance (m)		315.1	315.1	315.1			326.9	326.9	326.9			243.5
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	220.0				75.0	230.0				70.0	130.0	
Storage Blk Time (%)				20					1			
Queuing Penalty (veh)				70					1			

Intersection: 1: Ninth Line & Dundas Street East

Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	R	L	T	T	R
Maximum Queue (m)	59.6	49.8	87.3	98.8	89.5	24.5
Average Queue (m)	34.2	24.6	48.3	64.2	65.0	9.1
95th Queue (m)	56.5	45.3	78.6	91.3	88.5	19.0
Link Distance (m)	243.5			120.5	120.5	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)		90.0	115.0			65.0
Storage Blk Time (%)					13	
Queuing Penalty (veh)					15	

Intersection: 2: Dundas Street East & 403W Off-Ramp

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	300.8	302.7	224.0	46.9	35.1	27.2	240.0	256.3	253.7
Average Queue (m)	122.7	131.4	128.9	18.6	15.4	8.8	201.8	233.2	205.7
95th Queue (m)	209.4	218.2	197.9	37.4	33.6	22.1	256.3	277.2	292.0
Link Distance (m)	326.9	326.9	326.9	354.7	354.7	354.7		240.5	240.5
Upstream Blk Time (%)							0	31	10
Queuing Penalty (veh)							0	0	0
Storage Bay Dist (m)							145.0		
Storage Blk Time (%)							29	59	
Queuing Penalty (veh)							197	202	

Intersection: 3: 403E Off-Ramp & Dundas Street East

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	86.2	100.8	95.7	66.3	64.9	15.6	43.5	79.4	74.1
Average Queue (m)	44.4	48.6	52.5	27.3	8.4	2.7	8.8	52.1	40.7
95th Queue (m)	80.0	86.8	87.5	48.0	31.3	11.1	30.0	71.6	65.5
Link Distance (m)	354.7	354.7	354.7	176.5	176.5	176.5		279.5	279.5
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)							125.0		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: Ninth Line & Glen Oaks Access

Movement	EB	NB	NB	NB
Directions Served	LR	L	T	T
Maximum Queue (m)	7.8	9.2	31.0	28.7
Average Queue (m)	0.3	2.8	5.1	5.9
95th Queue (m)	2.6	9.3	18.2	21.2
Link Distance (m)	46.5		120.5	120.5
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)		15.0		
Storage Blk Time (%)		0	1	
Queuing Penalty (veh)		0	0	

Intersection: 5: Ninth Line & William Halton Parkway

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (m)	89.9	138.2	27.3	60.2	34.9	84.8	148.9	99.7	135.4
Average Queue (m)	47.7	137.8	9.5	28.2	13.3	16.3	94.1	40.8	88.4
95th Queue (m)	113.2	141.6	23.9	49.1	25.4	55.3	141.2	83.8	131.6
Link Distance (m)		133.6		221.4			1974.4		204.2
Upstream Blk Time (%)		55							
Queuing Penalty (veh)		0							
Storage Bay Dist (m)	20.0		120.0		120.0	30.0		30.0	
Storage Blk Time (%)	11	58					50	12	37
Queuing Penalty (veh)	80	47					16	75	66

Network Summary

Network wide Queuing Penalty: 769

Intersection: 1: Ninth Line & Dundas Street East

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	T
Maximum Queue (m)	53.2	125.3	136.2	101.4	22.2	39.1	245.4	249.7	254.7	130.0	153.9	253.9
Average Queue (m)	21.9	91.4	83.7	66.4	10.8	22.3	171.1	178.3	183.0	52.6	84.7	209.9
95th Queue (m)	40.6	120.1	113.5	96.5	20.0	36.6	231.1	234.1	240.7	143.6	131.8	266.5
Link Distance (m)		315.1	315.1	315.1			326.9	326.9	326.9			243.5
Upstream Blk Time (%)												0
Queuing Penalty (veh)												0
Storage Bay Dist (m)	220.0				75.0	230.0				70.0	130.0	
Storage Blk Time (%)				1			0		42		3	4
Queuing Penalty (veh)				1			0		60		9	10

Intersection: 1: Ninth Line & Dundas Street East

Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	R	L	T	T	R
Maximum Queue (m)	262.7	145.0	40.6	58.1	59.8	65.2
Average Queue (m)	242.4	142.7	19.2	30.1	33.4	37.5
95th Queue (m)	298.3	158.0	37.8	49.3	55.7	58.3
Link Distance (m)	243.5			120.5	120.5	
Upstream Blk Time (%)	70					
Queuing Penalty (veh)	0					
Storage Bay Dist (m)		90.0	115.0			65.0
Storage Blk Time (%)	9	79			0	0
Queuing Penalty (veh)	58	284			0	0

Intersection: 2: Dundas Street East & 403W Off-Ramp

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	143.4	157.5	159.5	150.3	127.7	127.3	218.5	243.0	212.3
Average Queue (m)	84.5	100.1	105.5	71.6	69.4	64.2	123.1	167.6	147.8
95th Queue (m)	143.8	155.1	155.8	113.7	108.7	102.4	200.3	229.7	215.6
Link Distance (m)	326.9	326.9	326.9	354.7	354.7	354.7		240.5	240.5
Upstream Blk Time (%)								0	
Queuing Penalty (veh)								0	
Storage Bay Dist (m)							145.0		
Storage Blk Time (%)							0	21	
Queuing Penalty (veh)							2	35	

Intersection: 3: 403E Off-Ramp & Dundas Street East

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	82.6	88.0	104.6	103.2	71.1	47.2	41.9	71.0	56.7
Average Queue (m)	30.9	36.5	35.2	57.8	44.6	25.2	8.2	43.2	28.9
95th Queue (m)	69.6	79.3	84.6	88.9	70.2	50.1	26.3	66.4	55.8
Link Distance (m)	354.7	354.7	354.7	176.5	176.5	176.5		279.5	279.5
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)							125.0		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: Ninth Line & Glen Oaks Access

Movement	EB	NB	NB	NB
Directions Served	LR	L	T	T
Maximum Queue (m)	7.8	22.4	87.8	83.8
Average Queue (m)	2.8	5.8	44.9	47.5
95th Queue (m)	8.9	21.2	69.2	71.1
Link Distance (m)	46.5		120.5	120.5
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)		15.0		
Storage Blk Time (%)		0	30	
Queuing Penalty (veh)		0	5	

Intersection: 5: Ninth Line & William Halton Parkway

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (m)	89.9	144.0	169.9	226.0	170.0	85.0	249.6	76.8	80.1
Average Queue (m)	31.9	138.6	103.6	137.6	18.7	34.3	149.4	35.0	45.9
95th Queue (m)	94.6	141.0	200.5	241.0	68.1	90.1	252.5	68.8	75.3
Link Distance (m)		133.6		221.4			1974.4		204.2
Upstream Blk Time (%)		76		27					
Queuing Penalty (veh)		0		0					
Storage Bay Dist (m)	20.0		120.0		120.0	30.0		30.0	
Storage Blk Time (%)	0	73	47	1		1	45	32	13
Queuing Penalty (veh)	0	21	327	2		8	38	138	20

Network Summary

Network wide Queuing Penalty: 1018

Intersection: 1: Ninth Line & Dundas Street East

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	T
Maximum Queue (m)	72.9	126.8	118.5	106.2	27.7	97.1	113.9	124.2	120.5	60.7	66.3	63.6
Average Queue (m)	29.0	99.2	89.1	71.6	13.3	38.6	75.6	83.2	84.2	21.0	35.0	34.7
95th Queue (m)	52.8	124.6	114.5	95.1	24.7	83.9	108.8	116.4	116.6	46.1	61.4	56.8
Link Distance (m)		315.1	315.1	315.1			326.9	326.9	326.9			243.5
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	220.0				75.0	230.0				70.0	130.0	
Storage Blk Time (%)				3					17			
Queuing Penalty (veh)				7					42			

Intersection: 1: Ninth Line & Dundas Street East

Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	R	L	T	T	R
Maximum Queue (m)	45.2	32.6	92.5	47.7	32.2	56.4
Average Queue (m)	19.5	10.5	46.1	17.5	19.3	19.3
95th Queue (m)	40.7	21.7	78.3	33.0	32.7	39.5
Link Distance (m)	243.5			120.5	120.5	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)		90.0	115.0			65.0
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 2: Dundas Street East & 403W Off-Ramp

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	161.5	154.8	160.3	120.4	111.4	108.5	76.2	117.1	91.5
Average Queue (m)	79.2	85.0	84.1	47.7	42.4	38.1	48.1	75.3	55.8
95th Queue (m)	143.3	146.9	144.0	94.0	83.9	73.4	83.1	101.7	79.6
Link Distance (m)	326.9	326.9	326.9	354.7	354.7	354.7		240.5	240.5
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)							145.0		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 3: 403E Off-Ramp & Dundas Street East

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	81.0	87.2	92.5	85.6	92.0	60.6	61.1	77.9	62.1
Average Queue (m)	27.9	30.7	32.6	63.4	46.5	23.2	21.5	53.5	38.9
95th Queue (m)	63.2	72.7	72.3	95.1	80.4	50.2	57.5	80.8	67.0
Link Distance (m)	354.7	354.7	354.7	176.5	176.5	176.5		279.5	279.5
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)							125.0		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: Ninth Line & Glen Oaks Access

Movement	EB	NB	NB
Directions Served	LR	L	T
Maximum Queue (m)	38.6	19.9	6.0
Average Queue (m)	9.4	8.7	0.2
95th Queue (m)	20.4	19.1	2.0
Link Distance (m)	46.5		120.5
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)		15.0	
Storage Blk Time (%)		1	
Queuing Penalty (veh)		3	

Intersection: 5: Ninth Line & William Halton Parkway

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (m)	14.7	54.1	27.3	67.4	39.9	23.5	90.1	87.5	85.4
Average Queue (m)	4.2	28.5	10.3	25.4	11.8	12.1	52.1	49.1	40.5
95th Queue (m)	12.3	44.7	20.1	45.1	24.3	20.7	76.7	82.0	70.9
Link Distance (m)		133.6		221.4			1974.4		204.2
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)	20.0		120.0		120.0	30.0		30.0	
Storage Blk Time (%)	0	14					26	56	7
Queuing Penalty (veh)	0	3					16	198	11

Network Summary

Network wide Queuing Penalty: 281

Intersection: 1: Ninth Line & Dundas Street East

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	T
Maximum Queue (m)	85.8	172.0	160.6	165.6	135.0	132.6	132.3	97.2	89.1	30.7	130.1	65.4
Average Queue (m)	35.0	131.6	125.3	106.3	34.3	74.0	46.3	52.6	53.8	9.9	78.2	44.3
95th Queue (m)	65.2	164.0	159.6	145.9	73.2	132.8	100.4	79.4	78.8	21.8	132.8	63.9
Link Distance (m)		315.1	315.1	315.1			159.0	159.0	159.0			243.5
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	220.0				75.0	230.0				70.0	130.0	
Storage Blk Time (%)				15	0				1		0	
Queuing Penalty (veh)				53	2				1		1	

Intersection: 1: Ninth Line & Dundas Street East

Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	R	L	T	T	R
Maximum Queue (m)	62.6	45.3	120.5	133.2	126.4	25.2
Average Queue (m)	33.3	18.5	101.3	102.9	81.9	9.8
95th Queue (m)	58.6	36.4	146.3	157.7	137.2	21.8
Link Distance (m)	243.5			120.5	120.5	
Upstream Blk Time (%)			34	36	0	
Queuing Penalty (veh)			0	167	2	
Storage Bay Dist (m)		90.0	115.0			65.0
Storage Blk Time (%)			53	36	17	
Queuing Penalty (veh)			154	77	21	

Intersection: 2: Dundas Street East & 403W Off-Ramp

Movement	EB	EB	EB	B6	B6	B6	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	172.8	172.8	172.8	78.5	92.1	89.9	58.2	58.4	47.6	230.1	246.6	246.6
Average Queue (m)	126.5	134.7	134.1	15.4	18.1	18.7	34.8	29.1	17.9	144.2	185.9	146.6
95th Queue (m)	207.7	208.8	208.5	54.1	59.5	61.8	55.8	53.3	37.1	209.8	263.2	226.6
Link Distance (m)	151.1	151.1	151.1	159.0	159.0	159.0	354.7	354.7	354.7		242.0	242.0
Upstream Blk Time (%)	11	12	13								3	1
Queuing Penalty (veh)	101	111	118								0	0
Storage Bay Dist (m)										145.0		
Storage Blk Time (%)										1	17	
Queuing Penalty (veh)										4	65	

Intersection: 3: 403E Off-Ramp & Dundas Street East

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	94.7	303.1	322.0	64.6	58.0	15.6	79.5	112.8	68.8
Average Queue (m)	50.5	58.2	65.1	33.1	14.7	4.5	25.7	65.2	51.4
95th Queue (m)	82.1	141.2	152.3	56.6	37.0	13.5	64.1	92.7	70.2
Link Distance (m)	354.7	354.7	354.7	176.5	176.5	176.5		279.5	279.5
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)							125.0		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: Ninth Line & Glen Oaks Access

Movement	EB	NB	NB	NB	SB
Directions Served	LR	L	T	T	TR
Maximum Queue (m)	7.8	15.4	35.9	42.6	998.2
Average Queue (m)	0.5	0.8	7.0	4.9	387.4
95th Queue (m)	3.7	6.0	22.4	19.5	1086.1
Link Distance (m)	46.5		120.5	120.5	987.8
Upstream Blk Time (%)					23
Queuing Penalty (veh)					0
Storage Bay Dist (m)		15.0			
Storage Blk Time (%)		0	2		
Queuing Penalty (veh)		0	0		

Network Summary

Network wide Queuing Penalty: 876

Intersection: 1: Ninth Line & Dundas Street East

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	B6	B6
Directions Served	L	T	T	T	R	L	T	T	T	R	T	T
Maximum Queue (m)	142.7	195.2	173.5	155.9	133.0	158.9	187.8	191.8	186.3	130.0	150.7	163.8
Average Queue (m)	77.4	135.8	122.8	100.7	19.0	106.8	177.2	178.9	179.0	58.9	70.8	78.5
95th Queue (m)	129.3	182.3	168.3	147.1	55.9	211.8	198.9	197.0	194.9	155.4	148.1	158.6
Link Distance (m)		315.1	315.1	315.1			159.0	159.0	159.0		151.1	151.1
Upstream Blk Time (%)						0	25	31	36		0	1
Queuing Penalty (veh)						0	254	310	364		1	7
Storage Bay Dist (m)	220.0				75.0	230.0				70.0		
Storage Blk Time (%)				16		0	25		45			
Queuing Penalty (veh)				27		4	32		69			

Intersection: 1: Ninth Line & Dundas Street East

Movement	B6	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	T	L	T	T	R	L	T	T	R
Maximum Queue (m)	154.4	230.0	255.4	248.1	145.0	84.8	55.9	78.1	92.6
Average Queue (m)	84.3	223.5	237.4	164.8	86.3	35.1	35.2	41.2	44.1
95th Queue (m)	155.0	256.7	299.3	303.5	164.8	71.3	53.3	64.2	71.8
Link Distance (m)	151.1		243.5	243.5			120.5	120.5	
Upstream Blk Time (%)	1		67	4					
Queuing Penalty (veh)	9		0	0					
Storage Bay Dist (m)		130.0			90.0	115.0			65.0
Storage Blk Time (%)		97	6	15	21			1	3
Queuing Penalty (veh)		373	18	109	82			2	5

Intersection: 2: Dundas Street East & 403W Off-Ramp

Movement	EB	EB	EB	B6	B6	B6	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	172.8	187.3	184.0	158.0	142.7	56.2	141.3	148.5	142.4	239.0	254.0	252.4
Average Queue (m)	144.0	156.9	157.0	11.9	17.2	16.4	86.5	87.9	83.1	180.7	225.1	217.9
95th Queue (m)	194.1	201.0	205.1	61.1	64.4	48.2	125.2	130.3	127.0	247.2	279.5	290.4
Link Distance (m)	151.1	151.1	151.1	159.0	159.0	159.0	354.7	354.7	354.7		242.0	242.0
Upstream Blk Time (%)	13	18	22	0						0	19	13
Queuing Penalty (veh)	105	145	176	0						0	0	0
Storage Bay Dist (m)										145.0		
Storage Blk Time (%)										1	42	
Queuing Penalty (veh)										5	77	

Intersection: 3: 403E Off-Ramp & Dundas Street East

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	92.3	373.3	101.8	109.5	111.9	91.1	56.5	78.7	64.2
Average Queue (m)	33.4	47.8	30.6	64.4	54.3	27.0	10.3	48.6	35.2
95th Queue (m)	73.2	157.5	83.1	108.4	98.2	62.1	38.6	72.1	60.6
Link Distance (m)	354.7	354.7	354.7	176.5	176.5	176.5		279.5	279.5
Upstream Blk Time (%)		0							
Queuing Penalty (veh)		1							
Storage Bay Dist (m)							125.0		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: Ninth Line & Glen Oaks Access

Movement	EB	NB	NB	NB
Directions Served	LR	L	T	T
Maximum Queue (m)	7.8	22.4	70.6	75.4
Average Queue (m)	1.8	2.4	31.0	32.5
95th Queue (m)	7.3	12.2	68.2	75.1
Link Distance (m)	46.5		120.5	120.5
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)		15.0		
Storage Blk Time (%)		0	19	
Queuing Penalty (veh)		0	3	

Network Summary

Network wide Queuing Penalty: 2178

Intersection: 1: Ninth Line & Dundas Street East

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	T
Maximum Queue (m)	51.0	162.8	149.5	135.8	35.2	65.4	143.0	152.4	154.9	130.0	72.0	58.7
Average Queue (m)	25.4	115.3	107.2	92.4	16.3	32.6	84.5	92.9	96.8	27.3	37.9	38.4
95th Queue (m)	42.8	155.4	146.9	127.1	29.1	55.3	130.2	133.8	139.4	74.3	70.6	58.1
Link Distance (m)		315.1	315.1	315.1			159.0	159.0	159.0			243.5
Upstream Blk Time (%)									0			
Queuing Penalty (veh)									0			
Storage Bay Dist (m)	220.0				75.0	230.0				70.0	130.0	
Storage Blk Time (%)				11					24			
Queuing Penalty (veh)				25					63			

Intersection: 1: Ninth Line & Dundas Street East

Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	R	L	T	T	R
Maximum Queue (m)	52.8	38.2	93.9	26.4	31.8	50.8
Average Queue (m)	26.7	16.9	54.8	15.0	17.4	20.1
95th Queue (m)	49.9	30.8	89.1	24.6	31.6	41.0
Link Distance (m)	243.5			120.5	120.5	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)		90.0	115.0			65.0
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 2: Dundas Street East & 403W Off-Ramp

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	88.1	96.4	96.5	102.4	103.4	95.8	93.6	117.5	121.1
Average Queue (m)	33.3	42.8	45.8	45.2	43.4	42.4	63.5	89.0	67.5
95th Queue (m)	69.0	86.0	84.7	78.7	79.1	76.1	94.3	111.6	96.5
Link Distance (m)	151.1	151.1	151.1	354.7	354.7	354.7		242.0	242.0
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)							145.0		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 3: 403E Off-Ramp & Dundas Street East

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	119.1	124.3	144.4	112.8	106.8	73.9	57.9	85.4	71.4
Average Queue (m)	42.5	41.8	43.9	68.0	55.6	35.8	23.4	59.0	44.5
95th Queue (m)	85.7	86.2	91.1	105.4	98.6	70.8	60.3	80.0	69.4
Link Distance (m)	354.7	354.7	354.7	176.5	176.5	176.5		279.5	279.5
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)							125.0		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: Ninth Line & Glen Oaks Access

Movement	EB	NB	NB	NB
Directions Served	LR	L	T	T
Maximum Queue (m)	21.2	18.0	21.3	11.1
Average Queue (m)	8.5	9.0	1.0	0.5
95th Queue (m)	17.0	17.8	7.8	4.1
Link Distance (m)	46.5		120.5	120.5
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)		15.0		
Storage Blk Time (%)		2	0	
Queuing Penalty (veh)		5	0	

Network Summary

Network wide Queuing Penalty: 93

Intersection: 1: Ninth Line & Dundas Street East

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	B6	B6
Directions Served	L	T	T	T	R	L	T	T	T	R	T	T
Maximum Queue (m)	279.9	319.7	319.7	327.0	135.0	158.9	187.8	159.0	103.7	27.8	33.8	30.2
Average Queue (m)	110.0	236.6	231.2	220.6	107.6	97.2	88.9	72.5	66.4	11.7	4.6	2.0
95th Queue (m)	280.8	342.7	336.8	337.2	183.0	182.8	184.6	126.5	91.5	21.5	21.5	14.3
Link Distance (m)		315.1	315.1	315.1			159.0	159.0	159.0		151.1	151.1
Upstream Blk Time (%)		8	5	9		11	15	0				
Queuing Penalty (veh)		0	0	0		0	72	1				
Storage Bay Dist (m)	220.0				75.0	230.0				70.0		
Storage Blk Time (%)		15		39	1	11	15		5			
Queuing Penalty (veh)		38		144	10	35	19		7			

Intersection: 1: Ninth Line & Dundas Street East

Movement	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	T	T	R	L	T	T	R
Maximum Queue (m)	230.0	253.2	243.2	78.0	120.4	141.6	136.3	37.6
Average Queue (m)	138.9	133.9	90.3	29.8	112.5	122.4	101.6	13.2
95th Queue (m)	272.2	283.1	226.6	55.2	139.3	157.4	135.8	28.8
Link Distance (m)		243.5	243.5			120.5	120.5	
Upstream Blk Time (%)		30	0		38	51	4	
Queuing Penalty (veh)		0	0		0	305	23	
Storage Bay Dist (m)	130.0			90.0	115.0			65.0
Storage Blk Time (%)	49		3		63	51	33	
Queuing Penalty (veh)	105		5		231	122	44	

Intersection: 2: Dundas Street East & 403W Off-Ramp

Movement	EB	EB	EB	B6	B6	B6	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	154.8	153.7	124.2	108.2	135.4	157.5	55.2	50.3	42.9	241.8	257.9	246.6
Average Queue (m)	62.6	72.0	73.3	3.6	12.2	9.4	29.0	26.2	14.7	160.6	200.0	168.4
95th Queue (m)	110.2	109.4	111.7	35.7	73.0	67.9	49.4	45.1	28.8	229.3	283.5	268.4
Link Distance (m)	151.1	151.1	151.1	159.0	159.0	159.0	354.7	354.7	354.7		242.0	242.0
Upstream Blk Time (%)	0	0				0				0	6	2
Queuing Penalty (veh)	0	1				0				0	0	0
Storage Bay Dist (m)										145.0		
Storage Blk Time (%)										1	22	
Queuing Penalty (veh)										8	96	

Intersection: 3: 403E Off-Ramp & Dundas Street East

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	100.2	110.1	117.0	59.7	47.6	22.3	71.9	96.4	96.1
Average Queue (m)	64.4	68.1	72.3	34.1	14.6	6.2	32.7	65.9	55.4
95th Queue (m)	103.1	108.5	114.3	50.8	33.9	18.1	69.0	89.5	82.1
Link Distance (m)	354.7	354.7	354.7	176.5	176.5	176.5		279.5	279.5
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)							125.0		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: Ninth Line & Glen Oaks Access

Movement	EB	NB	SB	SB
Directions Served	LR	L	T	TR
Maximum Queue (m)	8.5	14.3	161.7	152.6
Average Queue (m)	1.1	3.5	65.5	40.5
95th Queue (m)	5.5	11.0	165.0	124.3
Link Distance (m)	47.5		987.8	987.8
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)		15.0		
Storage Blk Time (%)		1		
Queuing Penalty (veh)		3		

Network Summary

Network wide Queuing Penalty: 1271

Intersection: 1: Ninth Line & Dundas Street East

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	B6	B6
Directions Served	L	T	T	T	R	L	T	T	T	R	T	T
Maximum Queue (m)	224.7	286.3	274.8	230.4	135.0	158.9	187.8	186.3	186.4	130.0	161.0	164.1
Average Queue (m)	105.3	218.0	207.8	178.5	72.1	83.3	181.3	180.6	181.1	78.1	147.1	150.6
95th Queue (m)	198.3	282.8	273.8	248.5	169.6	193.3	185.0	182.4	183.7	169.8	162.9	162.2
Link Distance (m)		315.1	315.1	315.1			159.0	159.0	159.0		151.1	151.1
Upstream Blk Time (%)						0	45	50	50		3	5
Queuing Penalty (veh)						0	488	542	547		31	51
Storage Bay Dist (m)	220.0				75.0	230.0				70.0		
Storage Blk Time (%)	1	13		53		0	45		51	0		
Queuing Penalty (veh)	4	16		93		2	59		81	0		

Intersection: 1: Ninth Line & Dundas Street East

Movement	B6	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	T	L	T	T	R	L	T	T	R
Maximum Queue (m)	156.2	230.0	255.4	255.4	145.0	110.8	109.3	84.0	82.6
Average Queue (m)	150.5	158.7	232.3	244.0	130.5	59.0	51.9	44.7	44.0
95th Queue (m)	158.4	281.3	264.2	270.8	187.8	106.0	90.5	70.3	73.3
Link Distance (m)	151.1		243.5	243.5			120.5	120.5	
Upstream Blk Time (%)	6		15	39					
Queuing Penalty (veh)	62		0	0					
Storage Bay Dist (m)		130.0			90.0	115.0			65.0
Storage Blk Time (%)		37	54	65	20	0	0	2	3
Queuing Penalty (veh)		189	187	516	105	0	0	5	6

Intersection: 2: Dundas Street East & 403W Off-Ramp

Movement	EB	EB	EB	B6	B6	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	153.6	177.1	180.1	11.7	25.8	360.5	361.0	360.8	237.4	261.3	257.9
Average Queue (m)	132.2	150.1	155.3	1.0	3.4	305.0	304.2	300.8	214.7	248.4	247.4
95th Queue (m)	169.0	181.3	187.2	6.3	15.2	443.3	442.9	443.9	245.0	254.2	254.5
Link Distance (m)	151.1	151.1	151.1	159.0	159.0	354.7	354.7	354.7		242.0	242.0
Upstream Blk Time (%)	1	9	19			22	20	22	0	52	42
Queuing Penalty (veh)	8	78	164			150	137	154	0	0	0
Storage Bay Dist (m)									145.0		
Storage Blk Time (%)									1	53	
Queuing Penalty (veh)									8	109	

Intersection: 3: 403E Off-Ramp & Dundas Street East

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	97.4	132.2	119.0	181.1	186.9	186.9	60.8	80.2	67.7
Average Queue (m)	40.4	40.6	41.1	139.7	129.4	117.8	21.7	55.2	43.0
95th Queue (m)	83.3	88.2	93.4	221.9	229.2	229.2	58.2	77.0	67.2
Link Distance (m)	354.7	354.7	354.7	176.5	176.5	176.5		279.5	279.5
Upstream Blk Time (%)				43	38	40			
Queuing Penalty (veh)				0	0	0			
Storage Bay Dist (m)							125.0		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: Ninth Line & Glen Oaks Access

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (m)	8.5	9.2
Average Queue (m)	2.8	2.6
95th Queue (m)	9.4	9.3
Link Distance (m)	47.5	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		15.0
Storage Blk Time (%)		0
Queuing Penalty (veh)		0

Network Summary

Network wide Queuing Penalty: 3792

Intersection: 1: Ninth Line & Dundas Street East

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	T
Maximum Queue (m)	60.0	224.1	230.8	179.0	135.0	87.0	162.9	163.9	173.1	130.0	66.1	65.1
Average Queue (m)	31.2	141.3	136.8	117.4	37.5	43.8	113.2	120.6	124.7	61.3	40.7	50.6
95th Queue (m)	52.4	194.4	194.8	166.0	110.2	73.1	151.0	156.0	163.8	142.1	67.3	63.0
Link Distance (m)		315.1	315.1	315.1			159.0	159.0	159.0			243.5
Upstream Blk Time (%)							0	0	1			
Queuing Penalty (veh)							3	4	11			
Storage Bay Dist (m)	220.0				75.0	230.0				70.0	130.0	
Storage Blk Time (%)		0		20			0		35			
Queuing Penalty (veh)		1		49			1		95			

Intersection: 1: Ninth Line & Dundas Street East

Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	R	L	T	T	R
Maximum Queue (m)	63.0	44.8	120.4	127.2	119.9	44.1
Average Queue (m)	37.1	22.8	88.0	77.8	38.4	22.7
95th Queue (m)	58.9	44.0	147.7	157.7	81.7	38.6
Link Distance (m)	243.5			120.5	120.5	
Upstream Blk Time (%)			10	8	0	
Queuing Penalty (veh)			0	27	0	
Storage Bay Dist (m)		90.0	115.0			65.0
Storage Blk Time (%)			23	8		
Queuing Penalty (veh)			31	15		

Intersection: 2: Dundas Street East & 403W Off-Ramp

Movement	EB	EB	EB	B6	B6	B6	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	172.0	172.6	172.7	95.8	162.6	158.7	156.1	155.4	153.2	153.4	176.4	151.9
Average Queue (m)	91.9	100.0	99.9	3.2	9.4	6.0	68.0	66.8	65.2	76.2	102.6	80.7
95th Queue (m)	183.1	189.8	188.0	31.6	65.1	53.1	134.9	132.9	131.1	120.3	137.6	116.2
Link Distance (m)	151.1	151.1	151.1	159.0	159.0	159.0	354.7	354.7	354.7		242.0	242.0
Upstream Blk Time (%)	2	4	3		0	0						
Queuing Penalty (veh)	15	29	26		1	0						
Storage Bay Dist (m)										145.0		
Storage Blk Time (%)										0	1	
Queuing Penalty (veh)										0	1	

Intersection: 3: 403E Off-Ramp & Dundas Street East

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	136.3	142.6	141.6	165.2	133.6	100.4	84.4	84.3	78.6
Average Queue (m)	55.8	56.8	58.4	87.3	74.8	48.5	34.6	65.1	51.6
95th Queue (m)	115.7	122.2	127.4	138.0	124.9	88.8	73.5	85.6	77.5
Link Distance (m)	354.7	354.7	354.7	176.5	176.5	176.5		279.5	279.5
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)							125.0		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: Ninth Line & Glen Oaks Access

Movement	EB	NB	NB	SB	SB
Directions Served	LR	L	T	T	TR
Maximum Queue (m)	16.6	21.6	30.1	35.0	9.2
Average Queue (m)	9.5	12.7	2.0	3.6	0.3
95th Queue (m)	16.3	19.7	14.4	18.1	3.0
Link Distance (m)	47.5		120.5	987.8	987.8
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)		15.0			
Storage Blk Time (%)		5			
Queuing Penalty (veh)		17			

Network Summary

Network wide Queuing Penalty: 324

Intersection: 1: Ninth Line & Dundas Street East

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	T
Maximum Queue (m)	280.0	327.0	334.3	331.0	135.0	293.8	292.1	287.9	106.0	40.5	229.9	248.1
Average Queue (m)	239.6	317.1	317.3	318.7	120.0	122.6	64.1	76.3	67.3	15.3	179.8	148.3
95th Queue (m)	387.8	332.6	336.8	346.4	175.4	259.0	175.3	169.7	90.6	30.1	252.1	273.5
Link Distance (m)		315.1	315.1	315.1			326.9	326.9	326.9			243.5
Upstream Blk Time (%)		27	22	44								18
Queuing Penalty (veh)		0	0	0								0
Storage Bay Dist (m)	220.0				75.0	230.0				70.0	130.0	
Storage Blk Time (%)		47		52	2	11			9		87	0
Queuing Penalty (veh)		120		200	17	35			13		248	0

Intersection: 1: Ninth Line & Dundas Street East

Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	R	L	T	T	R
Maximum Queue (m)	248.1	56.7	120.4	141.5	140.9	120.4
Average Queue (m)	100.1	29.6	119.4	135.1	123.2	35.2
95th Queue (m)	217.3	51.3	121.4	145.0	130.2	105.6
Link Distance (m)	243.5			120.5	120.5	
Upstream Blk Time (%)	0		62	81	30	0
Queuing Penalty (veh)	0		0	612	226	0
Storage Bay Dist (m)		90.0	115.0			65.0
Storage Blk Time (%)	1		86	80	52	
Queuing Penalty (veh)	2		403	215	77	

Intersection: 2: Dundas Street East & 403W Off-Ramp

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	334.4	318.9	154.6	47.0	44.3	37.9	236.4	256.4	256.4
Average Queue (m)	117.4	117.5	111.3	28.7	25.9	15.2	207.0	245.5	235.6
95th Queue (m)	215.2	188.1	141.8	44.7	41.7	33.1	240.8	273.8	287.1
Link Distance (m)	326.9	326.9	326.9	354.7	354.7	354.7		240.5	240.5
Upstream Blk Time (%)	0						0	33	10
Queuing Penalty (veh)	0						0	0	0
Storage Bay Dist (m)							145.0		
Storage Blk Time (%)							10	41	
Queuing Penalty (veh)							96	204	

Intersection: 3: 403E Off-Ramp & Dundas Street East

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	107.0	126.3	111.6	86.9	64.2	35.0	73.7	97.0	86.6
Average Queue (m)	75.0	81.3	79.3	38.5	21.9	8.5	41.5	74.0	61.8
95th Queue (m)	104.0	120.0	110.0	63.5	52.7	21.9	79.9	92.9	83.2
Link Distance (m)	354.7	354.7	354.7	176.5	176.5	176.5		279.5	279.5
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)							125.0		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: Ninth Line & Glen Oaks Access

Movement	EB	NB	SB	SB
Directions Served	LR	L	T	TR
Maximum Queue (m)	15.3	17.3	992.4	992.4
Average Queue (m)	5.7	3.8	510.1	507.8
95th Queue (m)	14.5	12.7	1016.7	1006.4
Link Distance (m)	47.5		987.8	987.8
Upstream Blk Time (%)			8	5
Queuing Penalty (veh)			0	0
Storage Bay Dist (m)		15.0		
Storage Blk Time (%)		6		
Queuing Penalty (veh)		37		

Network Summary

Network wide Queuing Penalty: 2506

Intersection: 1: Ninth Line & Dundas Street East

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	T
Maximum Queue (m)	206.9	237.4	222.0	194.8	135.0	299.9	336.3	347.3	335.7	130.0	230.0	259.4
Average Queue (m)	124.1	167.4	157.9	131.7	54.0	141.7	323.8	331.5	328.8	83.1	214.1	246.6
95th Queue (m)	186.7	224.9	213.6	188.9	142.8	370.2	337.1	348.8	334.7	177.1	277.0	257.8
Link Distance (m)		315.1	315.1	315.1			326.9	326.9	326.9			243.5
Upstream Blk Time (%)							2	8	14			53
Queuing Penalty (veh)							27	89	164			0
Storage Bay Dist (m)	220.0				75.0	230.0				70.0	130.0	
Storage Blk Time (%)		1		30			47		54		77	23
Queuing Penalty (veh)		2		54			65		91		532	90

Intersection: 1: Ninth Line & Dundas Street East

Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	R	L	T	T	R
Maximum Queue (m)	256.5	145.0	120.4	140.5	125.9	120.4
Average Queue (m)	218.3	95.0	106.2	117.7	92.7	50.9
95th Queue (m)	315.9	174.3	139.4	152.7	135.0	92.5
Link Distance (m)	243.5			120.5	120.5	
Upstream Blk Time (%)	17		35	41	2	0
Queuing Penalty (veh)	0		0	272	13	0
Storage Bay Dist (m)		90.0	115.0			65.0
Storage Blk Time (%)	35	8	48	44	16	3
Queuing Penalty (veh)	310	55	143	52	47	10

Intersection: 2: Dundas Street East & 403W Off-Ramp

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	141.3	147.7	149.4	367.2	363.3	360.2	237.6	259.7	252.4
Average Queue (m)	91.5	102.6	108.7	335.3	335.0	332.9	217.8	247.7	246.2
95th Queue (m)	146.7	149.4	153.3	439.9	437.1	436.0	248.5	254.1	250.3
Link Distance (m)	326.9	326.9	326.9	354.7	354.7	354.7		240.5	240.5
Upstream Blk Time (%)				21	19	21	0	64	54
Queuing Penalty (veh)				152	137	150	0	0	0
Storage Bay Dist (m)							145.0		
Storage Blk Time (%)							1	66	
Queuing Penalty (veh)							9	155	

Intersection: 3: 403E Off-Ramp & Dundas Street East

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	136.3	148.8	131.7	188.4	186.9	181.1	66.6	86.1	72.7
Average Queue (m)	47.2	49.7	47.3	159.7	156.3	151.3	20.4	55.7	42.8
95th Queue (m)	103.8	111.9	110.8	228.5	234.5	242.9	57.2	78.7	68.6
Link Distance (m)	354.7	354.7	354.7	176.5	176.5	176.5		279.5	279.5
Upstream Blk Time (%)				54	52	54			
Queuing Penalty (veh)				0	0	0			
Storage Bay Dist (m)							125.0		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: Ninth Line & Glen Oaks Access

Movement	EB	NB	SB	SB
Directions Served	LR	L	T	TR
Maximum Queue (m)	20.9	15.7	79.9	69.2
Average Queue (m)	3.3	1.4	24.9	10.2
95th Queue (m)	12.4	7.7	64.4	46.0
Link Distance (m)	47.5		987.8	987.8
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)		15.0		
Storage Blk Time (%)		1		
Queuing Penalty (veh)		9		

Network Summary

Network wide Queuing Penalty: 2628

Intersection: 1: Ninth Line & Dundas Street East

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	T
Maximum Queue (m)	51.1	228.2	217.8	193.2	135.0	109.4	176.2	164.6	167.8	130.0	150.9	82.0
Average Queue (m)	34.3	167.7	163.6	139.8	46.3	68.8	86.6	94.8	97.1	23.6	65.8	49.0
95th Queue (m)	51.0	214.2	207.6	183.2	128.2	119.4	132.7	135.2	136.9	60.5	133.0	70.0
Link Distance (m)		315.1	315.1	315.1			326.9	326.9	326.9			243.5
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	220.0				75.0	230.0				70.0	130.0	
Storage Blk Time (%)		0		32					24		8	
Queuing Penalty (veh)		1		79					69		21	

Intersection: 1: Ninth Line & Dundas Street East

Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	R	L	T	T	R
Maximum Queue (m)	76.3	64.2	120.4	141.0	120.5	64.6
Average Queue (m)	40.5	25.2	108.9	103.8	50.1	31.5
95th Queue (m)	64.2	44.9	132.7	163.4	103.0	56.2
Link Distance (m)	243.5			120.5	120.5	
Upstream Blk Time (%)			21	27	0	
Queuing Penalty (veh)			0	133	0	
Storage Bay Dist (m)		90.0	115.0			65.0
Storage Blk Time (%)			39	25	1	0
Queuing Penalty (veh)			75	52	2	0

Intersection: 2: Dundas Street East & 403W Off-Ramp

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	160.9	170.1	172.9	129.8	132.3	128.4	150.7	171.6	173.3
Average Queue (m)	116.6	125.3	127.7	66.8	65.5	62.6	97.7	122.0	100.9
95th Queue (m)	157.0	167.8	167.3	118.3	120.2	115.5	136.3	156.1	142.8
Link Distance (m)	326.9	326.9	326.9	354.7	354.7	354.7		240.5	240.5
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)							145.0		
Storage Blk Time (%)							0	2	
Queuing Penalty (veh)							0	3	

Intersection: 3: 403E Off-Ramp & Dundas Street East

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	115.9	121.0	122.2	181.1	136.7	96.7	76.9	102.8	97.8
Average Queue (m)	58.0	62.6	63.1	94.5	76.7	51.3	28.9	68.8	55.5
95th Queue (m)	98.3	101.2	105.7	137.6	119.8	81.8	66.1	94.2	83.2
Link Distance (m)	354.7	354.7	354.7	176.5	176.5	176.5		279.5	279.5
Upstream Blk Time (%)				0					
Queuing Penalty (veh)				0					
Storage Bay Dist (m)							125.0		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: Ninth Line & Glen Oaks Access

Movement	EB	NB	NB	NB	SB	SB
Directions Served	LR	L	T	T	T	TR
Maximum Queue (m)	52.1	22.4	60.0	52.9	99.8	95.8
Average Queue (m)	16.2	13.0	5.0	2.8	20.5	5.7
95th Queue (m)	36.9	20.5	29.8	20.7	68.5	40.1
Link Distance (m)	47.5		120.5	120.5	987.8	987.8
Upstream Blk Time (%)	5					
Queuing Penalty (veh)	0					
Storage Bay Dist (m)		15.0				
Storage Blk Time (%)		12				
Queuing Penalty (veh)		57				

Network Summary

Network wide Queuing Penalty: 492

Intersection: 1: Ninth Line & Dundas Street East

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	T
Maximum Queue (m)	70.5	266.3	259.6	232.8	135.0	158.7	177.5	158.8	79.1	28.4	229.7	236.5
Average Queue (m)	40.2	166.4	156.8	136.6	62.3	146.2	134.1	65.2	51.8	11.5	176.8	103.4
95th Queue (m)	67.0	239.3	233.7	214.1	136.4	181.3	225.3	129.0	73.8	22.3	243.1	236.4
Link Distance (m)		315.1	315.1	315.1			158.8	158.8	158.8			243.5
Upstream Blk Time (%)						44	51	0				
Queuing Penalty (veh)						0	212	0				
Storage Bay Dist (m)	220.0				75.0	230.0				70.0	130.0	
Storage Blk Time (%)		4		24	2	44	51		1		79	
Queuing Penalty (veh)		10		87	19	136	87		2		128	

Intersection: 1: Ninth Line & Dundas Street East

Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	R	L	T	T	R
Maximum Queue (m)	211.6	54.3	118.5	132.8	139.3	118.4
Average Queue (m)	54.5	26.3	111.2	112.7	74.3	15.7
95th Queue (m)	139.2	45.5	129.3	153.0	136.2	51.0
Link Distance (m)	243.5			118.6	118.6	
Upstream Blk Time (%)			31	42	0	0
Queuing Penalty (veh)			0	196	1	0
Storage Bay Dist (m)		90.0	115.0			65.0
Storage Blk Time (%)			60	42	14	
Queuing Penalty (veh)			172	110	17	

Intersection: 2: Dundas Street East & 403W Off-Ramp

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	158.3	157.1	155.1	62.6	56.2	42.6	199.6	254.0	253.0
Average Queue (m)	126.9	129.5	133.3	34.3	27.4	16.6	145.6	181.0	139.8
95th Queue (m)	179.0	183.6	178.7	55.7	50.6	36.0	201.1	247.3	208.9
Link Distance (m)	151.3	151.3	151.3	354.7	354.7	354.7		242.0	242.0
Upstream Blk Time (%)	6	6	7					3	1
Queuing Penalty (veh)	55	55	69					0	0
Storage Bay Dist (m)							145.0		
Storage Blk Time (%)							1	14	
Queuing Penalty (veh)							8	56	

Intersection: 3: 403E Off-Ramp & Dundas Street East

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	98.8	100.6	105.2	48.2	37.4	27.9	54.6	98.0	79.1
Average Queue (m)	52.8	55.8	59.6	30.2	13.6	8.1	14.0	63.3	48.2
95th Queue (m)	92.1	93.9	103.3	50.8	32.7	21.2	42.3	91.0	75.0
Link Distance (m)	354.7	354.7	354.7	176.5	176.5	176.5		279.5	279.5
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)							125.0		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: Ninth Line & Glen Oaks Access/Site Access B

Movement	EB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	T	TR	L	TR
Maximum Queue (m)	8.0	5.5	14.7	23.6	29.5	30.5	1008.4
Average Queue (m)	0.5	1.6	3.0	7.5	10.4	1.5	544.1
95th Queue (m)	3.8	5.5	10.6	21.2	28.2	11.5	1246.4
Link Distance (m)	46.8	53.4		118.6	118.6		989.1
Upstream Blk Time (%)							30
Queuing Penalty (veh)							0
Storage Bay Dist (m)			15.0			25.0	
Storage Blk Time (%)			0	2			47
Queuing Penalty (veh)			1	0			2

Intersection: 6: Dundas Street East & Site Access A

Movement	EB	EB	EB	WB	WB	SB
Directions Served	T	T	T	T	T	R
Maximum Queue (m)	93.8	107.9	91.7	72.7	36.1	9.1
Average Queue (m)	23.7	33.4	30.8	29.0	4.2	1.4
95th Queue (m)	70.9	92.0	79.7	69.0	22.2	6.6
Link Distance (m)	158.8	158.8	158.8	151.3	151.3	40.6
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Network Summary

Network wide Queuing Penalty: 1426

Intersection: 1: Ninth Line & Dundas Street East

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	T
Maximum Queue (m)	280.0	325.2	319.7	231.0	134.9	159.2	170.5	169.0	173.0	130.0	230.0	262.7
Average Queue (m)	230.8	254.1	238.0	103.1	28.9	33.7	151.6	156.4	157.5	65.5	226.8	243.8
95th Queue (m)	349.5	396.9	380.5	165.9	98.3	77.5	175.8	178.2	176.5	158.9	244.6	273.8
Link Distance (m)		315.1	315.1	315.1			159.5	159.5	159.5			243.5
Upstream Blk Time (%)		32	1			0	9	13	14			74
Queuing Penalty (veh)		0	0			0	89	127	138			0
Storage Bay Dist (m)	220.0				75.0	230.0				70.0	130.0	
Storage Blk Time (%)	68	6		18		0	9		42		99	
Queuing Penalty (veh)	370	11		31		0	12		64		381	

Intersection: 1: Ninth Line & Dundas Street East

Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	R	L	T	T	R
Maximum Queue (m)	248.1	145.0	118.6	122.3	118.0	74.7
Average Queue (m)	188.1	87.1	92.3	62.1	44.4	40.7
95th Queue (m)	305.8	152.3	123.1	125.9	82.8	70.0
Link Distance (m)	243.5			118.8	118.8	
Upstream Blk Time (%)	1		5	0	0	
Queuing Penalty (veh)	0		0	2	0	
Storage Bay Dist (m)		90.0	115.0			65.0
Storage Blk Time (%)	10	18	11	0	0	1
Queuing Penalty (veh)	70	71	17	1	0	1

Intersection: 2: Dundas Street East & 403W Off-Ramp

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	156.1	162.5	155.2	140.6	134.3	127.6	228.8	252.4	246.6
Average Queue (m)	95.4	104.2	111.3	74.4	72.1	67.7	166.0	210.0	192.1
95th Queue (m)	158.3	166.5	164.9	118.4	114.8	107.5	233.5	270.1	261.4
Link Distance (m)	150.5	150.5	150.5	354.7	354.7	354.7		242.0	242.0
Upstream Blk Time (%)	2	2	3					10	7
Queuing Penalty (veh)	20	21	24					0	0
Storage Bay Dist (m)							145.0		
Storage Blk Time (%)							0	37	
Queuing Penalty (veh)							3	68	

Intersection: 3: 403E Off-Ramp & Dundas Street East

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	98.8	91.9	87.4	100.0	97.2	75.7	68.0	79.8	61.1
Average Queue (m)	26.6	30.2	28.7	61.5	48.1	24.4	16.1	50.0	35.8
95th Queue (m)	61.2	64.4	69.2	91.5	84.7	54.1	50.4	73.3	57.1
Link Distance (m)	354.7	354.7	354.7	176.5	176.5	176.5		279.5	279.5
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)							125.0		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: Ninth Line & Glen Oaks Access/Site Access B

Movement	EB	WB	NB	NB	NB	SB
Directions Served	LTR	LTR	L	T	TR	L
Maximum Queue (m)	8.0	12.0	22.4	75.8	66.4	9.1
Average Queue (m)	1.1	3.9	2.3	28.3	29.8	0.9
95th Queue (m)	5.5	10.3	12.1	61.8	59.3	5.3
Link Distance (m)	46.8	42.4		118.8	118.8	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)			15.0			25.0
Storage Blk Time (%)			0	18		
Queuing Penalty (veh)			0	3		

Intersection: 6: Dundas Street East & Site Access A

Movement	EB	EB	EB	WB	WB	WB	SB
Directions Served	T	T	T	T	T	TR	R
Maximum Queue (m)	49.1	49.7	48.0	148.7	163.3	152.9	34.3
Average Queue (m)	4.5	5.8	6.9	42.7	50.6	52.2	8.6
95th Queue (m)	24.3	26.2	27.8	123.9	132.2	133.9	24.4
Link Distance (m)	159.5	159.5	159.5	150.5	150.5	150.5	59.4
Upstream Blk Time (%)				0	0	0	
Queuing Penalty (veh)				0	1	2	
Storage Bay Dist (m)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Network Summary

Network wide Queuing Penalty: 1530

Intersection: 1: Ninth Line & Dundas Street East

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	T
Maximum Queue (m)	59.9	174.7	170.8	176.5	135.0	71.8	127.4	128.3	135.5	83.9	70.7	60.3
Average Queue (m)	29.9	120.8	115.0	100.2	22.9	37.8	83.3	90.3	92.2	21.8	35.8	37.6
95th Queue (m)	50.7	165.6	158.1	149.0	73.1	65.4	126.2	130.3	126.2	47.7	59.3	59.8
Link Distance (m)		315.1	315.1	315.1			158.7	158.7	158.7			243.5
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	220.0				75.0	230.0				70.0	130.0	
Storage Blk Time (%)				11					17			
Queuing Penalty (veh)				27					45			

Intersection: 1: Ninth Line & Dundas Street East

Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	R	L	T	T	R
Maximum Queue (m)	55.1	39.0	118.3	133.9	96.4	50.5
Average Queue (m)	27.4	17.2	89.6	69.6	22.3	19.2
95th Queue (m)	50.6	33.0	140.7	157.3	49.7	38.5
Link Distance (m)	243.5			118.4	118.4	
Upstream Blk Time (%)			16	22		
Queuing Penalty (veh)			0	61		
Storage Bay Dist (m)		90.0	115.0			65.0
Storage Blk Time (%)			29	21		
Queuing Penalty (veh)			28	42		

Intersection: 2: Dundas Street East & 403W Off-Ramp

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	155.6	162.9	160.9	108.9	107.3	119.6	116.7	116.8	105.1
Average Queue (m)	104.6	109.5	111.3	47.5	46.1	44.0	65.4	89.0	69.3
95th Queue (m)	194.3	196.2	196.6	95.4	93.2	90.4	102.3	114.0	102.4
Link Distance (m)	151.4	151.4	151.4	354.7	354.7	354.7		242.0	242.0
Upstream Blk Time (%)	4	5	6						
Queuing Penalty (veh)	28	38	43						
Storage Bay Dist (m)							145.0		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 3: 403E Off-Ramp & Dundas Street East

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	342.7	142.6	149.4	154.2	139.5	84.0	59.7	84.1	72.1
Average Queue (m)	61.0	53.8	54.8	79.3	68.3	40.9	24.2	58.3	45.0
95th Queue (m)	164.9	120.5	116.2	124.1	119.5	77.2	62.1	76.8	68.9
Link Distance (m)	354.7	354.7	354.7	176.5	176.5	176.5		279.5	279.5
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)							125.0		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: Ninth Line & Glen Oaks Access/Site Access B

Movement	EB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	T	TR	L	TR
Maximum Queue (m)	51.4	18.2	21.7	34.1	33.0	8.5	259.0
Average Queue (m)	16.2	5.0	12.3	1.1	1.4	0.6	45.6
95th Queue (m)	42.3	12.1	22.5	11.2	11.5	4.0	164.7
Link Distance (m)	46.8	52.1		118.4	118.4		989.1
Upstream Blk Time (%)	12						
Queuing Penalty (veh)	0						
Storage Bay Dist (m)			15.0			25.0	
Storage Blk Time (%)			6	0			18
Queuing Penalty (veh)			16	0			1

Intersection: 6: Dundas Street East & Site Access A

Movement	EB	EB	EB	WB	SB
Directions Served	T	T	T	T	R
Maximum Queue (m)	67.1	77.1	79.7	9.7	9.1
Average Queue (m)	11.4	13.6	14.9	0.3	2.8
95th Queue (m)	42.1	49.2	51.5	3.2	9.6
Link Distance (m)	158.7	158.7	158.7	151.4	46.8
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 328

Intersection: 1: Ninth Line & Dundas Street East

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	T
Maximum Queue (m)	279.9	319.7	331.0	331.0	135.0	158.7	174.6	157.4	90.6	26.5	230.0	255.4
Average Queue (m)	106.9	220.5	218.1	211.7	105.7	141.5	125.5	64.4	54.7	11.5	222.9	230.6
95th Queue (m)	269.6	335.5	334.5	341.4	181.0	189.9	216.9	117.8	79.5	19.4	257.9	324.2
Link Distance (m)		315.1	315.1	315.1			158.8	158.8	158.8			243.5
Upstream Blk Time (%)		5	4	7		40	42	0				85
Queuing Penalty (veh)		0	0	0		0	180	0				0
Storage Bay Dist (m)	220.0				75.0	230.0				70.0	130.0	
Storage Blk Time (%)		14		37	2	40	42		3		100	
Queuing Penalty (veh)		36		140	20	128	74		4		216	

Intersection: 1: Ninth Line & Dundas Street East

Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	R	L	T	T	R
Maximum Queue (m)	243.5	58.5	118.5	139.6	123.3	118.5
Average Queue (m)	120.7	18.6	101.4	119.1	96.1	23.0
95th Queue (m)	278.3	40.8	148.5	158.0	132.2	76.4
Link Distance (m)	243.5			118.6	118.6	
Upstream Blk Time (%)	0		33	43	4	0
Queuing Penalty (veh)	0		0	258	25	0
Storage Bay Dist (m)		90.0	115.0			65.0
Storage Blk Time (%)	2		47	43	35	
Queuing Penalty (veh)	4		174	126	47	

Intersection: 2: Dundas Street East & 403W Off-Ramp

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	137.8	151.3	143.4	77.3	83.9	52.5	226.7	257.9	252.4
Average Queue (m)	80.4	90.7	90.6	37.2	32.2	22.4	171.0	210.1	171.9
95th Queue (m)	136.4	147.6	144.5	65.1	59.0	43.3	222.8	274.7	248.4
Link Distance (m)	151.3	151.3	151.3	354.7	354.7	354.7		242.0	242.0
Upstream Blk Time (%)		0						8	2
Queuing Penalty (veh)		1						0	0
Storage Bay Dist (m)							145.0		
Storage Blk Time (%)							4	28	
Queuing Penalty (veh)							39	121	

Intersection: 3: 403E Off-Ramp & Dundas Street East

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	116.9	121.9	120.2	81.4	65.1	22.1	77.3	108.5	104.6
Average Queue (m)	60.5	67.1	68.4	40.4	22.4	7.7	21.9	64.7	55.5
95th Queue (m)	99.8	110.2	116.7	71.1	49.9	18.6	58.1	92.2	83.7
Link Distance (m)	354.7	354.7	354.7	176.5	176.5	176.5		279.5	279.5
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)							125.0		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: Ninth Line & Glen Oaks Access/Site Access B

Movement	EB	WB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	L	T	TR
Maximum Queue (m)	8.6	14.7	8.9	8.9	161.0	110.5
Average Queue (m)	0.7	1.4	1.6	0.6	58.5	31.7
95th Queue (m)	4.5	7.2	7.0	4.2	137.9	90.6
Link Distance (m)	47.7	54.4			989.0	989.0
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)			15.0	25.0		
Storage Blk Time (%)					41	
Queuing Penalty (veh)					2	

Intersection: 6: Dundas Street East & Site Access A

Movement	EB	EB	EB	WB	WB	WB	SB
Directions Served	T	T	T	T	T	TR	R
Maximum Queue (m)	170.4	148.3	67.0	155.7	162.9	151.1	9.0
Average Queue (m)	14.6	12.1	5.0	54.2	23.0	5.0	0.9
95th Queue (m)	84.5	60.4	29.5	163.1	110.0	49.8	5.4
Link Distance (m)	158.8	158.8	158.8	151.3	151.3	151.3	40.6
Upstream Blk Time (%)				16	0	0	
Queuing Penalty (veh)				80	1	0	
Storage Bay Dist (m)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Network Summary

Network wide Queuing Penalty: 1676

Intersection: 1: Ninth Line & Dundas Street East

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	T
Maximum Queue (m)	279.9	333.1	303.4	199.4	135.0	159.4	168.2	169.0	172.2	130.0	230.0	255.4
Average Queue (m)	178.4	206.7	182.4	113.0	36.7	46.0	161.5	162.2	162.1	82.0	227.8	246.7
95th Queue (m)	289.2	332.9	302.9	174.8	109.9	122.5	164.4	166.2	166.2	173.0	242.2	256.3
Link Distance (m)		315.1	315.1	315.1			159.5	159.5	159.5			243.5
Upstream Blk Time (%)		8				0	31	32	32			70
Queuing Penalty (veh)		0				0	328	342	343			0
Storage Bay Dist (m)	220.0				75.0	230.0				70.0	130.0	
Storage Blk Time (%)	26	4		22		0	31		48		97	12
Queuing Penalty (veh)	143	7		38		1	43		77		502	46

Intersection: 1: Ninth Line & Dundas Street East

Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	R	L	T	T	R
Maximum Queue (m)	255.4	145.0	118.7	139.1	115.4	88.5
Average Queue (m)	168.4	71.4	107.1	111.2	66.4	50.4
95th Queue (m)	322.5	153.9	138.4	158.2	102.7	76.6
Link Distance (m)	243.5			118.8	118.8	
Upstream Blk Time (%)	11		42	48	0	
Queuing Penalty (veh)	0		0	236	0	
Storage Bay Dist (m)		90.0	115.0			65.0
Storage Blk Time (%)	20	15	60	48	9	2
Queuing Penalty (veh)	159	75	128	80	23	5

Intersection: 2: Dundas Street East & 403W Off-Ramp

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	157.7	159.1	156.8	358.5	367.1	368.2	242.0	261.3	254.0
Average Queue (m)	110.2	118.7	121.3	240.8	239.2	235.4	217.9	249.6	247.3
95th Queue (m)	176.0	180.6	180.1	425.7	424.0	418.4	255.0	256.9	250.7
Link Distance (m)	150.5	150.5	150.5	354.7	354.7	354.7		242.0	242.0
Upstream Blk Time (%)	1	5	9	4	4	5	0	62	53
Queuing Penalty (veh)	9	47	83	28	28	31	0	0	0
Storage Bay Dist (m)							145.0		
Storage Blk Time (%)							1	67	
Queuing Penalty (veh)							7	139	

Intersection: 3: 403E Off-Ramp & Dundas Street East

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	77.0	87.9	85.5	183.7	181.1	181.1	57.6	75.3	65.3
Average Queue (m)	44.1	47.0	41.9	107.1	96.9	70.9	11.9	53.9	40.9
95th Queue (m)	79.9	84.9	87.5	185.6	184.6	171.5	38.6	77.0	64.6
Link Distance (m)	354.7	354.7	354.7	176.5	176.5	176.5		279.5	279.5
Upstream Blk Time (%)				8	5	3			
Queuing Penalty (veh)				0	0	0			
Storage Bay Dist (m)							125.0		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: Ninth Line & Glen Oaks Access/Site Access B

Movement	EB	WB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	L	T	TR
Maximum Queue (m)	22.0	34.0	14.3	32.0	112.2	81.4
Average Queue (m)	4.0	9.4	1.4	1.5	36.3	7.1
95th Queue (m)	14.6	23.7	7.2	11.3	93.3	39.0
Link Distance (m)	47.7	43.3			989.0	989.0
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)			15.0	25.0		
Storage Blk Time (%)			1		38	
Queuing Penalty (veh)			5		1	

Intersection: 6: Dundas Street East & Site Access A

Movement	EB	EB	EB	WB	WB	WB	SB
Directions Served	T	T	T	T	T	TR	R
Maximum Queue (m)	84.7	118.8	113.6	153.2	170.7	157.7	47.1
Average Queue (m)	6.4	12.9	14.3	143.4	149.9	150.9	29.8
95th Queue (m)	34.9	58.9	56.6	161.5	167.8	164.1	48.3
Link Distance (m)	159.5	159.5	159.5	150.5	150.5	150.5	59.4
Upstream Blk Time (%)				2	6	11	
Queuing Penalty (veh)				21	63	125	
Storage Bay Dist (m)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Network Summary

Network wide Queuing Penalty: 3166

Intersection: 1: Ninth Line & Dundas Street East

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	T
Maximum Queue (m)	78.1	165.3	160.3	150.7	47.8	89.9	142.6	158.7	158.7	129.9	98.0	70.6
Average Queue (m)	36.1	121.6	111.4	97.6	18.7	33.6	106.3	111.4	112.4	35.6	47.4	47.5
95th Queue (m)	64.3	157.3	150.3	136.3	34.8	65.6	139.0	147.1	144.4	105.0	83.8	68.4
Link Distance (m)		315.1	315.1	315.1			158.7	158.7	158.7			243.5
Upstream Blk Time (%)								0	0			
Queuing Penalty (veh)								0	0			
Storage Bay Dist (m)	220.0				75.0	230.0				70.0	130.0	
Storage Blk Time (%)				12					21			
Queuing Penalty (veh)				28					57			

Intersection: 1: Ninth Line & Dundas Street East

Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	R	L	T	T	R
Maximum Queue (m)	61.6	38.2	117.5	122.8	72.5	56.0
Average Queue (m)	37.7	15.4	72.0	38.4	28.1	22.5
95th Queue (m)	58.0	30.1	119.5	94.3	48.6	48.4
Link Distance (m)	243.5			118.4	118.4	
Upstream Blk Time (%)			5	6		
Queuing Penalty (veh)			0	22		
Storage Bay Dist (m)		90.0	115.0			65.0
Storage Blk Time (%)			9	6		
Queuing Penalty (veh)			12	13		

Intersection: 2: Dundas Street East & 403W Off-Ramp

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	155.9	163.6	156.2	157.7	149.2	148.8	124.6	132.3	125.0
Average Queue (m)	144.5	146.2	146.3	59.1	59.4	57.7	71.0	95.3	76.3
95th Queue (m)	167.5	171.2	168.4	110.3	108.6	103.2	107.2	120.8	104.4
Link Distance (m)	151.4	151.4	151.4	354.7	354.7	354.7		242.0	242.0
Upstream Blk Time (%)	8	10	9						
Queuing Penalty (veh)	63	82	74						
Storage Bay Dist (m)							145.0		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 3: 403E Off-Ramp & Dundas Street East

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	124.8	362.9	108.7	171.8	144.1	88.5	61.3	96.4	81.6
Average Queue (m)	47.6	59.3	51.8	85.2	68.8	44.2	27.8	58.6	43.1
95th Queue (m)	97.7	166.4	102.5	132.1	117.6	80.9	62.2	80.8	67.4
Link Distance (m)	354.7	354.7	354.7	176.5	176.5	176.5		279.5	279.5
Upstream Blk Time (%)		0		0					
Queuing Penalty (veh)		1		0					
Storage Bay Dist (m)							125.0		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: Ninth Line & Glen Oaks Access/Site Access B

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	L	L	T
Maximum Queue (m)	16.4	14.6	21.6	8.6	21.2
Average Queue (m)	9.1	4.8	10.2	0.6	1.2
95th Queue (m)	14.8	11.6	19.8	4.0	8.7
Link Distance (m)	47.7	53.2			989.0
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)			15.0	25.0	
Storage Blk Time (%)			2		0
Queuing Penalty (veh)			6		0

Intersection: 6: Dundas Street East & Site Access A

Movement	EB	EB	EB	WB	WB	SB
Directions Served	T	T	T	T	TR	R
Maximum Queue (m)	65.7	66.8	61.1	12.4	16.7	15.5
Average Queue (m)	18.0	18.8	20.8	0.7	0.9	3.9
95th Queue (m)	52.0	55.7	57.6	5.2	6.4	12.2
Link Distance (m)	158.7	158.7	158.7	151.4	151.4	46.8
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Network Summary

Network wide Queuing Penalty: 358

Intersection: 1: Ninth Line & Dundas Street East

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	T
Maximum Queue (m)	279.9	320.0	334.3	331.0	135.0	158.7	179.7	133.0	74.8	16.2	230.0	262.7
Average Queue (m)	210.2	315.7	314.3	312.1	101.9	157.4	168.1	51.8	55.0	9.2	221.5	234.9
95th Queue (m)	386.2	338.4	341.9	354.8	185.0	160.0	180.0	85.9	74.9	16.1	261.1	307.0
Link Distance (m)		315.1	315.1	315.1			158.8	158.8	158.8			243.5
Upstream Blk Time (%)		29	31	44		79	87					81
Queuing Penalty (veh)		0	0	0		0	384					0
Storage Bay Dist (m)	220.0				75.0	230.0				70.0	130.0	
Storage Blk Time (%)		47		52	1	79	87		1		96	
Queuing Penalty (veh)		123		198	6	258	157		1		277	

Intersection: 1: Ninth Line & Dundas Street East

Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	R	L	T	T	R
Maximum Queue (m)	248.1	54.6	118.5	147.4	124.0	118.6
Average Queue (m)	116.0	16.5	118.0	135.3	121.2	44.2
95th Queue (m)	275.5	41.5	119.1	142.6	123.8	119.7
Link Distance (m)	243.5			118.6	118.6	
Upstream Blk Time (%)	0		56	82	26	0
Queuing Penalty (veh)	0		0	623	197	0
Storage Bay Dist (m)		90.0	115.0			65.0
Storage Blk Time (%)	5		88	81	50	0
Queuing Penalty (veh)	9		415	259	74	0

Intersection: 2: Dundas Street East & 403W Off-Ramp

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	151.3	152.3	152.4	87.1	82.0	78.2	236.5	257.9	257.9
Average Queue (m)	54.6	63.6	66.2	47.6	45.6	34.9	211.2	251.1	248.6
95th Queue (m)	102.6	111.2	113.4	75.1	71.3	61.7	244.5	258.1	259.5
Link Distance (m)	151.3	151.3	151.3	354.7	354.7	354.7		242.0	242.0
Upstream Blk Time (%)	0	0	0				0	55	20
Queuing Penalty (veh)	0	1	3				0	0	0
Storage Bay Dist (m)							145.0		
Storage Blk Time (%)							31	64	
Queuing Penalty (veh)							308	316	

Intersection: 3: 403E Off-Ramp & Dundas Street East

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	136.9	142.2	135.8	72.1	49.6	21.9	77.6	117.4	112.6
Average Queue (m)	61.9	66.9	65.9	40.0	20.7	4.3	36.0	73.8	63.3
95th Queue (m)	107.0	113.7	114.9	62.3	46.5	14.9	73.1	106.8	96.4
Link Distance (m)	354.7	354.7	354.7	176.5	176.5	176.5		279.5	279.5
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)							125.0		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: Ninth Line & Glen Oaks Access/Site Access B

Movement	EB	WB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	L	T	TR
Maximum Queue (m)	15.2	52.8	16.6	8.8	525.0	520.7
Average Queue (m)	3.4	27.8	3.5	0.3	364.2	364.9
95th Queue (m)	9.4	55.6	11.3	2.9	498.1	500.2
Link Distance (m)	47.7	54.4			989.0	989.0
Upstream Blk Time (%)		14				
Queuing Penalty (veh)		0				
Storage Bay Dist (m)			15.0	25.0		
Storage Blk Time (%)			3		89	
Queuing Penalty (veh)			17		4	

Intersection: 6: Dundas Street East & Site Access A

Movement	EB	EB	EB	WB	WB	WB	SB
Directions Served	T	T	T	T	T	TR	R
Maximum Queue (m)	145.6	158.0	158.5	157.4	163.4	157.7	9.0
Average Queue (m)	4.9	6.8	6.1	135.4	62.1	10.5	0.6
95th Queue (m)	48.0	54.2	53.3	206.5	181.4	75.1	4.3
Link Distance (m)	158.8	158.8	158.8	151.3	151.3	151.3	40.6
Upstream Blk Time (%)		0	0	52	2	1	
Queuing Penalty (veh)		1	0	280	13	7	
Storage Bay Dist (m)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Network Summary

Network wide Queuing Penalty: 3933

Intersection: 1: Ninth Line & Dundas Street East

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	T
Maximum Queue (m)	280.0	327.0	319.7	327.0	135.0	159.5	168.1	180.0	164.1	130.0	230.0	252.3
Average Queue (m)	263.9	293.0	253.9	160.1	27.6	37.6	161.6	162.5	161.4	74.2	229.0	246.6
95th Queue (m)	323.0	376.8	391.2	300.5	88.6	106.0	164.7	169.7	163.6	167.0	234.5	260.5
Link Distance (m)		315.1	315.1	315.1			159.5	159.5	159.5			243.5
Upstream Blk Time (%)		59	8	0		0	39	41	40			60
Queuing Penalty (veh)		0	0	0		0	436	456	447			0
Storage Bay Dist (m)	220.0				75.0	230.0				70.0	130.0	
Storage Blk Time (%)	87	5		27		0	39		55		99	12
Queuing Penalty (veh)	494	9		49		1	57		92		682	54

Intersection: 1: Ninth Line & Dundas Street East

Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	R	L	T	T	R
Maximum Queue (m)	253.9	145.0	118.7	140.2	126.3	117.4
Average Queue (m)	223.2	104.1	105.4	114.8	81.5	47.9
95th Queue (m)	290.8	176.4	141.4	166.9	121.8	88.4
Link Distance (m)	243.5			118.8	118.8	
Upstream Blk Time (%)	10		45	65	0	0
Queuing Penalty (veh)	0		0	440	2	0
Storage Bay Dist (m)		90.0	115.0			65.0
Storage Blk Time (%)	34	16	68	65	12	4
Queuing Penalty (veh)	296	113	204	117	35	11

Intersection: 2: Dundas Street East & 403W Off-Ramp

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	144.1	155.4	153.5	361.9	364.8	363.9	241.8	257.9	252.4
Average Queue (m)	86.5	102.3	105.6	334.3	333.9	334.1	213.5	248.2	245.2
95th Queue (m)	137.8	160.1	161.7	450.6	447.3	442.0	254.8	253.6	262.7
Link Distance (m)	150.5	150.5	150.5	354.7	354.7	354.7		242.0	242.0
Upstream Blk Time (%)		2	2	37	38	37	0	52	48
Queuing Penalty (veh)		14	19	268	281	269	0	0	0
Storage Bay Dist (m)							145.0		
Storage Blk Time (%)							0	55	
Queuing Penalty (veh)							3	129	

Intersection: 3: 403E Off-Ramp & Dundas Street East

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	131.5	151.0	153.3	192.4	192.4	186.9	223.7	268.3	232.3
Average Queue (m)	31.9	34.0	31.9	173.7	167.7	156.5	96.5	126.5	114.3
95th Queue (m)	88.4	98.9	98.0	209.8	219.7	234.2	190.8	220.8	205.3
Link Distance (m)	354.7	354.7	354.7	176.5	176.5	176.5		279.5	279.5
Upstream Blk Time (%)				67	65	65			
Queuing Penalty (veh)				0	0	0			
Storage Bay Dist (m)							125.0		
Storage Blk Time (%)							28	38	
Queuing Penalty (veh)							87	14	

Intersection: 4: Ninth Line & Glen Oaks Access/Site Access B

Movement	EB	WB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	L	T	TR
Maximum Queue (m)	8.6	46.6	9.3	9.0	254.0	250.2
Average Queue (m)	1.0	19.6	3.3	1.0	101.7	85.3
95th Queue (m)	5.5	46.8	10.3	5.5	237.7	222.2
Link Distance (m)	47.7	43.3			989.0	989.0
Upstream Blk Time (%)		23				
Queuing Penalty (veh)		0				
Storage Bay Dist (m)			15.0	25.0		
Storage Blk Time (%)			0		64	
Queuing Penalty (veh)			0		2	

Intersection: 6: Dundas Street East & Site Access A

Movement	EB	EB	WB	WB	WB	SB
Directions Served	T	T	T	T	TR	R
Maximum Queue (m)	15.8	22.4	161.3	170.7	157.7	15.1
Average Queue (m)	1.4	2.0	150.2	155.1	151.8	5.8
95th Queue (m)	8.2	10.1	162.6	166.1	160.0	13.4
Link Distance (m)	159.5	159.5	150.5	150.5	150.5	59.4
Upstream Blk Time (%)			6	12	16	
Queuing Penalty (veh)			66	146	186	
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Network Summary

Network wide Queuing Penalty: 5480

Intersection: 1: Ninth Line & Dundas Street East

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	T
Maximum Queue (m)	53.2	240.6	237.5	195.6	135.0	120.3	161.2	163.9	160.2	130.0	229.9	248.1
Average Queue (m)	34.3	160.3	156.7	136.7	42.1	72.4	101.0	109.8	115.1	58.2	146.4	129.5
95th Queue (m)	54.1	224.2	223.5	192.5	111.5	116.6	135.4	146.5	150.3	132.3	263.6	257.9
Link Distance (m)		315.1	315.1	315.1			158.7	158.7	158.7			243.5
Upstream Blk Time (%)							1	1	1			3
Queuing Penalty (veh)							6	7	6			0
Storage Bay Dist (m)	220.0				75.0	230.0				70.0	130.0	
Storage Blk Time (%)		1		27			1		34	1	57	1
Queuing Penalty (veh)		2		66			1		97	3	148	1

Intersection: 1: Ninth Line & Dundas Street East

Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	R	L	T	T	R
Maximum Queue (m)	242.8	44.2	118.3	144.7	118.8	118.2
Average Queue (m)	97.4	20.1	117.4	130.2	44.0	36.7
95th Queue (m)	208.4	35.9	118.8	140.4	84.3	71.8
Link Distance (m)	243.5			118.4	118.4	
Upstream Blk Time (%)	0		51	83	0	0
Queuing Penalty (veh)	0		0	423	0	0
Storage Bay Dist (m)		90.0	115.0			65.0
Storage Blk Time (%)	1		82	81	2	0
Queuing Penalty (veh)	1		155	190	4	1

Intersection: 2: Dundas Street East & 403W Off-Ramp

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	57.5	70.2	68.8	141.8	131.0	131.0	165.9	246.6	220.8
Average Queue (m)	34.6	41.9	43.9	75.2	74.9	74.3	92.1	124.1	106.6
95th Queue (m)	58.5	65.2	70.6	130.9	130.9	126.1	142.7	188.1	167.3
Link Distance (m)	151.4	151.4	151.4	354.7	354.7	354.7		242.0	242.0
Upstream Blk Time (%)								0	
Queuing Penalty (veh)								0	
Storage Bay Dist (m)							145.0		
Storage Blk Time (%)							0	2	
Queuing Penalty (veh)							0	5	

Intersection: 3: 403E Off-Ramp & Dundas Street East

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (m)	146.4	156.4	165.2	166.4	122.7	92.4	86.4	100.7	79.9
Average Queue (m)	62.1	65.9	66.3	105.0	86.3	61.2	40.1	71.9	56.8
95th Queue (m)	117.1	126.3	131.8	151.3	119.8	94.1	77.9	92.7	75.3
Link Distance (m)	354.7	354.7	354.7	176.5	176.5	176.5		279.5	279.5
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)							125.0		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: Ninth Line & Glen Oaks Access/Site Access B

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	T	TR	L	T	TR
Maximum Queue (m)	52.3	57.8	22.4	67.0	80.2	32.3	152.6	111.1
Average Queue (m)	42.5	44.4	16.2	18.2	9.6	4.0	92.2	24.9
95th Queue (m)	54.5	70.6	26.3	58.0	43.6	19.9	136.3	90.3
Link Distance (m)	47.7	53.2		118.4	118.4		989.0	989.0
Upstream Blk Time (%)	86	69						
Queuing Penalty (veh)	0	0						
Storage Bay Dist (m)			15.0			25.0		
Storage Blk Time (%)			29				87	
Queuing Penalty (veh)			144				4	

Intersection: 6: Dundas Street East & Site Access A

Movement	EB	WB	WB	WB	SB
Directions Served	T	T	T	TR	R
Maximum Queue (m)	144.1	44.8	60.8	74.2	9.1
Average Queue (m)	4.8	1.5	2.0	2.5	2.1
95th Queue (m)	47.5	14.8	20.1	24.4	8.4
Link Distance (m)	158.7	151.4	151.4	151.4	46.8
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 1265

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]

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Filename: 2023 Future Background.arc8
Path: J:\1600\1644-DYM Capital Corp\5084-3855 Dundas St E\Design\Traffic\Analysis\ARCADY
Report generation date: 11/4/2018 1:26:21 PM

Summary of junction performance

	AM				PM				SAT			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	2023 FB											
Arm 1	0.83	3.29	0.45	A	0.58	3.35	0.37	A	0.39	2.56	0.28	A
Arm 4	1.26	5.19	0.56	A	0.58	3.25	0.37	A	0.30	2.55	0.23	A
Arm 2	0.55	3.61	0.35	A	1.21	4.60	0.55	A	0.46	2.81	0.32	A
Arm 3	0.32	2.55	0.24	A	1.09	4.41	0.52	A	0.42	2.67	0.29	A

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.

"D1 - 2023 FB, AM " model duration: 8:00 AM - 9:00 AM
"D2 - 2023 FB, PM" model duration: 5:00 PM - 6:00 PM
"D3 - 2023 FB, SAT" model duration: 4:00 PM - 5:00 PM

Run using Junctions 8.0.6.541 at 11/4/2018 1:26:21 PM

File summary

Title	(untitled)
Location	
Site Number	
Date	10/31/2018
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	mferguson
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCU	PCU	perHour	s	-Min	perMin

2023 FB, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2023 FB, AM	2023 FB	AM	2023 Future Background Conditions	PHF	08:00	09:00	60	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Ninth Line and William Halton Parkway	Roundabout	1,4,2,3			3.83	A

Junction Network Options

Driving Side	Lighting
Right	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	North	
4	4	South	
2	2	East	
3	3	West	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
4	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	7.00	8.00	13.00	40.00	40.00	45.00	
4	7.00	8.00	13.00	40.00	40.00	45.00	

2	7.00	8.00	13.00	40.00	40.00	45.00	
3	7.00	8.00	13.00	40.00	40.00	45.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.753	2298.898
4		(calculated)	(calculated)	0.753	2298.898
2		(calculated)	(calculated)	0.753	2298.898
3		(calculated)	(calculated)	0.753	2298.898

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	PHF	✓	865.00	100.000
4	PHF	✓	836.00	100.000
2	PHF	✓	521.00	100.000
3	PHF	✓	433.00	100.000

Peak Hour Factor Data

Arm	Hourly Volume (PCU/hr)	Peak Hour Factor	Peak Time Segment
1	865.00	0.95	SecondQuarter
4	836.00	0.95	SecondQuarter
2	521.00	0.95	SecondQuarter
3	433.00	0.95	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To			
		1	**4**	**2**	**3**
From	**1**	0.000	35.000	643.000	187.000
	4	85.000	0.000	105.000	646.000
	2	400.000	33.000	0.000	88.000
	3	121.000	227.000	85.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To			
		1	4	2	3
From	1	0.00	0.04	0.74	0.22
	4	0.10	0.00	0.13	0.77
	2	0.77	0.06	0.00	0.17
	3	0.28	0.52	0.20	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		1	4	2	3
From	1	1.000	1.030	1.020	1.020
	4	1.000	1.000	1.030	1.000
	2	1.030	1.000	1.000	1.030
	3	1.030	1.010	1.010	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	4	2	3
From	1	0.0	3.0	2.0	2.0
	4	0.0	0.0	3.0	0.0
	2	3.0	0.0	0.0	3.0
	3	3.0	1.0	1.0	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS
1	0.45	3.29	0.83	~1	A
4	0.56	5.19	1.26	1.00	A
2	0.35	3.61	0.55	1.03	A
3	0.24	2.55	0.32	~1	A

Main Results for each time segment

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	834.65	831.86	331.97	0.00	2048.88	0.407	0.70	3.012	A
4	806.67	802.80	880.00	0.00	1636.15	0.493	0.97	4.316	A
2	502.72	500.90	881.80	0.00	1634.78	0.308	0.45	3.258	A
3	417.81	416.68	497.92	0.00	1923.90	0.217	0.28	2.425	A

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	910.53	910.00	363.02	0.00	2025.50	0.450	0.83	3.291	A

4	880.00	878.84	962.62	0.00	1573.92	0.559	1.26	5.190	A
2	548.42	548.05	965.19	0.00	1571.99	0.349	0.55	3.614	A
3	455.79	455.62	544.83	0.00	1888.57	0.241	0.32	2.551	A

Main results: (08:30-08:45)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	880.18	880.36	351.10	0.00	2034.47	0.433	0.78	3.185	A
4	850.67	851.08	931.24	0.00	1597.55	0.532	1.15	4.844	A
2	530.14	530.27	934.50	0.00	1595.10	0.332	0.51	3.478	A
3	440.60	440.66	527.24	0.00	1901.82	0.232	0.31	2.501	A

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	834.65	834.96	332.98	0.00	2048.12	0.408	0.71	3.030	A
4	806.67	807.33	883.21	0.00	1633.73	0.494	0.99	4.375	A
2	502.72	502.94	886.44	0.00	1631.29	0.308	0.46	3.282	A
3	417.81	417.90	500.07	0.00	1922.28	0.217	0.28	2.431	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.70	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.97	0.00	0.00	1.00	1.00			N/A	N/A
2	0.45	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.28	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:15-08:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.83	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	1.26	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	0.55	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.32	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:30-08:45)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.78	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	1.15	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	0.51	0.00	0.00	0.00	1.03			N/A	N/A

3	0.31	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:45-09:00)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	0.71	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	0.99	0.00	0.00	0.00	1.00			N/A	N/A
2	0.46	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.28	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]

For sales and distribution information, program advice and maintenance, contact TRL:
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Filename: 2028 Future Background.arc8
Path: J:\1600\1644-DYM Capital Corp\5084-3855 Dundas St E\Design\Traffic\Analysis\ARCADY
Report generation date: 11/4/2018 1:29:00 PM

Summary of junction performance

	AM				PM				SAT			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	2028 FB											
Arm 1	1.28	4.13	0.56	A	0.97	4.24	0.49	A	0.58	2.95	0.37	A
Arm 4	1.85	7.30	0.65	A	0.73	3.89	0.42	A	0.35	2.84	0.26	A
Arm 2	0.87	4.48	0.46	A	2.35	7.14	0.71	A	0.68	3.28	0.41	A
Arm 3	0.37	2.82	0.27	A	1.55	5.96	0.61	A	0.49	2.97	0.33	A

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.

"D1 - 2028 FB, AM " model duration: 8:00 AM - 9:00 AM
"D2 - 2028 FB, PM" model duration: 5:00 PM - 6:00 PM
"D3 - 2028 FB, SAT" model duration: 4:00 PM - 5:00 PM

Run using Junctions 8.0.6.541 at 11/4/2018 1:29:00 PM

File summary

Title	(untitled)
Location	
Site Number	
Date	10/31/2018
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	mferguson
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCU	PCU	perHour	s	-Min	perMin

2028 FB, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2028 FB, AM	2028 FB	AM	2028 Future Background Conditions	PHF	08:00	09:00	60	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Ninth Line and William Halton Parkway	Roundabout	1,4,2,3			4.92	A

Junction Network Options

Driving Side	Lighting
Right	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	North	
4	4	South	
2	2	East	
3	3	West	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
4	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	7.00	8.00	13.00	40.00	40.00	45.00	
4	7.00	8.00	13.00	40.00	40.00	45.00	

2	7.00	8.00	13.00	40.00	40.00	45.00	
3	7.00	8.00	13.00	40.00	40.00	45.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.753	2298.898
4		(calculated)	(calculated)	0.753	2298.898
2		(calculated)	(calculated)	0.753	2298.898
3		(calculated)	(calculated)	0.753	2298.898

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	PHF	✓	1066.00	100.000
4	PHF	✓	878.00	100.000
2	PHF	✓	668.00	100.000
3	PHF	✓	455.00	100.000

Peak Hour Factor Data

Arm	Hourly Volume (PCU/hr)	Peak Hour Factor	Peak Time Segment
1	1066.00	0.95	SecondQuarter
4	878.00	0.95	SecondQuarter
2	668.00	0.95	SecondQuarter
3	455.00	0.95	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To			
		1	**4**	**2**	**3**
From	**1**	0.000	39.000	821.000	206.000
	4	89.000	0.000	110.000	679.000
	2	535.000	36.000	0.000	97.000
	3	127.000	239.000	89.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To			
		1	**4**	**2**	**3**
From	**1**	0.00	0.04	0.77	0.19
	4	0.10	0.00	0.13	0.77
	2	0.80	0.05	0.00	0.15
	3	0.28	0.53	0.20	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		1	**4**	**2**	**3**
From	**1**	1.000	1.030	1.020	1.020
	4	1.000	1.000	1.030	1.000
	2	1.030	1.000	1.000	1.030
	3	1.030	1.010	1.010	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	**4**	**2**	**3**
From	**1**	0.0	3.0	2.0	2.0
	4	0.0	0.0	3.0	0.0
	2	3.0	0.0	0.0	3.0
	3	3.0	1.0	1.0	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS
1	0.56	4.13	1.28	?	A
4	0.65	7.30	1.85	3.01	A
2	0.46	4.48	0.87	~1	A
3	0.27	2.82	0.37	~1	A

Main Results for each time segment

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	1028.60	1024.46	350.15	0.00	2035.19	0.505	1.03	3.619	A
4	847.19	841.99	1072.61	0.00	1491.09	0.568	1.30	5.523	A
2	644.56	641.79	934.47	0.00	1595.12	0.404	0.69	3.873	A
3	439.04	437.75	633.95	0.00	1821.45	0.241	0.32	2.639	A

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	1122.11	1121.14	382.97	0.00	2010.47	0.558	1.28	4.126	A

4	924.21	922.02	1173.76	0.00	1414.90	0.653	1.85	7.296	A
2	703.16	702.45	1023.16	0.00	1528.32	0.460	0.87	4.479	A
3	478.95	478.74	693.91	0.00	1776.29	0.270	0.37	2.817	A

Main results: (08:30-08:45)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	1084.70	1085.03	370.45	0.00	2019.90	0.537	1.19	3.932	A
4	893.40	894.17	1135.91	0.00	1443.41	0.619	1.66	6.591	A
2	679.72	679.96	991.82	0.00	1551.93	0.438	0.81	4.246	A
3	462.98	463.06	671.87	0.00	1792.90	0.258	0.35	2.750	A

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	1028.60	1029.16	351.34	0.00	2034.29	0.506	1.05	3.655	A
4	847.19	848.44	1077.41	0.00	1487.47	0.570	1.35	5.667	A
2	644.56	644.97	941.02	0.00	1590.18	0.405	0.71	3.919	A
3	439.04	439.16	637.32	0.00	1818.92	0.241	0.32	2.651	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	1.03	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	1.30	0.00	0.00	2.01	3.01			N/A	N/A
2	0.69	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.32	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:15-08:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	1.28	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	1.85	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	0.87	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.37	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:30-08:45)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	1.19	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	1.66	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
						Percentiles could not be calculated. This			

2	0.81	~1	~1	~1	~1	may be because the mean queue is very small or very big.		N/A	N/A
3	0.35	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:45-09:00)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	1.05	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	1.35	0.00	0.00	2.01	3.01			N/A	N/A
2	0.71	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.32	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]

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The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: 2033 Future Background.arc8
Path: J:\1600\1644-DYM Capital Corp\5084-3855 Dundas St E\Design\Traffic\Analysis\ARCADY
Report generation date: 11/4/2018 1:30:47 PM

Summary of junction performance

	AM				PM				SAT			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	2033 FB											
Arm 1	2.29	6.01	0.70	A	1.93	6.47	0.66	A	0.95	3.68	0.49	A
Arm 4	3.74	14.11	0.80	B	1.02	5.21	0.51	A	0.44	3.34	0.30	A
Arm 2	1.60	6.40	0.61	A	8.77	20.69	0.92	C	1.10	4.18	0.53	A
Arm 3	0.45	3.25	0.31	A	2.82	10.41	0.74	B	0.60	3.48	0.37	A

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.

"D1 - 2033 FB, AM " model duration: 8:00 AM - 9:00 AM
"D2 - 2033 FB, PM" model duration: 5:00 PM - 6:00 PM
"D3 - 2033 FB, SAT" model duration: 4:00 PM - 5:00 PM

Run using Junctions 8.0.6.541 at 11/4/2018 1:30:46 PM

File summary

Title	(untitled)
Location	
Site Number	
Date	10/31/2018
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	mferguson
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCU	PCU	perHour	s	-Min	perMin

2033 FB, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2033 FB, AM	2033 FB	AM	2033 Future Background Conditions	PHF	08:00	09:00	60	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Ninth Line and William Halton Parkway	Roundabout	1,4,2,3			7.82	A

Junction Network Options

Driving Side	Lighting
Right	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	North	
4	4	South	
2	2	East	
3	3	West	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
4	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	7.00	8.00	13.00	40.00	40.00	45.00	
4	7.00	8.00	13.00	40.00	40.00	45.00	

2	7.00	8.00	13.00	40.00	40.00	45.00	
3	7.00	8.00	13.00	40.00	40.00	45.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.753	2298.898
4		(calculated)	(calculated)	0.753	2298.898
2		(calculated)	(calculated)	0.753	2298.898
3		(calculated)	(calculated)	0.753	2298.898

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	PHF	✓	1318.00	100.000
4	PHF	✓	924.00	100.000
2	PHF	✓	863.00	100.000
3	PHF	✓	478.00	100.000

Peak Hour Factor Data

Arm	Hourly Volume (PCU/hr)	Peak Hour Factor	Peak Time Segment
1	1318.00	0.95	SecondQuarter
4	924.00	0.95	SecondQuarter
2	863.00	0.95	SecondQuarter
3	478.00	0.95	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To			
		1	**4**	**2**	**3**
From	**1**	0.000	43.000	1048.000	227.000
	4	94.000	0.000	116.000	714.000
	2	716.000	40.000	0.000	107.000
	3	133.000	251.000	94.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To			
		1	4	2	3
From	1	0.00	0.03	0.80	0.17
	4	0.10	0.00	0.13	0.77
	2	0.83	0.05	0.00	0.12
	3	0.28	0.53	0.20	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		1	4	2	3
From	1	1.000	1.030	1.020	1.020
	4	1.000	1.000	1.030	1.000
	2	1.030	1.000	1.000	1.030
	3	1.030	1.010	1.010	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	4	2	3
From	1	0.0	3.0	2.0	2.0
	4	0.0	0.0	3.0	0.0
	2	3.0	0.0	0.0	3.0
	3	3.0	1.0	1.0	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS
1	0.70	6.01	2.29	5.10	A
4	0.80	14.11	3.74	12.04	B
2	0.61	6.40	1.60	2.06	A
3	0.31	3.25	0.45	~1	A

Main Results for each time segment

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	1271.75	1264.92	370.17	0.00	2020.11	0.630	1.71	4.821	A
4	891.58	883.25	1314.05	0.00	1309.25	0.681	2.08	8.327	A
2	832.72	828.02	990.23	0.00	1553.13	0.536	1.17	5.075	A
3	461.23	459.70	815.21	0.00	1684.94	0.274	0.38	2.979	A

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	1387.37	1385.06	404.98	0.00	1993.90	0.696	2.29	6.008	A

4	972.63	965.98	1438.76	0.00	1215.32	0.800	3.74	14.107	B
2	908.42	906.73	1083.26	0.00	1483.06	0.613	1.60	6.405	A
3	503.16	502.87	892.58	0.00	1626.67	0.309	0.45	3.253	A

Main results: (08:30-08:45)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	1341.12	1341.88	391.85	0.00	2003.78	0.669	2.10	5.558	A
4	940.21	942.46	1393.77	0.00	1249.21	0.753	3.18	11.884	B
2	878.14	878.68	1055.25	0.00	1504.16	0.584	1.46	5.925	A
3	486.39	486.49	865.61	0.00	1646.98	0.295	0.43	3.149	A

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	1271.75	1273.10	371.66	0.00	2018.99	0.630	1.76	4.935	A
4	891.58	895.36	1322.30	0.00	1303.03	0.684	2.24	8.948	A
2	832.72	833.70	1002.23	0.00	1544.09	0.539	1.22	5.219	A
3	461.23	461.39	821.42	0.00	1680.26	0.275	0.39	3.001	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	1.71	0.00	0.00	3.06	5.10			N/A	N/A
4	2.08	0.00	0.00	4.01	6.02			N/A	N/A
2	1.17	0.00	0.00	1.03	2.06			N/A	N/A
3	0.38	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:15-08:30)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	2.29	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	3.74	0.00	0.00	3.01	12.04			N/A	N/A
2	1.60	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.45	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:30-08:45)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	2.10	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
4	3.18	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
2	1.46	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
3	0.43	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:45-09:00)

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
1	1.76	0.00	0.00	3.06	4.08			N/A	N/A
4	2.24	0.00	0.00	4.01	7.03			N/A	N/A
2	1.22	0.00	0.00	1.03	2.06			N/A	N/A
3	0.39	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

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Filename: 2023 Future Total.arc8
Path: J:\1600\1644-DYM Capital Corp\5084-3855 Dundas St E\Design\Traffic\Analysis\ARCADY\2020.11.09 Total
Report generation date: 2020-11-09 2:32:52 PM

« 2023 FT, AM
» Intersection Network
» Legs
» Traffic Flows
» Entry Flows
» Turning Proportions
» Vehicle Mix
» Results

Summary of intersection performance

	AM				PM				SAT			
	Queue (PCE)	Delay (s)	V/C Ratio	LOS	Queue (PCE)	Delay (s)	V/C Ratio	LOS	Queue (PCE)	Delay (s)	V/C Ratio	LOS
	2023 FT											
Burnhamthorpe Road (East)	0.32	2.57	0.24	A	1.09	4.42	0.52	A	0.41	2.66	0.29	A
Ninth Line (North)	0.82	3.24	0.45	A	0.58	3.33	0.37	A	0.40	2.59	0.28	A
Burnhamthorpe Road (West)	1.29	5.33	0.56	A	0.59	3.29	0.37	A	0.30	2.54	0.23	A
Ninth Line (South)	0.55	3.58	0.35	A	1.25	4.68	0.56	A	0.48	2.85	0.32	A

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.

"D1 - 2023 FT, AM " model duration: 8:00 AM - 9:00 AM
"D2 - 2023 FT, PM" model duration: 5:00 PM - 6:00 PM
"D3 - 2023 FT, SAT" model duration: 4:00 PM - 5:00 PM

Run using Junctions 8.0.6.541 at 2020-11-09 2:32:51 PM

File summary

Title	3855 Dundas Street E.
Location	
Site Number	
Date	2020-11-09
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	papasnore
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

2023 FT, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2023 FT, AM	2023 FT	AM	2023 Future Total Conditions	PHF	08:00	09:00	60	15		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Ninth Line and William Halton Parkway	Roundabout	1,4,2,3			3.86	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Burnhamthorpe Road (East)	1	Burnhamthorpe Road (East)	
Ninth Line (North)	4	Ninth Line (North)	
Burnhamthorpe Road (West)	2	Burnhamthorpe Road (West)	
Ninth Line (South)	3	Ninth Line (South)	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Burnhamthorpe Road (East)	0.00	99999.00
Ninth Line (North)	0.00	99999.00
Burnhamthorpe Road (West)	0.00	99999.00
Ninth Line (South)	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Burnhamthorpe Road (East)	7.00	8.00	13.00	40.00	40.00	45.00	
Ninth Line (North)	7.00	8.00	13.00	40.00	40.00	45.00	
Burnhamthorpe Road (West)	7.00	8.00	13.00	40.00	40.00	45.00	
Ninth Line (South)	7.00	8.00	13.00	40.00	40.00	45.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Burnhamthorpe Road (East)		(calculated)	(calculated)	0.753	2298.898
Ninth Line (North)		(calculated)	(calculated)	0.753	2298.898
Burnhamthorpe Road (West)		(calculated)	(calculated)	0.753	2298.898
Ninth Line (South)		(calculated)	(calculated)	0.753	2298.898

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Burnhamthorpe Road (East)	PHF	✓	433.00	100.000
Ninth Line (North)	PHF	✓	869.00	100.000
Burnhamthorpe Road (West)	PHF	✓	836.00	100.000
Ninth Line (South)	PHF	✓	526.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Burnhamthorpe Road (East)	433.00	0.95	SecondQuarter
Ninth Line (North)	869.00	0.95	SecondQuarter
Burnhamthorpe Road (West)	836.00	0.95	SecondQuarter
Ninth Line (South)	526.00	0.95	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Ninth Line and William Halton Parkway (for whole period)

		To			
		Burnhamthorpe Road (East)	Ninth Line (North)	Burnhamthorpe Road (West)	Ninth Line (South)
From	Burnhamthorpe Road (East)	0.000	121.000	227.000	85.000
	Ninth Line (North)	187.000	0.000	35.000	647.000
	Burnhamthorpe Road (West)	646.000	85.000	0.000	105.000
	Ninth Line (South)	91.000	402.000	33.000	0.000

Turning Proportions (PCE) - Ninth Line and William Halton Parkway (for whole period)

		To			
		Burnhamthorpe Road (East)	Ninth Line (North)	Burnhamthorpe Road (West)	Ninth Line (South)
From	Burnhamthorpe Road (East)	0.00	0.28	0.52	0.20
	Ninth Line (North)	0.22	0.00	0.04	0.74
	Burnhamthorpe Road (West)	0.77	0.10	0.00	0.13
	Ninth Line (South)	0.17	0.76	0.06	0.00

Vehicle Mix

Average PCE Per Vehicle - Ninth Line and William Halton Parkway (for whole period)

		To			
		Burnhamthorpe Road (East)	Ninth Line (North)	Burnhamthorpe Road (West)	Ninth Line (South)
From	Burnhamthorpe Road (East)	1.000	1.030	1.020	1.020
	Ninth Line (North)	1.000	1.000	1.030	1.000
	Burnhamthorpe Road (West)	1.030	1.000	1.000	1.030
	Ninth Line (South)	1.030	1.010	1.010	1.000

Truck Percentages - Ninth Line and William Halton Parkway (for whole period)

		To			
		Burnhamthorpe Road (East)	Ninth Line (North)	Burnhamthorpe Road (West)	Ninth Line (South)
From	Burnhamthorpe Road (East)	0.0	3.0	2.0	2.0
	Ninth Line (North)	0.0	0.0	3.0	0.0
	Burnhamthorpe Road (West)	3.0	0.0	0.0	3.0
	Ninth Line (South)	3.0	1.0	1.0	0.0

Results

Results Summary for whole modelled period

Name	Max V/C Ratio	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS
Burnhamthorpe Road (East)	0.24	2.57	0.32	~1	A
Ninth Line (North)	0.45	3.24	0.82	~1	A
Burnhamthorpe Road (West)	0.56	5.33	1.29	1.03	A
Ninth Line (South)	0.35	3.58	0.55	1.01	A

Main Results for each time segment

Main results: (08:00-08:15)

Name	Total Demand (PCE/hr)	Entry Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	V/C Ratio	End Queue (PCE)	Delay (s)	LOS
Burnhamthorpe Road (East)	417.81	416.67	499.85	0.00	1922.45	0.217	0.28	2.444	A
Ninth Line (North)	838.51	835.75	331.97	0.00	2048.88	0.409	0.69	2.965	A
Burnhamthorpe Road (West)	806.67	802.70	883.88	0.00	1633.22	0.494	0.99	4.430	A
Ninth Line (South)	507.54	505.73	881.72	0.00	1634.84	0.310	0.45	3.225	A

Main results: (08:15-08:30)

Name	Total Demand (PCE/hr)	Entry Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	V/C Ratio	End Queue (PCE)	Delay (s)	LOS
Burnhamthorpe Road (East)	455.79	455.62	546.94	0.00	1886.98	0.242	0.32	2.572	A
Ninth Line (North)	914.74	914.22	363.01	0.00	2025.50	0.452	0.82	3.241	A
Burnhamthorpe Road (West)	880.00	878.80	966.84	0.00	1570.74	0.560	1.29	5.332	A
Ninth Line (South)	553.68	553.31	965.16	0.00	1572.01	0.352	0.55	3.581	A

Main results: (08:30-08:45)

Name	Total Demand (PCE/hr)	Entry Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	V/C Ratio	End Queue (PCE)	Delay (s)	LOS
Burnhamthorpe Road (East)	440.60	440.66	529.28	0.00	1900.28	0.232	0.31	2.522	A
Ninth Line (North)	884.25	884.43	351.10	0.00	2034.47	0.435	0.77	3.133	A
Burnhamthorpe Road (West)	850.67	851.09	935.31	0.00	1594.49	0.534	1.19	4.975	A
Ninth Line (South)	535.23	535.36	934.51	0.00	1595.09	0.336	0.51	3.442	A

Main results: (08:45-09:00)

Name	Total Demand (PCE/hr)	Entry Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	V/C Ratio	End Queue (PCE)	Delay (s)	LOS
Burnhamthorpe Road (East)	417.81	417.91	502.00	0.00	1920.82	0.218	0.29	2.451	A
Ninth Line (North)	838.51	838.81	332.98	0.00	2048.12	0.409	0.70	2.980	A
Burnhamthorpe Road (West)	806.67	807.36	887.07	0.00	1630.82	0.495	1.01	4.492	A
Ninth Line (South)	507.54	507.76	886.46	0.00	1631.28	0.311	0.46	3.249	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

Name	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
Burnhamthorpe Road (East)	0.28	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
Ninth Line (North)	0.69	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
Burnhamthorpe Road (West)	0.99	0.00	0.00	1.03	1.03			N/A	N/A
Ninth Line (South)	0.45	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:15-08:30)

Name	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
Burnhamthorpe Road (East)	0.32	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
Ninth Line (North)	0.82	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
Burnhamthorpe Road (West)	1.29	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
Ninth Line (South)	0.55	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:30-08:45)

Name	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
Burnhamthorpe Road (East)	0.31	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
Ninth Line (North)	0.77	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
Burnhamthorpe Road (West)	1.19	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
Ninth Line (South)	0.51	0.00	0.00	0.00	1.01			N/A	N/A

Queue Variation results: (08:45-09:00)

Name	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
Burnhamthorpe Road (East)	0.29	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
Ninth Line (North)	0.70	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
Burnhamthorpe Road (West)	1.01	0.00	0.00	1.03	1.03			N/A	N/A
Ninth Line (South)	0.46	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Filename: 2028 Future Total.arc8
Path: J:\1600\1644-DYM Capital Corp\5084-3855 Dundas St E\Design\Traffic\Analysis\ARCADY\2020.11.09 Total
Report generation date: 2020-11-09 2:29:44 PM

Summary of intersection performance

	AM				PM				SAT			
	Queue (PCE)	Delay (s)	V/C Ratio	LOS	Queue (PCE)	Delay (s)	V/C Ratio	LOS	Queue (PCE)	Delay (s)	V/C Ratio	LOS
	2028 FT											
Burnhamthorpe Road (East)	0.38	2.84	0.27	A	1.55	5.98	0.61	A	0.48	2.96	0.33	A
Ninth Line (North)	1.26	4.07	0.56	A	0.96	4.22	0.49	A	0.59	2.98	0.37	A
Burnhamthorpe Road (West)	1.90	7.51	0.65	A	0.74	3.93	0.42	A	0.35	2.83	0.26	A
Ninth Line (South)	0.87	4.44	0.46	A	2.44	7.34	0.71	A	0.71	3.34	0.41	A

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.

"D1 - 2028 FT, AM " model duration: 8:00 AM - 9:00 AM
"D2 - 2028 FT, PM" model duration: 5:00 PM - 6:00 PM
"D3 - 2028 FT, SAT" model duration: 4:00 PM - 5:00 PM

Run using Junctions 8.0.6.541 at 2020-11-09 2:29:44 PM

File summary

Title	3855 Dundas Street E.
Location	
Site Number	
Date	2020-11-09
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	papasnore
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

2028 FT, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2028 FT, AM	2028 FT	AM	2023 Future Total Conditions	PHF	08:00	09:00	60	15		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Ninth Line and William Halton Parkway	Roundabout	1,4,2,3			4.95	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Burnhamthorpe Road (East)	1	Burnhamthorpe Road (East)	
Ninth Line (North)	4	Ninth Line (North)	
Burnhamthorpe Road (West)	2	Burnhamthorpe Road (West)	
Ninth Line (South)	3	Ninth Line (South)	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Burnhamthorpe Road (East)	0.00	99999.00
Ninth Line (North)	0.00	99999.00
Burnhamthorpe Road (West)	0.00	99999.00
Ninth Line (South)	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Burnhamthorpe Road (East)	7.00	8.00	13.00	40.00	40.00	45.00	
Ninth Line (North)	7.00	8.00	13.00	40.00	40.00	45.00	
Burnhamthorpe Road (West)	7.00	8.00	13.00	40.00	40.00	45.00	
Ninth Line (South)	7.00	8.00	13.00	40.00	40.00	45.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Burnhamthorpe Road (East)		(calculated)	(calculated)	0.753	2298.898
Ninth Line (North)		(calculated)	(calculated)	0.753	2298.898
Burnhamthorpe Road (West)		(calculated)	(calculated)	0.753	2298.898
Ninth Line (South)		(calculated)	(calculated)	0.753	2298.898

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Burnhamthorpe Road (East)	PHF	✓	455.00	100.000
Ninth Line (North)	PHF	✓	1070.00	100.000
Burnhamthorpe Road (West)	PHF	✓	878.00	100.000
Ninth Line (South)	PHF	✓	673.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Burnhamthorpe Road (East)	455.00	0.95	SecondQuarter
Ninth Line (North)	1070.00	0.95	SecondQuarter
Burnhamthorpe Road (West)	878.00	0.95	SecondQuarter
Ninth Line (South)	673.00	0.95	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Ninth Line and William Halton Parkway (for whole period)

		To			
		Burnhamthorpe Road (East)	Ninth Line (North)	Burnhamthorpe Road (West)	Ninth Line (South)
From	Burnhamthorpe Road (East)	0.000	127.000	239.000	89.000
	Ninth Line (North)	206.000	0.000	39.000	825.000
	Burnhamthorpe Road (West)	679.000	89.000	0.000	110.000
	Ninth Line (South)	100.000	537.000	36.000	0.000

Turning Proportions (PCE) - Ninth Line and William Halton Parkway (for whole period)

		To			
		Burnhamthorpe Road (East)	Ninth Line (North)	Burnhamthorpe Road (West)	Ninth Line (South)
From	Burnhamthorpe Road (East)	0.00	0.28	0.53	0.20
	Ninth Line (North)	0.19	0.00	0.04	0.77
	Burnhamthorpe Road (West)	0.77	0.10	0.00	0.13
	Ninth Line (South)	0.15	0.80	0.05	0.00

Vehicle Mix

Average PCE Per Vehicle - Ninth Line and William Halton Parkway (for whole period)

		To			
		Burnhamthorpe Road (East)	Ninth Line (North)	Burnhamthorpe Road (West)	Ninth Line (South)
From	Burnhamthorpe Road (East)	1.000	1.030	1.020	1.020
	Ninth Line (North)	1.000	1.000	1.030	1.000
	Burnhamthorpe Road (West)	1.030	1.000	1.000	1.030
	Ninth Line (South)	1.030	1.010	1.010	1.000

Truck Percentages - Ninth Line and William Halton Parkway (for whole period)

		To			
		Burnhamthorpe Road (East)	Ninth Line (North)	Burnhamthorpe Road (West)	Ninth Line (South)
From	Burnhamthorpe Road (East)	0.0	3.0	2.0	2.0
	Ninth Line (North)	0.0	0.0	3.0	0.0
	Burnhamthorpe Road (West)	3.0	0.0	0.0	3.0
	Ninth Line (South)	3.0	1.0	1.0	0.0

Results

Results Summary for whole modelled period

Name	Max V/C Ratio	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS
Burnhamthorpe Road (East)	0.27	2.84	0.38	~1	A
Ninth Line (North)	0.56	4.07	1.26	2.00	A
Burnhamthorpe Road (West)	0.65	7.51	1.90	3.08	A
Ninth Line (South)	0.46	4.44	0.87	~1	A

Main Results for each time segment

Main results: (08:00-08:15)

Name	Total Demand (PCE/hr)	Entry Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	V/C Ratio	End Queue (PCE)	Delay (s)	LOS
Burnhamthorpe Road (East)	439.04	437.74	635.88	0.00	1820.00	0.241	0.32	2.661	A
Ninth Line (North)	1032.46	1028.37	350.15	0.00	2035.19	0.507	1.02	3.565	A
Burnhamthorpe Road (West)	847.19	841.84	1076.51	0.00	1488.15	0.569	1.34	5.674	A
Ninth Line (South)	649.39	646.62	934.36	0.00	1595.21	0.407	0.69	3.834	A

Main results: (08:15-08:30)

Name	Total Demand (PCE/hr)	Entry Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	V/C Ratio	End Queue (PCE)	Delay (s)	LOS
Burnhamthorpe Road (East)	478.95	478.74	696.01	0.00	1774.71	0.270	0.38	2.840	A
Ninth Line (North)	1126.32	1125.35	382.97	0.00	2010.47	0.560	1.26	4.067	A
Burnhamthorpe Road (West)	924.21	921.95	1177.98	0.00	1411.73	0.655	1.90	7.510	A
Ninth Line (South)	708.42	707.71	1023.10	0.00	1528.37	0.464	0.87	4.439	A

Main results: (08:30-08:45)

Name	Total Demand (PCE/hr)	Entry Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	V/C Ratio	End Queue (PCE)	Delay (s)	LOS
Burnhamthorpe Road (East)	462.98	463.06	673.90	0.00	1791.36	0.258	0.36	2.773	A
Ninth Line (North)	1088.77	1089.10	370.45	0.00	2019.90	0.539	1.18	3.874	A
Burnhamthorpe Road (West)	893.40	894.19	1139.98	0.00	1440.34	0.620	1.71	6.782	A
Ninth Line (South)	684.81	685.05	991.84	0.00	1551.91	0.441	0.81	4.209	A

Main results: (08:45-09:00)

Name	Total Demand (PCE/hr)	Entry Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	V/C Ratio	End Queue (PCE)	Delay (s)	LOS
Burnhamthorpe Road (East)	439.04	439.16	639.25	0.00	1817.46	0.242	0.33	2.673	A
Ninth Line (North)	1032.46	1033.02	351.34	0.00	2034.29	0.508	1.04	3.603	A
Burnhamthorpe Road (West)	847.19	848.48	1081.27	0.00	1484.56	0.571	1.38	5.823	A
Ninth Line (South)	649.39	649.79	941.06	0.00	1590.16	0.408	0.70	3.879	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

Name	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
Burnhamthorpe Road (East)	0.32	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
Ninth Line (North)	1.02	0.00	0.00	1.00	2.00			N/A	N/A
Burnhamthorpe Road (West)	1.34	0.00	0.00	2.05	3.08			N/A	N/A
Ninth Line (South)	0.69	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:15-08:30)

Name	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
Burnhamthorpe Road (East)	0.38	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
Ninth Line (North)	1.26	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
Burnhamthorpe Road (West)	1.90	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
Ninth Line (South)	0.87	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:30-08:45)

Name	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
Burnhamthorpe Road (East)	0.36	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
Ninth Line (North)	1.18	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
Burnhamthorpe Road (West)	1.71	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
Ninth Line (South)	0.81	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:45-09:00)

Name	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
Burnhamthorpe Road (East)	0.33	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
Ninth Line (North)	1.04	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
Burnhamthorpe Road (West)	1.38	0.00	0.00	2.05	3.08			N/A	N/A
Ninth Line (South)	0.70	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758   email: software@trl.co.uk   Web: http://www.trlsoftware.co.uk

Filename: 2033 Future Total.arc8
Path: J:\1600\1644-DYM Capital Corp\5084-3855 Dundas St E\Design\Traffic\Analysis\ARCADY\2020.11.09 Total
Report generation date: 2020-11-09 2:19:26 PM

Summary of intersection performance

	AM				PM				SAT			
	Queue (PCE)	Delay (s)	V/C Ratio	LOS	Queue (PCE)	Delay (s)	V/C Ratio	LOS	Queue (PCE)	Delay (s)	V/C Ratio	LOS
	2033 FT											
Burnhamthorpe Road (East)	0.46	3.28	0.31	A	2.83	10.45	0.75	B	0.60	3.47	0.37	A
Ninth Line (North)	2.27	5.93	0.70	A	1.93	6.44	0.66	A	0.97	3.73	0.49	A
Burnhamthorpe Road (West)	3.87	14.58	0.80	B	1.04	5.27	0.51	A	0.44	3.33	0.30	A
Ninth Line (South)	1.60	6.36	0.62	A	9.46	21.99	0.92	C	1.15	4.27	0.54	A

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.

"D1 - 2033 FT, AM " model duration: 8:00 AM - 9:00 AM
"D2 - 2033 FT, PM" model duration: 5:00 PM - 6:00 PM
"D3 - 2033 FT, SAT" model duration: 4:00 PM - 5:00 PM

Run using Junctions 8.0.6.541 at 2020-11-09 2:19:25 PM

File summary

Title	3855 Dundas Street E.
Location	
Site Number	
Date	2020-11-09
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	papasnore
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

2033 FT, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2033 FT, AM	2033 FT	AM	2023 Future Total Conditions	PHF	08:00	09:00	60	15		

Intersection Network

Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	Ninth Line and William Halton Parkway	Roundabout	1,4,2,3			7.91	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Name	Leg	Name	Description
Burnhamthorpe Road (East)	1	Burnhamthorpe Road (East)	
Ninth Line (North)	4	Ninth Line (North)	
Burnhamthorpe Road (West)	2	Burnhamthorpe Road (West)	
Ninth Line (South)	3	Ninth Line (South)	

Capacity Options

Name	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
Burnhamthorpe Road (East)	0.00	99999.00
Ninth Line (North)	0.00	99999.00
Burnhamthorpe Road (West)	0.00	99999.00
Ninth Line (South)	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Burnhamthorpe Road (East)	7.00	8.00	13.00	40.00	40.00	45.00	
Ninth Line (North)	7.00	8.00	13.00	40.00	40.00	45.00	
Burnhamthorpe Road (West)	7.00	8.00	13.00	40.00	40.00	45.00	
Ninth Line (South)	7.00	8.00	13.00	40.00	40.00	45.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
Burnhamthorpe Road (East)		(calculated)	(calculated)	0.753	2298.898
Ninth Line (North)		(calculated)	(calculated)	0.753	2298.898
Burnhamthorpe Road (West)		(calculated)	(calculated)	0.753	2298.898
Ninth Line (South)		(calculated)	(calculated)	0.753	2298.898

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
Burnhamthorpe Road (East)	PHF	✓	478.00	100.000
Ninth Line (North)	PHF	✓	1322.00	100.000
Burnhamthorpe Road (West)	PHF	✓	924.00	100.000
Ninth Line (South)	PHF	✓	868.00	100.000

Peak Hour Factor Data

Name	Hourly Volume (PCE/hr)	Peak Hour Factor	Peak Time Segment
Burnhamthorpe Road (East)	478.00	0.95	SecondQuarter
Ninth Line (North)	1322.00	0.95	SecondQuarter
Burnhamthorpe Road (West)	924.00	0.95	SecondQuarter
Ninth Line (South)	868.00	0.95	SecondQuarter

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Ninth Line and William Halton Parkway (for whole period)

		To			
		Burnhamthorpe Road (East)	Ninth Line (North)	Burnhamthorpe Road (West)	Ninth Line (South)
From	Burnhamthorpe Road (East)	0.000	133.000	251.000	94.000
	Ninth Line (North)	227.000	0.000	43.000	1052.000
	Burnhamthorpe Road (West)	714.000	94.000	0.000	116.000
	Ninth Line (South)	110.000	718.000	40.000	0.000

Turning Proportions (PCE) - Ninth Line and William Halton Parkway (for whole period)

		To			
		Burnhamthorpe Road (East)	Ninth Line (North)	Burnhamthorpe Road (West)	Ninth Line (South)
From	Burnhamthorpe Road (East)	0.00	0.28	0.53	0.20
	Ninth Line (North)	0.17	0.00	0.03	0.80
	Burnhamthorpe Road (West)	0.77	0.10	0.00	0.13
	Ninth Line (South)	0.13	0.83	0.05	0.00

Vehicle Mix

Average PCE Per Vehicle - Ninth Line and William Halton Parkway (for whole period)

		To			
		Burnhamthorpe Road (East)	Ninth Line (North)	Burnhamthorpe Road (West)	Ninth Line (South)
From	Burnhamthorpe Road (East)	1.000	1.030	1.020	1.020
	Ninth Line (North)	1.000	1.000	1.030	1.000
	Burnhamthorpe Road (West)	1.030	1.000	1.000	1.030
	Ninth Line (South)	1.030	1.010	1.010	1.000

Truck Percentages - Ninth Line and William Halton Parkway (for whole period)

		To			
		Burnhamthorpe Road (East)	Ninth Line (North)	Burnhamthorpe Road (West)	Ninth Line (South)
From	Burnhamthorpe Road (East)	0.0	3.0	2.0	2.0
	Ninth Line (North)	0.0	0.0	3.0	0.0
	Burnhamthorpe Road (West)	3.0	0.0	0.0	3.0
	Ninth Line (South)	3.0	1.0	1.0	0.0

Results

Results Summary for whole modelled period

Name	Max V/C Ratio	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS
Burnhamthorpe Road (East)	0.31	3.28	0.46	~1	A
Ninth Line (North)	0.70	5.93	2.27	5.00	A
Burnhamthorpe Road (West)	0.80	14.58	3.87	12.32	B
Ninth Line (South)	0.62	6.36	1.60	2.02	A

Main Results for each time segment

Main results: (08:00-08:15)

Name	Total Demand (PCE/hr)	Entry Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	V/C Ratio	End Queue (PCE)	Delay (s)	LOS
Burnhamthorpe Road (East)	461.23	459.69	817.14	0.00	1683.48	0.274	0.38	3.004	A
Ninth Line (North)	1275.61	1268.85	370.17	0.00	2020.11	0.631	1.69	4.754	A
Burnhamthorpe Road (West)	891.58	883.01	1317.98	0.00	1306.29	0.683	2.14	8.570	A
Ninth Line (South)	837.54	832.86	990.03	0.00	1553.28	0.539	1.17	5.028	A

Main results: (08:15-08:30)

Name	Total Demand (PCE/hr)	Entry Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	V/C Ratio	End Queue (PCE)	Delay (s)	LOS
Burnhamthorpe Road (East)	503.16	502.87	894.65	0.00	1625.11	0.310	0.46	3.280	A
Ninth Line (North)	1391.58	1389.28	404.98	0.00	1993.90	0.698	2.27	5.935	A
Burnhamthorpe Road (West)	972.63	965.72	1442.98	0.00	1212.15	0.802	3.87	14.585	B
Ninth Line (South)	913.68	911.98	1083.03	0.00	1483.23	0.616	1.60	6.361	A

Main results: (08:30-08:45)

Name	Total Demand (PCE/hr)	Entry Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	V/C Ratio	End Queue (PCE)	Delay (s)	LOS
Burnhamthorpe Road (East)	486.39	486.49	867.66	0.00	1645.44	0.296	0.43	3.179	A
Ninth Line (North)	1345.19	1345.95	391.85	0.00	2003.78	0.671	2.08	5.485	A
Burnhamthorpe Road (West)	940.21	942.52	1397.84	0.00	1246.14	0.755	3.29	12.291	B
Ninth Line (South)	883.23	883.77	1055.30	0.00	1504.12	0.587	1.46	5.881	A

Main results: (08:45-09:00)

Name	Total Demand (PCE/hr)	Entry Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	V/C Ratio	End Queue (PCE)	Delay (s)	LOS
Burnhamthorpe Road (East)	461.23	461.40	823.36	0.00	1678.80	0.275	0.39	3.024	A
Ninth Line (North)	1275.61	1276.96	371.66	0.00	2018.99	0.632	1.74	4.865	A
Burnhamthorpe Road (West)	891.58	895.53	1326.16	0.00	1300.13	0.686	2.31	9.226	A
Ninth Line (South)	837.54	838.53	1002.37	0.00	1543.99	0.542	1.21	5.175	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

Name	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
Burnhamthorpe Road (East)	0.38	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
Ninth Line (North)	1.69	0.00	0.00	3.00	5.00			N/A	N/A
Burnhamthorpe Road (West)	2.14	0.00	0.00	4.11	6.16			N/A	N/A
Ninth Line (South)	1.17	0.00	0.00	1.01	2.02			N/A	N/A

Queue Variation results: (08:15-08:30)

Name	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
Burnhamthorpe Road (East)	0.46	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
Ninth Line (North)	2.27	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
Burnhamthorpe Road (West)	3.87	0.00	0.00	3.08	12.32			N/A	N/A
Ninth Line (South)	1.60	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:30-08:45)

Name	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
Burnhamthorpe Road (East)	0.43	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
Ninth Line (North)	2.08	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
Burnhamthorpe Road (West)	3.29	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
Ninth Line (South)	1.46	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:45-09:00)

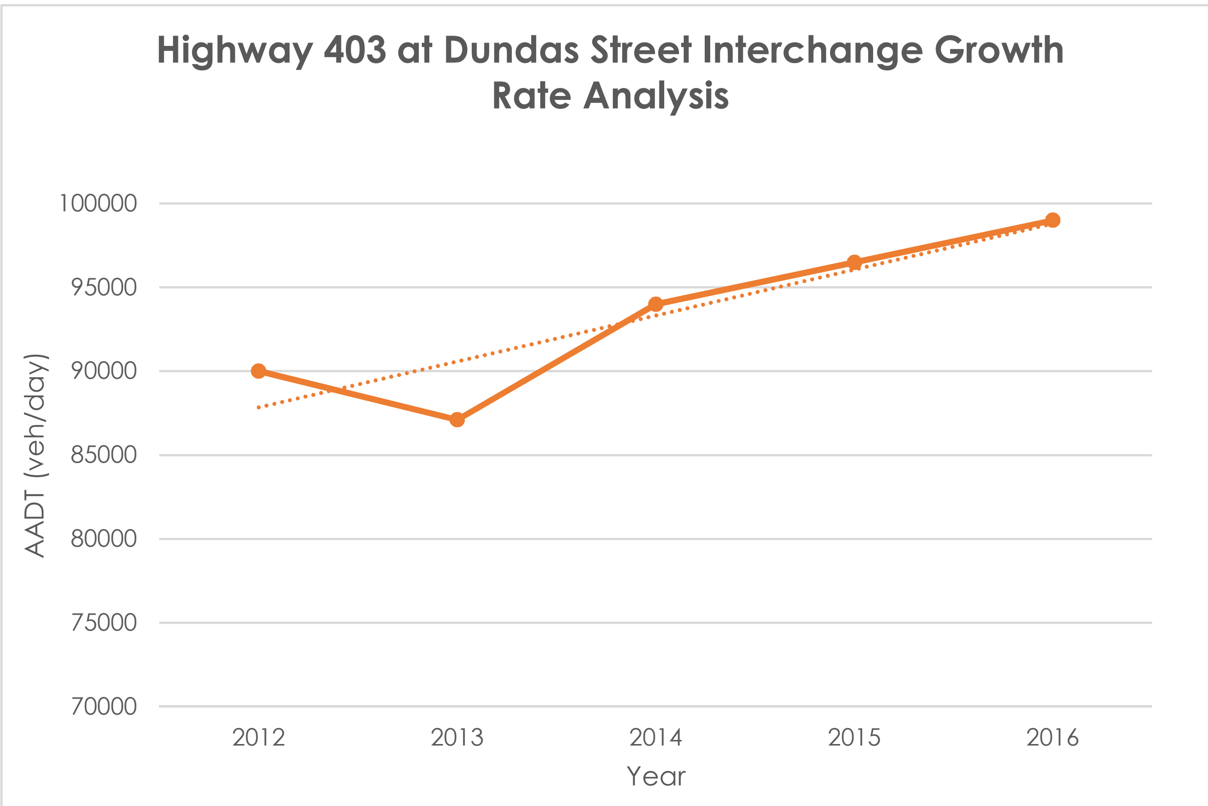
Name	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
Burnhamthorpe Road (East)	0.39	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
Ninth Line (North)	1.74	0.00	0.00	3.00	4.00			N/A	N/A
Burnhamthorpe Road (West)	2.31	0.00	0.00	4.11	8.21			N/A	N/A
Ninth Line (South)	1.21	0.00	0.00	1.01	2.02			N/A	N/A

APPENDIX G

MTO Growth Rate Analysis

Highway 403 at Dundas Street Interchange

Year	AADT	Year-to-Year Increase	Average Increase
2012	90000	-3.22%	2.49%
2013	87100	7.92%	
2014	94000	2.66%	
2015	96500	2.59%	
2016	99000		



APPENDIX H

Ninth Line Widening Preliminary Design Drawings

Class Environmental Assessment Study
Ninth Line (Regional Road 13)
Transportation Corridor Improvements
Dundas (Regional Road 5) to 407 ETR

Preliminary Preferred Plan
Dundas Street to Willam Halton Parkway

Halton REGION

June 22, 2017

CIMA+

APPENDIX I

TTS Data

Mon Oct 22 2018 10:17:14 GMT-0400 (Eastern Daylight Time) - Run Time: 3838ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: Primary travel mode of trip - mode_prime
Table: Planning district of origin - pd_orig

Filters:
(Primary travel mode of trip - mode_prime In D
and
2006 GTA zone of destination - gta06_dest In 4035
and
Trip purpose of destination - purp_dest In M
and
Start time of trip - start_time In 1600-1900)

Trip 2016
Table: Mississauga

	Auto driver	Route
3634	21	East (Dundas)
3644	69	East (Dundas)
3680	13	East (Highway 403)
3684	21	East (Highway 403)

Route	# of trips	% of trips	% assumed
East (Dundas)	90	17%	15%
East (Highway 403)	34	6%	5%
North (Ninth)	59	11%	10%
South (Ninth)	17	3%	5%
West (Dundas)	308	58%	60%
West (Highway 403)	25	5%	5%
Total	533	100%	100%

Trip 2016
Table: Milton

	Auto driver	
4112	24	North (Ninth)

Trip 2016
Table: Oakville

	Auto driver	
4011	20	West (Dundas)
4017	35	West (Dundas)
4023	37	West (Dundas)
4025	17	South (Ninth)
4027	29	West (Dundas)
4029	35	West (Dundas)
4030	29	West (Dundas)
4031	13	West (Dundas)
4034	11	West (Dundas)
4035	53	West (Dundas)
4036	19	West (Dundas)
4037	19	West (Dundas)
4180	35	North (Ninth)
4185	8	West (Dundas)
4186	23	West (Dundas)

Trip 2016
Table: Burlington

	Auto driver	
4092	25	West (Highway 403)

Tue Oct 30 2018 23:37:27 GMT-0400 (Eastern Daylight Time) - Run Time: 2129ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of origin - pd_orig
Column: Primary travel mode of trip - mode_prime

Filters:
(Start time of trip - start_time In 600-900
and
2006 GTA zone of destination - gta06_dest In 3634)

Trip 2016
Table:

	Transit excluding GO rail	Cycle	Auto driver	Auto passenger	Walk	
PD 2 of Toronto	0	0	56	0	0	
PD 3 of Toronto	0	0	32	0	0	
PD 4 of Toronto	0	0	16	0	0	
PD 8 of Toronto	0	0	71	0	0	
PD 16 of Toronto	0	0	74	0	0	
Richmond Hill	0	0	32	0	0	
Markham	0	0	38	0	0	
Vaughan	0	0	127	0	0	
Brampton	0	0	177	6	0	
Mississauga	276	4	1284	111	32	
Halton Hills	0	0	78	0	0	
Milton	0	0	105	0	0	
Oakville	0	0	650	36	0	
Burlington	0	0	166	16	0	
Flamborough	0	0	105	0	0	
Hamilton	0	0	123	0	0	
Cambridge	0	0	44	0	0	
Orangeville	0	0	15	0	0	
Barrie	0	0	17	0	0	
Shelburne	0	0	15	0	0	
Brantford	0	0	0	20	0	
	276	4	3225	189	32	3726

Mode	**% of trips**
Transit	7%
Auto Driver	87%
Auto Passenger	5%
Cycling	0%
Walk	1%
Total	100%

APPENDIX J

Left-Turn Lane Warrant Analysis Worksheets

NINTH LINE & GLEN OAKS/SITE ACCESS
2033 FUTURE TOTAL CONDITIONS
SOUTHBOUND LEFT-TURN

WEEKDAY A.M.

VL = 4 veh/hr
VO = 1273 veh/hr
REQ = N/A

WEEKDAY P.M.

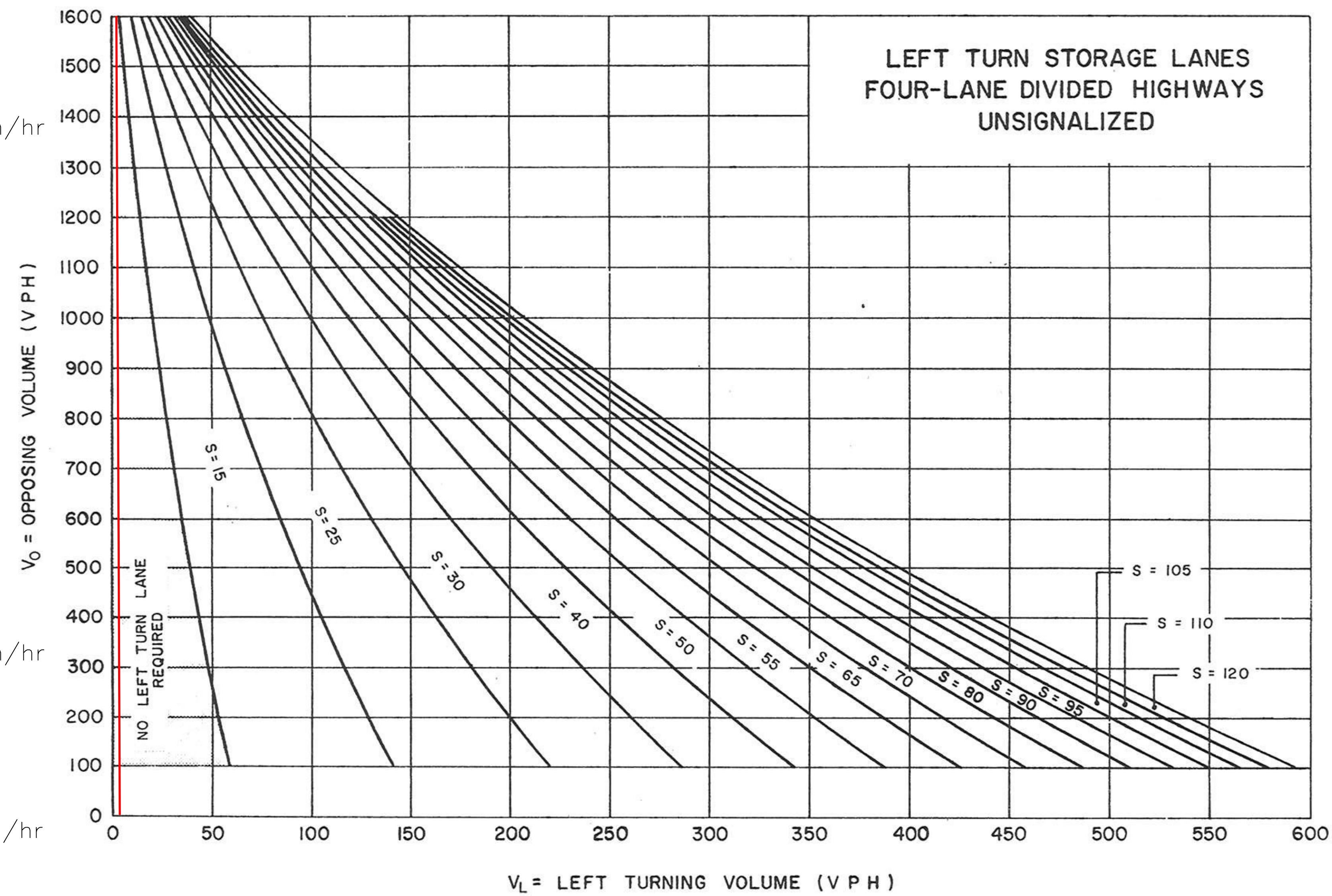
VL = 3 veh/hr
VO = 1885 veh/hr
REQ = 15m

SATURDAY

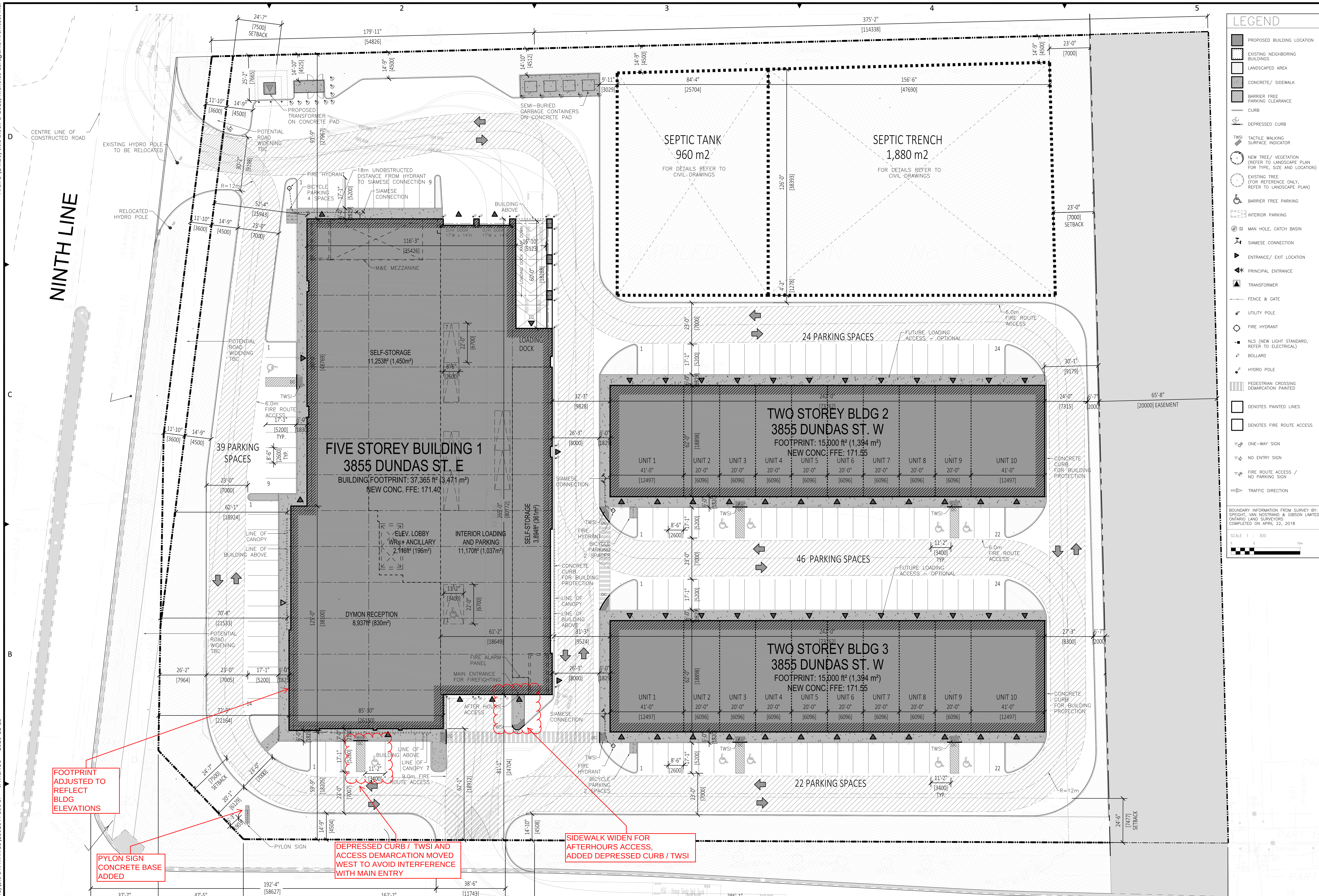
VL = 5 veh/hr
VO = 1132 veh/hr
REQ = N/A

Figure EC-1

EC-2



FIGURES



SITE STATISTICS

LEGAL DESCRIPTION OF PROPERTY:
LOT 9, REGISTRAR'S COMPILED PLAN 1542
CITY OF MISSISSAUGA
REGIONAL MUNICIPALITY OF PEEL

ZONING PROVISION	REQUIRED	PROPOSED
Lot Area	N/A	23,871m² (5.9 AC)
Lot Area after 20m easement and potential 3.6m ROW on 9th Line)		20,639m² (5.1 AC)
Lot Frontage	N/A	167.1m Dundas St. 118.4m Ninth Line
Front Yard	7.5m	15.9m
Exterior Side Yard	7.5m	18.2m
Interior Side Yard	7.5m	9.1m (to 20m easement)
Rear Yard	7.5m	27.9m
Depth of Landscaping	4.5m	4.5m
Building Height	N/A	23.3m (5-Storey building)

ZONING PROVISION	REQUIRED	PROPOSED
Parking:		
Self-Storage 0.6 per 100m2:	109	45 (Including 7 Interior Parking)
Manufacturing Facility 1.6 per 100m2:	80	90 (4 spaces per unit)
Accessible Parking Space:	N/A	11 (Including 1 Interior Parking)
Bicycle Parking Space:	N/A	8
Loading Space:	N/A	2 (Including 1 Interior Loading)
Drive Aisle Width	7m	7m

LANDSCAPE AREA 6.876 m² (74,013 ft²) 33 %
PAVED AREA 7.672 m² (82,590 ft²) 36.8 %
(Percentage from lot area after 20m easement and potential 3.6m ROW along 9th Line)

BUILDING AREAS

BUILDING 1 (5-STOREY SELF-STORAGE):	18,101 m²	(194,842 ft²)
BUILDING 2 (2-STOREY INDUSTRIAL CONDOS):	2,408 m²	(25,920 ft²)
BUILDING 3 (2-STOREY INDUSTRIAL CONDOS):	2,408 m²	(25,920 ft²)

GROSS FLOOR AREA (GFA)

BUILDING 1

-BUILDING FOOTPRINT	3,471 m² (37,365 ft²)	19 %	
-MECHANICAL & ELECTRICAL MEZZANINE	108 m² (1,168 ft²)	0.6 %	100%
-ELEVATORS LOBBY	196 m² (2,116 ft²)	1 %	
-INTERIOR LOADING & PARKING AND LOADING DOCK	1,037 m² (11,170 ft²)	6 %	
-DYMON RECEPTION	830 m² (8,937 ft²)	5 %	
-SELF-STORAGE GROUND TO FIFTH	15,928 m² (171,451 ft²)	88 %	
TOTAL GFA *	**17,426 m² (187,574 ft²)**		

TOTAL GFA (5-STOREY BUILDING) ** **16,388 m² (176,405 ft²)**

* EXCLUDES M&E MEZZANINE, STAIRWAYS, ELEVATOR SHAFTS
** GFA EXCLUDES INTERIOR LOADING AND PARKING AND LOADING DOCK
NOTE: SELF-STORAGE: 2ND TO 5TH FLOOR 39,076 ft² (3,630m²) PER FLOOR

BUILDING 2
TOTAL GFA (2-STOREY BUILDING) **2,034 m² (20,900 ft²)**

BUILDING 3
TOTAL GFA (2-STOREY BUILDING) **2,034 m² (20,900 ft²)**

nicholas caragianis architect inc.
137 Pamilla Street
Ottawa ON K1S 3K9
613 237 6801 ncarchitect.ca

PROJECT NORTH: TRUE NORTH: ARCHITECT'S SEAL:

Notes: Contractor must verify all drawings, dimensions, details and specifications and report any discrepancies to the architect before proceeding with work. All drawings and specifications are instruments of service and the property of the architect, and these must be returned at the completion of the project, and may not be reproduced without the architect's written permission. All drawings are to be read in conjunction with specifications and consultants' documents. Do not scale drawings. Do not use for construction unless both indicated as "For Construction" and bearing the architect's stamp and signature. All construction to meet local, provincial and federal requirements.

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cfcrozier.ca

DESIGN ARCHITECT
TACT Architecture Inc
660R College Street (Rear Lane) Toronto ON. M6G 1B8
tel: (416) 516-1949
email: info@tactdesign.ca

ISSUE	YYYYMMDD	ISSUES DESCRIPTION
26	2020/11/18	FOR COORDINATION
25	2020/10/08	FOR COORDINATION
24	2020/09/29	FOR COORDINATION
23	2020/09/16	FOR COORDINATION
22	2020/09/09	FOR DISCUSSION
21	2020/08/28	FOR DISCUSSION
20	8/20/2020	FOR DISCUSSION
19	2020/06/27	FOR DISCUSSION
18	2020/03/06	FOR DISCUSSION
17	2020/02/13	FOR DISCUSSION
16	2018-11-21	ISSUED FOR ZBA

DYMON STORAGE

CLIENT NAME AND ADDRESS:
DYMON CAPITAL CORP.
2-1830 WALKLEY ROAD
OTTAWA ON. K1H 8K3

PROJECT NAME & LOCATION:
9th LINE & DUNDAS
3855 DUNDAS ST. E
MISSISSAUGA ON

NCA PROJECT NUMBER: 2018.0020
FILE NUMBER:
OWNER'S CONTRACT NUMBER:
OWNER'S PROJECT NUMBER:
CAD FILE NAME: 18020 A-100 SP
SHEET TITLE: SITE PLAN
SCALE: 1:300
SHEET ID: A-100
DRAWN BY: CLW/SG
DATE CREATED: 2018.03.07

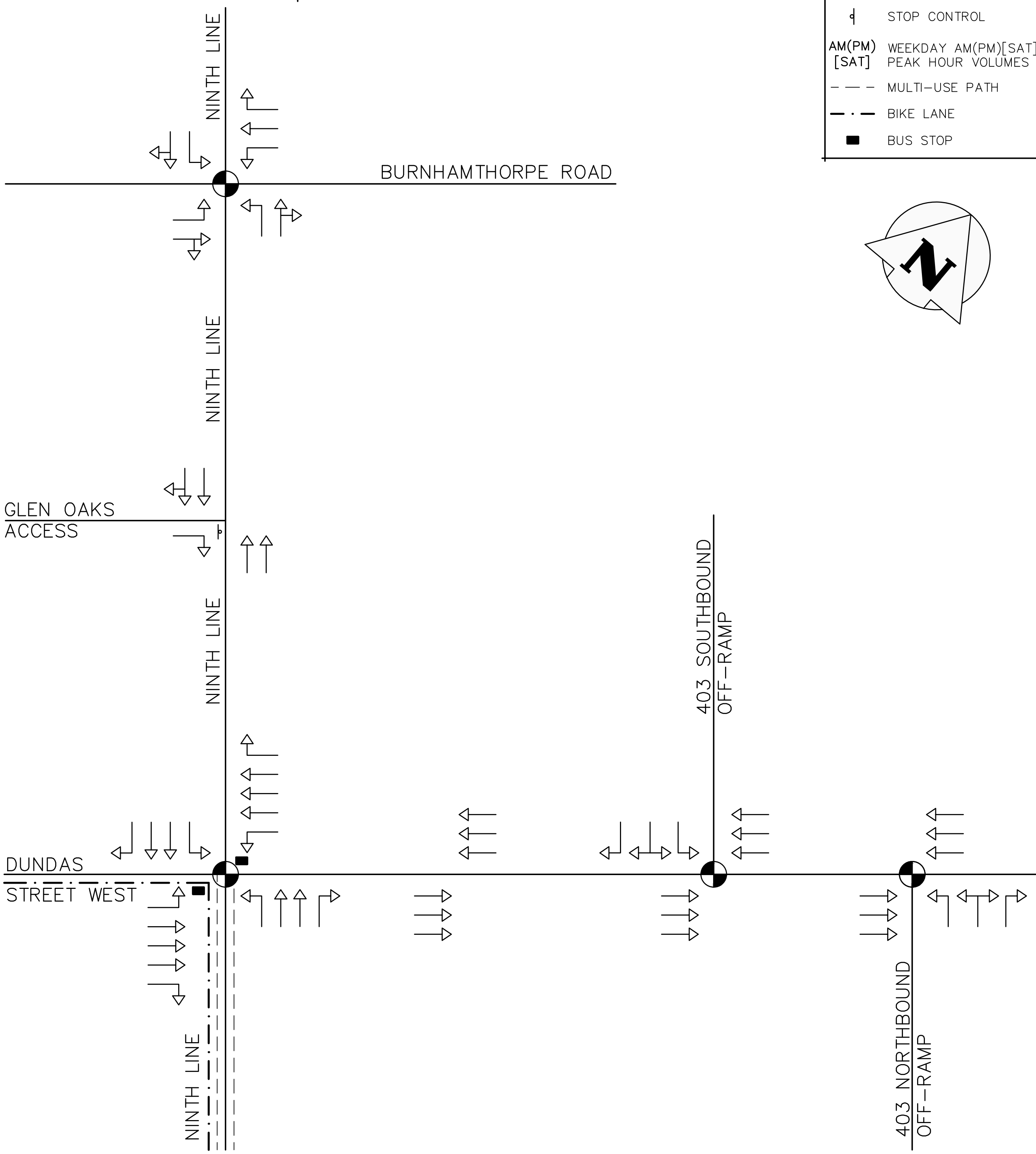
Arch D (24x36) title block © 2018, Nicholas Caragianis Architect Inc.

V:\DYMON\18020 Mississauga 3855 Dundas E (9th line)\3.0 DRAWINGS\18020 A-100 SP - JAVIERGU - 2020-11-18

Legend	Project	
	3855 DUNDAS STREET WEST	CROZIER & ASSOCIATES Consulting Engineers The HarbourEdge Building, 40 Huron Street, Suite 301, Collingwood, ON L9Y 4R3 705 446-3510 T 705 446-3520 F www.cfcrozier.ca info@cfcrozier.ca
	Drawing: SITE LOCATION PLAN	Drawn By: D.L. · Design By: D.L. · Project: 1644-5084 Scale: N.T.S. · Date: NOV. 2, 2018 · Check By: A.F. · Drawing: FIG. 2

NOTE:
THIS FIGURE IS SCHEMATIC ONLY AND IS NOT TO BE SCALED.

LEGEND:
- SIGNAL CONTROL
- STOP CONTROL
- AM(PM) [SAT] — WEEKDAY AM(PM)[SAT] PEAK HOUR VOLUMES
- MULTI-USE PATH
- BIKE LANE
- BUS STOP

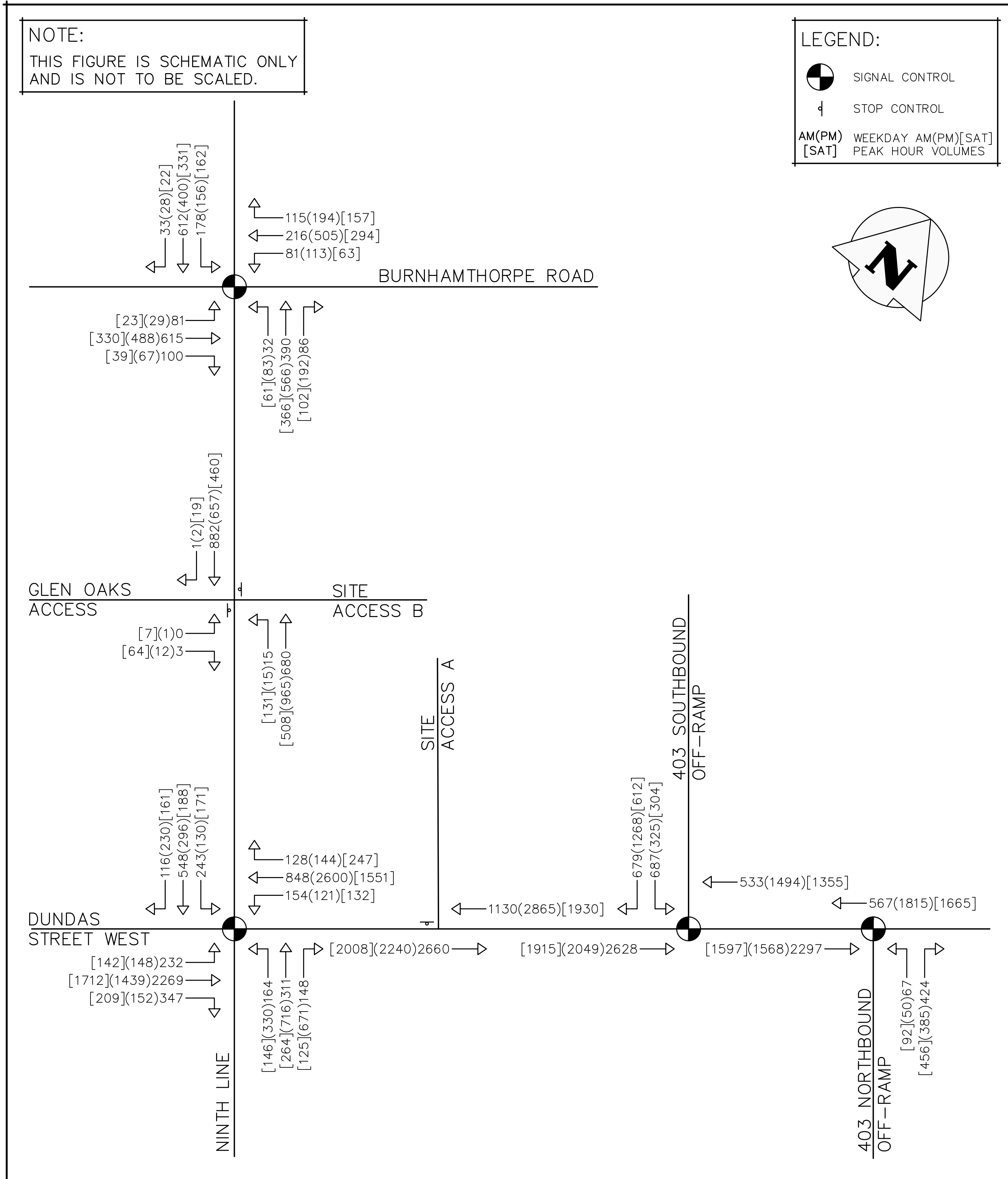


3855 DUNDAS STREET WEST
CITY OF MISSISSAUGA

BOUNDARY ROAD NETWORK

CROZIER & ASSOCIATES Consulting Engineers
2800 High Point Drive
Suite 100
Milton, ON L9T 6P4
905 875-0026 T
905 875-4915 F
WWW.CFCROZIER.CA

Drawn T.D.S.	Design D.L.	Project No.	1644-5084
Check T.D.S.	Check D.L.	Scale N.T.S	Dwg. FIG. 03

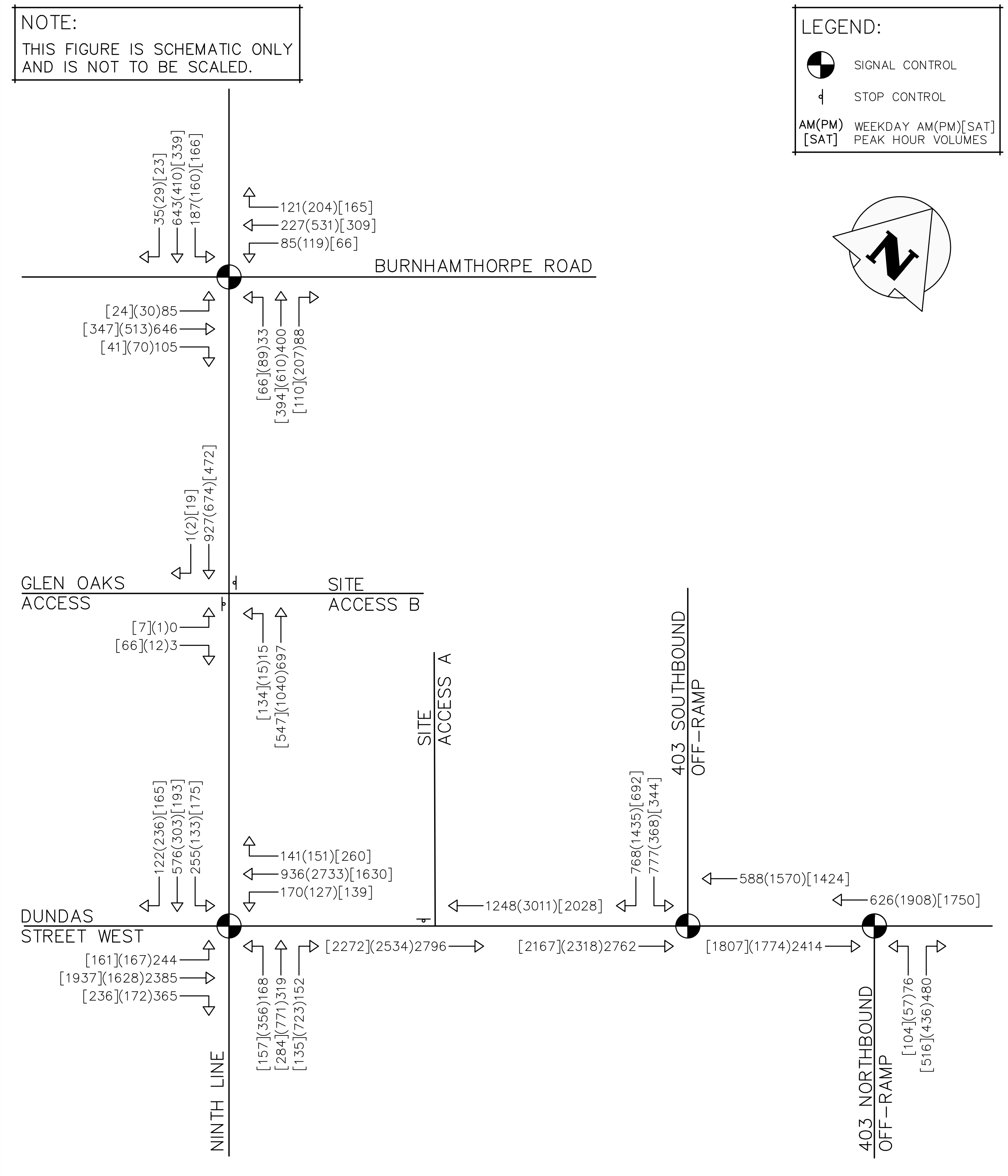


3855 DUNDAS STREET WEST
CITY OF MISSISSAUGA

2018 EXISTING TRAFFIC VOLUMES

CROZIER & ASSOCIATES
Consulting Engineers
2800 HIGH POINT DRIVE
SUITE 100
MILTON, ON L9T 6P4
905 875-0026 T
905 875-4915 F
WWW.CFCROZIER.CA

Drawn T.D.S.	Design D.L.	Project No. 1644–5084
Check T.D.S.	Check D.L.	Scale N.T.S · Dwg. FIG. 04

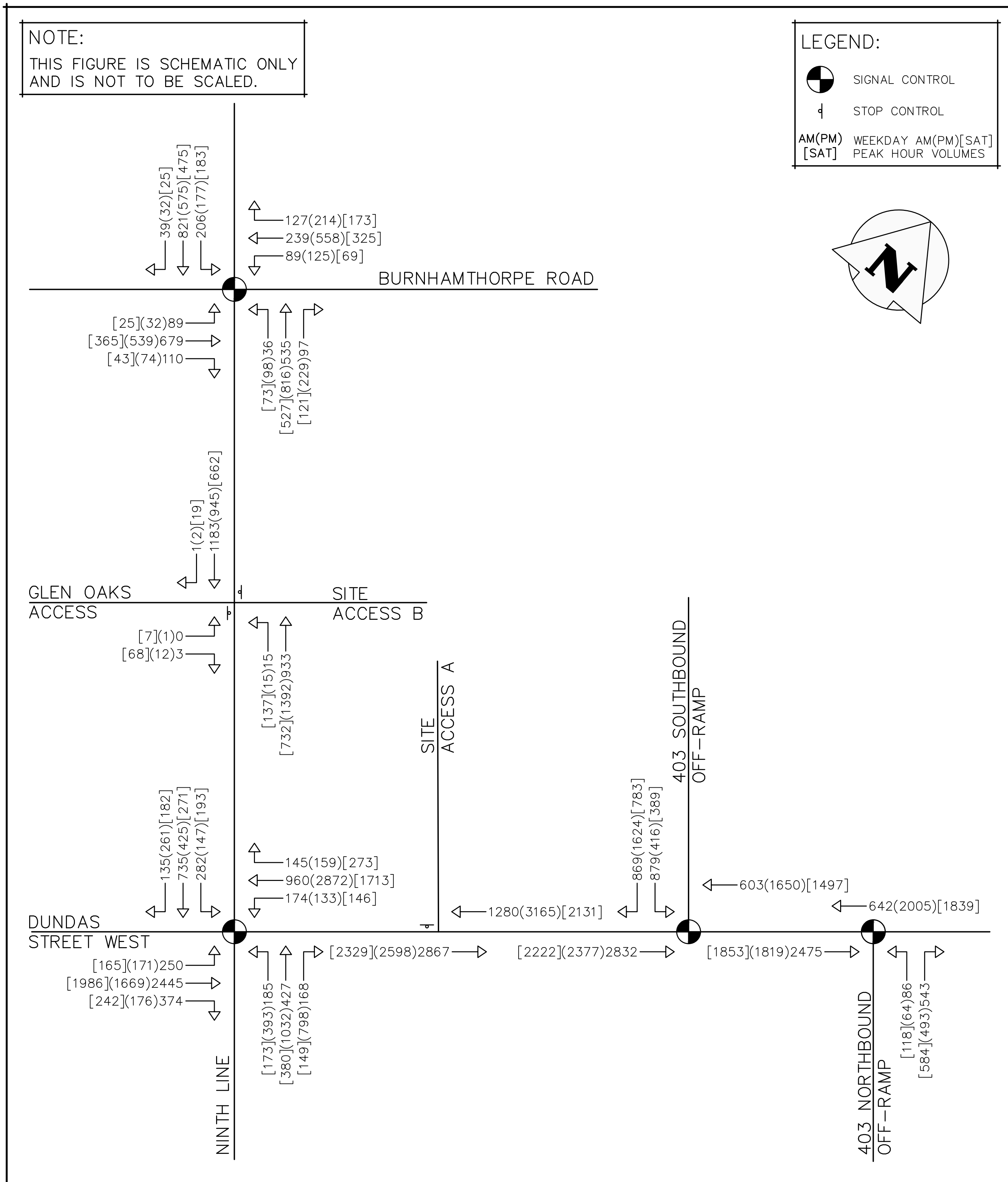


3855 DUNDAS STREET WEST
CITY OF MISSISSAUGA

2023 FUTURE BACKGROUND
TRAFFIC VOLUMES

CROZIER & ASSOCIATES
Consulting Engineers
2800 HIGH POINT DRIVE
SUITE 100
MILTON, ON L9T 6P4
905 875-0026 T
905 875-4915 F
WWW.CFCROZIER.CA

Drawn T.D.S.	Design D.L.	Project No.	1644–5084
Check T.D.S.	Check D.L.	Scale N.T.S	Dwg. FIG. 05



3855 DUNDAS STREET WEST
CITY OF MISSISSAUGA

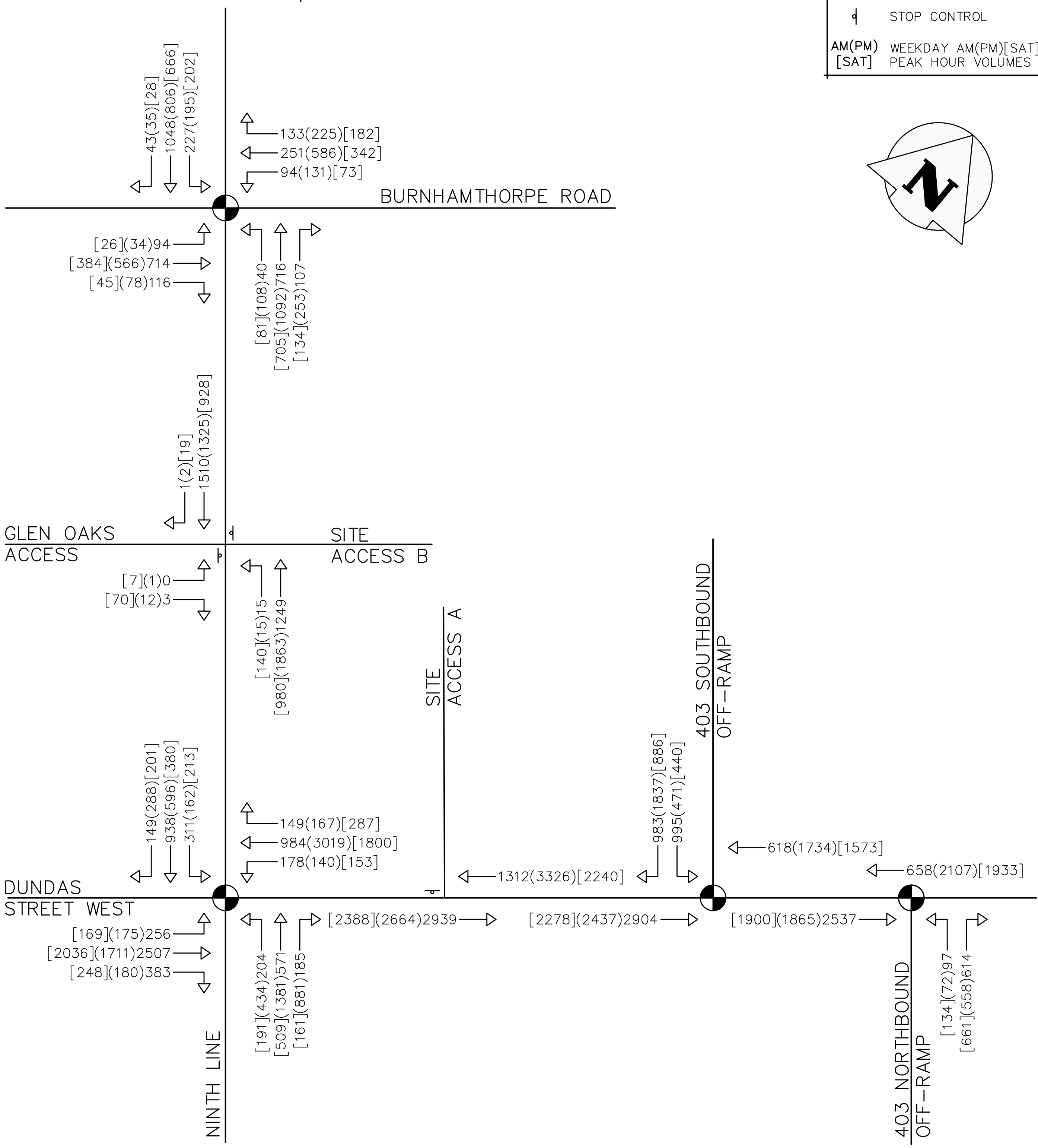
2028 FUTURE BACKGROUND
TRAFFIC VOLUMES

CROZIER &ASSOCIATES Consulting Engineers
2800 High Point Drive
Suite 100
Milton, ON L9T 6P4
905 875-0026 T
905 875-4915 F
WWW.CFCROZIER.CA

Drawn T.D.S.	Design D.L.	Project No.	1644–5084
Check T.D.S.	Check D.L.	Scale N.T.S	Dwg. FIG. 06

NOTE:
THIS FIGURE IS SCHEMATIC ONLY AND IS NOT TO BE SCALED.

LEGEND:
SIGNAL CONTROL
STOP CONTROL
AM(PM) [SAT] WEEKDAY AM(PM)[SAT] PEAK HOUR VOLUMES



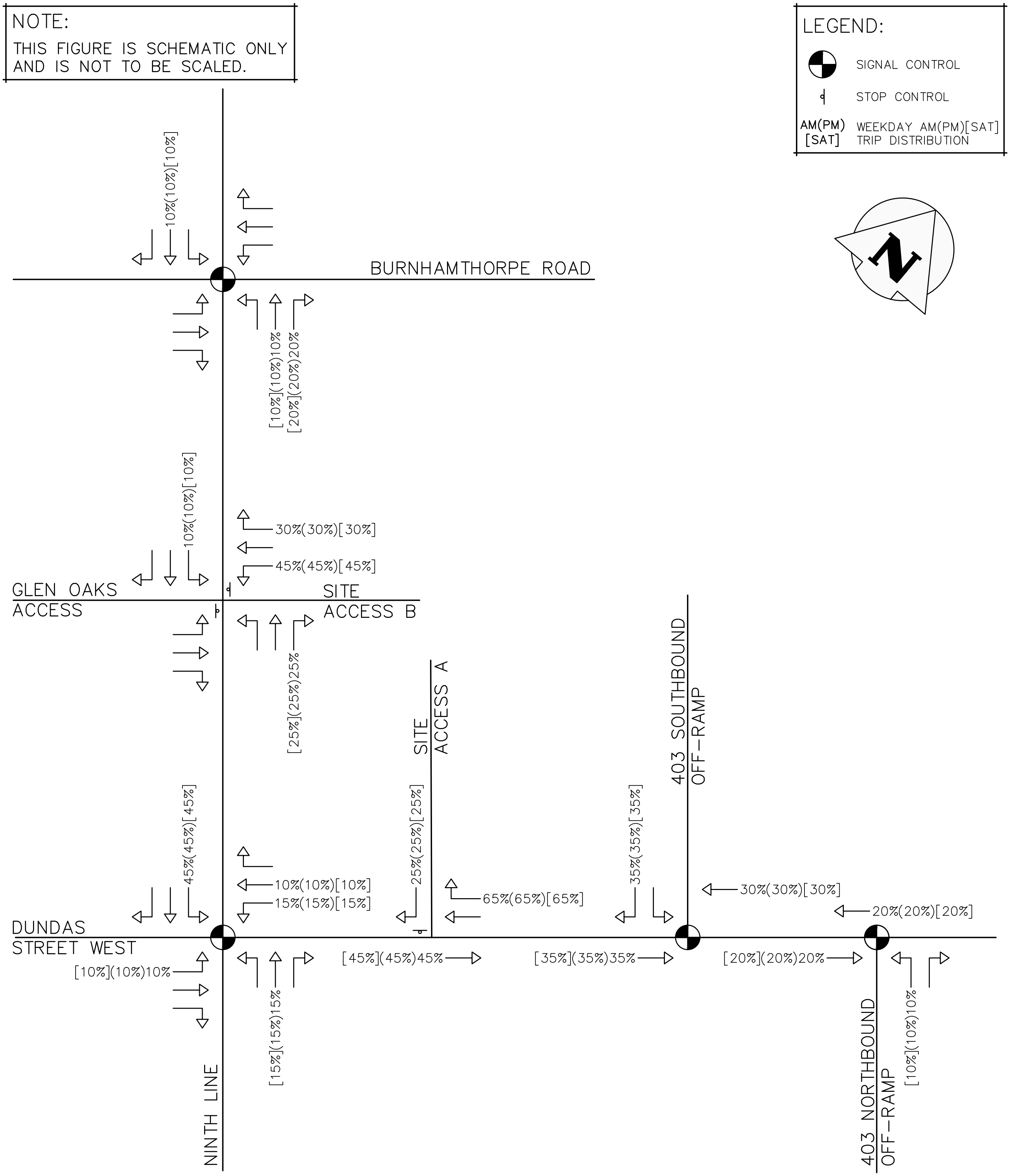
3855 DUNDAS STREET WEST
CITY OF MISSISSAUGA

2033 FUTURE BACKGROUND
TRAFFIC VOLUMES

CROZIER & ASSOCIATES
Consulting Engineers
2800 HIGH POINT DRIVE
SUITE 100
MILTON, ON L9T 6P4
905 875-0026 T
905 875-4915 F
WWW.CFCROZIER.CA

Drawn T.D.S.	Design D.L.	Project No.	1644–5084
Check T.D.S.	Check D.L.	Scale N.T.S	Dwg. FIG. 07

NOTE:
THIS FIGURE IS SCHEMATIC ONLY AND IS NOT TO BE SCALED.



3855 DUNDAS STREET WEST
CITY OF MISSISSAUGA

TRIP DISTRIBUTION

CROZIER & ASSOCIATES Consulting Engineers
2800 HIGH POINT DRIVE
SUITE 100
MILTON, ON L9T 6P4
905 875-0026 T
905 875-4915 F
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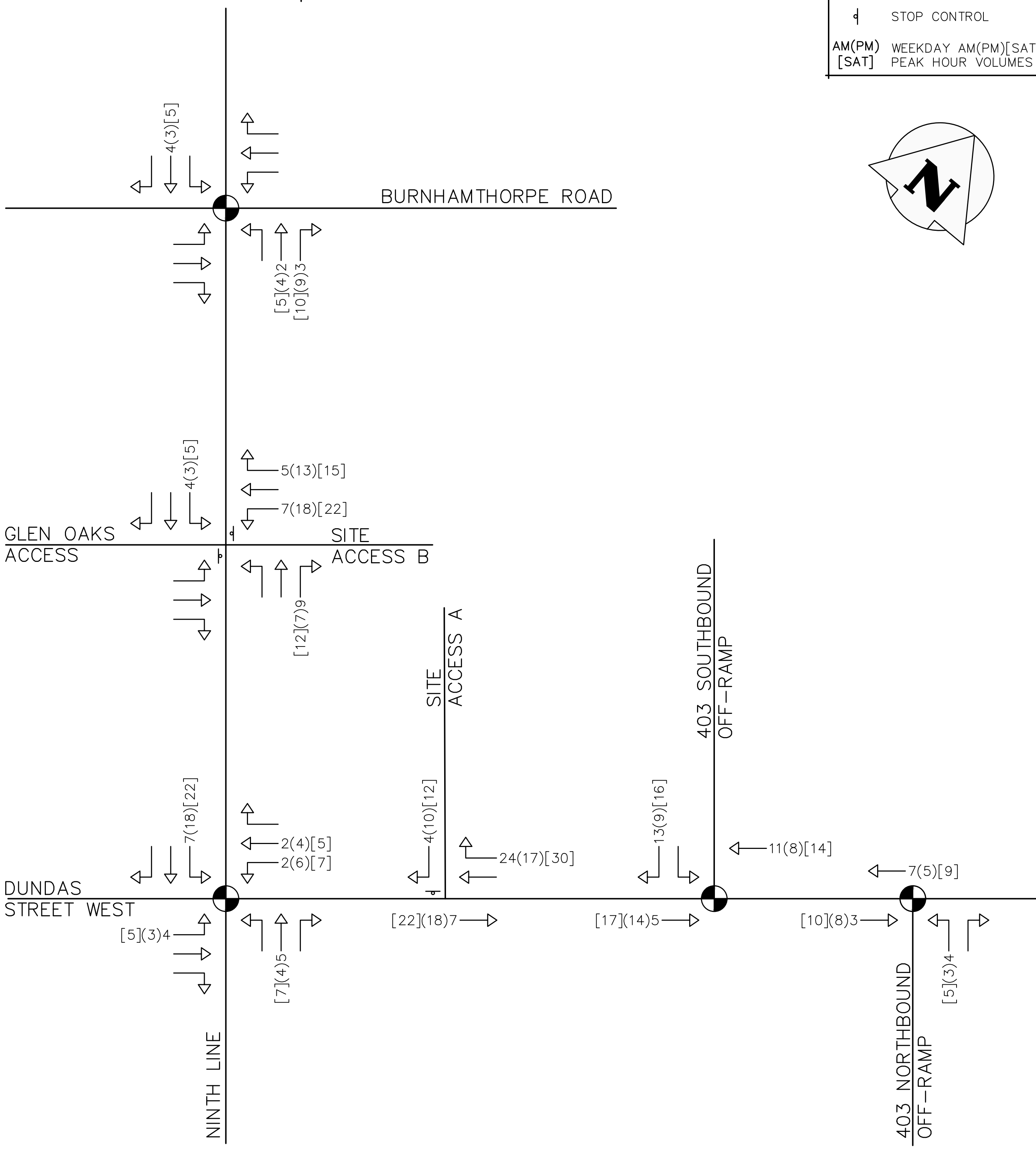
Drawn	T.D.S.	Design	D.L.	Project No.	1644–5084
Check	T.D.S.	Check	D.L.	Scale N.T.S	Dwg. FIG. 08

NOTE:
THIS FIGURE IS SCHEMATIC ONLY AND IS NOT TO BE SCALED.

LEGEND:
SIGNAL CONTROL
STOP CONTROL
AM(PM) [SAT] WEEKDAY AM(PM)[SAT] PEAK HOUR VOLUMES



3855 DUNDAS STREET WEST
CITY OF MISSISSAUGA

TRIP ASSIGNMENT

CROZIER & ASSOCIATES
Consulting Engineers
2800 High Point Drive
Suite 100
Milton, ON L9T 6P4
905 875-0026 T
905 875-4915 F
WWW.CFCROZIER.CA

Drawn T.D.S.	Design D.L.	Project No.	1644–5084
Check T.D.S.	Check D.L.	Scale N.T.S	Dwg. FIG. 09

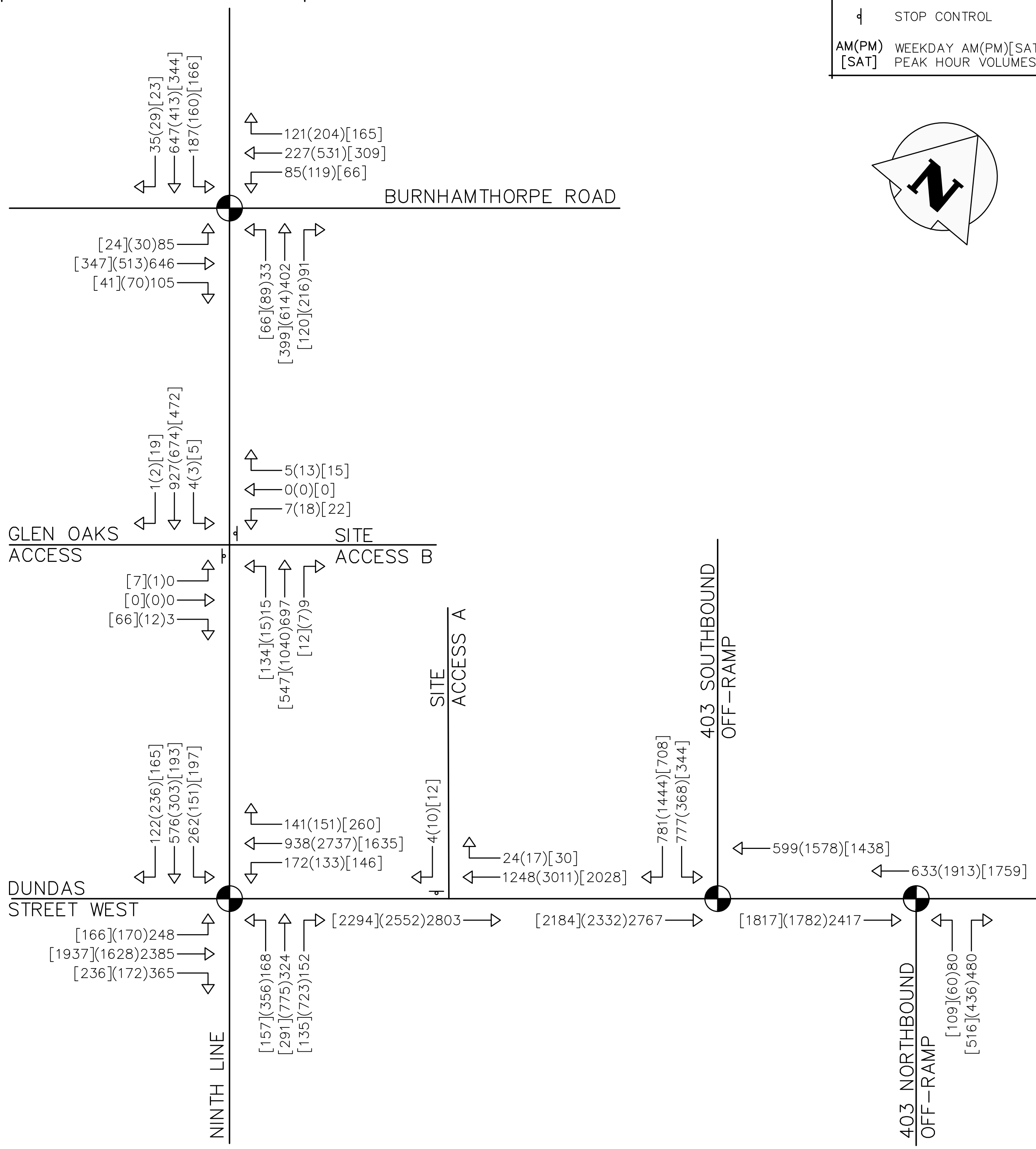
NOTE:
THIS FIGURE IS SCHEMATIC ONLY AND IS NOT TO BE SCALED.

LEGEND:

SIGNAL CONTROL

STOP CONTROL

AM(PM)[SAT] WEEKDAY AM(PM)[SAT] PEAK HOUR VOLUMES



3855 DUNDAS STREET WEST
CITY OF MISSISSAUGA

2023 FUTURE TOTAL TRAFFIC VOLUMES

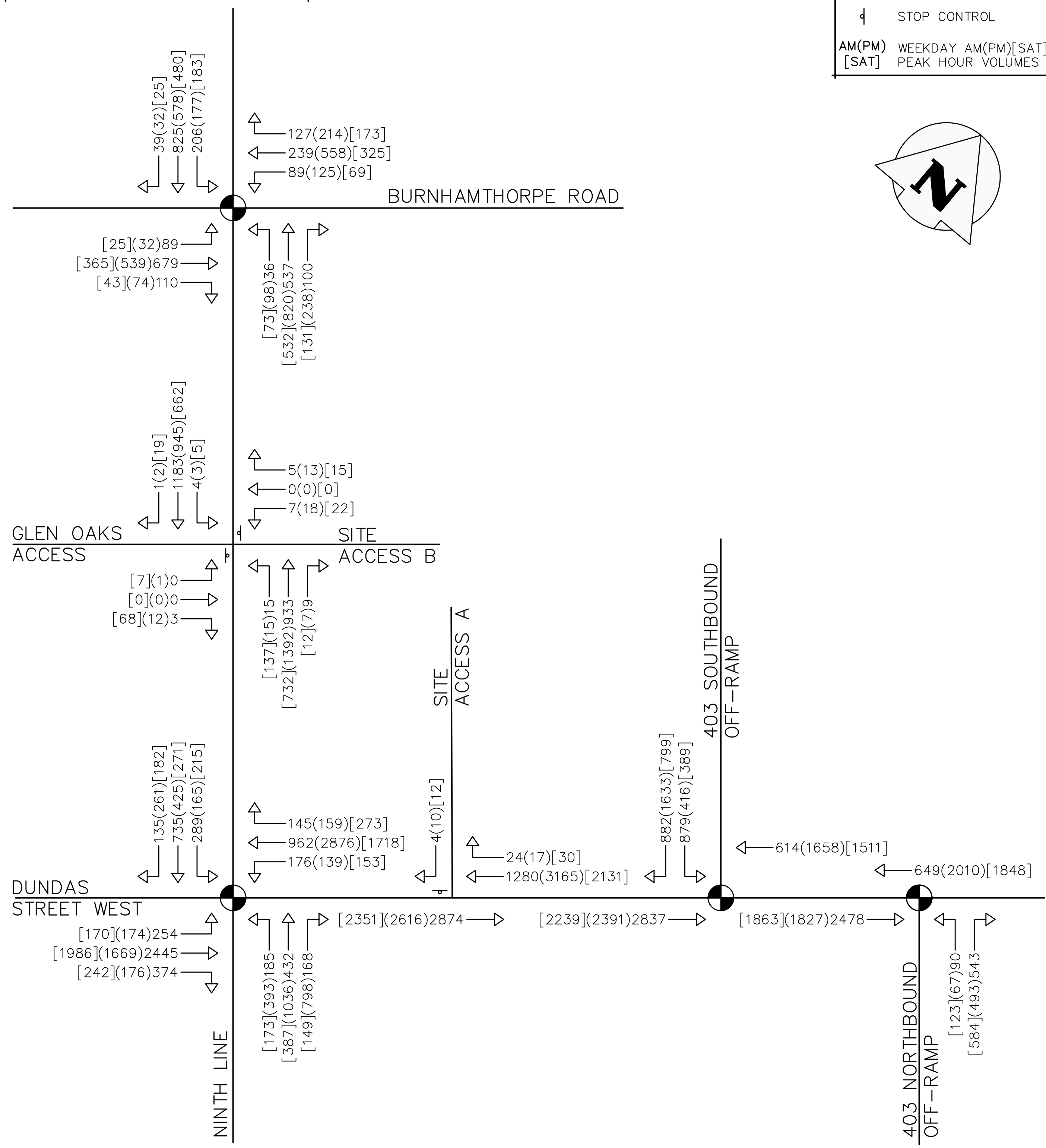
CROZIER & ASSOCIATES
Consulting Engineers
2800 HIGH POINT DRIVE
SUITE 100
MILTON, ON L9T 6P4
905 875-0026 T
905 875-4915 F
WWW.CFCROZIER.CA

Drawn T.D.S.	Design D.L.	Project No.	1644–5084
Check T.D.S.	Check D.L.	Scale N.T.S	Dwg. FIG. 10

NOTE:
THIS FIGURE IS SCHEMATIC ONLY AND IS NOT TO BE SCALED.

LEGEND:

	SIGNAL CONTROL
	STOP CONTROL
AM(PM) [SAT]	WEEKDAY AM(PM)[SAT] PEAK HOUR VOLUMES



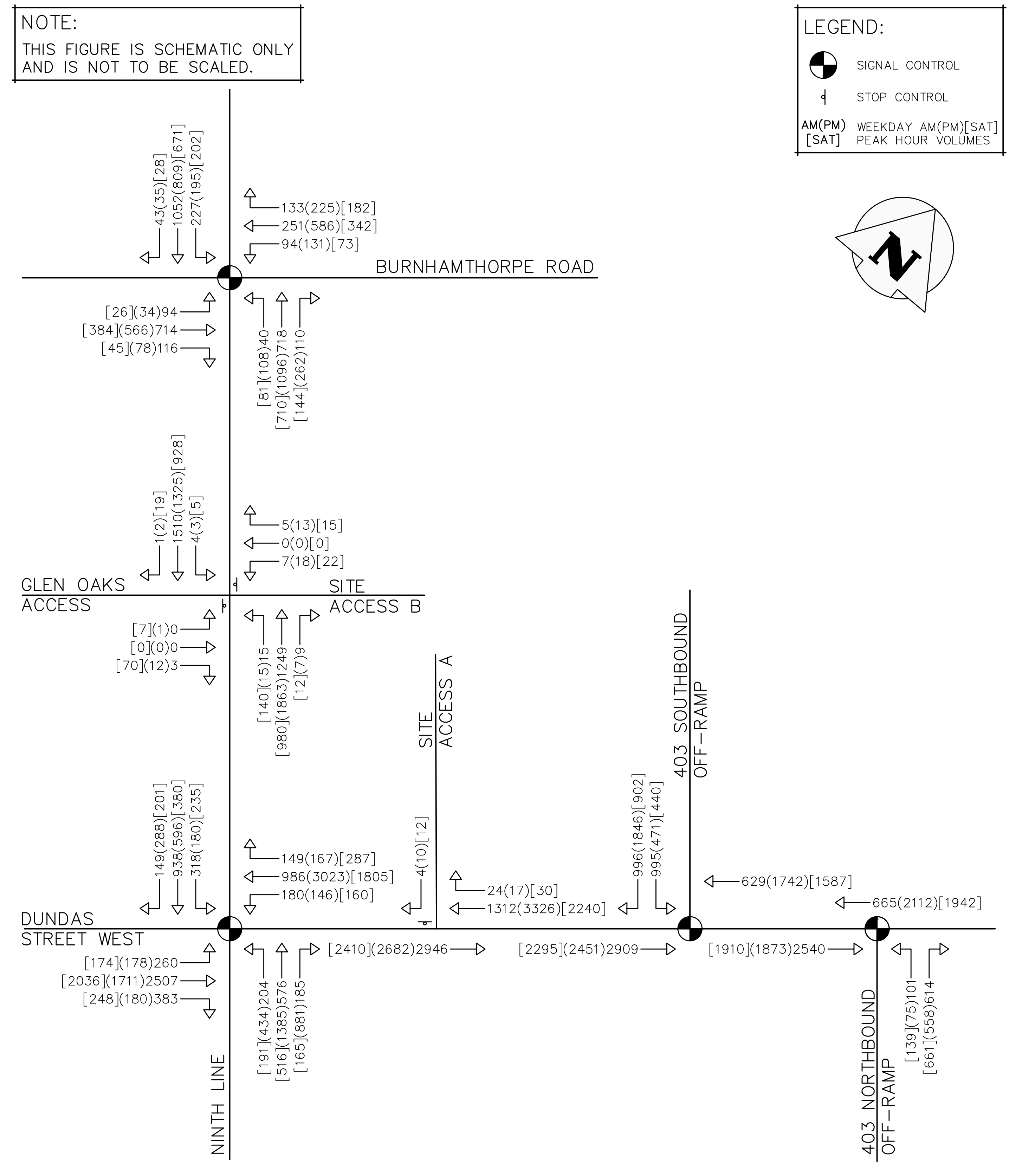
3855 DUNDAS STREET WEST
CITY OF MISSISSAUGA

2028 FUTURE TOTAL
TRAFFIC VOLUMES

CROZIER &ASSOCIATES Consulting Engineers

2800 High Point Drive
Suite 100
Milton, ON L9T 6P4
905 875-0026 T
905 875-4915 F
WWW.CFCROZIER.CA

Drawn T.D.S.	Design D.L.	Project No.	1644–5084
Check T.D.S.	Check D.L.	Scale N.T.S	Dwg. FIG. 11



3855 DUNDAS STREET WEST
CITY OF MISSISSAUGA

2033 FUTURE TOTAL
TRAFFIC VOLUMES

CROZIER &ASSOCIATES
Consulting Engineers

2800 High Point Drive
Suite 100
Milton, ON L9T 6P4
905 875-0026 T
905 875-4915 F
WWW.CFCROZIER.CA

Drawn T.D.S.	Design D.L.	Project No.	1644–5084
Check T.D.S.	Check D.L.	Scale N.T.S	Dwg. FIG. 12