Traffic Impact Study

Proposed Residential Development
550 Kerr Street

Zelinka Priamo Ltd.

GHD | 6705 Millcreek Drive Mississauga Ontario L5N 5M4 Canada

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Executive Summary

GHD Limited (GHD) was retained to prepare a Traffic Impact Study for the proposed residential development at the municipal address of 550 Kerr Street in the Town of Oakville. This report determines potential site related traffic and traffic-related impacts on the adjacent road network during the weekday a.m. and p.m. peak hours from the proposed development. These impacts are based on projected future background traffic and road network conditions derived for a 2026 planning horizon.

The site is located southeast of Kerr Street approximately adjacent from Shepherd Road in the Town of Oakville. The site includes an ultimate design of a future proposed site access at the intersection of Kerr Street and future Shepherd Street extension. The proposed development predominantly consist of residential condominium developments which in total have 472 residential units. In addition, the subject site also has 2,415 m^2 of retail space dispersed across the building.

Based on an estimated trip generation, it is estimated that the subject site could generate an additional 206 new two-way vehicle trips during the a.m. peak hour consisting of 170 new two-way vehicle trips during the a.m. peak hour consisting of 50 inbound and 120 outbound trips. During the p.m. peak hour it generates 301 two-way vehicle trips consisting of 165 inbound and 136 outbound trips. This trips would use Kerr Street and the surrounding road network to access the site.

Under future 2026 future conditions, the incremental impact of the site generated traffic is expected to be nominal, with no recommended geometric improvements to the study area intersections in response to the subject development. While several intersections and specific movements are expected to operate with reduced capacity and some operational concerns, these are a direct result of background corridor growth. Any recommended improvements are in response to the background traffic demands.

Respectfully submitted,

GHD

William Maria, P. Eng.
Transportation Engineer

Ivan Drewnitski, Dipl. T.
Transportation Planner

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1. Introduction

1.1 Retainer and Objective

GHD Limited (GHD) was retained to prepare a Traffic Impact Study for the proposed residential development located in the southeast corner of the intersection of Bronte Street South and Main Street East in the Town of Milton to determine the following:

The following key issues are addressed by this study:

- Establish baseline traffic conditions for the study area and update the existing traffic conditions to derive the future background operating conditions for the study intersections at a future 5-year (2026) planning horizon;
- Estimate a conservative trip generation for the proposed development using ITE 10th Edition Trip Generation manual and distribute the site traffic to the study area road network via the proposed site access based on existing traffic patterns;
- Determine existing and future (background and total) traffic conditions during the critical peak hours by conducting intersectional capacity analysis;
- Recommend improvements to the study area roadway system and traffic controls, if necessary, to accommodate the traffic generated by the proposed development, as well as the configuration of any proposed access points to the abutting road network;
- Review the site plan in the context of operational, geometric and safety issues, and provide recommendations on how to address any deficiencies (if any are revealed) by identifying the transportation system requirements and ensuring that sufficient intersection capacity is available to accommodate the additional site generated traffic on the adjacent road network; and,
- Complete a site access and circulation review for the site plan including AutoTurn assessment for passenger vehicles, delivery vehicles and garbage truck collection.

1.2 Study Team

The GHD team involved in the preparation of the study are:

- William Maria, P. Eng., Senior Project Manager
- Ivan Drewnitski, Dipl. T., Transportation Planner

1.3 Study Background

GHD has consulted with the Region of Halton and Town of Oakville staff to discuss the assumptions and scope of this study. We have also referenced the Region's and Town's Transportation Impact Study Guidelines to determine the most reasonable terms of reference for the study.

Figure 1 Site Location

2. Site Characteristics

2.1 Existing Site Location

The subject site is located along 550 Kerr Street in the Town of Oakville. At present day, the Oakville Commons property consists of various commercial uses such as:

- D.O.T. Furniture Patio Experts;
- Food Basics;
- Shoppers Drug Mart;
- Jysk; and,
- Various other commercial and retail establishments.

There are three accesses that exist for the development one full moves along Speers Road and two full moves access along Kerr Street.

2.2 Study Area Intersections

The study area includes the following intersections:

- Dorval Drive and North Service Road (signalized);
- Dorval Drive and Wyecroft Road (signalized);
- Kerr Street and Site Access (unsignalized);
- Kerr Street and Speers Road (signalized); and
- Kerr Street and Shepherd Road (signalized).

2.3 Proposed Site Plan Phases

As the development will be proceeding well before the other adjacent residential developments, two proposed site plans were proposed for the development.

Site Plan (Existing Site) is the proposed site plan prior the Shepherd Road Extension, with access to the site provided via the existing plaza access south of the intersection of Kerr Street and Shepherd Road.

Site Plan (Proposed Site) is the proposed site plan with the future Shepherd Road Extension, with access to the site provided via at the future 4-legged intersection of Kerr Street and Shepherd Road.

However, as directed by Town staff, the future extension of Shepherd Road is expected to occur outside of our proposed planning horizon. As such, the development was analyzed under the Existing Site Concept Plan.

2.4 Site Plan

The site is located southwest of Kerr Street approximately adjacent from Shepherd Road in the Town of Oakville. The site includes an ultimate design of a future proposed full moves site access at the intersection of Kerr Street and future Shepherd Street extension.

The proposed development predominantly consist of residential condominium developments which in total have 472 residential units. In addition, the subject site also has 2,415 m^2 of retail space dispersed across the building. **Figure 2** shows the proposed site plan without the future road extension and access locations. **Figure 3** shows the proposed site plan with the future road extension at Kerr Street.

2.5 Parking Provision

Based on the latest concept plan, the expected total parking provision for the site is 624 spaces, based on the following breakdown:

- 60 commercial/retail parking spaces;
- 216 one bedroom units parking spaces;
- 320 two and three bedroom units parking spaces; and
- 28 additional parking spaces.

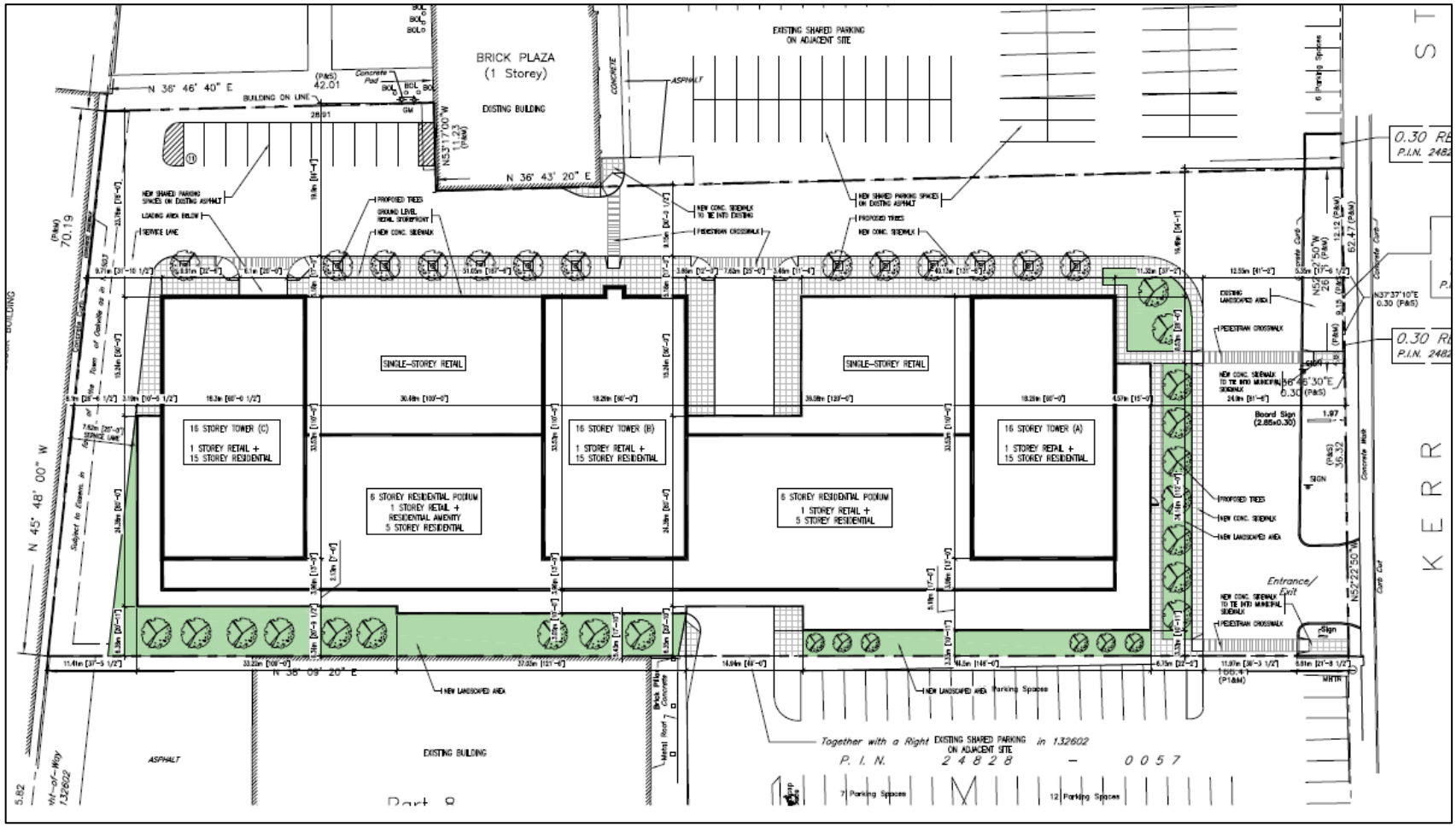


Figure 2 Site Plan (Existing Site)

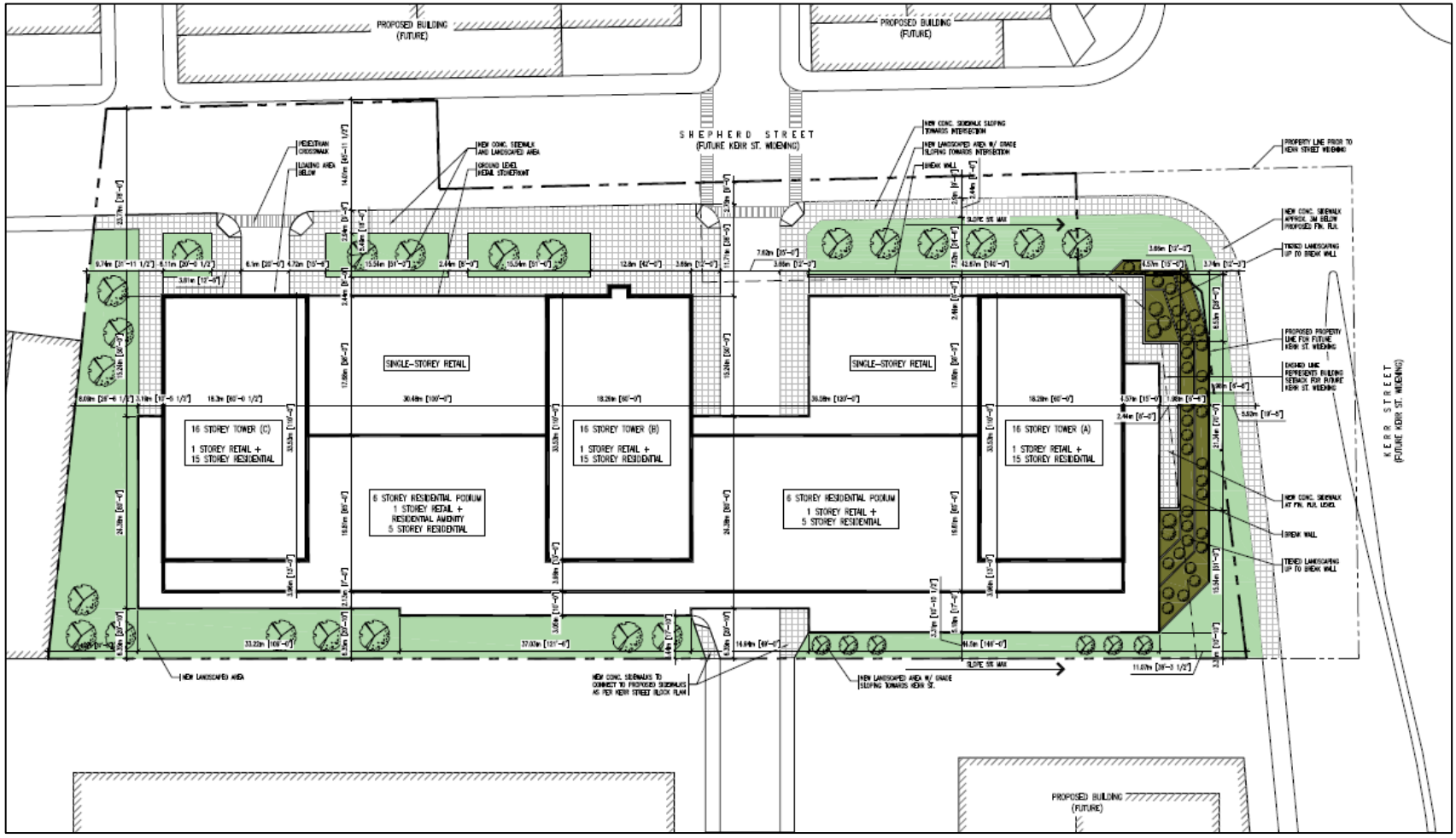


Figure 3 Site Plan (Proposed Site)

3. Existing Conditions

3.1 Existing Road Network

Dorval Drive is an arterial road under the jurisdiction of Halton Region that runs north-south in the study area. It currently has a six-lane cross-section (three lanes per direction plus) and a posted speed limit of 60 km/h. It has auxiliary left and right-turn lanes at its intersection with Speers Road, and auxiliary left-turn lanes at its intersection at Wyecroft Road. It has pedestrian sidewalks on the west and east sides of the road.

Speers Road is an arterial road under the jurisdiction of Halton Region that runs east-west in the study area. It currently has a four-lane cross-section (two lanes per direction) and a posted speed limit of 60 km/h. It has auxiliary left-turn lanes in its approach to Dorval Drive and in both approaches to Speers Road, and sidewalk on both sides of the road; no bicycle facilities are currently provided.

Kerr Street is a collector road under the jurisdiction of Halton Region that generally runs north-south in the study area. It currently has a two-lane cross-section (one lane per direction) and an assumed speed limit of 50 km/h adjacent of the subject site.

Shepherd Road is a two-lane collector road that runs east-west in the study area with an posted speed limit of 50 km/h, and auxiliary left-turn lanes on both approaches to Ontario Street. There are sidewalks on both sides of the road, and no bicycle facilities.

Wyecroft Road is a two-lane collector road that runs north-south in the study area with an posted speed limit of 50 km/h, and auxiliary left-turn lanes on both approaches to Derry Road. There are sidewalks on both sides of the road, and no bicycle facilities.

3.2 Existing Transit Services

Within the study area, bus service is provide in close proximity to the site. Oakville Transit provides transit via Routes #4, #10, #14, #14A, #15, #18, and #28. There is currently a bus terminal in close proximity located at Oakville GO station, which provide many additional transit routes for passengers.

A map for the transit route for Oakville Transit is illustrated below in **Figure 4**.

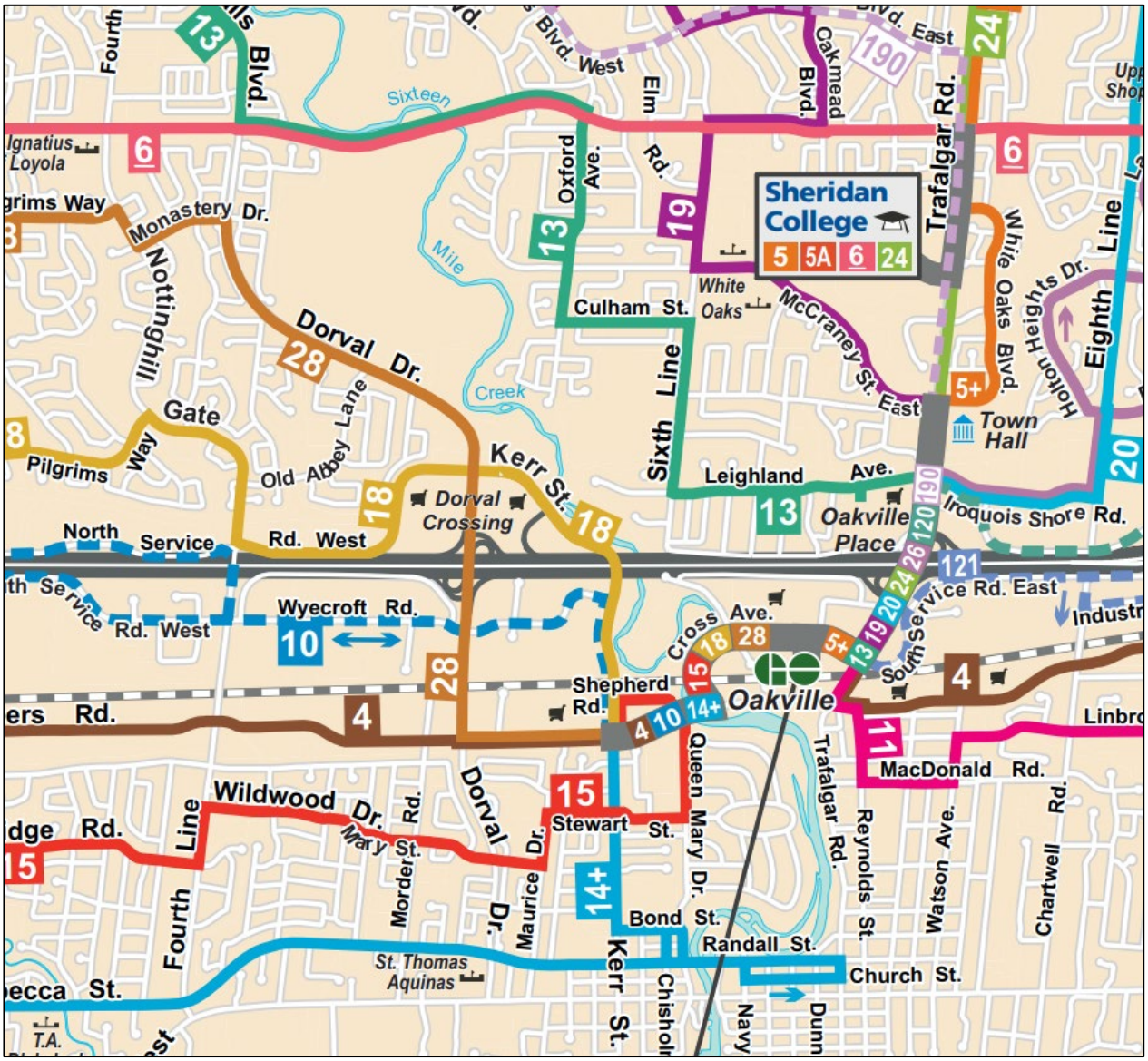


Figure 4 Oakville Transit Routes

Oakville Transit Route 4 (Speers - Cornwall)

Route 4 offers weekday and weekend service with approximately 30 minute headways during peak periods. Route 4 runs between Bronte GO Station and Clarkson GO Station. It passes through Oakville GO Station.

Oakville Transit Route 10 (West Industrial)

Route 10 offers weekday service with approximately 20-30 minute headways during peak periods. 10 West Industrial is a rush hour Oakville Transit route that runs between Oakville GO Station and Bronte GO Station.

Oakville Transit Route 14 & 14A (Lakeshore West)

Route 14 & 14A offers weekday and weekend service with approximately 15-20 minute headways during peak periods. Route 14 runs between Oakville GO Station and the intersection of Burloak & Fothergill.

Oakville Transit Route 15 (Bridge)

Route 15 offers weekday and weekend service with approximately 30 minute headways during peak periods. Route 15 runs between Oakville GO Station and South Oakville Centre.

Oakville Transit Route 18 (Glen Abbey South)

Route 18 offers weekday and weekend service with approximately 30 minute headways during peak periods. Route 18 is a rush hour Oakville Transit route that runs between Oakville GO Station and Glen Abbey. This route runs in the opposite direction of route 28 (off-peak) during rush hour.

Oakville Transit Route 28 (Glen Abbey North)

Route 28 offers weekday and weekend service with approximately 30 minute headways during peak periods. Route 28 runs between Oakville GO Station and back to Oakville GO Station.

3.3 Existing Traffic

Turning movement counts were obtained from the Town of Oakville at the intersection of Dorval Drive and North Service Road intersection and Kerr Street and Shepherd Road intersection. Subsequently, GHD collected turning movements' counts in April 2019 during the weekday a.m. and p.m. peak hours at the remainder study intersections.

Additionally, signal timing plans were provided by Halton Region for the signalized intersections within the study area.

The turning movement counts and signal timing plans are included in **Appendix A**. **Figure 5** represents the existing 2019 traffic volumes during each of the peak hours.

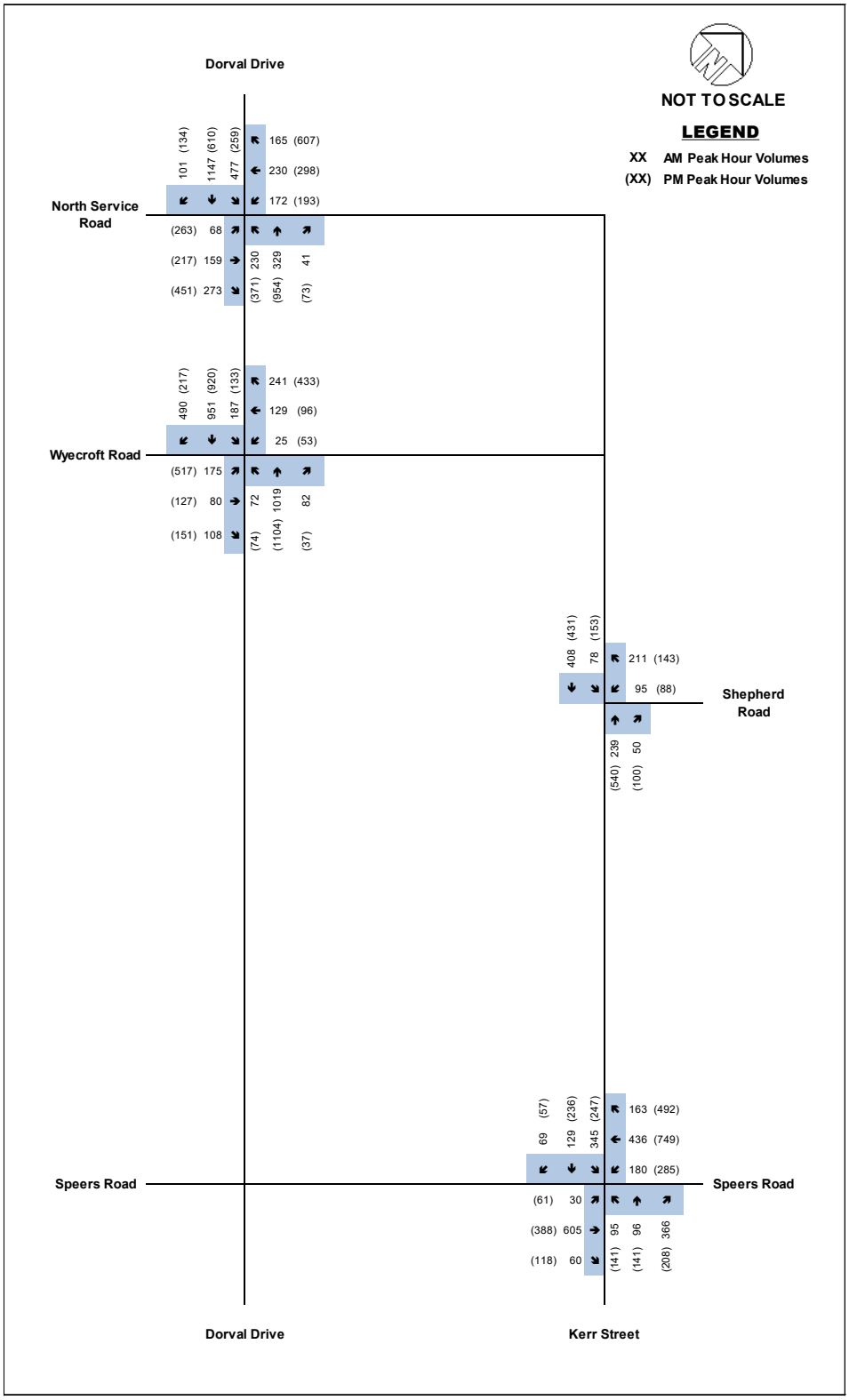


Figure 5 Existing (2019) Traffic Volumes

4. Background Traffic

4.1 Study Horizon Year

In addition to analyzing 2019 existing conditions, the analyses adopted a five-year planning horizon of 2026 to correspond with a five year period from the anticipated build-out of the development in 2021.

4.2 Network Improvements

As discussed with Town staff, there are no network road improvements planned within the study area that will have an effect on local area traffic within the 2026 horizon year.

4.3 Background Developments

Also, as the direction of Town staff there are no planned or approved background developments to consider in the forecasting of the 2026 planning horizon.

4.4 Future Corridor Growth

As directed by Region staff, a growth rate was calculated based on a review of historical turning movement traffic volumes, provided by the Region's Transportation Division. The 2016 traffic counts are provided in **Appendix A**.

The resulting calculated corridor growth rates are:

- 5.39% per annum growth rate northbound along Dorval Dr; and
- 7.63% per annum growth rate southbound along Dorval Dr.

However, as directed by Regional staff, a 1.00 percent per annum growth rate was adopted to the through movements along Dorval Drive, to account for general corridor growth.

As directed by Town staff, a 2.00 percent per annum growth rate was generally only applied to through movements at Town intersections, as any future growth in turning movements is captured in considered site trips from future planned background developments.

4.5 Future Background Traffic Volumes

Future background traffic volumes were derived with the forecasted corridor growth volumes within the vicinity of the site. The background traffic volume at the 2021 and 2026 planning horizon during the weekday a.m. and p.m. peak hours, is provided below in **Figure 6** and **Figure 7**, respectively**.**

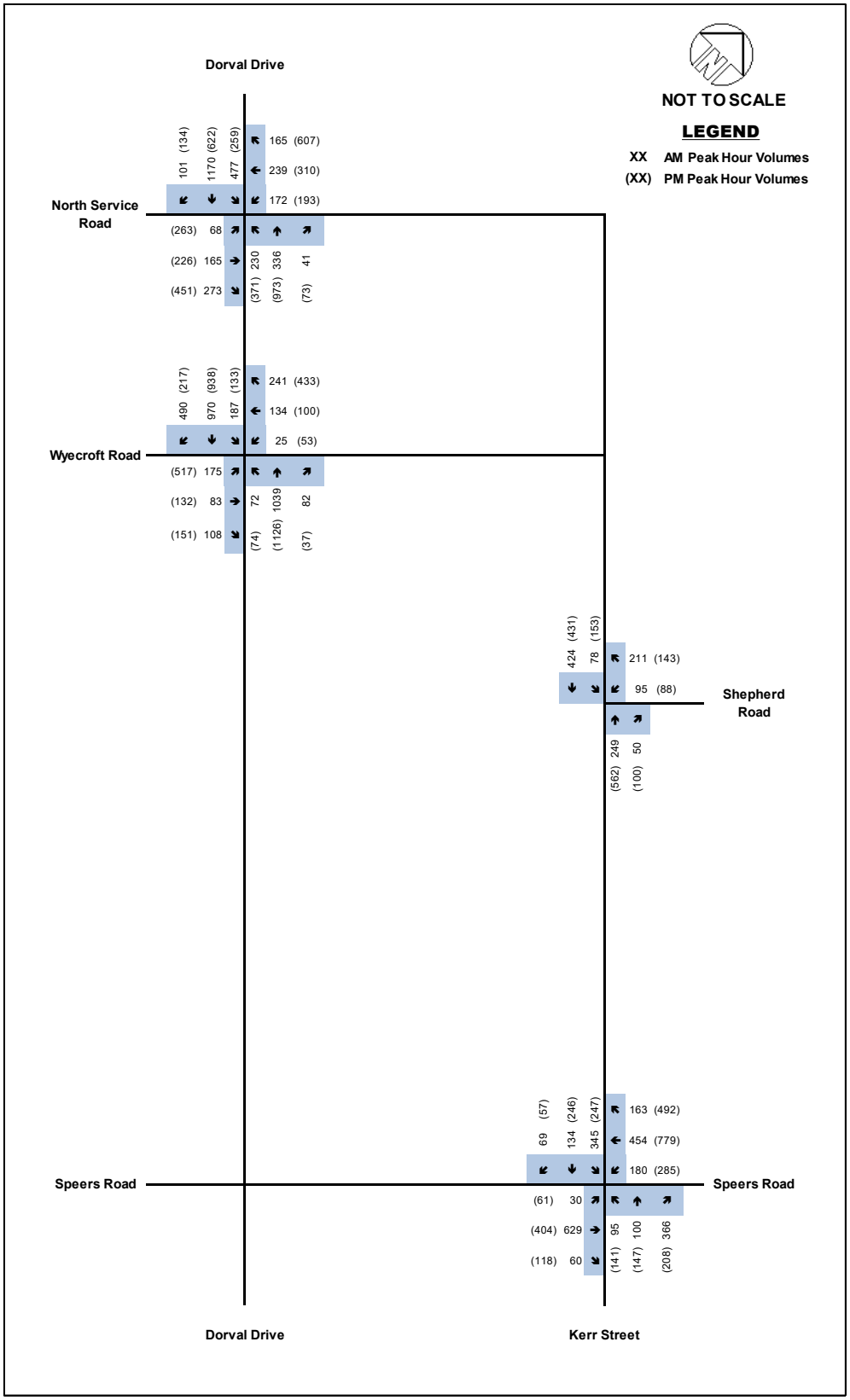


Figure 6 Future Background (2021) Traffic Volumes

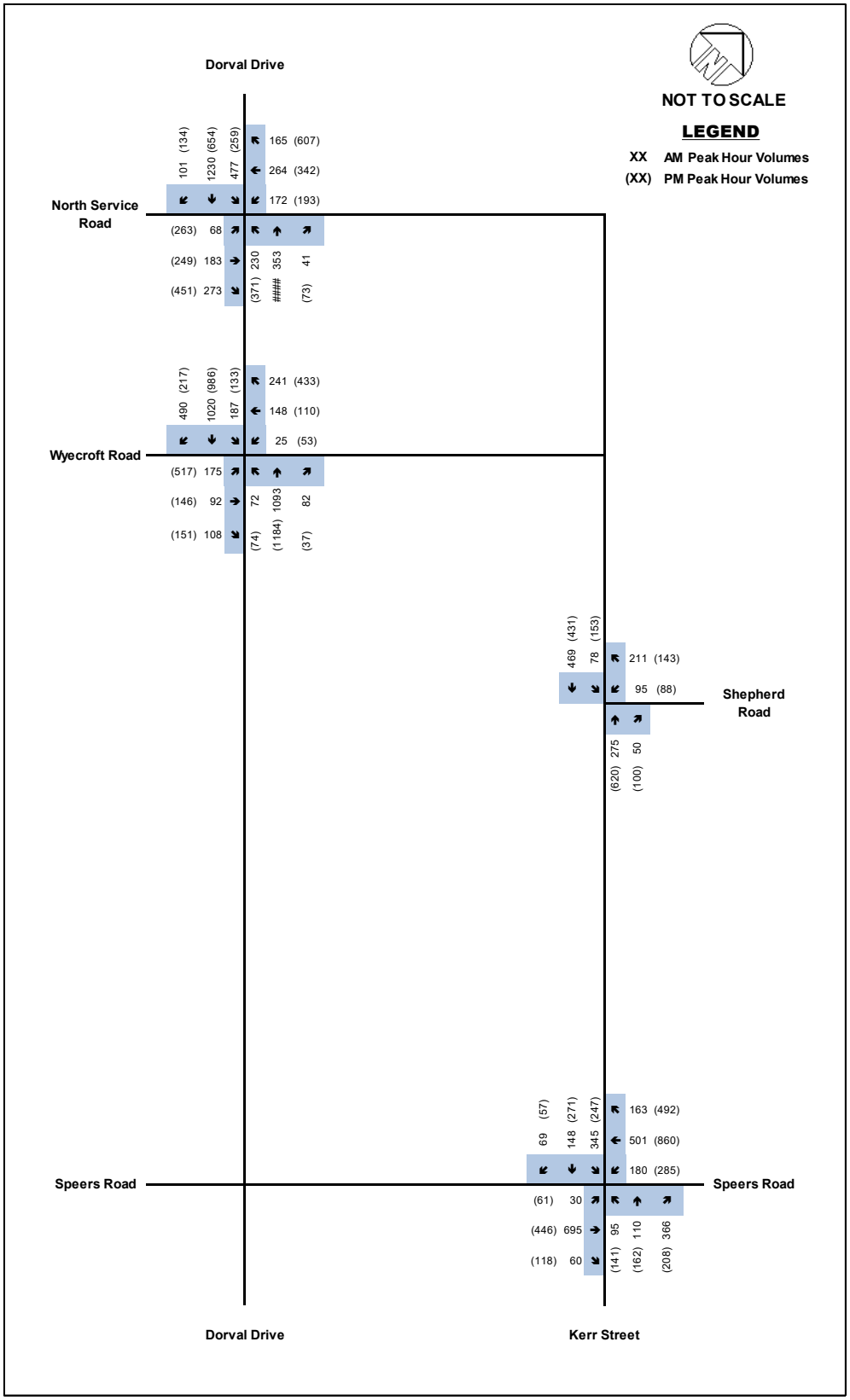


Figure 7 Future Background (2026) Traffic Volumes

5. Site Generated Traffic

5.1 Transit Modal Split

The subject site has multiple opportunities to access the surrounding transit system. However as a conservative measure, and in consideration of assumptions already incorporated in the trip generation data from the 10th Edition of the Trip Generation Manual, no transit modal split was assumed. As a conservative measure, the average rates were utilized rather than the fitted curve equations.

5.2 Site Trip Generation

Utilizing the Institute of Transportation Engineer's (ITE) Trip Generation Manual 10th Edition, trip generation estimates were calculated for the existing and proposed buildings based on ITE Land Use Codes (LUC) for Multifamily High-Rise Housing (#222) and Shopping Center (#820). A comparison of the fitted curve equations and average rates for each individual Land Use Code was completed, therefore whichever calculation resulted in a greater trip generation was applied as a conservative measure.

As per the ITE Trip Generation manual 10th Edition, a 0% and 36% pass-by rate was applied to the a.m. and p.m. peak hours, respectively. The resultant trip rates, entering and exiting proportions, and estimated total site trips are summarized in **Table 1** below.

Table 1 Site Trip Generation

Land Use Code	Units/GFA ft²	Parameters	Peak Hour Trip Generation					
			Weekday a.m.			Weekday p.m.		
			In	Out	Total	In	Out	Total
Multifamily Housing High-Rise (LUC 222)	472 units	Trip Rate	0.074	0.235	0.309	0.220	0.140	0.360
		Trip Ratio	24%	76%	-	61%	39%	-
		Total Trips	35	111	146	104	66	170
		Pass-by	0	0	0	0	0	0
		Gross Trips	35	111	146	104	66	170
Shopping Centre (LUC 820)	(25,994.84 sq.f.)	Trip Rate	0.577	0.346	0.923	3.3693	4.039	7.732
		Trip Ratio	62%	38%	-	48%	52%	-
		Total Trips	15	9	24	96	105	201
		Pass-by	0	0	0	35	35	70
		Gross Trips	15	9	24	61	70	131
Total New Primary Trips			**50**	**120**	**170**	**165**	**136**	**301**

Based on these assumptions and the proposed land uses, it is estimated that the future development will generate approximately 170 new two-way vehicle trips during the a.m. peak hour consisting of 50 inbound and 120 outbound trips. During the p.m. peak hour it generates 301 two-way vehicle trips consisting of 165 inbound and 136 outbound trips.

5.3 Site Trip Distribution

Trips generated by the proposed development were distributed to the roadway system based on 2016 Transportation Tomorrow Survey (TTS) data, which is provided in **Appendix B.** The distribution was derived for whichever route would provide the driver the quickest and convenient route possible to their desired location. **Figure 8** summarizes the directional distribution of site trips for the weekday a.m. and p.m. peak hours.

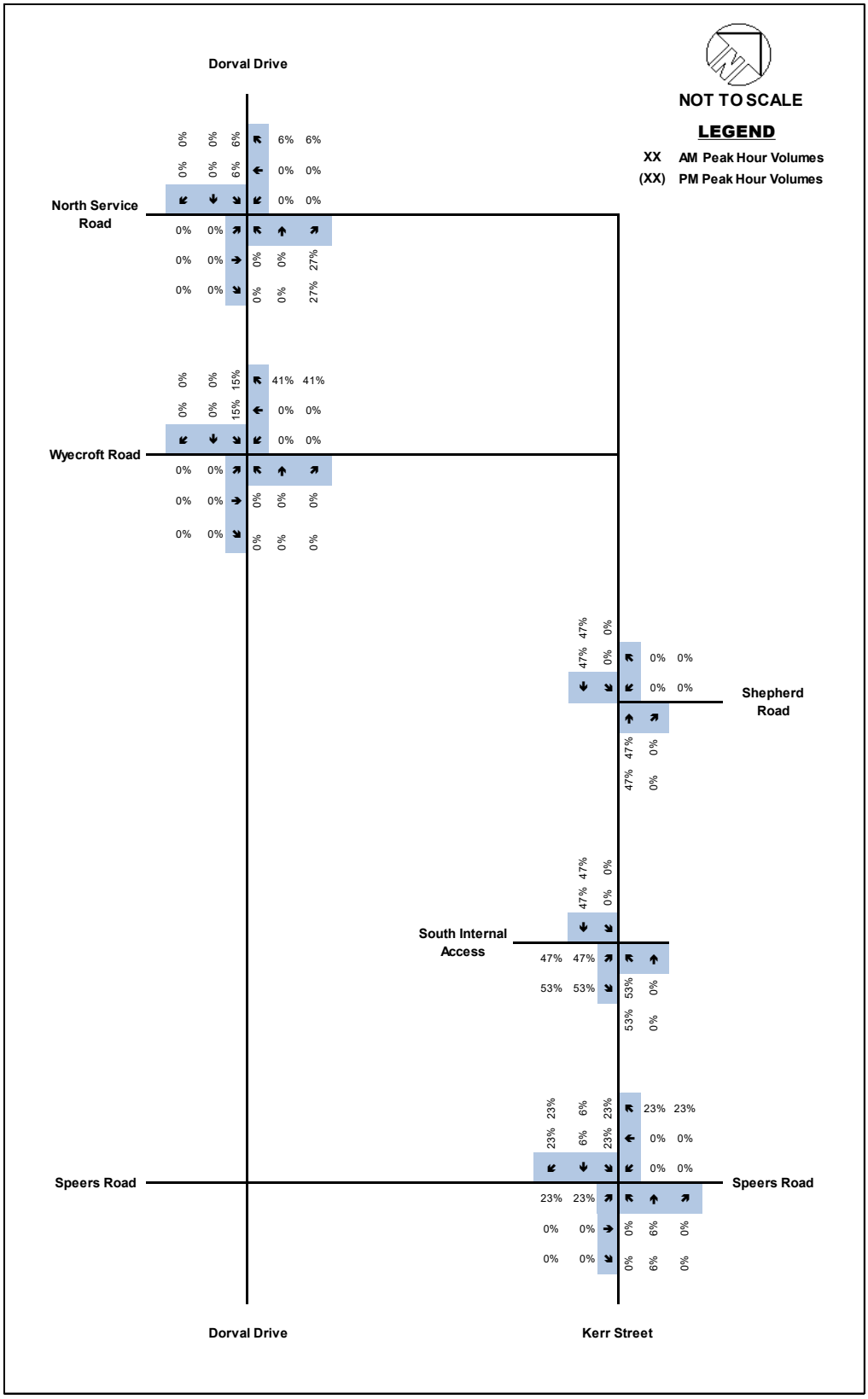


Figure 8 Site Trip Distribution

5.4 Site Trip Assignment

The estimated site trips generated by the proposed development assigned to the adjacent road network for the weekday a.m. and p.m. peak hours are shown below in **Figure 9**.

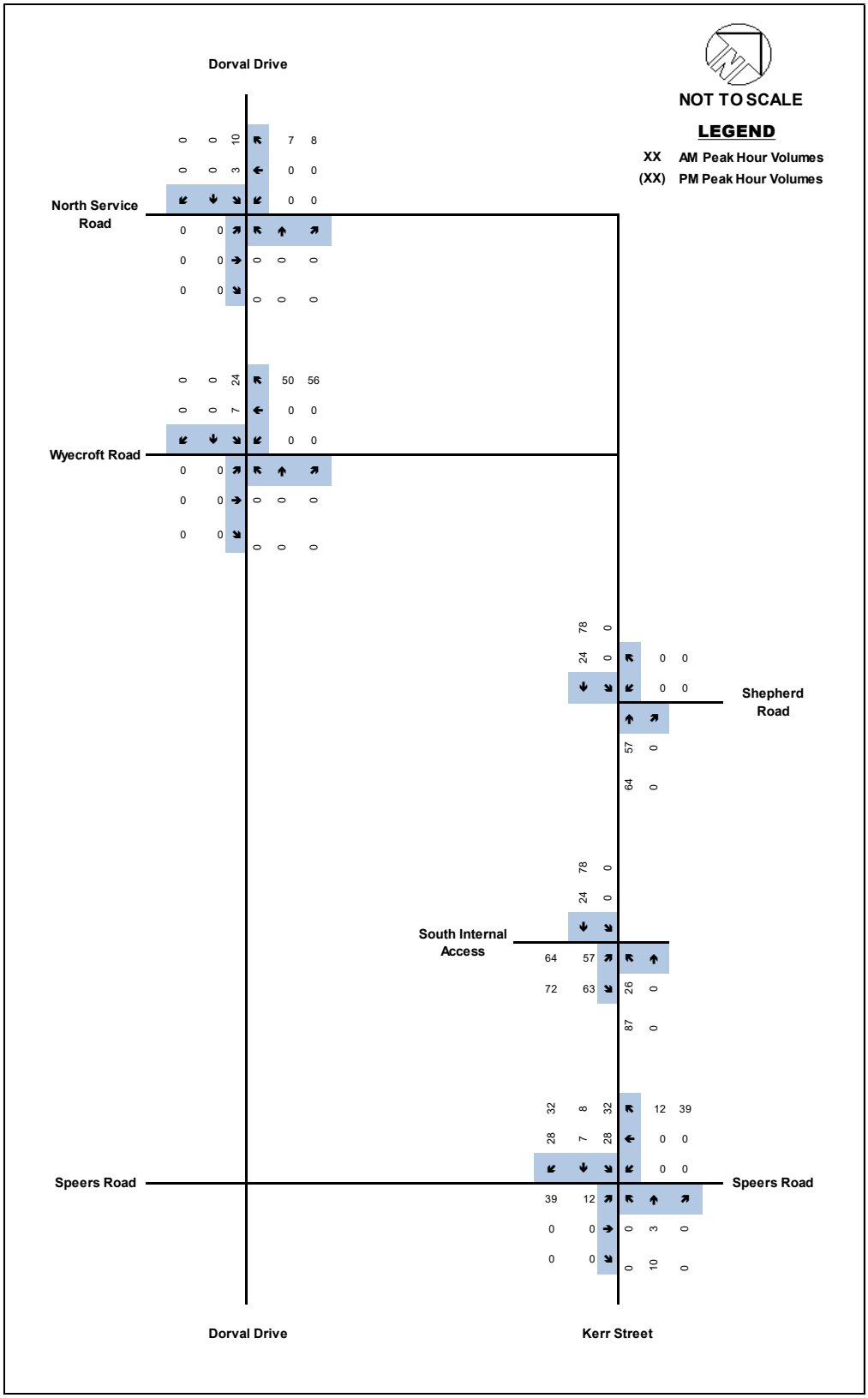


Figure 9 Site Trip Assignment

6. Future Total Traffic

The future total traffic conditions in the weekday a.m. and p.m. peak hours for the 2026 planning horizons was derived by combining the future background traffic volumes with the corresponding estimates of site trips generated by the proposed development. The 2021 and 2026 future total traffic volumes at the study area intersections are summarized in **Figure 10** and **Figure 11**, respectively.

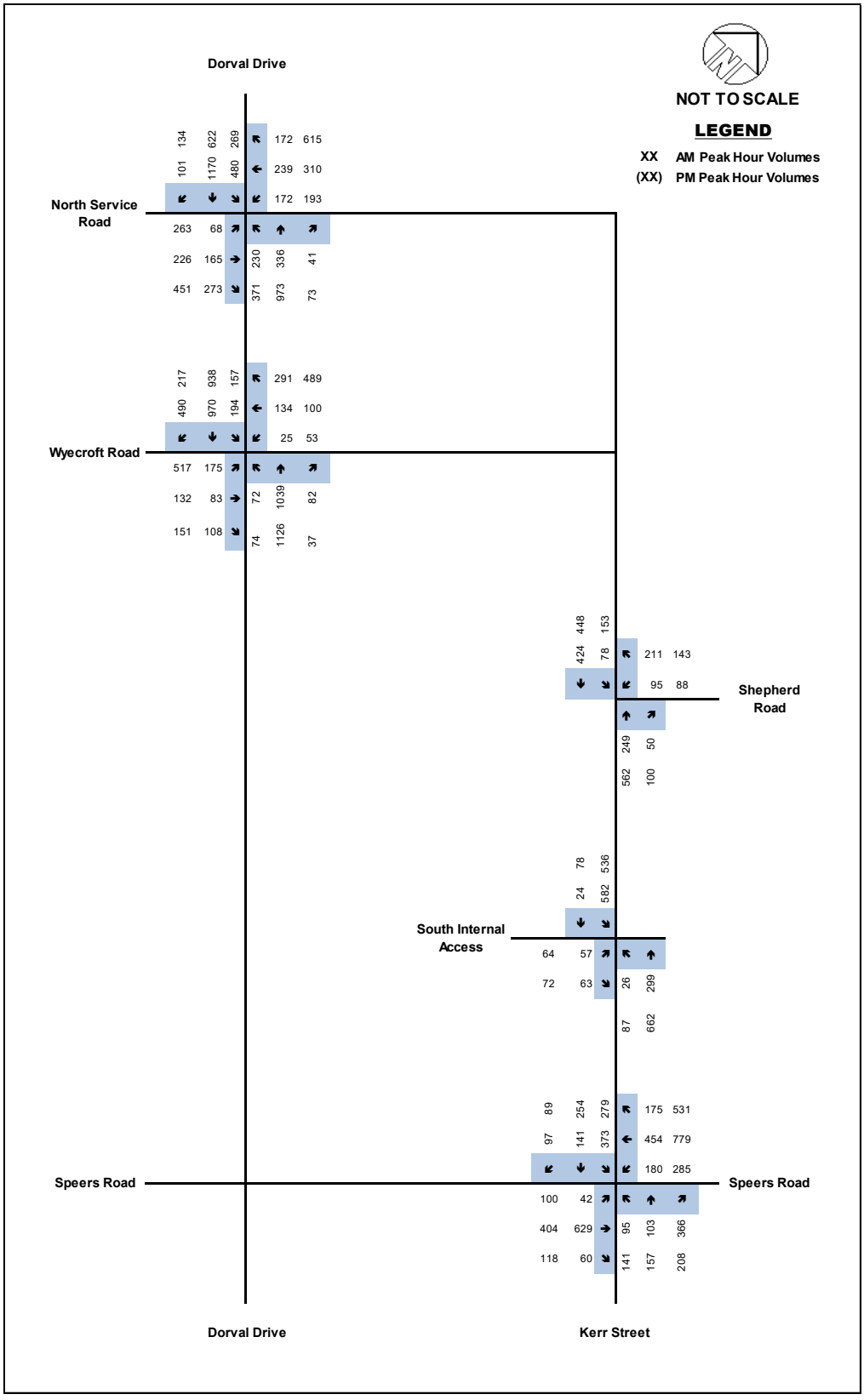


Figure 10 Future Total (2021) Traffic Volumes

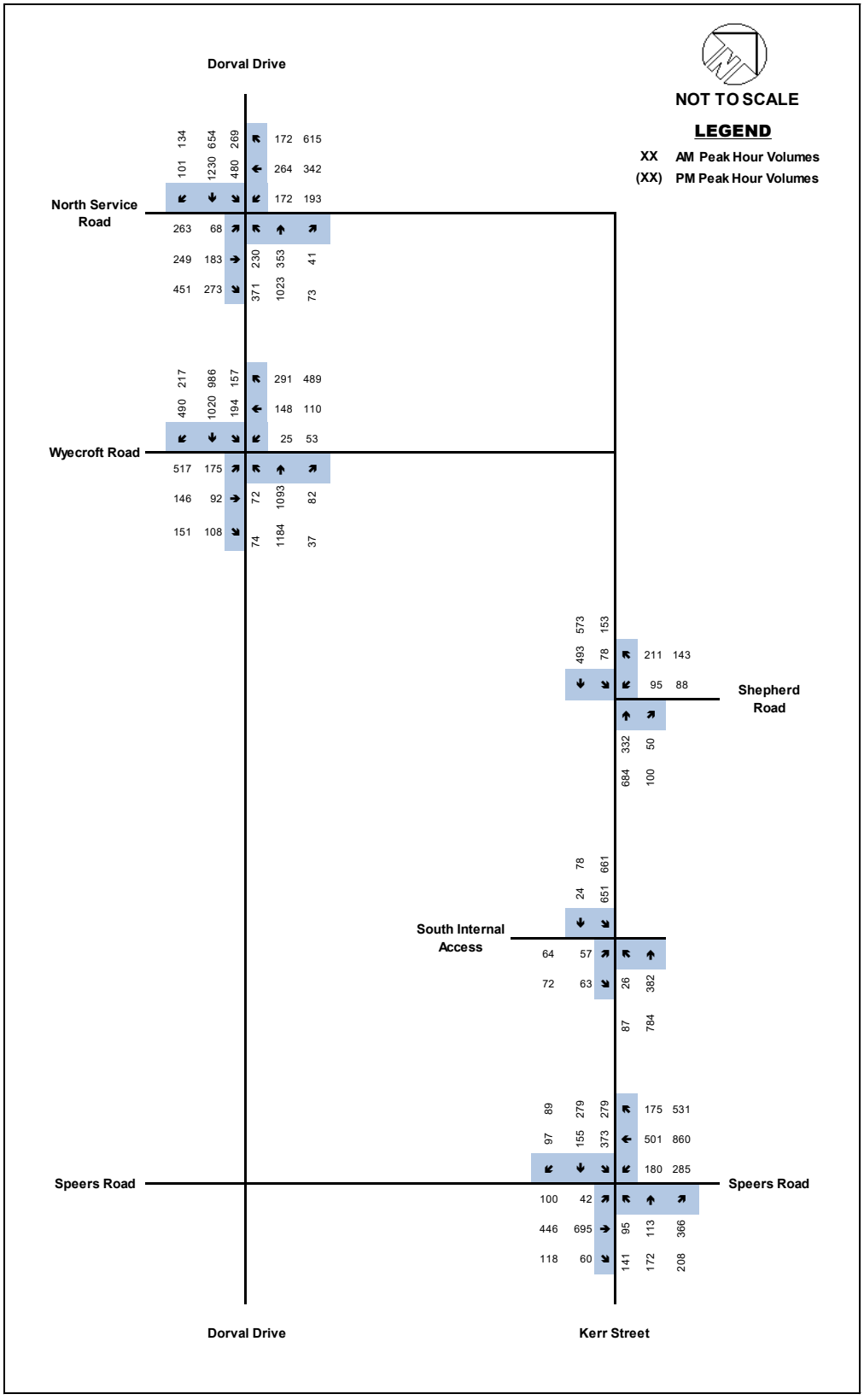


Figure 11 Future Total (2026) Traffic Volumes

7. Capacity Analysis

7.1 Calibration

GHD utilized signal timings plans provided by the Town and Region and peak hour intersection volumes collected in the field. As a result of the counts capturing volumes that were serviced by the intersection within a given timeframe based on the provided signal timing plan, the expectation is that the v/c ratio for existing conditions should be at 1.00 or below. A v/c ratio greater than 1.00 indicates a volume that theoretically cannot be serviced by the intersection within the given timeframe based on set signal timing plan. Therefore the analysis of existing conditions should not included movements reported v/c ratios greater then 1.00 in order to better reflect real-world operating conditions.

GHD identified the westbound shared through-right movement in the existing condition p.m. model to be a reported v/c ratio greater than 1.00. This can occur when the Synchro model is being overly conservative in its assessment of operations, with one more input variables requiring calibration. Therefore, GHD increased the saturated flow rates of these identified movements sufficiently enough so as to have resulting v/c ratio just below 1.00. This still generally represented at-capacity operating conditions for these movements, however it does not represent over-capacity conditions which as discussed is theoretically impossible under existing conditions.

7.2 Methodology

The capacity analysis identifies how well study intersections are currently operating and expected to operate in the future planning horizon year. The analysis contained within this report utilizes the Highway Capacity Manual (HCM) 2000 techniques within the Synchro Version 10 software package. The reported intersection volume-to-capacity (v/c) are a measure of the saturation volumes for each turning movement, while the level-of-service (LOS) are a measure of the average delay for each turning movement. Queuing characteristics are reported as the predicted 95th percentile queue for each movement.

The observed intersection peak hour factors (PHF) from the latest TMCs were applied to the study intersections, as this demonstrates a better representation of existing traffic conditions along each intersection.

In addition to the PHF, other parameters have been applied on appropriate sections within the roadway network. The following parameters include:

- Bus blockages;
- Pedestrian crossing volumes; and
- Heavy vehicle traffic percentage.

In accordance with the Region of Halton and Oakville's Transportation Impact Study guidelines, the analysis includes identification for all v/c ratios, Los indicators and 95th percentile queue lengths for all movements at all study intersections. Critical intersections and movements shall be highlighted (in **bold**). 'Critical' intersections and movements for a signalized intersections include:

- V/C ratios for overall intersections operations increase to 0.85 or above;
- V/C ratios for individual through or turning movements increase to 1.00 or higher; or
- Queue length for individual movements that are projected to, or exceed, the storage length.

The following tables summarize the capacity results for the site related key movements at the study intersections during the weekday am and pm peak hours. Raw synchro report are provided in **Appendix C**.

7.3 Dorval Drive & North Service Road West

Table 2 presents the findings of the capacity analysis for the intersection of Ontario Street at Laurier Avenue.

Table 2 Capacity Analysis for Dorval Drive at North Service Road West

Traffic Condition	Movement v/c (LOS) 95th Percentile Queue	
	AM Peak Hour	PM Peak Hour
Existing 2018	Overall 0.66 (D) EBL = 0.28 (D)15m EBT = 0.35 (D)30m EBR = 0.41 (D)40m WBL = 0.5 (D)35m WBT = 0.41 (D)40m WBR = 0.12 (D)20m NBL = 0.53 (D)40m NBT = 0.28 (C)55m NBR = 0.03 (C)5m SBL = 0.61 (D)80m SBTR = 0.8 (C)225m	Overall 0.78 (D) EBL = 0.66 (**E**)45m EBT = 0.19 (C)30m EBR = 0.52 (C)70m WBL = 0.5 (D)35m WBT = 0.26 (C)40m WBR = 0.89 (**E**)155m NBL = 0.71 (D)60m NBT = 0.76 (D)150m NBR = 0.13 (D)30m SBL = 0.63 (D)45m SBTR = 0.66 (D)105m
Future Background 2021	Overall 0.67 (D) EBL = 0.28 (D)15m EBT = 0.36 (D)30m EBR = 0.41 (D)40m WBL = 0.5 (D)35m WBT = 0.42 (D)40m WBR = 0.12 (D)20m NBL = 0.53 (D)40m NBT = 0.28 (C)55m NBR = 0.03 (C)5m SBL = 0.61 (D)80m SBTR = 0.82 (C)230m	Overall 0.79 (D) EBL = 0.67 (**E**)45m EBT = 0.2 (C)30m EBR = 0.53 (C)70m WBL = 0.5 (D)35m WBT = 0.27 (C)40m WBR = 0.88 (**E**)155m NBL = 0.71 (D)60m NBT = 0.77 (D)155m NBR = 0.13 (D)30m SBL = 0.63 (D)45m SBTR = 0.67 (D)105m
Future Total 2021	Overall 0.67 (D) EBL = 0.28 (D)15m EBT = 0.36 (D)30m EBR = 0.41 (D)40m WBL = 0.5 (D)35m	Overall 0.79 (D) EBL = 0.68 (**E**)45m EBT = 0.2 (C)30m EBR = 0.53 (C)70m WBL = 0.5 (D)35m

	WBT = 0.42 (D)40m WBR = 0.13 (D)20m NBL = 0.53 (D)40m NBT = 0.29 (C)60m NBR = 0.03 (C)5m SBL = 0.61 (D)80m SBTR = 0.82 (C)230m	WBT = 0.27 (C)40m WBR = 0.89 (**E**)160m NBL = 0.71 (D)60m NBT = 0.78 (D)155m NBR = 0.13 (D)25m SBL = 0.65 (D)50m SBTR = 0.68 (D)105m
Future Background 2026	Overall 0.70 (D) EBL = 0.28 (D)15m EBT = 0.39 (D)35m EBR = 0.41 (D)40m WBL = 0.5 (D)35m WBT = 0.46 (D)45m WBR = 0.12 (D)20m NBL = 0.53 (D)45m NBT = 0.3 (C)60m NBR = 0.03 (C)5m SBL = 0.61 (D)80m SBTR = 0.86 (C)250m	Overall 0.80 (D) EBL = 0.69 (**E**)45m EBT = 0.22 (C)25m EBR = 0.54 (C)70m WBL = 0.5 (D)35m WBT = 0.3 (C)45m WBR = 0.88 (**E**)155m NBL = 0.71 (D)60m NBT = 0.81 (D)160m NBR = 0.13 (D)25m SBL = 0.63 (D)45m SBTR = 0.7 (D)115m
Future Total 2026	Overall 0.70 (D) EBL = 0.28 (D)15m EBT = 0.39 (D)35m EBR = 0.41 (D)40m WBL = 0.5 (D)35m WBT = 0.46 (D)45m WBR = 0.13 (D)20m NBL = 0.53 (D)40m NBT = 0.3 (C)65m NBR = 0.03 (C)5m SBL = 0.61 (D)80m SBTR = **0.86** (C)250m	Overall 0.81 (D) EBL = 0.69 (**E**)45m EBT = 0.22 (C)35m EBR = 0.53 (C)70m WBL = 0.5 (D)35m WBT = 0.29 (C)45m WBR = 0.89 (**E**)160m NBL = 0.71 (D)60m NBT = 0.81 (D)160m NBR = 0.13 (D)25m SBL = 0.65 (D)50m SBTR = 0.71 (D)115m

Under existing conditions the intersection is expected to be operating satisfactorily during the analysed peak hours, with substantial reserve capacity, acceptable levels of delay and no queueing concerns.

Under all future conditions, this signalized intersection is expected to operate very well, with substantial reserve capacity, acceptable levels of delay, and no queueing concerns. The operational impact of the added site traffic is negligible, with any change in operations not expected to be identifiable from a driver's perspective.

Therefore there are geometric improvements recommended to this intersection in response to the subject development.

7.4 Dorval Drive & Wyecroft Road

Table 3 presents the findings of the capacity analysis for the intersection of Ontario Street at Laurier Avenue.

Table 3 Capacity Analysis for Dorval Drive at Wyecroft Road

Traffic Condition	Movement v/c (LOS) 95th Percentile Queue	
	AM Peak Hour	PM Peak Hour
Existing 2018	Overall 0.57 (C) EBL = 0.67 (**E**)40m EBTR = 0.2 (D)20m WBL = 0.1 (D)15m WBTR = 0.5 (D)40m NBL = 0.33 (B)15m NBTR = 0.49 (B)85m SBL = 0.48 (D)30m SBTR = 0.6 (C)150m	Overall 0.61 (D) EBL = 0.84 (**E**)105m EBTR = 0.18 (C)25m WBL = 0.17 (C)15m WBTR = **0.99**dr (D)60m NBL = 0.28 (B)15m NBTR = 0.6 (C)100m SBL = 0.37 (D)25m SBTR = 0.56 (D)115m
Future Background 2021	Overall 0.58 (C) EBL = 0.69 (**E**)40m EBTR = 0.21 (D)20m WBL = 0.1 (D)15m WBTR = 0.51 (D)40m NBL = 0.33 (B)15m NBTR = 0.5 (B)90m SBL = 0.48 (D)30m SBTR = 0.6 (C)155m	Overall 0.67 (D) EBL = 0.85 (**E**)105m EBTR = 0.18 (C)25m WBL = 0.17 (C)15m WBTR = **0.99**dr (D)60m NBL = 0.28 (B)15m NBTR = 0.6 (C)100m SBL = 0.37 (D)25m SBTR = 0.56 (D)115m
Future Total 2021	Overall 0.60 (C) EBL = 0.69 (**E**)40m EBTR = 0.19 (D)20m WBL = 0.1 (D)10m WBTR = 0.57 (D)45m NBL = 0.34 (B)15m NBTR = 0.52 (C)95m SBL = 0.49 (D)30m SBTR = 0.62 (C)155m	Overall 0.65 (D) EBL = 0.87 (**E**)105m EBTR = 0.18 (C)25m WBL = 0.16 (C)15m WBTR = **1.04**dr (D)65m NBL = 0.29 (B)20m NBTR = 0.65 (C)105m SBL = 0.41 (D)30m SBTR = 0.59 (D)115m
Future Background 2026	Overall 0.59 (C) EBL = 0.71 (**E**)40m EBTR = 0.22 (D)20m WBL = 0.1 (D)10m WBTR = 0.53 (D)40m NBL = 0.35 (B)15m NBTR = 0.52 (C)95m SBL = 0.48 (D)30m SBTR = 0.63 (C)160m	Overall 0.64 (D) EBL = 0.89 (**E**)105m EBTR = 0.2 (C)25m WBL = 0.17 (C)15m WBTR = **0.98**dr (D)60m NBL = 0.29 (B)15m NBTR = 0.63 (C)105m SBL = 0.37 (D)25m SBTR = 0.58 (D)120m
Future Total 2026	Overall 0.62 (C) EBL = 0.71 (**E**)40m EBTR = 0.21 (D)20m WBL = 0.1 (D)10m WBTR = 0.59 (D)50m NBL = 0.35 (B)15m NBTR = 0.54 (C)100m SBL = 0.49 (D)30m SBTR = 0.65 (C)160m	Overall 0.65 (C) EBL = 0.87 (**E**)105m EBTR = 0.18 (C)25m WBL = 0.16 (C)15m WBTR = **1.04**dr (D)65m NBL = 0.29 (B)20m NBTR = 0.65 (C)105m SBL = 0.41 (D)30m SBTR = 0.59 (D)115m

Under existing conditions the intersection is operating satisfactorily during the a.m. and p.m. peak hours, with substantial reserve capacity, acceptable levels of delay and no queueing concerns. However, the westbound shared through-right movement is nearing capacity with a v/c ratio of 0.99 LOS D.

With additional corridor growth, under 2026 future background conditions the intersection is expected to continue to operate with substantial reserve capacity, acceptable levels of delay, and no critical queuing concerns during the a.m. and p.m. peak hours. However, during the p.m. peak hour the westbound shared through-right movement continues to be nearing capacity with a v/c ratio of 0.99 LOS D.

Under future total traffic conditions, with the addition of site trips from the subject site, the a.m. peak hour continue to operate with acceptable v/c ratios and LOS for all movements. The p.m. peak hour however will continue to experience increased capacity issues and delays for the westbound shared through-right turn from Wyecroft to Dorval Drive which is expected to increase from a v/c ratio of 0.99 LOS D under future background conditions to a v/c ratio of 1.04 LOS D due to the additional traffic volumes.

The capacity issues at the intersection is primarily a result of future background capacity constraints, essentially being the high demand westbound right-turn movements towards the QEW. It is recommended that the Region further analyze the intersection, based on future lane configurations. This is a future background nearing capacity issue that requires migration prior to the intersection.

7.5 Kerr Street & Speers Road

Table 4 presents the findings of the capacity analysis for the intersection of Ontario Street at Laurier Avenue.

Table 4 Capacity Analysis for Kerr Street at Speers Road

Traffic Condition	Movement v/c (LOS) 95th Percentile Queue	
	AM Peak Hour	PM Peak Hour
Existing 2018	Overall 0.66 (C) EBL = 0.09 (B)10m EBTR = 0.51 (C)105m WBL = 0.51 (B)40m WBT = 0.29 (B)55m WBR = 0.12 (B)15m NBL = 0.35 (D)25m NBT = 0.4 (D)35m NBR = 0.48 (D)45m SBL = 0.87 (D)95m SBTR = 0.53 (D)65m	Overall 0.69 (C) EBL = 0.22 (B)20m EBTR = 0.41 (C)75m WBL = 0.63 (B)65m WBT = 0.5 (C)105m WBR = 0.36 (C)25m NBL = 0.55 (C)35m NBT = 0.38 (D)45m NBR = 0.15 (D)20m SBL = 0.62 (C)60m SBTR = 0.76 (D)90m
Future Background 2021	Overall 0.67 (C) EBL = 0.09 (B)10m EBTR = 0.53 (C)110m WBL = 0.52 (B)40m WBT = 0.3 (B)60m WBR = 0.12 (B)15m	Overall 0.70 (C) EBL = 0.23 (C)20m EBTR = 0.43 (C)75m WBL = 0.64 (B)65m WBT = 0.53 (C)110m WBR = 0.36 (C)25m

	NBL = 0.34 (D)25m NBT = 0.41 (D)40m NBR = 0.49 (D)45m SBL = 0.88 (D)95m SBTR = 0.55 (D)65m	NBL = 0.56 (C)35m NBT = 0.39 (D)50m NBR = 0.15 (D)20m SBL = 0.62 (C)60m SBTR = 0.77 (D)95m
Future Total 2021	Overall 0.7 (C) EBL = 0.12 (B)15m EBTR = 0.55 (C)110m WBL = 0.53 (B)40m WBT = 0.32 (B)60m WBR = 0.13 (B)15m NBL = 0.35 (D)25m NBT = 0.4 (D)40m NBR = 0.5 (D)45m SBL = 0.93 (**E**)105m SBTR = 0.62 (D)75m	Overall 0.73 (C) EBL = 0.37 (C)25m EBTR = 0.45 (C)75m WBL = 0.66 (C)65m WBT = 0.58 (C)115m WBR = 0.39 (C)30m NBL = 0.58 (C)35m NBT = 0.39 (D)50m NBR = 0.15 (D)20m SBL = 0.67 (C)65m SBTR = 0.81 (D)110m
Future Background 2026	Overall 0.75 (D) EBL = 0.1 (B)10 EBTR = 0.59 (C)130m WBL = 0.54 (B)40m WBT = 0.33 (B)65m WBR = 0.12 (B)15m NBL = 0.35 (D)25m NBT = 0.44 (D)40m NBR = 0.51 (D)45m SBL = 0.93 (**E**)95m SBTR = 0.61 (D)70m	Overall 0.77 (C) EBL = 0.27 (C)20m EBTR = 0.49 (C)85m WBL = 0.68 (C)65m WBT = 0.6 (C)125m WBR = 0.36 (C)25m NBL = 0.57 (C)35m NBT = 0.41 (D)50m NBR = 0.15 (D)20m SBL = 0.61 (C)60m SBTR = 0.79 (D)105m
Future Total 2026	Overall 0.70 (C) EBL = 0.13 (B)15m EBTR = 0.61 (C)130m WBL = 0.56 (B)40m WBT = 0.35 (B)65m WBR = 0.13 (B)15m NBL = 0.37 (D)25m NBT = 0.42 (D)40m NBR = 0.51 (D)50m SBL = 0.97 (**E**)110m SBTR = 0.67 (D)80m	Overall 0.73 (C) EBL = 0.42 (C)25 EBTR = 0.51 (C)85 WBL = 0.71 (C)65 WBT = 0.66 (C)130 WBR = 0.39 (C)30 NBL = 0.59 (C)35 NBT = 0.4 (D)55 NBR = 0.15 (D)20 SBL = 0.67 (C)65 SBTR = 0.83 (D)120

Under existing conditions the intersection is expected to be operating satisfactorily during the analysed peak hours, with substantial reserve capacity, acceptable levels of delay and no queueing concerns.

With additional corridor growth, under 2026 future background conditions the intersection is expected to continue to operate with substantial reserve capacity, acceptable levels of delay, and no critical queuing concerns during the a.m. and p.m. peak hours. However, during the a.m. peak hour the southbound left turn movement is reported to be nearing capacity with a v/c ratio of 0.93 LOS E.

Under future total traffic conditions, with the addition of site trips from the subject site, the p.m. peak hour continue to operate with acceptable v/c ratios and LOS for all movements. The a.m. peak hour however will continue to experience increased capacity issues and delays for the southbound left turn movement which is expected to increase from a v/c ratio of 0.93 LOS E under future background

conditions to a v/c ratio of 0.97 LOS E due to the additional traffic volumes. The operational impact of the added site traffic is expected to have a nominal impact, and is generally not expected to be identifiable from a driver's perspective.

Therefore there are geometric improvements recommended to this intersection in response to the subject development.

7.6 Kerr Street & Shepherd Road

Table 5 presents the findings of the capacity analysis for the intersection of Ontario Street at Laurier Avenue.

Table 5 Capacity Analysis for Kerr Street at Shepherd Road

Traffic Condition	Movement v/c (LOS) 95th Percentile Queue	
	AM Peak Hour	PM Peak Hour
Existing 2018	Overall 0.39 (D) WBLR = 0.56 (C)40m NBTR = 0.14 (A)15m SBTL = 0.28 (A)30m	Overall 0.45 (A) WBLR = 0.46 (C)35m NBTR = 0.3 (A)30m SBTL = 0.39 (A)35m
Future Background 2021	Overall 0.40 (B) WBLR = 0.56 (C)40m NBTR = 0.15 (A)15m SBTL = 0.29 (A)30m	Overall 0.46 (A) WBLR = 0.46 (C)35m NBTR = 0.31 (A)35m SBTL = 0.4 (A)35m
Future Total 2021	Overall 0.40 (B) WBLR = 0.56 (C)40m NBTR = 0.15 (A)15m SBTL = 0.29 (A)30m	Overall 0.46 (A) WBLR = 0.46 (C)35m NBTR = 0.31 (A)35m SBTL = 0.4 (A)35m
Future Background 2026	Overall 0.42 (B) WBLR = 0.56 (C)40m NBTR = 0.16 (A)20m SBTL = 0.31 (A)35m	Overall 0.49 (A) WBLR = 0.46 (C)30m NBTR = 0.33 (A)35m SBTL = 0.44 (A)40m
Future Total 2026	Overall 0.42 (B) WBLR = 0.56 (C)40m NBTR = 0.16 (A)20m SBTL = 0.31 (A)35m	Overall 0.49 (A) WBLR = 0.46 (C)30m NBTR = 0.33 (A)35m SBTL = 0.44 (A)40m

Under existing and future conditions, this intersection is expected to operate very well, with substantial reserve capacity, acceptable levels of delay, and no queueing concerns. The operational impact of the added site traffic is negligible, with any change in operations not expected to be identifiable from a driver's perspective.

Therefore there are geometric improvements recommended to this intersection in response to the subject development.

7.7 Kerr Street & Site Access

Table 6 presents the findings of the capacity analysis for the intersection of Ontario Street at Laurier Avenue.

Table 6 Capacity Analysis for Kerr Street at Site Access

Traffic Condition	Movement v/c (LOS) 95th Percentile Queue	
	AM Peak Hour	PM Peak Hour
Future Total 2021	Overall 0.28 (C) EBLR = 0.28 (C)10m NBTL = 0.03 (A)5m	Overall 0.49 (D) EBLR = 0.49 (D)20m NBTL = 0.1 (A)5m
Future Total 2026	Overall 0.30 (C) EBLR = 0.3 (C)10m NBTL = 0.03 (A)5m	Overall 0.53 (D) EBLR = 0.53 (D)25m NBTL = 0.1 (A)5m

Under future total traffic conditions, the site driveway is expected to operate very well, with substantial reserve capacity, acceptable levels of delay, and no queueing concerns.

8. Safety Analysis

8.1 Sightline Assessment

A review of the existing access on Kerr Street has found that sightline issues are not expected. Kerr Street has a generally straight horizontal alignment and generally level vertical alignment without any significant curves or grade changes that could result in reduced sightlines.

8.2 Site Circulation Review

GHD undertook a Vehicle Swept Path Analysis to assess the site's ability to accommodate the required turning movements of a TAC Passenger Vehicle, MSU Loading Truck and Garbage Waste Collection Truck, as per TAC design guidelines. The figures illustrating the design vehicles used in the review and their pathways through the site are provided in **Appendix D**. The proposed site plan has been found acceptable in terms of vehicular flow and parking space accessibility, and therefore conclude that the current site plan can accommodate the intended design vehicles.

9. Traffic Demand Management Considerations (TDM)

TDM refers to a variety of strategies to reduce congestion, minimize the number of single-occupant vehicles, encourage non-auto modes of travel, and reduce vehicle dependency to create a sustainable transportation system. TDM strategies have multiple benefits including the following:

- Reduced auto-related emissions to improve air quality.
- Decreased traffic congestion to reduce travel time.
- Increased travel options for businesses and commuters.
- Reduced personal transportation costs and energy consumptions.
- Support Provincial smart growth objectives.

The combined benefits listed above will assist in creating a more active and liveable community through improvements to overall active transportation standards for the local businesses and surrounding community.

9.1 Existing TDM Opportunities

Pedestrian sidewalks are currently provided on the both sides of Kerr Street up until the CN railway.

The subject site has multiple opportunities to access the surrounding transit system. Oakville Transit provides transit via Routes #4, #10, #14, #14A, #15, #18, and #28. There is currently a bus terminal in close proximity located at Oakville GO station, which provide many additional transit routes for passengers.

9.2 Proposed TDM Measures

As this development continues further through the planning stages, Transportation Demand Management measures will be considered to further reduce the dependency to automobile ownership depending on the specific land use proposed. The land owner will continue to work with the Town to preserve streets and public space for a more balanced transportation system.

Appendices

Appendix A
Traffic Data

Ontario Traffic Inc.

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 7:45:00
To: 8:45:00

Municipality: Oakville
Site #: 1908500001
Intersection: Speers Rd & Kerr St
TFR File #: 1
Count date: 2-Apr-19

Weather conditions:

Person(s) who counted:

**** Signalized Intersection ****

Major Road: Speers Rd runs W/E

North Leg Total: 832
North Entering: 543
North Peds: 16
Peds Cross: ⋈

Cyclists	0	0	0	0
Trucks	10	12	22	44
Cars	59	117	323	499
Totals	69	129	345	

Cyclists	0
Trucks	32
Cars	257
Totals	289

East Leg Total: 2095
East Entering: 779
East Peds: 37
Peds Cross: ⋈

Kerr St

Cyclists	Trucks	Cars	Totals
0	80	520	600

Cars	Trucks	Cyclists	Totals
148	15	0	163
371	65	0	436
157	23	0	180
676	103	0	

Speers Rd

N
W E
S

Cyclists	Trucks	Cars	Totals
0	8	22	30
0	60	545	605
0	15	45	60
0	83	612	

Speers Rd

Cars	Trucks	Cyclists	Totals
1214	102	0	1316

Kerr St

Peds Cross: ⋈
West Peds: 27
West Entering: 695
West Leg Total: 1295

Cars	319
Trucks	50
Cyclists	0
Totals	369

Cars	90	87	346	523
Trucks	5	9	20	34
Cyclists	0	0	0	0
Totals	95	96	366	

Peds Cross: ⋈
South Peds: 13
South Entering: 557
South Leg Total: 926

Comments

Ontario Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 18:00:00

One Hour Peak
From: 17:00:00
To: 18:00:00

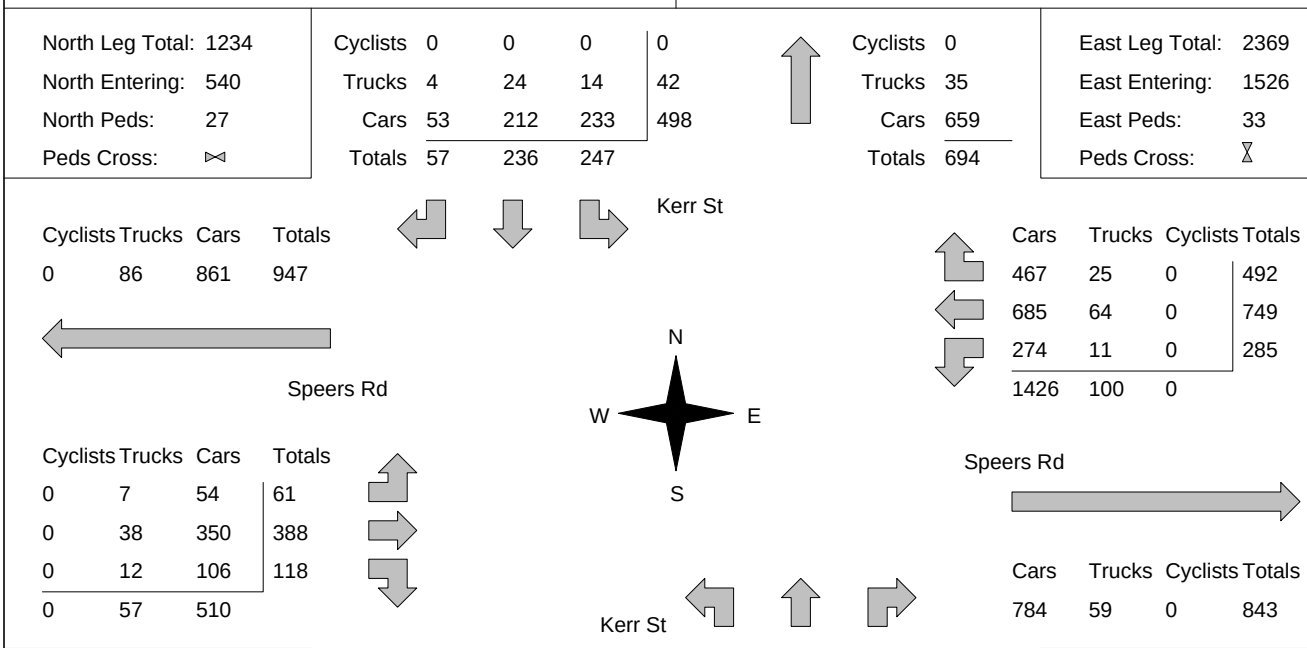
Municipality: Oakville
Site #: 1908500001
Intersection: Speers Rd & Kerr St
TFR File #: 1
Count date: 2-Apr-19

Weather conditions:

Person(s) who counted:

**** Signalized Intersection ****

Major Road: Speers Rd runs W/E



Comments

Ontario Traffic Inc.

Total Count Diagram

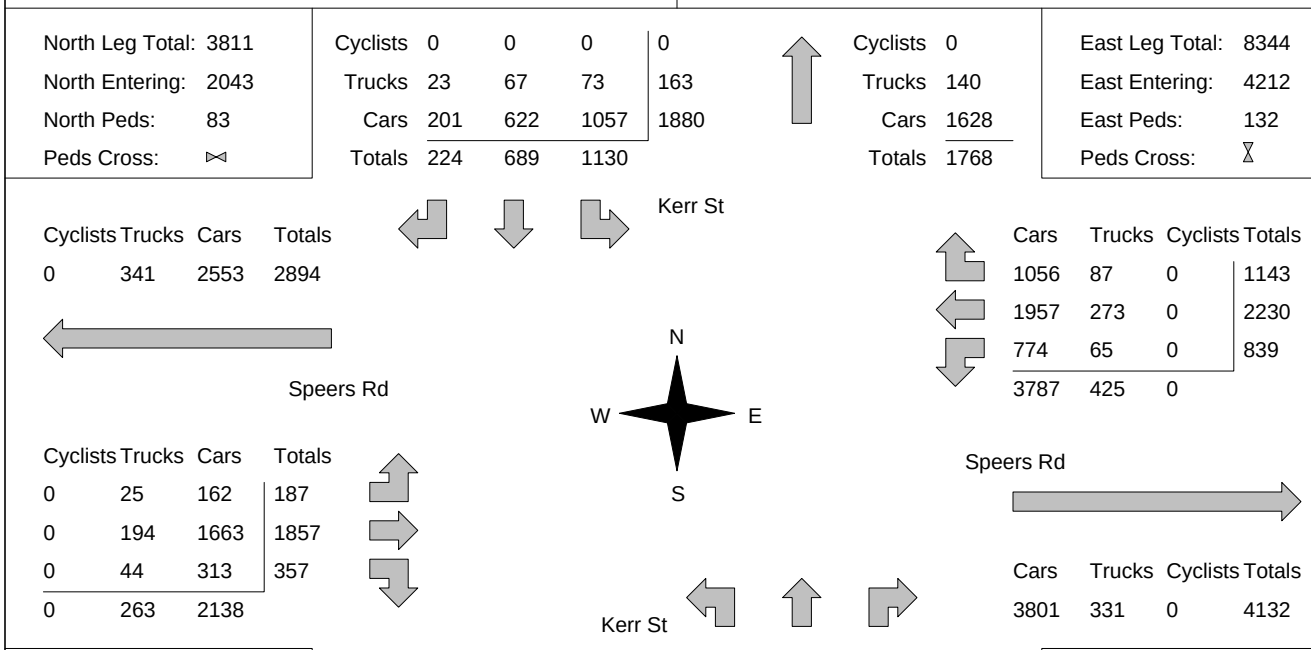
Municipality: Oakville
Site #: 1908500001
Intersection: Speers Rd & Kerr St
TFR File #: 1
Count date: 2-Apr-19

Weather conditions:

Person(s) who counted:

**** Signalized Intersection ****

Major Road: Speers Rd runs W/E



Comments

Ontario Traffic Inc.
Traffic Count Summary

Intersection: Speers Rd & Kerr St | **Count Date:** 2-Apr-19 | **Municipality:** Oakville

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	North/South Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	329	87	25	441	5	880
9:00:00	293	145	73	511	21	1065
16:00:00	0	0	0	0	0	0
17:00:00	261	221	69	551	30	1091
18:00:00	247	236	57	540	27	1030
Totals:	1130	689	224	2043	83	4066

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	71	58	310	439	6
9:00:00	109	98	347	554	16
16:00:00	0	0	0	0	0
17:00:00	119	141	280	540	27
18:00:00	141	141	208	490	18
Totals:	440	438	1145	2023	67

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	East/West Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	111	247	87	445	26	1013
9:00:00	188	486	174	848	40	1502
16:00:00	0	0	0	0	0	0
17:00:00	255	748	390	1393	33	2005
18:00:00	285	749	492	1526	33	2093
Totals:	839	2230	1143	4212	132	6613

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	18	502	48	568	7
9:00:00	33	554	67	654	35
16:00:00	0	0	0	0	0
17:00:00	75	413	124	612	59
18:00:00	61	388	118	567	50
Totals:	187	1857	357	2401	151

Calculated Values for Traffic Crossing Major Street

Hours Ending:	0:00	0:00	7:00	8:00	9:00	16:00	17:00	18:00
Crossing Values:	0	0	0	520	622	0	693	707

Ontario Traffic Inc.

Count Date: 2-Apr-19 Site #: 1908500001

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Cyclists - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	59	59	17	17	1	1	4	4	1	1	1	1	0	0	0	0	0	0	0	0
7:30:00	133	74	38	21	3	2	5	1	6	5	2	1	0	0	0	0	0	0	1	1
7:45:00	212	79	51	13	11	8	12	7	7	1	3	1	0	0	0	0	0	0	4	3
8:00:00	312	100	76	25	21	10	17	5	11	4	4	1	0	0	0	0	0	0	5	1
8:15:00	408	96	108	32	38	17	26	9	12	1	7	3	0	0	0	0	0	0	9	4
8:30:00	491	83	136	28	54	16	31	5	14	2	11	4	0	0	0	0	0	0	18	9
8:45:00	535	44	168	32	70	16	34	3	19	5	13	2	0	0	0	0	0	0	20	2
9:00:00	584	49	208	40	82	12	38	4	24	5	16	3	0	0	0	0	0	0	26	6
9:02:00	584	0	208	0	82	0	38	0	24	0	16	0	0	0	0	0	0	0	26	0
16:00:00	584	0	208	0	82	0	38	0	24	0	16	0	0	0	0	0	0	0	26	0
16:15:00	650	66	262	54	100	18	47	9	28	4	17	1	0	0	0	0	0	0	31	5
16:30:00	714	64	294	32	118	18	50	3	32	4	18	1	0	0	0	0	0	0	41	10
16:45:00	771	57	354	60	134	16	56	6	37	5	19	1	0	0	0	0	0	0	47	6
17:00:00	824	53	410	56	148	14	59	3	43	6	19	0	0	0	0	0	0	0	56	9
17:15:00	893	69	470	60	164	16	63	4	46	3	20	1	0	0	0	0	0	0	59	3
17:30:00	943	50	507	37	174	10	66	3	50	4	20	0	0	0	0	0	0	0	64	5
17:45:00	1001	58	568	61	188	14	70	4	60	10	20	0	0	0	0	0	0	0	74	10
18:00:00	1057	56	622	54	201	13	73	3	67	7	23	3	0	0	0	0	0	0	83	9
18:15:00	1057	0	622	0	201	0	73	0	67	0	23	0	0	0	0	0	0	0	83	0
18:15:45	1057	0	622	0	201	0	73	0	67	0	23	0	0	0	0	0	0	0	83	0

Ontario Traffic Inc.

Count Date: 2-Apr-19 Site #: 1908500001

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Cyclists - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	13	13	24	24	11	11	0	0	12	12	6	6	0	0	0	0	0	0	4	4
7:30:00	26	13	61	37	27	16	4	4	24	12	8	2	0	0	0	0	0	0	7	3
7:45:00	59	33	118	57	45	18	7	3	38	14	13	5	0	0	0	0	0	0	24	17
8:00:00	93	34	197	79	70	25	18	11	50	12	17	4	0	0	0	0	0	0	26	2
8:15:00	129	36	282	85	114	44	23	5	63	13	21	4	0	0	0	0	0	0	47	21
8:30:00	166	37	389	107	159	45	25	2	80	17	22	1	0	0	0	0	0	0	55	8
8:45:00	216	50	489	100	193	34	30	5	103	23	28	6	0	0	0	0	0	0	61	6
9:00:00	260	44	610	121	229	36	39	9	123	20	32	4	0	0	0	0	0	0	66	5
9:02:00	260	0	610	0	229	0	39	0	123	0	32	0	0	0	0	0	0	0	66	0
16:00:00	260	0	610	0	229	0	39	0	123	0	32	0	0	0	0	0	0	0	66	0
16:15:00	317	57	796	186	322	93	43	4	148	25	40	8	0	0	0	0	0	0	75	9
16:30:00	380	63	960	164	391	69	47	4	175	27	48	8	0	0	0	0	0	0	81	6
16:45:00	441	61	1112	152	505	114	49	2	190	15	56	8	0	0	0	0	0	0	90	9
17:00:00	500	59	1272	160	589	84	54	5	209	19	62	6	0	0	0	0	0	0	99	9
17:15:00	568	68	1455	183	714	125	58	4	229	20	68	6	0	0	0	0	0	0	107	8
17:30:00	640	72	1601	146	801	87	60	2	245	16	74	6	0	0	0	0	0	0	114	7
17:45:00	704	64	1770	169	922	121	62	2	255	10	77	3	0	0	0	0	0	0	121	7
18:00:00	774	70	1957	187	1056	134	65	3	273	18	87	10	0	0	0	0	0	0	132	11
18:15:00	774	0	1957	0	1056	0	65	0	273	0	87	0	0	0	0	0	0	0	132	0
18:15:45	774	0	1957	0	1056	0	65	0	273	0	87	0	0	0	0	0	0	0	132	0

Ontario Traffic Inc.

Count Date: 2-Apr-19 **Site #: 1908500001**

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Cyclists - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	13	13	7	7	54	54	1	1	0	0	3	3	0	0	0	0	0	0	0	0
7:30:00	24	11	15	8	142	88	1	0	1	1	9	6	0	0	0	0	0	0	0	0
7:45:00	36	12	37	22	207	65	7	6	3	2	13	4	0	0	0	0	0	0	5	5
8:00:00	62	26	54	17	295	88	9	2	4	1	15	2	0	0	0	0	0	0	6	1
8:15:00	90	28	76	22	393	98	11	2	5	1	23	8	0	0	0	0	0	0	8	2
8:30:00	112	22	106	30	480	87	11	0	10	5	31	8	0	0	0	0	0	0	9	1
8:45:00	126	14	124	18	553	73	12	1	12	2	33	2	0	0	0	0	0	0	18	9
9:00:00	164	38	141	17	618	65	16	4	15	3	39	6	0	0	0	0	0	0	22	4
9:02:00	164	0	141	0	618	0	16	0	15	0	39	0	0	0	0	0	0	0	22	0
16:00:00	164	0	141	0	618	0	16	0	15	0	39	0	0	0	0	0	0	0	22	0
16:15:00	194	30	182	41	682	64	21	5	16	1	46	7	0	0	0	0	0	0	31	9
16:30:00	218	24	214	32	746	64	22	1	17	1	49	3	0	0	0	0	0	0	39	8
16:45:00	244	26	238	24	817	71	25	3	20	3	53	4	0	0	0	0	0	0	44	5
17:00:00	272	28	272	34	880	63	27	2	25	5	57	4	0	0	0	0	0	0	49	5
17:15:00	295	23	320	48	918	38	31	4	25	0	58	1	0	0	0	0	0	0	54	5
17:30:00	322	27	353	33	958	40	36	5	28	3	60	2	0	0	0	0	0	0	58	4
17:45:00	367	45	387	34	1018	60	40	4	28	0	64	4	0	0	0	0	0	0	60	2
18:00:00	395	28	410	23	1081	63	45	5	28	0	64	0	0	0	0	0	0	0	67	7
18:15:00	395	0	410	0	1081	0	45	0	28	0	64	0	0	0	0	0	0	0	67	0
18:15:45	395	0	410	0	1081	0	45	0	28	0	64	0	0	0	0	0	0	0	67	0

Ontario Traffic Inc.

Count Date: 2-Apr-19 Site #: 1908500001

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Cyclists - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	3	3	80	80	11	11	1	1	13	13	1	1	0	0	0	0	0	0	3	3
7:30:00	5	2	199	119	22	11	1	0	20	7	2	1	0	0	0	0	0	0	4	1
7:45:00	9	4	292	93	26	4	1	0	36	16	3	1	0	0	0	0	0	0	6	2
8:00:00	17	8	451	159	38	12	1	0	51	15	10	7	0	0	0	0	0	0	7	1
8:15:00	25	8	577	126	45	7	5	4	67	16	12	2	0	0	0	0	0	0	11	4
8:30:00	27	2	746	169	59	14	7	2	82	15	15	3	0	0	0	0	0	0	18	7
8:45:00	31	4	837	91	71	12	9	2	96	14	18	3	0	0	0	0	0	0	33	15
9:00:00	42	11	945	108	93	22	9	0	111	15	22	4	0	0	0	0	0	0	42	9
9:02:00	42	0	945	0	93	0	9	0	111	0	22	0	0	0	0	0	0	0	42	0
16:00:00	42	0	945	0	93	0	9	0	111	0	22	0	0	0	0	0	0	0	42	0
16:15:00	61	19	1027	82	125	32	14	5	122	11	25	3	0	0	0	0	0	0	66	24
16:30:00	77	16	1124	97	150	25	16	2	133	11	27	2	0	0	0	0	0	0	80	14
16:45:00	97	20	1202	78	186	36	17	1	145	12	29	2	0	0	0	0	0	0	91	11
17:00:00	108	11	1313	111	207	21	18	1	156	11	32	3	0	0	0	0	0	0	101	10
17:15:00	126	18	1400	87	241	34	18	0	168	12	34	2	0	0	0	0	0	0	119	18
17:30:00	137	11	1493	93	266	25	20	2	178	10	37	3	0	0	0	0	0	0	125	6
17:45:00	148	11	1577	84	284	18	24	4	185	7	39	2	0	0	0	0	0	0	136	11
18:00:00	162	14	1663	86	313	29	25	1	194	9	44	5	0	0	0	0	0	0	151	15
18:15:00	162	0	1663	0	313	0	25	0	194	0	44	0	0	0	0	0	0	0	151	0
18:15:45	162	0	1663	0	313	0	25	0	194	0	44	0	0	0	0	0	0	0	151	0

Ontario Traffic Inc.

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 7:45:00
To: 8:45:00

Municipality: Oakville
Site #: 1908500002
Intersection: Dorval Dr & Wyecroft Rd
TFR File #: 1
Count date: 2-Apr-19

Weather conditions:

Person(s) who counted:

**** Signalized Intersection ****

Major Road: Dorval Dr runs N/S

North Leg Total:	3063
North Entering:	1628
North Peds:	0
Peds Cross:	⋈

Cyclists	0	0	0	0
Trucks	80	128	24	232
Cars	410	823	163	1396
Totals	490	951	187	

Cyclists	0
Trucks	196
Cars	1239
Totals	1435

East Leg Total:	744
East Entering:	395
East Peds:	0
Peds Cross:	⧖

Dorval Dr

Cyclists	Trucks	Cars	Totals
0	115	576	691

Wyecroft Rd

Cars	Trucks	Cyclists	Totals
218	23	0	241
105	24	0	129
21	4	0	25
344	51	0	

N
W E
S

Cyclists	Trucks	Cars	Totals
0	48	127	175
0	17	63	80
0	17	91	108
0	82	281	

Wyecroft Rd

Cars	Trucks	Cyclists	Totals
294	55	0	349

Dorval Dr

Peds Cross:	⧖
West Peds:	0
West Entering:	363
West Leg Total:	1054

Cars	935			
Trucks	149			
Cyclists	0			
Totals	1084			

Cars	61	894	68	1023
Trucks	11	125	14	150
Cyclists	0	0	0	0
Totals	72	1019	82	

Peds Cross:	⋈
South Peds:	5
South Entering:	1173
South Leg Total:	2257

Comments

Ontario Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 18:00:00

One Hour Peak
From: 16:30:00
To: 17:30:00

Municipality: Oakville
Site #: 1908500002
Intersection: Dorval Dr & Wyecroft Rd
TFR File #: 1
Count date: 2-Apr-19

Weather conditions:

Person(s) who counted:

**** Signalized Intersection ****

Major Road: Dorval Dr runs N/S

North Leg Total: 3324
North Entering: 1270
North Peds: 1
Peds Cross: ⋈

Cyclists	0	0	0	0
Trucks	31	83	12	126
Cars	186	837	121	1144
Totals	217	920	133	

Cyclists	0
Trucks	209
Cars	1845
Totals	2054

East Leg Total: 879
East Entering: 582
East Peds: 2
Peds Cross: ⧖

Dorval Dr

Cyclists	Trucks	Cars	Totals
0	47	340	387

Wyecroft Rd

Cyclists	Trucks	Cars	Totals
0	70	447	517
0	10	117	127
0	9	142	151
0	89	706	

Cars	Trucks	Cyclists	Totals
399	34	0	433
86	10	0	96
45	8	0	53
530	52	0	

N
W E
S

Wyecroft Rd

Cars	Trucks	Cyclists	Totals
273	24	0	297

Dorval Dr

Peds Cross: ⧖
West Peds: 1
West Entering: 795
West Leg Total: 1182

Cars	68	999	35	1102
Trucks	6	105	2	113
Cyclists	0	0	0	0
Totals	74	1104	37	

Cars	1024
Trucks	100
Cyclists	0
Totals	1124

Peds Cross: ⋈
South Peds: 2
South Entering: 1215
South Leg Total: 2339

Comments

Ontario Traffic Inc.

Total Count Diagram

Municipality: Oakville
Site #: 1908500002
Intersection: Dorval Dr & Wyecroft Rd
TFR File #: 1
Count date: 2-Apr-19

Weather conditions:

Person(s) who counted:

**** Signalized Intersection ****

Major Road: Dorval Dr runs N/S

North Leg Total: 11739
North Entering: 5455
North Peds: 4
Peds Cross: ⋈

Cyclists	0	0	0	0
Trucks	192	419	58	669
Cars	1069	3190	527	4786
Totals	1261	3609	585	

Cyclists	0
Trucks	780
Cars	5504
Totals	6284

East Leg Total: 2827
East Entering: 1681
East Peds: 3
Peds Cross: ⧖

Dorval Dr

Cyclists	Trucks	Cars	Totals
0	290	1630	1920

Wyecroft Rd

Cars	Trucks	Cyclists	Totals
1040	105	0	1145
314	64	0	378
136	22	0	158
1490	191	0	

N
W E
S

Cyclists	Trucks	Cars	Totals
0	217	1024	1241
0	49	295	344
0	46	396	442
0	312	1715	

Wyecroft Rd

Cars	Trucks	Cyclists	Totals
1011	135	0	1146

Dorval Dr

Peds Cross: ⧖
West Peds: 6
West Entering: 2027
West Leg Total: 3947

Cars	3722			
Trucks	487			
Cyclists	0			
Totals	4209			

Cars	247	3440	189	3876
Trucks	34	458	28	520
Cyclists	0	0	0	0
Totals	281	3898	217	

Peds Cross: ⋈
South Peds: 13
South Entering: 4396
South Leg Total: 8605

Comments

Ontario Traffic Inc.
Traffic Count Summary

Intersection: Dorval Dr & Wyecroft Rd | **Count Date:** 2-Apr-19 | **Municipality:** Oakville

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	North/South Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	118	762	348	1228	1	2077
9:00:00	190	963	501	1654	0	2801
16:00:00	0	0	0	0	0	0
17:00:00	143	909	241	1293	3	2470
18:00:00	134	975	171	1280	0	2503
Totals:	585	3609	1261	5455	4	9851

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	44	751	54	849	0
9:00:00	82	981	84	1147	8
16:00:00	0	0	0	0	0
17:00:00	71	1062	44	1177	4
18:00:00	84	1104	35	1223	1
Totals:	281	3898	217	4396	13

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	East/West Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	21	95	169	285	1	579
9:00:00	29	114	247	390	0	758
16:00:00	0	0	0	0	0	0
17:00:00	57	97	351	505	2	1228
18:00:00	51	72	378	501	0	1143
Totals:	158	378	1145	1681	3	3708

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	138	64	92	294	1
9:00:00	190	81	97	368	0
16:00:00	0	0	0	0	0
17:00:00	500	105	118	723	4
18:00:00	413	94	135	642	1
Totals:	1241	344	442	2027	6

Calculated Values for Traffic Crossing Major Street

Hours Ending:	0:00	0:00	7:00	8:00	9:00	16:00	17:00	18:00
Crossing Values:	0	0	0	255	341	0	669	559

Ontario Traffic Inc.

Count Date: 2-Apr-19 Site #: 1908500002

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Cyclists - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	13	13	94	94	61	61	3	3	26	26	18	18	0	0	0	0	0	0	0	0
7:30:00	36	23	240	146	119	58	4	1	38	12	32	14	0	0	0	0	0	0	1	1
7:45:00	69	33	426	186	193	74	8	4	77	39	38	6	0	0	0	0	0	0	1	0
8:00:00	99	30	652	226	285	92	19	11	110	33	63	25	0	0	0	0	0	0	1	0
8:15:00	136	37	883	231	387	102	25	6	146	36	79	16	0	0	0	0	0	0	1	0
8:30:00	187	51	1059	176	489	102	26	1	176	30	99	20	0	0	0	0	0	0	1	0
8:45:00	232	45	1249	190	603	114	32	6	205	29	118	19	0	0	0	0	0	0	1	0
9:00:00	272	40	1489	240	719	116	36	4	236	31	130	12	0	0	0	0	0	0	1	0
9:01:16	272	0	1489	0	719	0	36	0	236	0	130	0	0	0	0	0	0	0	1	0
16:00:00	272	0	1489	0	719	0	36	0	236	0	130	0	0	0	0	0	0	0	1	0
16:15:00	310	38	1692	203	768	49	37	1	263	27	142	12	0	0	0	0	0	0	1	0
16:30:00	344	34	1865	173	812	44	42	5	287	24	151	9	0	0	0	0	0	0	3	2
16:45:00	379	35	2113	248	871	59	46	4	306	19	161	10	0	0	0	0	0	0	4	1
17:00:00	403	24	2302	189	922	51	48	2	332	26	168	7	0	0	0	0	0	0	4	0
17:15:00	431	28	2504	202	968	46	52	4	353	21	176	8	0	0	0	0	0	0	4	0
17:30:00	465	34	2702	198	998	30	54	2	370	17	182	6	0	0	0	0	0	0	4	0
17:45:00	492	27	2963	261	1030	32	57	3	395	25	187	5	0	0	0	0	0	0	4	0
18:00:00	527	35	3190	227	1069	39	58	1	419	24	192	5	0	0	0	0	0	0	4	0
18:15:00	527	0	3190	0	1069	0	58	0	419	0	192	0	0	0	0	0	0	0	4	0
18:15:59	527	0	3190	0	1069	0	58	0	419	0	192	0	0	0	0	0	0	0	4	0

Ontario Traffic Inc.

Count Date: 2-Apr-19 Site #: 1908500002

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Cyclists - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	4	4	11	11	27	27	0	0	3	3	6	6	0	0	0	0	0	0	0	0
7:30:00	8	4	28	17	60	33	1	1	9	6	12	6	0	0	0	0	0	0	1	1
7:45:00	12	4	40	12	106	46	2	1	13	4	13	1	0	0	0	0	0	0	1	0
8:00:00	17	5	77	37	147	41	4	2	18	5	22	9	0	0	0	0	0	0	1	0
8:15:00	23	6	96	19	202	55	4	0	26	8	26	4	0	0	0	0	0	0	1	0
8:30:00	28	5	116	20	259	57	5	1	30	4	31	5	0	0	0	0	0	0	1	0
8:45:00	33	5	145	29	324	65	6	1	37	7	36	5	0	0	0	0	0	0	1	0
9:00:00	42	9	167	22	374	50	8	2	42	5	42	6	0	0	0	0	0	0	1	0
9:01:16	42	0	167	0	374	0	8	0	42	0	42	0	0	0	0	0	0	0	1	0
16:00:00	42	0	167	0	374	0	8	0	42	0	42	0	0	0	0	0	0	0	1	0
16:15:00	54	12	189	22	447	73	10	2	48	6	51	9	0	0	0	0	0	0	1	0
16:30:00	69	15	202	13	509	62	12	2	52	4	56	5	0	0	0	0	0	0	1	0
16:45:00	77	8	227	25	597	88	16	4	56	4	59	3	0	0	0	0	0	0	2	1
17:00:00	90	13	249	22	695	98	17	1	57	1	72	13	0	0	0	0	0	0	3	1
17:15:00	101	11	267	18	819	124	17	0	59	2	83	11	0	0	0	0	0	0	3	0
17:30:00	114	13	288	21	908	89	20	3	62	3	90	7	0	0	0	0	0	0	3	0
17:45:00	125	11	304	16	987	79	20	0	63	1	96	6	0	0	0	0	0	0	3	0
18:00:00	136	11	314	10	1040	53	22	2	64	1	105	9	0	0	0	0	0	0	3	0
18:15:00	136	0	314	0	1040	0	22	0	64	0	105	0	0	0	0	0	0	0	3	0
18:15:59	136	0	314	0	1040	0	22	0	64	0	105	0	0	0	0	0	0	0	3	0

Ontario Traffic Inc.

Count Date: 2-Apr-19 Site #: 1908500002

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Cyclists - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	10	10	116	116	13	13	1	1	24	24	1	1	0	0	0	0	0	0	0	0
7:30:00	16	6	234	118	18	5	1	0	41	17	2	1	0	0	0	0	0	0	0	0
7:45:00	28	12	438	204	27	9	5	4	66	25	5	3	0	0	0	0	0	0	0	0
8:00:00	39	11	657	219	46	19	5	0	94	28	8	3	0	0	0	0	0	0	0	0
8:15:00	51	12	942	285	56	10	8	3	125	31	13	5	0	0	0	0	0	0	0	0
8:30:00	74	23	1165	223	74	18	12	4	161	36	15	2	0	0	0	0	0	0	4	4
8:45:00	89	15	1332	167	95	21	16	4	191	30	19	4	0	0	0	0	0	0	5	1
9:00:00	106	17	1508	176	117	22	20	4	224	33	21	2	0	0	0	0	0	0	8	3
9:01:16	106	0	1508	0	117	0	20	0	224	0	21	0	0	0	0	0	0	0	8	0
16:00:00	106	0	1508	0	117	0	20	0	224	0	21	0	0	0	0	0	0	0	8	0
16:15:00	128	22	1780	272	128	11	23	3	264	40	21	0	0	0	0	0	0	0	9	1
16:30:00	139	11	2009	229	143	15	26	3	291	27	23	2	0	0	0	0	0	0	10	1
16:45:00	156	17	2235	226	150	7	28	2	317	26	23	0	0	0	0	0	0	0	11	1
17:00:00	169	13	2447	212	158	8	28	0	347	30	24	1	0	0	0	0	0	0	12	1
17:15:00	192	23	2742	295	169	11	30	2	373	26	25	1	0	0	0	0	0	0	12	0
17:30:00	207	15	3008	266	178	9	32	2	396	23	25	0	0	0	0	0	0	0	12	0
17:45:00	228	21	3258	250	186	8	34	2	430	34	28	3	0	0	0	0	0	0	13	1
18:00:00	247	19	3440	182	189	3	34	0	458	28	28	0	0	0	0	0	0	0	13	0
18:15:00	247	0	3440	0	189	0	34	0	458	0	28	0	0	0	0	0	0	0	13	0
18:15:59	247	0	3440	0	189	0	34	0	458	0	28	0	0	0	0	0	0	0	13	0

Ontario Traffic Inc.

Count Date: 2-Apr-19 Site #: 1908500002

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Cyclists - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	8	8	9	9	16	16	8	8	2	2	1	1	0	0	0	0	0	0	0	0
7:30:00	36	28	24	15	34	18	21	13	6	4	7	6	0	0	0	0	0	0	0	0
7:45:00	62	26	33	9	48	14	31	10	12	6	10	3	0	0	0	0	0	0	1	1
8:00:00	93	31	47	14	76	28	45	14	17	5	16	6	0	0	0	0	0	0	1	0
8:15:00	118	25	64	17	101	25	54	9	22	5	18	2	0	0	0	0	0	0	1	0
8:30:00	160	42	80	16	123	22	64	10	25	3	22	4	0	0	0	0	0	0	1	0
8:45:00	189	29	96	16	139	16	79	15	29	4	27	5	0	0	0	0	0	0	1	0
9:00:00	238	49	114	18	160	21	90	11	31	2	29	2	0	0	0	0	0	0	1	0
9:01:16	238	0	114	0	160	0	90	0	31	0	29	0	0	0	0	0	0	0	1	0
16:00:00	238	0	114	0	160	0	90	0	31	0	29	0	0	0	0	0	0	0	1	0
16:15:00	348	110	133	19	182	22	107	17	34	3	30	1	0	0	0	0	0	0	3	2
16:30:00	439	91	149	16	203	21	126	19	36	2	35	5	0	0	0	0	0	0	5	2
16:45:00	570	131	171	22	236	33	141	15	41	5	38	3	0	0	0	0	0	0	5	0
17:00:00	670	100	209	38	266	30	158	17	41	0	41	3	0	0	0	0	0	0	5	0
17:15:00	771	101	240	31	322	56	175	17	44	3	44	3	0	0	0	0	0	0	6	1
17:30:00	886	115	266	26	345	23	196	21	46	2	44	0	0	0	0	0	0	0	6	0
17:45:00	958	72	285	19	366	21	206	10	48	2	45	1	0	0	0	0	0	0	6	0
18:00:00	1024	66	295	10	396	30	217	11	49	1	46	1	0	0	0	0	0	0	6	0
18:15:00	1024	0	295	0	396	0	217	0	49	0	46	0	0	0	0	0	0	0	6	0
18:15:59	1024	0	295	0	396	0	217	0	49	0	46	0	0	0	0	0	0	0	6	0

Dorval Dr @ North Service Rd

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 8:00:00
To: 9:00:00

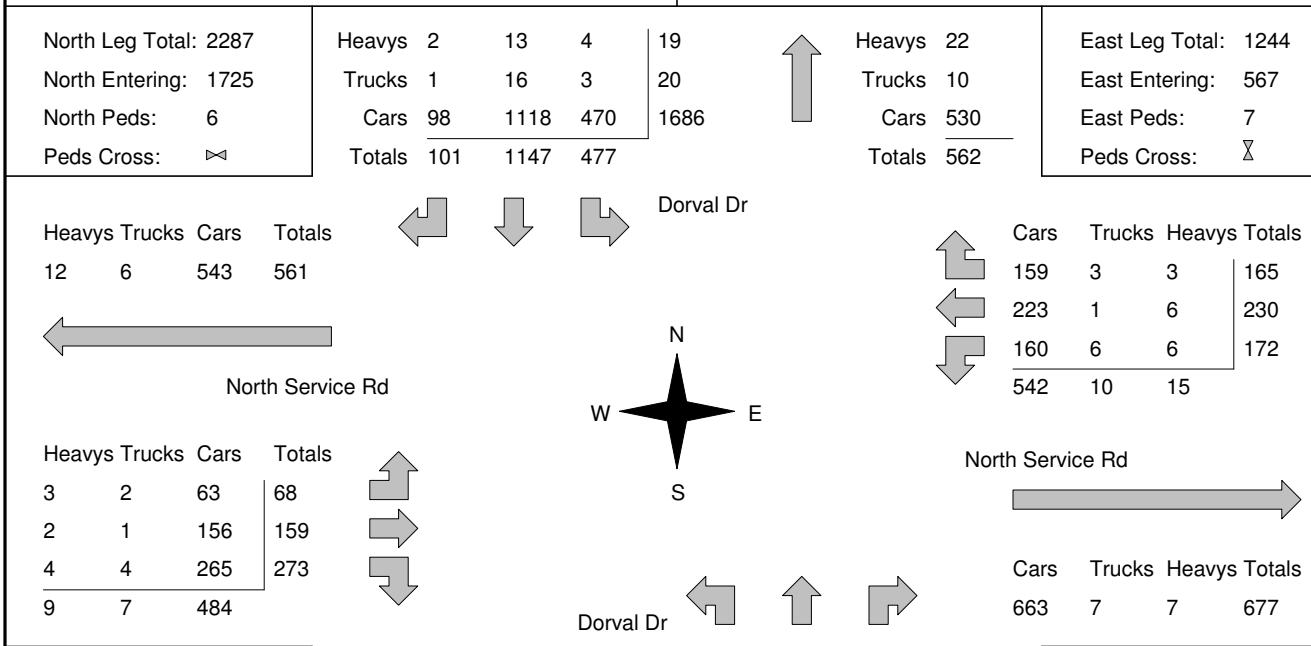
Municipality: Halton Regon
Site #: 0000003191
Intersection: Dorval Dr & North Service Rd
TFR File #: 8
Count date: 29-May-2018

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Dorval Dr runs N/S



Comments

Dorval Dr @ North Service Rd

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 12:00:00
To: 13:00:00

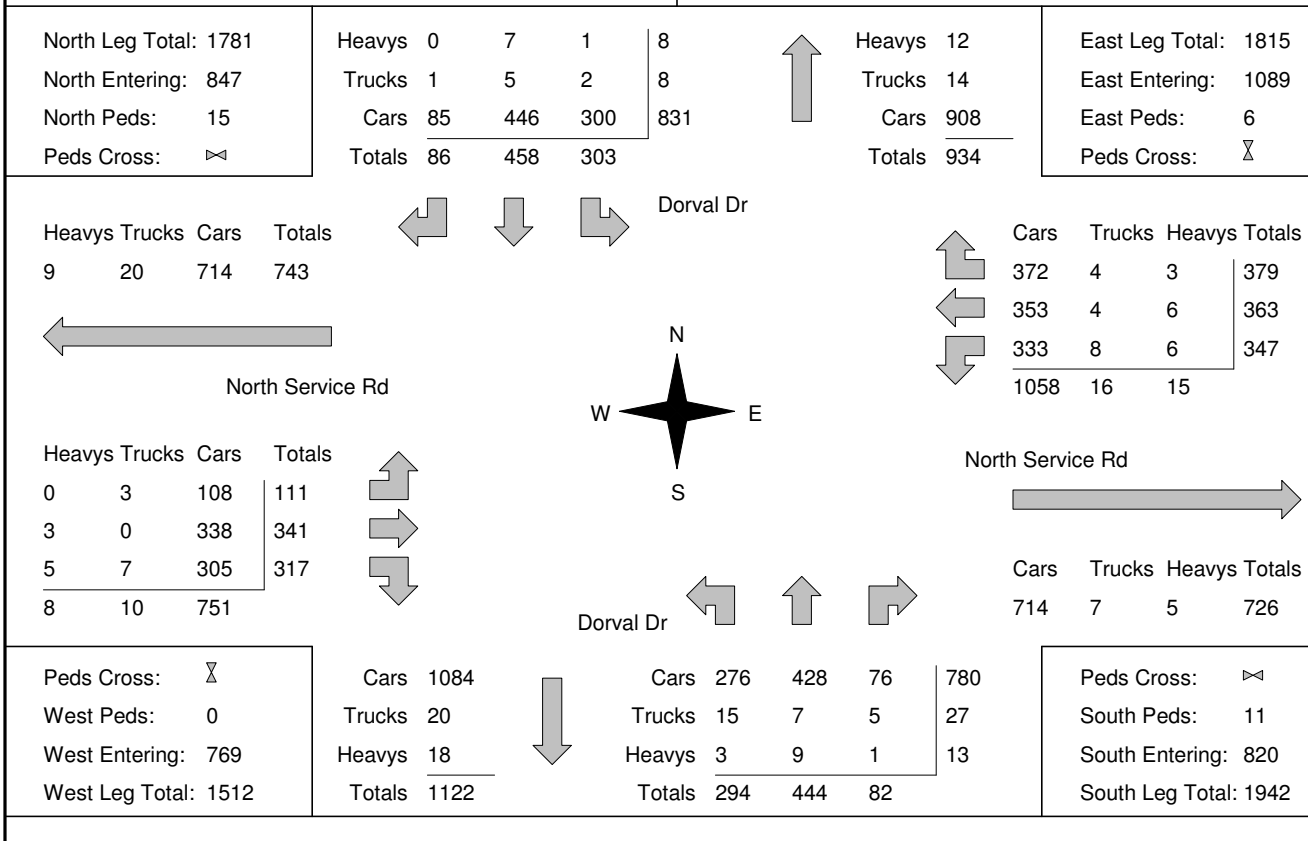
Municipality: Halton Regon
Site #: 0000003191
Intersection: Dorval Dr & North Service Rd
TFR File #: 8
Count date: 29-May-2018

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Dorval Dr runs N/S



Comments

Dorval Dr @ North Service Rd

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 17:00:00
To: 18:00:00

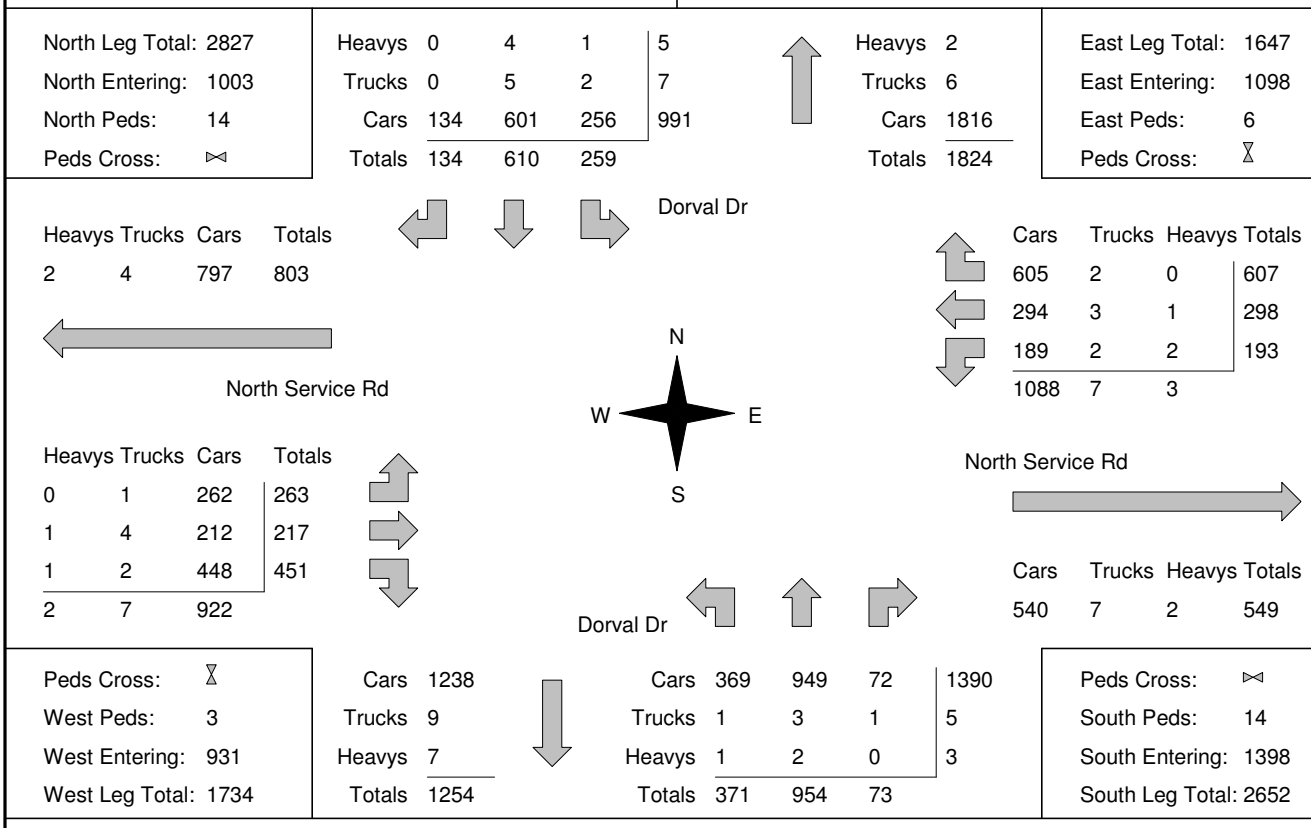
Municipality: Halton Regon
Site #: 0000003191
Intersection: Dorval Dr & North Service Rd
TFR File #: 8
Count date: 29-May-2018

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Dorval Dr runs N/S



Comments

Dorval Dr @ North Service Rd

Total Count Diagram

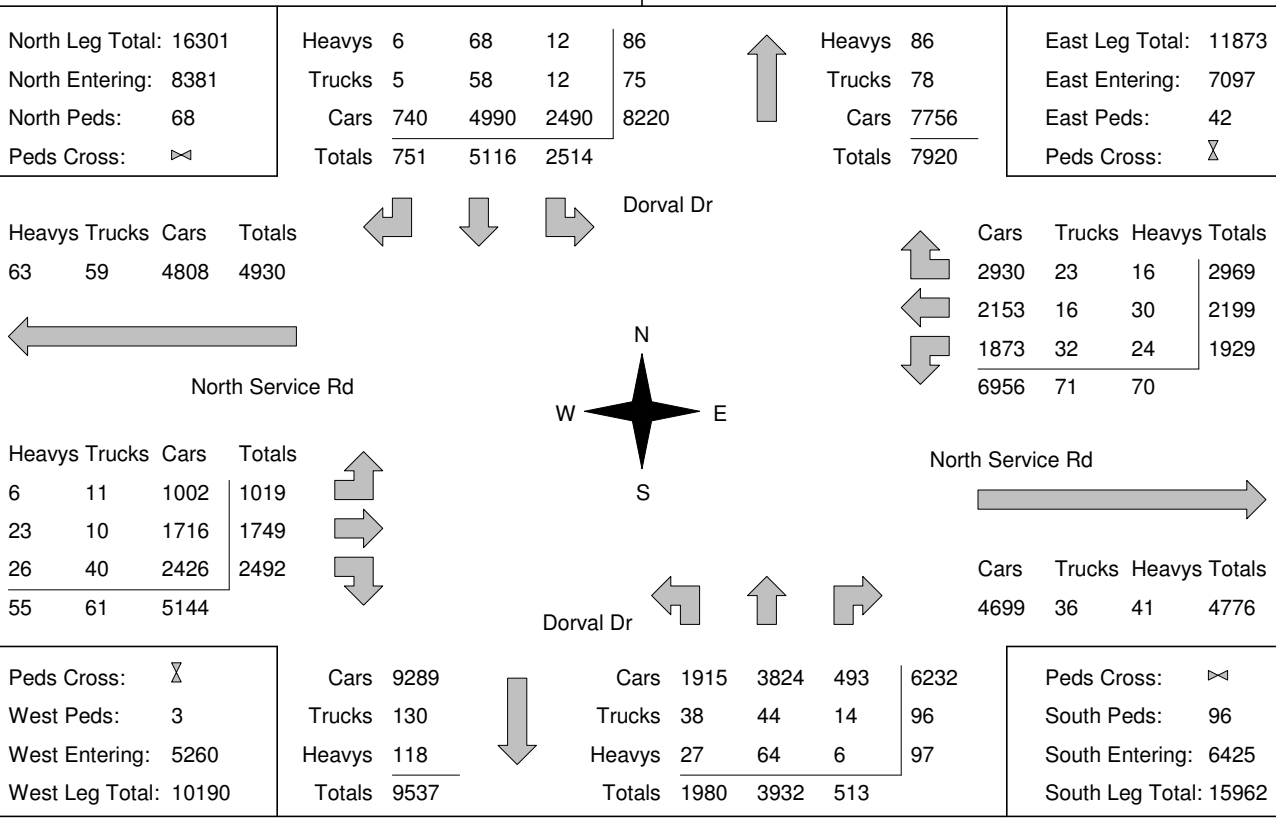
Municipality: Halton Regon
Site #: 0000003191
Intersection: Dorval Dr & North Service Rd
TFR File #: 8
Count date: 29-May-2018

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Dorval Dr runs N/S



Comments

Turning Movement Count - Details Report

Location..... KERR STREET @ SHEPHERD ROAD

Municipality..... OAKVILLE

Count Date..... Thursday, April 19, 2018

		KERR STREET										SHEPHERD ROAD									
		North Approach					South Approach					East Approach					West Approach				
Time Period		LT	TH	RT	Cyclists	Ped	LT	TH	RT	Cyclists	Ped	LT	TH	RT	Cyclists	Ped	LT	TH	RT	Cyclists	Ped
07:00	07:15	4	50	0	0	0	0	16	4	0	0	4	0	21	0	0	0	0	0	0	0
07:15	07:30	11	92	0	0	0	0	32	7	0	0	22	0	35	0	0	0	0	0	0	0
07:30	07:45	20	73	0	0	1	0	35	9	0	2	22	0	40	0	0	0	0	0	0	0
07:45	08:00	10	112	0	0	0	0	59	8	0	1	18	0	42	0	0	0	0	0	0	0
Hourly Total		45	327	0	0	1	0	142	28	0	3	66	0	138	0	0	0	0	0	0	0
08:00	08:15	19	104	0	0	0	0	55	13	0	1	29	0	50	0	1	0	0	0	0	0
08:15	08:30	20	121	0	0	1	0	57	13	0	0	27	0	57	0	1	0	0	0	0	0
08:30	08:45	18	92	0	0	9	0	69	6	0	0	21	0	49	1	0	0	0	0	0	0
08:45	09:00	21	91	0	0	0	0	58	18	0	4	18	0	55	0	2	0	0	0	0	0
Hourly Total		78	408	0	0	10	0	239	50	0	5	95	0	211	1	4	0	0	0	0	0
11:00	11:15	24	92	0	0	0	0	75	13	0	0	11	0	23	0	2	0	0	0	0	0
11:15	11:30	18	86	0	0	1	0	85	16	0	1	19	0	21	0	2	0	0	0	0	0
11:30	11:45	22	114	0	0	1	0	77	14	0	2	16	0	24	0	3	0	0	0	0	0
11:45	12:00	17	118	0	0	0	0	66	19	0	1	15	0	28	0	1	0	0	0	0	0
Hourly Total		81	410	0	0	2	0	303	62	0	4	61	0	96	0	8	0	0	0	0	0
12:00	12:15	29	136	0	0	1	0	93	10	0	1	19	0	16	0	4	0	0	0	0	0
12:15	12:30	23	119	0	0	1	0	74	20	0	1	11	0	27	0	2	0	0	0	0	0
12:30	12:45	16	106	0	0	1	0	72	16	0	4	12	0	26	0	3	0	0	0	0	0
12:45	13:00	17	116	0	0	0	0	83	14	0	2	26	0	26	0	0	0	0	0	0	0
Hourly Total		85	477	0	0	3	0	322	60	0	8	68	0	95	0	9	0	0	0	0	0
13:00	13:15	18	105	0	0	2	0	96	16	0	0	28	0	35	0	0	0	0	0	0	0
13:15	13:30	18	97	0	0	0	0	109	18	0	3	18	0	22	0	0	0	0	0	0	0
13:30	13:45	8	34	0	0	5	0	28	22	0	0	29	0	22	0	1	0	0	0	0	0
13:45	14:00	25	112	0	0	3	0	107	34	0	2	14	0	31	0	0	0	0	0	0	0
Hourly Total		69	348	0	0	10	0	340	90	0	5	89	0	110	0	1	0	0	0	0	0
15:00	15:15	20	92	0	0	3	0	85	13	0	3	20	0	17	0	0	0	0	0	0	0
15:15	15:30	28	96	0	0	3	0	97	19	0	3	23	0	31	0	2	0	0	0	0	0
15:30	15:45	41	99	0	0	3	0	115	23	0	3	18	0	33	0	0	0	0	0	0	0
15:45	16:00	20	114	0	0	2	0	112	27	0	3	23	0	31	0	3	0	0	0	0	0
Hourly Total		109	401	0	0	11	0	409	82	0	12	84	0	112	0	5	0	0	0	0	0
16:00	16:15	37	94	0	0	1	0	113	24	0	2	21	0	32	0	0	0	0	0	0	0
16:15	16:30	42	126	0	0	2	0	117	30	0	1	15	0	41	0	0	0	0	0	0	0
16:30	16:45	41	104	0	0	1	0	120	20	0	1	20	0	25	0	0	0	0	0	0	0
16:45	17:00	20	62	0	0	1	0	92	28	0	3	13	0	21	0	1	0	0	0	0	0
Hourly Total		140	386	0	0	5	0	442	102	0	7	69	0	119	0	1	0	0	0	0	0
17:00	17:15	39	97	0	0	0	0	146	35	0	2	27	0	38	0	1	0	0	0	0	0
17:15	17:30	38	114	0	1	0	0	108	29	0	6	26	0	34	0	1	0	0	0	0	0
17:30	17:45	38	108	0	0	4	0	154	20	0	2	17	0	40	0	2	0	0	0	0	0
17:45	18:00	38	112	0	0	1	0	132	16	0	2	18	0	31	0	2	0	0	0	0	0
Hourly Total		153	431	0	1	5	0	540	100	0	12	88	0	143	0	6	0	0	0	0	0
Grand Total		760	3188	0	1	47	0	2737	574	0	56	620	0	1024	1	34	0	0	0	0	0
Truck %		3%	4%	0%			0%	3%	9%			7%	0%	3%			0%	0%	0%		

Dorval Dr @ Wyecroft Rd

Municipality: Halton Region
Major Road: Dorval Dr
Minor Road: Wyecroft Rd

Date: May 18, 2017

Major Road Runs: North/South
Weather Conditions: Sunny/Dry
Person No. 1 Teresa
Person No. 2 Ela M

Period	North Approach							East Approach							South Approach							West Approach							Veh. Summary	
	Cars			Trucks			Ped.	Cars			Trucks			Ped.	Cars			Trucks			Ped.	Cars			Trucks			Ped.		
Ending	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Cross.	15	60
7:15	26	97	31	0	7	6	0	1	18	7	0	0	0	0	5	125	8	1	3	0	0	6	17	16	10	2	3	0	389	
7:30	40	173	78	1	18	5	0	3	25	40	0	1	4	0	6	162	11	1	22	0	1	11	16	23	10	3	4	0	657	
7:45	43	232	92	1	23	13	1	6	26	37	1	0	3	0	16	206	9	1	10	0	0	23	15	13	9	3	3	0	785	
8:00	67	329	107	2	14	8	0	11	46	48	0	2	4	1	32	297	14	0	13	0	1	32	25	31	8	2	1	3	1093	2924
8:15	34	282	95	0	10	13	0	2	26	41	1	2	3	0	24	320	12	3	16	1	1	26	41	34	8	6	9	0	1009	3544
8:30	61	212	104	0	11	16	1	5	35	62	2	3	3	1	30	294	13	3	22	1	3	40	33	29	12	2	3	0	996	3883
8:45	66	294	95	5	25	11	1	6	45	45	0	0	2	1	36	317	20	2	15	0	3	33	45	18	16	5	3	3	1104	4202
	235	1177	449					27	159	208					130	1294	61					175	159	128						
9:00	87	294	124	3	12	13	0	12	45	55	0	3	2	1	25	220	12	3	23	0	6	44	38	27	12	4	6	3	1064	4173
11:15	24	248	55	2	14	14	0	7	18	54	0	2	2	0	22	231	9	3	32	0	0	64	24	22	23	3	1	0	874	
11:30	39	225	47	2	16	14	3	9	37	65	1	4	1	0	15	216	4	2	12	0	8	66	27	24	13	3	4	1	846	
11:45	24	214	52	3	20	17	0	13	19	46	0	4	3	0	30	260	13	3	22	0	4	49	16	24	15	2	4	2	853	
12:00	31	220	46	1	21	13	0	17	30	55	1	5	8	0	26	258	8	4	17	1	2	68	33	25	16	1	2	2	907	3480
12:15	21	188	53	0	14	11	0	17	25	88	0	0	3	1	23	227	7	2	15	0	2	85	40	43	21	0	5	2	888	3494
12:30	27	164	58	2	23	15	0	9	38	58	0	2	1	3	25	232	10	4	21	0	6	84	24	22	10	3	0	4	832	3480
12:45	33	207	49	1	24	11	0	14	19	51	0	2	3	0	30	233	11	4	20	1	5	58	31	31	27	2	1	5	863	3490
13:00	31	228	63	0	18	16	0	12	30	58	1	3	6	0	37	251	12	1	18	0	7	70	24	27	17	4	5	2	932	3515
13:15	36	206	49	3	22	14	0	13	28	52	2	1	4	0	33	209	7	1	17	1	3	80	32	38	16	0	1	1	865	3492
13:30	38	239	56	2	20	13	0	8	28	52	0	1	4	2	39	249	7	8	20	0	3	59	23	23	9	1	1	1	900	3560
13:45	39	234	59	1	18	19	1	10	26	39	0	4	6	2	19	224	15	6	16	0	0	59	22	21	24	1	1	2	863	3560
14:00	56	304	85	3	11	15	0	7	38	62	0	2	2	0	65	299	10	1	23	0	2	79	30	26	11	3	2	5	1134	3762
15:15	31	243	47	0	10	6	0	20	19	62	0	3	2	0	34	329	16	5	16	0	1	118	34	25	11	4	2	2	1037	
15:30	31	240	52	1	20	9	1	7	34	61	2	2	2	2	25	289	10	4	20	1	1	88	33	31	7	2	1	0	972	
15:45	49	305	48	3	19	11	0	8	22	78	0	1	3	0	19	320	8	1	15	0	2	92	33	38	11	2	2	0	1088	
16:00	25	310	79	0	8	7	1	9	33	73	0	5	0	2	25	278	13	4	16	1	4	71	28	34	13	0	1	0	1033	4130
16:15	41	283	40	1	15	10	1	12	22	63	0	1	1	0	20	318	16	2	13	1	0	102	36	30	12	3	2	2	1044	4137
16:30	47	282	54	1	3	7	1	18	28	77	2	2	2	0	18	296	9	4	12	0	0	97	36	34	13	3	4	1	1049	4214
16:45	47	295	41	0	7	10	0	11	20	99	0	4	5	0	34	314	8	4	6	1	0	96	22	29	8	2	1	0	1064	4190
17:00	39	311	42	1	4	4	0	4	46	92	0	5	1	0	50	284	8	2	6	0	0	80	65	33	11	1	2	0	1091	4248
17:15	31	442	29	0	11	8	0	27	45	97	1	2	3	0	58	355	10	2	5	0	0	114	86	22	7	1	1	4	1357	4561
17:30	43	406	61	2	4	3	1	29	32	134	1	1	1	0	50	451	20	4	9	0	0	131	38	40	9	3	3	0	1475	4987
17:45	57	421	49	0	7	5	0	29	30	116	0	0	2	0	39	389	13	4	7	0	0	138	33	40	10	3	0	0	1392	5315
	173	1606	201					91	161	446					209	1506	51					500	230	141						
18:00	29	347	24	0	5	2	0	20	6	47	0	1	0	1	32	357	23	0	12	0	1	100	25	26	3	1	0	1	1060	5284

Appendix B
Transportation Tomorrow Survey Data

Thu Jun 20 2019 15:31:12 GMT-0400 (Eastern Daylight Time) - Run Time: 1984ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of origin - pd_orig
Column: Planning district of destination - pd_dest

RowG:(39)
ColG:
TblG:

Filters:
No Filters

Trip 2016
Table:

PD 1 of Toronto	13852	am		
PD 2 of Toronto	2500	north to qew eb	109198	27%
PD 3 of Toronto	1171	north to dorval	23995	6%
PD 4 of Toronto	1096	south kerr	23995	6%
PD 5 of Toronto	692	west speers	95982	23%
PD 6 of Toronto	591	east speers	95982	23%
PD 7 of Toronto	1516	north to qew wb	59939	15%
PD 8 of Toronto	4302			
PD 9 of Toronto	1273	pm		
PD 10 of Toronto	1059	south on kerr wb qew		27%
PD 11 of Toronto	682	north to dorval		6%
PD 12 of Toronto	255	south kerr		6%
PD 13 of Toronto	462	west speers		23%
PD 14 of Toronto	162	east speers		23%
PD 15 of Toronto	116	qew eb off south		15%
PD 16 of Toronto	387			
Uxbridge	10		409091	
Scugog	5			
Pickering	75			
Ajax	62			
Whitby	122			
Oshawa	93			
Clarington	31			
Georgina	78			
East Gwillimbury	61			
Newmarket	177			
Aurora	67			
Richmond Hill	503			
Whitchurch-Stouffville	104			
Markham	928			
King	54			
Vaughan	2230			
Caledon	558			
Brampton	7090			
Mississauga	55445			
Halton Hills	2307			
Milton	9082			
Oakville	239954			
Burlington	32131			
Flamborough	2024			
Dundas	411			
Ancaster	1148			
Glanbrook	775			
Stoney Creek	2208			
Hamilton	10269			
Grimsby	1260			
Lincoln	598			
Pelham	62			
Niagara-on-the-Lake	210			
St. Catharines	729			
Thorold	33			
Niagara Falls	524			
Welland	232			
Port Colborne	16			
Fort Erie	35			
West Lincoln	152			
Waterloo	374			
Kitchener	398			
Cambridge	1075			
North Dumfries	69			
Wilmot	43			
Wellesley	15			
Woolwich	143			
City of Guelph	928			
Puslinch	133			
Guelph/Eramosa	144			
Centre Wellington	42			
Erin	366			
Orangeville	182			
Barrie	169			
Innisfil	32			
Bradford-West Gwillimbury	67			
New Tecumseth	257			
Adjala-Tosorontio	19			
Essa	74			
Springwater	37			
Kawartha Lakes	86			
Peterborough	43			
Muskoka	58			
Grey	110			
Perth	51			
Brant	325			
Haldimand-Norfolk	76			
Wasaga Beach	29			
Severn	60			
Mulmur	7			
Shelburne	75			
Amaranth	13			
Mono	104			
Brantford	884			
External	634			
Unknown	36			

Appendix C
Synchro Reports

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	76	179	307	193	258	185	258	370	46	536	1402
v/c Ratio	0.25	0.37	0.71	0.50	0.41	0.43	0.53	0.27	0.07	0.61	0.79
Control Delay	52.5	48.1	19.8	54.1	45.3	8.8	46.3	29.0	4.0	43.5	30.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.5	48.1	19.8	54.1	45.3	8.8	46.3	29.0	4.0	43.5	30.2
Queue Length 50th (m)	8.7	20.8	12.0	22.1	29.5	0.0	29.1	25.8	0.0	58.0	135.1
Queue Length 95th (m)	15.9	28.4	36.9	33.3	38.0	17.1	40.3	52.5	m3.5	76.1	#222.1
Internal Link Dist (m)		205.6			162.2			285.5			95.1
Turn Bay Length (m)	60.0		40.0	50.0		30.0	60.0			60.0	
Base Capacity (vph)	330	1103	656	413	1181	637	499	1356	639	875	1777
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.16	0.47	0.47	0.22	0.29	0.52	0.27	0.07	0.61	0.79

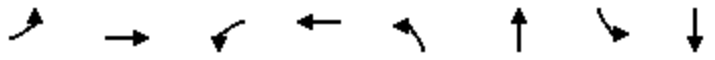
Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	159	273	172	230	165	230	329	41	477	1147	101
Future Volume (vph)	68	159	273	172	230	165	230	329	41	477	1147	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.98	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	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3309	3579	1563	3309	3544	1542	3404	3444	1455	3471	3532	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3309	3579	1563	3309	3544	1542	3404	3444	1455	3471	3532	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	76	179	307	193	258	185	258	370	46	536	1289	113
RTOR Reduction (vph)	0	0	216	0	0	152	0	0	28	0	4	0
Lane Group Flow (vph)	76	179	91	193	258	33	258	370	18	536	1398	0
Confl. Peds. (#/hr)	6		2	2		6			7	7		
Heavy Vehicles (%)	7%	2%	3%	7%	3%	4%	4%	6%	10%	2%	2%	3%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	6.7	15.2	15.2	11.1	19.6	19.6	14.3	44.4	44.4	27.3	57.4	
Effective Green, g (s)	9.7	17.2	17.2	14.1	21.6	21.6	17.3	46.4	46.4	30.3	59.4	
Actuated g/C Ratio	0.08	0.14	0.14	0.12	0.18	0.18	0.14	0.39	0.39	0.25	0.49	
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	267	512	224	388	637	277	490	1331	562	876	1748	
v/s Ratio Prot	0.02	0.05		c0.06	c0.07		0.08	0.11		c0.15	c0.40	
v/s Ratio Perm			0.06			0.02			0.01			
v/c Ratio	0.28	0.35	0.41	0.50	0.41	0.12	0.53	0.28	0.03	0.61	0.80	
Uniform Delay, d1	51.9	46.4	46.8	49.6	43.5	41.2	47.6	25.3	22.9	39.7	25.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.10	1.00	1.00	1.00	
Incremental Delay, d2	0.6	0.4	1.2	1.0	0.4	0.2	0.9	0.5	0.1	1.3	3.9	
Delay (s)	52.5	46.8	48.0	50.6	43.9	41.4	44.0	28.4	22.9	40.9	29.3	
Level of Service	D	D	D	D	D	D	D	C	C	D	C	
Approach Delay (s)		48.2			45.2			34.0			32.5	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	37.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	186	200	27	393	77	1171	199	1533
v/c Ratio	0.67	0.32	0.09	0.68	0.30	0.48	0.48	0.58
Control Delay	65.2	20.0	31.2	29.0	9.6	19.1	39.6	29.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.2	20.0	31.2	29.0	9.6	19.1	39.6	29.2
Queue Length 50th (m)	22.3	9.4	4.8	22.1	4.7	58.3	23.8	99.7
Queue Length 95th (m)	#37.9	19.1	11.1	36.4	11.3	85.1	m30.2	148.9
Internal Link Dist (m)		196.0		171.4		239.0		127.7
Turn Bay Length (m)	55.0		110.0		55.0		50.0	
Base Capacity (vph)	277	1098	306	1174	269	2457	443	2624
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.18	0.09	0.33	0.29	0.48	0.45	0.58

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	80	108	25	129	241	72	1019	82	187	951	490
Future Volume (vph)	175	80	108	25	129	241	72	1019	82	187	951	490
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	1.0	5.0		1.0	5.0		1.0	5.0		1.0	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.91		0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.91		1.00	0.90		1.00	0.99		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	2788	2796		1570	2911		1587	4615		3133	4340	
Flt Permitted	0.95	1.00		0.63	1.00		0.13	1.00		0.95	1.00	
Satd. Flow (perm)	2788	2796		1035	2911		214	4615		3133	4340	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	186	85	115	27	137	256	77	1084	87	199	1012	521
RTOR Reduction (vph)	0	93	0	0	174	0	0	5	0	0	52	0
Lane Group Flow (vph)	186	107	0	27	219	0	77	1166	0	199	1481	0
Confl. Peds. (#/hr)			5	5								
Heavy Vehicles (%)	27%	21%	16%	16%	19%	10%	15%	12%	17%	13%	14%	16%
Turn Type	Prot	NA		pm+pt	NA		pm+pt	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases				8			2					
Actuated Green, G (s)	8.9	20.8		20.3	16.1		66.3	60.1		12.9	66.8	
Effective Green, g (s)	11.9	22.8		26.3	18.1		72.3	62.1		15.9	68.8	
Actuated g/C Ratio	0.10	0.19		0.22	0.15		0.60	0.52		0.13	0.57	
Clearance Time (s)	4.0	7.0		4.0	7.0		4.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	276	531		258	439		234	2388		415	2488	
v/s Ratio Prot	c0.07	0.04		0.01	c0.08		0.03	0.25		c0.06	c0.34	
v/s Ratio Perm				0.02			0.17					
v/c Ratio	0.67	0.20		0.10	0.50		0.33	0.49		0.48	0.60	
Uniform Delay, d1	52.2	40.9		37.2	46.8		10.7	18.7		48.2	16.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.77	1.90	
Incremental Delay, d2	6.4	0.2		0.2	0.9		0.8	0.7		0.6	0.7	
Delay (s)	58.5	41.1		37.4	47.7		11.6	19.4		37.7	32.3	
Level of Service	E	D		D	D		B	B		D	C	
Approach Delay (s)		49.5			47.0			18.9			32.9	
Approach LOS		D			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	31.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	33	731	198	479	179	104	105	402	379	218
v/c Ratio	0.08	0.52	0.50	0.29	0.21	0.32	0.40	0.78	0.82	0.55
Control Delay	12.8	27.5	16.9	18.2	3.6	28.6	48.6	18.8	47.5	41.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.8	27.5	16.9	18.2	3.6	28.6	48.6	18.8	47.5	41.7
Queue Length 50th (m)	2.9	61.1	19.4	33.0	0.0	17.1	23.2	11.2	75.3	41.8
Queue Length 95th (m)	8.9	101.1	38.9	53.9	13.2	25.8	35.1	41.8	92.8	61.4
Internal Link Dist (m)		332.3		134.2			105.5			149.5
Turn Bay Length (m)	90.0		80.0		100.0	35.0		35.0		
Base Capacity (vph)	517	1418	434	1667	841	432	513	673	464	489
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.52	0.46	0.29	0.21	0.24	0.20	0.60	0.82	0.45

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	605	60	180	436	163	95	96	366	345	129	69
Future Volume (vph)	30	605	60	180	436	163	95	96	366	345	129	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.96	1.00	1.00	0.95	1.00	0.99	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	0.99	1.00	1.00	0.98	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1428	3217		1612	3174	1440	1715	1762	1459	1692	1620	
Flt Permitted	0.48	1.00		0.26	1.00	1.00	0.62	1.00	1.00	0.54	1.00	
Satd. Flow (perm)	719	3217		446	3174	1440	1122	1762	1459	960	1620	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	33	665	66	198	479	179	104	105	402	379	142	76
RTOR Reduction (vph)	0	5	0	0	0	87	0	0	297	0	18	0
Lane Group Flow (vph)	33	726	0	198	479	92	104	105	105	379	200	0
Confl. Peds. (#/hr)	16		13	13		16	27		37	37		27
Heavy Vehicles (%)	27%	10%	25%	13%	15%	9%	5%	9%	6%	6%	9%	14%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8		8	4		
Actuated Green, G (s)	56.2	51.8		68.3	60.9	60.9	26.8	16.8	16.8	39.5	26.5	
Effective Green, g (s)	56.2	52.7		68.3	61.8	61.8	26.8	18.1	18.1	39.5	27.8	
Actuated g/C Ratio	0.47	0.44		0.57	0.51	0.51	0.22	0.15	0.15	0.33	0.23	
Clearance Time (s)	3.0	5.9		3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	
Vehicle Extension (s)	2.5	5.5		2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	
Lane Grp Cap (vph)	362	1412		385	1634	741	299	265	220	436	375	
v/s Ratio Prot	0.00	0.23		c0.06	0.15		0.03	0.06		c0.14	0.12	
v/s Ratio Perm	0.04			c0.23		0.06	0.05		0.07	c0.14		
v/c Ratio	0.09	0.51		0.51	0.29	0.12	0.35	0.40	0.48	0.87	0.53	
Uniform Delay, d1	17.4	24.4		14.3	16.6	15.1	38.5	46.0	46.6	35.6	40.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	1.3		0.9	0.5	0.3	0.5	1.3	2.2	16.5	1.9	
Delay (s)	17.4	25.7		15.2	17.1	15.4	39.0	47.3	48.8	52.1	42.3	
Level of Service	B	C		B	B	B	D	D	D	D	D	
Approach Delay (s)		25.4			16.3			46.9			48.5	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	32.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	86.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	NBT	SBT
Lane Group Flow (vph)	332	314	528
v/c Ratio	0.66	0.15	0.28
Control Delay	18.4	5.8	7.0
Queue Delay	0.0	0.0	0.0
Total Delay	18.4	5.8	7.0
Queue Length 50th (m)	19.9	6.5	13.5
Queue Length 95th (m)	38.1	15.0	28.1
Internal Link Dist (m)	145.2	149.5	96.2
Turn Bay Length (m)			
Base Capacity (vph)	573	2132	1933
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.58	0.15	0.27

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	95	211	239	50	78	408
Future Volume (vph)	95	211	239	50	78	408
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0			4.0
Lane Util. Factor	1.00		0.95			0.95
Frpb, ped/bikes	0.98		1.00			1.00
Flpb, ped/bikes	1.00		1.00			1.00
Frt	0.91		0.97			1.00
Flt Protected	0.98		1.00			0.99
Satd. Flow (prot)	1616		3402			3484
Flt Permitted	0.98		1.00			0.85
Satd. Flow (perm)	1616		3402			2974
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	103	229	260	54	85	443
RTOR Reduction (vph)	120	0	17	0	0	0
Lane Group Flow (vph)	212	0	297	0	0	528
Confl. Peds. (#/hr)	5	10		4	4	
Heavy Vehicles (%)	7%	3%	3%	9%	3%	4%
Turn Type	Perm		NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8				6	
Actuated Green, G (s)	15.8		42.5			44.5
Effective Green, g (s)	16.5		43.5			44.5
Actuated g/C Ratio	0.24		0.62			0.64
Clearance Time (s)	5.7		6.0			4.0
Vehicle Extension (s)	5.0		3.5			3.5
Lane Grp Cap (vph)	380		2114			1890
v/s Ratio Prot			0.09			
v/s Ratio Perm	c0.13					c0.18
v/c Ratio	0.56		0.14			0.28
Uniform Delay, d1	23.5		5.5			5.6
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	3.0		0.1			0.1
Delay (s)	26.5		5.6			5.7
Level of Service	C		A			A
Approach Delay (s)	26.5		5.6			5.7
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	11.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	14.7
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	266	219	456	195	301	613	375	964	74	262	751
v/c Ratio	0.67	0.19	0.66	0.50	0.26	0.91	0.71	0.76	0.13	0.63	0.67
Control Delay	60.0	29.3	17.0	54.8	30.2	42.4	48.0	53.0	40.7	57.9	38.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.0	29.3	17.0	54.8	30.2	42.4	48.0	53.0	40.7	57.9	38.7
Queue Length 50th (m)	31.5	18.8	32.6	22.4	26.2	87.1	43.7	119.0	15.4	30.8	81.4
Queue Length 95th (m)	45.6	28.2	67.7	34.3	37.1	#154.3	m58.7	148.8	m26.8	44.5	103.3
Internal Link Dist (m)		205.6			162.2			285.5			95.1
Turn Bay Length (m)	60.0		40.0	50.0		30.0	60.0			60.0	
Base Capacity (vph)	400	1222	724	404	1264	713	537	1276	554	418	1127
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.18	0.63	0.48	0.24	0.86	0.70	0.76	0.13	0.63	0.67

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	263	217	451	193	298	607	371	954	73	259	610	134
Future Volume (vph)	263	217	451	193	298	607	371	954	73	259	610	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.98	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	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3541	3579	1575	3471	3614	1591	3541	3650	1587	3506	3485	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3541	3579	1575	3471	3614	1591	3541	3650	1587	3506	3485	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	266	219	456	195	301	613	375	964	74	262	616	135
RTOR Reduction (vph)	0	0	192	0	0	164	0	0	0	0	15	0
Lane Group Flow (vph)	266	219	264	195	301	449	375	964	74	262	736	0
Confl. Peds. (#/hr)	14		14	14		14	3		6	6		3
Heavy Vehicles (%)	0%	2%	1%	2%	1%	0%	0%	0%	1%	1%	2%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	10.6	36.4	36.4	10.5	36.3	36.3	14.9	39.9	39.9	11.2	36.2	
Effective Green, g (s)	13.6	38.4	38.4	13.5	38.3	38.3	17.9	41.9	41.9	14.2	38.2	
Actuated g/C Ratio	0.11	0.32	0.32	0.11	0.32	0.32	0.15	0.35	0.35	0.12	0.32	
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	401	1145	504	390	1153	507	528	1274	554	414	1109	
v/s Ratio Prot	c0.08	0.06		0.06	0.08		c0.11	c0.26		0.07	0.21	
v/s Ratio Perm			0.17			c0.28			0.05			
v/c Ratio	0.66	0.19	0.52	0.50	0.26	0.89	0.71	0.76	0.13	0.63	0.66	
Uniform Delay, d1	51.0	29.6	33.3	50.1	30.3	38.8	48.6	34.5	26.7	50.4	35.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.85	1.39	1.40	1.00	1.00	
Incremental Delay, d2	4.1	0.1	1.0	1.0	0.1	16.7	3.5	3.3	0.4	3.1	3.1	
Delay (s)	55.1	29.6	34.3	51.1	30.5	55.5	45.0	51.3	37.8	53.6	38.5	
Level of Service	E	C	C	D	C	E	D	D	D	D	D	
Approach Delay (s)		39.1			47.9			48.9			42.4	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	45.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	517	278	53	529	74	1141	133	1137
v/c Ratio	0.84	0.26	0.15	0.99dr	0.25	0.59	0.37	0.55
Control Delay	61.1	15.0	22.3	36.4	14.5	29.3	42.3	36.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.1	15.0	22.3	36.4	14.5	29.3	42.3	36.9
Queue Length 50th (m)	61.2	11.6	7.3	42.7	7.6	75.0	14.5	94.1
Queue Length 95th (m)	#105.6	21.5	14.9	57.0	15.3	96.4	m24.2	112.8
Internal Link Dist (m)		196.0		171.4		239.0		127.7
Turn Bay Length (m)	55.0		110.0		55.0		50.0	
Base Capacity (vph)	616	1336	354	1161	304	1946	361	2082
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.21	0.15	0.46	0.24	0.59	0.37	0.55

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	517	127	151	53	96	433	74	1104	37	133	920	217
Future Volume (vph)	517	127	151	53	96	433	74	1104	37	133	920	217
Ideal Flow (vphpl)	2000	1900	1900	1900	2000	2000	1900	1900	1900	1900	1900	1900
Total Lost time (s)	1.0	5.0		1.0	5.0		1.0	5.0		1.0	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.91		0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.88		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3269	3112		1586	3077		1690	4750		3248	4622	
Flt Permitted	0.95	1.00		0.58	1.00		0.18	1.00		0.95	1.00	
Satd. Flow (perm)	3269	3112		970	3077		320	4750		3248	4622	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	517	127	151	53	96	433	74	1104	37	133	920	217
RTOR Reduction (vph)	0	104	0	0	134	0	0	2	0	0	27	0
Lane Group Flow (vph)	517	174	0	53	395	0	74	1139	0	133	1110	0
Confl. Peds. (#/hr)	1		2	2		1	1		2	2		1
Heavy Vehicles (%)	14%	8%	6%	15%	10%	8%	8%	10%	5%	9%	9%	14%
Turn Type	Prot	NA		pm+pt	NA		pm+pt	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases				8			2					
Actuated Green, G (s)	19.6	35.6		27.8	21.9		53.0	46.3		10.2	49.8	
Effective Green, g (s)	22.6	37.6		33.8	23.9		59.0	48.3		13.2	51.8	
Actuated g/C Ratio	0.19	0.31		0.28	0.20		0.49	0.40		0.11	0.43	
Clearance Time (s)	4.0	7.0		4.0	7.0		4.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	615	975		318	612		268	1911		357	1995	
v/s Ratio Prot	c0.16	0.06		0.01	c0.13		0.02	c0.24		c0.04	0.24	
v/s Ratio Perm				0.03			0.11					
v/c Ratio	0.84	0.18		0.17	0.99dr		0.28	0.60		0.37	0.56	
Uniform Delay, d1	47.0	30.0		32.0	44.2		16.9	28.2		49.6	25.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.81	1.49	
Incremental Delay, d2	10.1	0.1		0.2	2.3		0.6	1.4		0.5	0.9	
Delay (s)	57.0	30.1		32.3	46.5		17.5	29.6		40.8	38.9	
Level of Service	E	C		C	D		B	C		D	D	
Approach Delay (s)		47.6			45.2			28.8			39.1	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	38.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.3%	ICU Level of Service	D
Analysis Period (min)	15		

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	65	539	303	797	523	150	150	221	263	312
v/c Ratio	0.20	0.42	0.61	0.50	0.54	0.52	0.38	0.45	0.59	0.76
Control Delay	16.5	28.0	21.4	25.6	4.6	30.4	41.9	7.4	31.2	52.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.5	28.0	21.4	25.6	4.6	30.4	41.9	7.4	31.2	52.9
Queue Length 50th (m)	6.7	45.6	36.2	68.3	0.0	23.5	30.7	0.0	44.0	66.4
Queue Length 95th (m)	16.2	71.1	65.3	105.1	24.7	32.9	44.6	17.7	56.4	90.7
Internal Link Dist (m)		332.3		134.2			105.5			149.5
Turn Bay Length (m)	90.0		80.0		100.0	35.0		35.0		
Base Capacity (vph)	443	1275	519	1606	971	347	549	596	454	501
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.42	0.58	0.50	0.54	0.43	0.27	0.37	0.58	0.62

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	388	118	285	749	492	141	141	208	247	236	57
Future Volume (vph)	61	388	118	285	749	492	141	141	208	247	236	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.94	1.00	1.00	0.95	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1624	3149		1745	3380	1466	1601	1883	1509	1700	1682	
Flt Permitted	0.31	1.00		0.35	1.00	1.00	0.32	1.00	1.00	0.50	1.00	
Satd. Flow (perm)	525	3149		637	3380	1466	541	1883	1509	891	1682	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	65	413	126	303	797	523	150	150	221	263	251	61
RTOR Reduction (vph)	0	20	0	0	0	278	0	0	175	0	8	0
Lane Group Flow (vph)	65	519	0	303	797	245	150	150	46	263	304	0
Confl. Peds. (#/hr)	27		18	18		27	50		33	33		50
Heavy Vehicles (%)	12%	10%	10%	4%	8%	5%	13%	2%	3%	6%	10%	7%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8		8	4		
Actuated Green, G (s)	53.3	46.8		64.9	55.4	55.4	36.2	23.8	23.8	42.9	27.5	
Effective Green, g (s)	53.3	47.7		64.9	56.3	56.3	36.2	25.1	25.1	42.9	28.8	
Actuated g/C Ratio	0.44	0.40		0.54	0.47	0.47	0.30	0.21	0.21	0.36	0.24	
Clearance Time (s)	3.0	5.9		3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	
Vehicle Extension (s)	2.5	5.5		2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	
Lane Grp Cap (vph)	292	1251		483	1585	687	272	393	315	427	403	
v/s Ratio Prot	0.01	0.16		c0.08	0.24		0.06	0.08		c0.08	c0.18	
v/s Ratio Perm	0.09			c0.26		0.17	0.11		0.03	0.14		
v/c Ratio	0.22	0.41		0.63	0.50	0.36	0.55	0.38	0.15	0.62	0.76	
Uniform Delay, d1	19.5	26.1		16.2	22.1	20.3	32.8	40.8	38.7	29.5	42.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	1.0		2.2	1.1	1.4	1.9	0.8	0.3	2.3	8.3	
Delay (s)	19.7	27.1		18.4	23.3	21.8	34.8	41.6	39.0	31.8	50.7	
Level of Service	B	C		B	C	C	C	D	D	C	D	
Approach Delay (s)		26.3			21.9			38.5			42.0	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	28.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	85.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	NBT	SBT
Lane Group Flow (vph)	244	673	615
v/c Ratio	0.57	0.30	0.39
Control Delay	18.2	5.9	6.8
Queue Delay	0.0	0.0	0.0
Total Delay	18.2	5.9	6.8
Queue Length 50th (m)	14.9	15.4	15.5
Queue Length 95th (m)	31.1	29.8	31.8
Internal Link Dist (m)	145.2	149.5	96.2
Turn Bay Length (m)			
Base Capacity (vph)	528	2238	1579
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.46	0.30	0.39

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	88	143	540	100	153	431
Future Volume (vph)	88	143	540	100	153	431
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0			4.0
Lane Util. Factor	1.00		0.95			0.95
Frpb, ped/bikes	0.99		1.00			1.00
Flpb, ped/bikes	0.99		1.00			1.00
Frt	0.92		0.98			1.00
Flt Protected	0.98		1.00			0.99
Satd. Flow (prot)	1626		3413			3469
Flt Permitted	0.98		1.00			0.67
Satd. Flow (perm)	1626		3413			2361
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	93	151	568	105	161	454
RTOR Reduction (vph)	91	0	13	0	0	0
Lane Group Flow (vph)	153	0	660	0	0	615
Confl. Peds. (#/hr)	12	5		6	6	
Heavy Vehicles (%)	7%	3%	3%	9%	3%	4%
Turn Type	Perm		NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8				6	
Actuated Green, G (s)	13.7		44.6			46.6
Effective Green, g (s)	14.4		45.6			46.6
Actuated g/C Ratio	0.21		0.65			0.67
Clearance Time (s)	5.7		6.0			4.0
Vehicle Extension (s)	5.0		3.5			3.5
Lane Grp Cap (vph)	334		2223			1571
v/s Ratio Prot			0.19			
v/s Ratio Perm	c0.09					c0.26
v/c Ratio	0.46		0.30			0.39
Uniform Delay, d1	24.4		5.3			5.3
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	2.1		0.3			0.1
Delay (s)	26.4		5.6			5.4
Level of Service	C		A			A
Approach Delay (s)	26.4		5.6			5.4
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	8.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	14.7
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	76	185	307	193	269	185	258	378	46	536	1428
v/c Ratio	0.25	0.38	0.71	0.50	0.42	0.43	0.53	0.28	0.07	0.61	0.80
Control Delay	52.5	48.2	20.0	54.1	45.5	8.8	46.5	29.4	4.3	43.5	30.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.5	48.2	20.0	54.1	45.5	8.8	46.5	29.4	4.3	43.5	30.9
Queue Length 50th (m)	8.7	21.5	12.2	22.1	30.9	0.0	29.1	26.3	0.0	58.0	139.8
Queue Length 95th (m)	15.9	29.2	37.2	33.3	39.4	17.1	40.4	53.9	m3.7	76.1	#229.0
Internal Link Dist (m)		205.6			162.2			285.5			95.1
Turn Bay Length (m)	60.0		40.0	50.0		30.0	60.0			60.0	
Base Capacity (vph)	330	1103	655	413	1181	637	499	1354	638	875	1774
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.17	0.47	0.47	0.23	0.29	0.52	0.28	0.07	0.61	0.80

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	165	273	172	239	165	230	336	41	477	1170	101
Future Volume (vph)	68	165	273	172	239	165	230	336	41	477	1170	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.98	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	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3309	3579	1563	3309	3544	1542	3404	3444	1455	3471	3533	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3309	3579	1563	3309	3544	1542	3404	3444	1455	3471	3533	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	76	185	307	193	269	185	258	378	46	536	1315	113
RTOR Reduction (vph)	0	0	215	0	0	152	0	0	28	0	4	0
Lane Group Flow (vph)	76	185	92	193	269	33	258	378	18	536	1424	0
Confl. Peds. (#/hr)	6		2	2		6			7	7		
Heavy Vehicles (%)	7%	2%	3%	7%	3%	4%	4%	6%	10%	2%	2%	3%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	6.7	15.3	15.3	11.1	19.7	19.7	14.3	44.3	44.3	27.3	57.3	
Effective Green, g (s)	9.7	17.3	17.3	14.1	21.7	21.7	17.3	46.3	46.3	30.3	59.3	
Actuated g/C Ratio	0.08	0.14	0.14	0.12	0.18	0.18	0.14	0.39	0.39	0.25	0.49	
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	267	515	225	388	640	278	490	1328	561	876	1745	
v/s Ratio Prot	0.02	0.05		c0.06	c0.08		0.08	0.11		c0.15	c0.40	
v/s Ratio Perm			0.06			0.02			0.01			
v/c Ratio	0.28	0.36	0.41	0.50	0.42	0.12	0.53	0.28	0.03	0.61	0.82	
Uniform Delay, d1	51.9	46.3	46.7	49.6	43.6	41.2	47.6	25.4	22.9	39.7	25.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.11	1.00	1.00	1.00	
Incremental Delay, d2	0.6	0.4	1.2	1.0	0.4	0.2	0.9	0.5	0.1	1.3	4.3	
Delay (s)	52.5	46.8	47.9	50.6	44.0	41.4	44.2	28.8	23.0	40.9	30.1	
Level of Service	D	D	D	D	D	D	D	C	C	D	C	
Approach Delay (s)		48.2			45.2			34.2			33.0	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	37.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	186	203	27	399	77	1192	199	1553
v/c Ratio	0.68	0.33	0.09	0.69	0.30	0.49	0.48	0.59
Control Delay	66.1	20.3	31.0	29.4	9.7	19.3	39.3	29.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.1	20.3	31.0	29.4	9.7	19.3	39.3	29.5
Queue Length 50th (m)	22.3	9.7	4.8	22.9	4.8	60.1	23.8	103.1
Queue Length 95th (m)	#37.9	19.5	11.1	37.1	11.4	87.5	m30.0	151.0
Internal Link Dist (m)		196.0		171.4		239.0		127.7
Turn Bay Length (m)	55.0		110.0		55.0		50.0	
Base Capacity (vph)	272	1099	308	1175	266	2457	443	2625
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.18	0.09	0.34	0.29	0.49	0.45	0.59

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	83	108	25	134	241	72	1039	82	187	970	490
Future Volume (vph)	175	83	108	25	134	241	72	1039	82	187	970	490
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	1.0	5.0		1.0	5.0		1.0	5.0		1.0	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.91		0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.90		1.00	0.99		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	2788	2800		1570	2913		1587	4616		3133	4343	
Flt Permitted	0.95	1.00		0.62	1.00		0.12	1.00		0.95	1.00	
Satd. Flow (perm)	2788	2800		1032	2913		207	4616		3133	4343	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	186	88	115	27	143	256	77	1105	87	199	1032	521
RTOR Reduction (vph)	0	93	0	0	174	0	0	5	0	0	50	0
Lane Group Flow (vph)	186	110	0	27	225	0	77	1187	0	199	1503	0
Confl. Peds. (#/hr)			5	5								
Heavy Vehicles (%)	27%	21%	16%	16%	19%	10%	15%	12%	17%	13%	14%	16%
Turn Type	Prot	NA		pm+pt	NA		pm+pt	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases				8			2					
Actuated Green, G (s)	8.7	20.8		20.5	16.3		66.3	60.1		12.9	66.8	
Effective Green, g (s)	11.7	22.8		26.5	18.3		72.3	62.1		15.9	68.8	
Actuated g/C Ratio	0.10	0.19		0.22	0.15		0.60	0.52		0.13	0.57	
Clearance Time (s)	4.0	7.0		4.0	7.0		4.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	271	532		260	444		230	2388		415	2489	
v/s Ratio Prot	c0.07	0.04		0.01	c0.08		0.03	0.26		c0.06	c0.35	
v/s Ratio Perm				0.02			0.18					
v/c Ratio	0.69	0.21		0.10	0.51		0.33	0.50		0.48	0.60	
Uniform Delay, d1	52.4	41.0		37.1	46.7		10.8	18.8		48.2	16.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.76	1.90	
Incremental Delay, d2	7.0	0.2		0.2	0.9		0.9	0.7		0.6	0.8	
Delay (s)	59.4	41.2		37.2	47.6		11.7	19.5		37.5	32.5	
Level of Service	E	D		D	D		B	B		D	C	
Approach Delay (s)		49.9			47.0			19.1			33.0	
Approach LOS		D			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	31.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	33	757	198	499	179	104	110	402	379	223
v/c Ratio	0.08	0.54	0.51	0.30	0.21	0.31	0.41	0.78	0.83	0.57
Control Delay	12.9	28.2	17.1	18.3	3.6	28.5	48.7	19.1	48.8	42.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.9	28.2	17.1	18.3	3.6	28.5	48.7	19.1	48.8	42.6
Queue Length 50th (m)	2.9	63.4	18.9	34.0	0.0	17.4	24.3	12.1	76.3	43.7
Queue Length 95th (m)	8.9	106.7	39.3	56.6	13.3	25.7	36.5	42.8	92.1	62.8
Internal Link Dist (m)		332.3		134.2			105.5			149.5
Turn Bay Length (m)	90.0		80.0		100.0	35.0		35.0		
Base Capacity (vph)	511	1414	426	1670	842	434	513	670	456	488
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.54	0.46	0.30	0.21	0.24	0.21	0.60	0.83	0.46

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	629	60	180	454	163	95	100	366	345	134	69
Future Volume (vph)	30	629	60	180	454	163	95	100	366	345	134	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96	1.00	1.00	0.95	1.00	0.99	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	0.99	1.00	1.00	0.98	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1428	3220		1612	3174	1440	1715	1762	1459	1693	1623	
Flt Permitted	0.47	1.00		0.25	1.00	1.00	0.62	1.00	1.00	0.53	1.00	
Satd. Flow (perm)	705	3220		424	3174	1440	1118	1762	1459	942	1623	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	33	691	66	198	499	179	104	110	402	379	147	76
RTOR Reduction (vph)	0	5	0	0	0	87	0	0	293	0	17	0
Lane Group Flow (vph)	33	753	0	198	499	92	104	110	109	379	206	0
Confl. Peds. (#/hr)	16		13	13		16	27		37	37		27
Heavy Vehicles (%)	27%	10%	25%	13%	15%	9%	5%	9%	6%	6%	9%	14%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8		8	4		
Actuated Green, G (s)	56.0	51.6		68.4	61.0	61.0	27.1	17.1	17.1	39.4	26.4	
Effective Green, g (s)	56.0	52.5		68.4	61.9	61.9	27.1	18.4	18.4	39.4	27.7	
Actuated g/C Ratio	0.47	0.44		0.57	0.52	0.52	0.23	0.15	0.15	0.33	0.23	
Clearance Time (s)	3.0	5.9		3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	
Vehicle Extension (s)	2.5	5.5		2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	
Lane Grp Cap (vph)	355	1408		378	1637	742	302	270	223	430	374	
v/s Ratio Prot	0.00	0.23		c0.06	0.16		0.03	0.06		c0.14	0.13	
v/s Ratio Perm	0.04			c0.24		0.06	0.05		0.07	c0.15		
v/c Ratio	0.09	0.53		0.52	0.30	0.12	0.34	0.41	0.49	0.88	0.55	
Uniform Delay, d1	17.5	24.8		14.5	16.7	15.0	38.3	45.9	46.5	35.9	40.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	1.5		1.0	0.5	0.3	0.5	1.4	2.3	18.6	2.2	
Delay (s)	17.6	26.2		15.5	17.2	15.4	38.8	47.2	48.8	54.5	42.8	
Level of Service	B	C		B	B	B	D	D	D	D	D	
Approach Delay (s)		25.9			16.4			46.8			50.1	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	32.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	86.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	NBT	SBT
Lane Group Flow (vph)	332	325	546
v/c Ratio	0.66	0.15	0.29
Control Delay	18.4	5.8	7.0
Queue Delay	0.0	0.0	0.0
Total Delay	18.4	5.8	7.0
Queue Length 50th (m)	19.9	6.8	14.1
Queue Length 95th (m)	38.1	15.6	29.2
Internal Link Dist (m)	145.2	149.5	96.2
Turn Bay Length (m)			
Base Capacity (vph)	573	2134	1933
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.58	0.15	0.28

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	95	211	249	50	78	424
Future Volume (vph)	95	211	249	50	78	424
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0			4.0
Lane Util. Factor	1.00		0.95			0.95
Frpb, ped/bikes	0.98		1.00			1.00
Flpb, ped/bikes	1.00		1.00			1.00
Frt	0.91		0.98			1.00
Flt Protected	0.98		1.00			0.99
Satd. Flow (prot)	1616		3407			3485
Flt Permitted	0.98		1.00			0.85
Satd. Flow (perm)	1616		3407			2975
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	103	229	271	54	85	461
RTOR Reduction (vph)	120	0	16	0	0	0
Lane Group Flow (vph)	212	0	309	0	0	546
Confl. Peds. (#/hr)	5	10		4	4	
Heavy Vehicles (%)	7%	3%	3%	9%	3%	4%
Turn Type	Perm		NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8				6	
Actuated Green, G (s)	15.8		42.5			44.5
Effective Green, g (s)	16.5		43.5			44.5
Actuated g/C Ratio	0.24		0.62			0.64
Clearance Time (s)	5.7		6.0			4.0
Vehicle Extension (s)	5.0		3.5			3.5
Lane Grp Cap (vph)	380		2117			1891
v/s Ratio Prot			0.09			
v/s Ratio Perm	c0.13					c0.18
v/c Ratio	0.56		0.15			0.29
Uniform Delay, d1	23.5		5.5			5.7
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	3.0		0.1			0.1
Delay (s)	26.5		5.7			5.8
Level of Service	C		A			A
Approach Delay (s)	26.5		5.7			5.8
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	11.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	14.7
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	266	228	456	195	313	613	375	983	74	262	763
v/c Ratio	0.67	0.20	0.66	0.50	0.27	0.91	0.71	0.77	0.13	0.63	0.68
Control Delay	60.5	29.5	17.3	54.8	30.3	42.6	47.9	53.2	40.7	57.9	39.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.5	29.5	17.3	54.8	30.3	42.6	47.9	53.2	40.7	57.9	39.0
Queue Length 50th (m)	31.5	19.7	33.0	22.4	27.3	87.4	43.8	121.8	15.5	30.8	83.1
Queue Length 95th (m)	45.6	29.3	68.3	34.3	38.5	#154.6	m58.4	151.6	m26.6	44.5	105.5
Internal Link Dist (m)		205.6			162.2			285.5			95.1
Turn Bay Length (m)	60.0		40.0	50.0		30.0	60.0			60.0	
Base Capacity (vph)	395	1222	723	404	1264	712	537	1279	556	418	1128
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.19	0.63	0.48	0.25	0.86	0.70	0.77	0.13	0.63	0.68

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	263	226	451	193	310	607	371	973	73	259	622	134
Future Volume (vph)	263	226	451	193	310	607	371	973	73	259	622	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.98	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	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3541	3579	1575	3471	3614	1591	3541	3650	1587	3506	3486	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3541	3579	1575	3471	3614	1591	3541	3650	1587	3506	3486	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	266	228	456	195	313	613	375	983	74	262	628	135
RTOR Reduction (vph)	0	0	191	0	0	163	0	0	0	0	14	0
Lane Group Flow (vph)	266	228	265	195	313	450	375	983	74	262	749	0
Confl. Peds. (#/hr)	14		14	14		14	3		6	6		3
Heavy Vehicles (%)	0%	2%	1%	2%	1%	0%	0%	0%	1%	1%	2%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	10.4	36.3	36.3	10.5	36.4	36.4	14.9	40.0	40.0	11.2	36.3	
Effective Green, g (s)	13.4	38.3	38.3	13.5	38.4	38.4	17.9	42.0	42.0	14.2	38.3	
Actuated g/C Ratio	0.11	0.32	0.32	0.11	0.32	0.32	0.15	0.35	0.35	0.12	0.32	
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	395	1142	502	390	1156	509	528	1277	555	414	1112	
v/s Ratio Prot	c0.08	0.06		0.06	0.09		c0.11	c0.27		0.07	0.21	
v/s Ratio Perm			0.17			c0.28			0.05			
v/c Ratio	0.67	0.20	0.53	0.50	0.27	0.88	0.71	0.77	0.13	0.63	0.67	
Uniform Delay, d1	51.2	29.7	33.4	50.1	30.4	38.7	48.6	34.7	26.6	50.4	35.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.85	1.38	1.40	1.00	1.00	
Incremental Delay, d2	4.5	0.1	1.0	1.0	0.1	16.5	3.5	3.5	0.4	3.1	3.3	
Delay (s)	55.7	29.8	34.4	51.1	30.5	55.2	45.0	51.6	37.7	53.6	38.7	
Level of Service	E	C	C	D	C	E	D	D	D	D	D	
Approach Delay (s)		39.3			47.6			49.1			42.5	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	45.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	517	283	53	533	74	1163	133	1155
v/c Ratio	0.85	0.26	0.15	0.99dr	0.25	0.60	0.37	0.55
Control Delay	62.7	15.3	22.4	36.5	14.5	29.4	42.2	37.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.7	15.3	22.4	36.5	14.5	29.4	42.2	37.3
Queue Length 50th (m)	61.6	12.2	7.4	43.3	7.5	76.4	14.6	95.7
Queue Length 95th (m)	#105.6	22.2	14.8	57.6	15.4	98.9	m23.9	114.6
Internal Link Dist (m)		196.0		171.4		239.0		127.7
Turn Bay Length (m)	55.0		110.0		55.0		50.0	
Base Capacity (vph)	606	1337	353	1161	300	1953	361	2092
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.21	0.15	0.46	0.25	0.60	0.37	0.55

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	517	132	151	53	100	433	74	1126	37	133	938	217
Future Volume (vph)	517	132	151	53	100	433	74	1126	37	133	938	217
Ideal Flow (vphpl)	2000	1900	1900	1900	2000	2000	1900	1900	1900	1900	1900	1900
Total Lost time (s)	1.0	5.0		1.0	5.0		1.0	5.0		1.0	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.91		0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.88		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3269	3117		1586	3081		1690	4750		3248	4625	
Flt Permitted	0.95	1.00		0.58	1.00		0.17	1.00		0.95	1.00	
Satd. Flow (perm)	3269	3117		965	3081		311	4750		3248	4625	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	517	132	151	53	100	433	74	1126	37	133	938	217
RTOR Reduction (vph)	0	104	0	0	133	0	0	2	0	0	27	0
Lane Group Flow (vph)	517	179	0	53	400	0	74	1161	0	133	1128	0
Confl. Peds. (#/hr)	1		2	2		1	1		2	2		1
Heavy Vehicles (%)	14%	8%	6%	15%	10%	8%	8%	10%	5%	9%	9%	14%
Turn Type	Prot	NA		pm+pt	NA		pm+pt	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases				8			2					
Actuated Green, G (s)	19.3	35.5		27.8	22.0		53.2	46.5		10.2	50.0	
Effective Green, g (s)	22.3	37.5		33.8	24.0		59.2	48.5		13.2	52.0	
Actuated g/C Ratio	0.19	0.31		0.28	0.20		0.49	0.40		0.11	0.43	
Clearance Time (s)	4.0	7.0		4.0	7.0		4.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	607	974		317	616		264	1919		357	2004	
v/s Ratio Prot	c0.16	0.06		0.01	c0.13		0.02	c0.24		c0.04	0.24	
v/s Ratio Perm				0.03			0.12					
v/c Ratio	0.85	0.18		0.17	0.99dr		0.28	0.60		0.37	0.56	
Uniform Delay, d1	47.3	30.1		32.0	44.1		16.9	28.2		49.6	25.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.81	1.50	
Incremental Delay, d2	11.1	0.1		0.3	2.4		0.6	1.4		0.5	0.9	
Delay (s)	58.4	30.2		32.3	46.5		17.5	29.6		40.7	39.2	
Level of Service	E	C		C	D		B	C		D	D	
Approach Delay (s)		48.4			45.2			28.9			39.4	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	38.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		

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

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	65	556	303	829	523	150	156	221	263	323
v/c Ratio	0.21	0.44	0.62	0.52	0.54	0.53	0.39	0.45	0.59	0.77
Control Delay	16.9	28.9	22.1	26.3	4.6	30.4	41.7	7.3	30.9	53.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.9	28.9	22.1	26.3	4.6	30.4	41.7	7.3	30.9	53.3
Queue Length 50th (m)	6.8	48.2	36.7	72.8	0.0	23.3	31.8	0.0	43.6	68.8
Queue Length 95th (m)	16.2	73.7	65.3	110.3	24.7	32.9	46.3	17.7	56.4	94.4
Internal Link Dist (m)		332.3		134.2			105.5			149.5
Turn Bay Length (m)	90.0		80.0		100.0	35.0		35.0		
Base Capacity (vph)	429	1257	508	1590	966	343	549	596	455	502
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.44	0.60	0.52	0.54	0.44	0.28	0.37	0.58	0.64

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	404	118	285	779	492	141	147	208	247	246	57
Future Volume (vph)	61	404	118	285	779	492	141	147	208	247	246	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.94	1.00	1.00	0.95	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1624	3154		1746	3380	1466	1602	1883	1509	1700	1684	
Flt Permitted	0.29	1.00		0.33	1.00	1.00	0.30	1.00	1.00	0.49	1.00	
Satd. Flow (perm)	495	3154		614	3380	1466	514	1883	1509	879	1684	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	65	430	126	303	829	523	150	156	221	263	262	61
RTOR Reduction (vph)	0	19	0	0	0	280	0	0	174	0	8	0
Lane Group Flow (vph)	65	537	0	303	829	243	150	156	47	263	315	0
Confl. Peds. (#/hr)	27		18	18		27	50		33	33		50
Heavy Vehicles (%)	12%	10%	10%	4%	8%	5%	13%	2%	3%	6%	10%	7%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8		8	4		
Actuated Green, G (s)	52.7	46.2		64.4	54.9	54.9	36.8	24.4	24.4	43.4	28.0	
Effective Green, g (s)	52.7	47.1		64.4	55.8	55.8	36.8	25.7	25.7	43.4	29.3	
Actuated g/C Ratio	0.44	0.39		0.54	0.46	0.46	0.31	0.21	0.21	0.36	0.24	
Clearance Time (s)	3.0	5.9		3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	
Vehicle Extension (s)	2.5	5.5		2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	
Lane Grp Cap (vph)	278	1237		472	1571	681	270	403	323	427	411	
v/s Ratio Prot	0.01	0.17		c0.08	0.25		0.06	0.08		c0.08	c0.19	
v/s Ratio Perm	0.09			c0.26		0.17	0.11		0.03	0.14		
v/c Ratio	0.23	0.43		0.64	0.53	0.36	0.56	0.39	0.15	0.62	0.77	
Uniform Delay, d1	19.9	26.7		16.6	22.8	20.6	32.4	40.4	38.3	29.2	42.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	1.1		2.6	1.3	1.5	2.0	0.8	0.3	2.3	8.9	
Delay (s)	20.2	27.8		19.2	24.0	22.1	34.4	41.2	38.5	31.4	51.0	
Level of Service	C	C		B	C	C	C	D	D	C	D	
Approach Delay (s)		27.0			22.5			38.2			42.2	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	29.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	85.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	NBT	SBT
Lane Group Flow (vph)	244	697	633
v/c Ratio	0.57	0.31	0.40
Control Delay	18.2	6.0	6.9
Queue Delay	0.0	0.0	0.0
Total Delay	18.2	6.0	6.9
Queue Length 50th (m)	14.9	16.2	16.1
Queue Length 95th (m)	31.1	31.2	33.0
Internal Link Dist (m)	145.2	149.5	96.2
Turn Bay Length (m)			
Base Capacity (vph)	528	2238	1574
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.46	0.31	0.40

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	88	143	562	100	153	448
Future Volume (vph)	88	143	562	100	153	448
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0			4.0
Lane Util. Factor	1.00		0.95			0.95
Frpb, ped/bikes	0.99		1.00			1.00
Flpb, ped/bikes	0.99		1.00			1.00
Frt	0.92		0.98			1.00
Flt Protected	0.98		1.00			0.99
Satd. Flow (prot)	1626		3417			3470
Flt Permitted	0.98		1.00			0.67
Satd. Flow (perm)	1626		3417			2353
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	93	151	592	105	161	472
RTOR Reduction (vph)	91	0	13	0	0	0
Lane Group Flow (vph)	153	0	684	0	0	633
Confl. Peds. (#/hr)	12	5		6	6	
Heavy Vehicles (%)	7%	3%	3%	9%	3%	4%
Turn Type	Perm		NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8				6	
Actuated Green, G (s)	13.7		44.6			46.6
Effective Green, g (s)	14.4		45.6			46.6
Actuated g/C Ratio	0.21		0.65			0.67
Clearance Time (s)	5.7		6.0			4.0
Vehicle Extension (s)	5.0		3.5			3.5
Lane Grp Cap (vph)	334		2225			1566
v/s Ratio Prot			0.20			
v/s Ratio Perm	c0.09					c0.27
v/c Ratio	0.46		0.31			0.40
Uniform Delay, d1	24.4		5.3			5.4
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	2.1		0.4			0.1
Delay (s)	26.4		5.7			5.5
Level of Service	C		A			A
Approach Delay (s)	26.4		5.7			5.5
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	8.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	14.7
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	76	206	307	193	297	185	258	397	46	536	1495
v/c Ratio	0.25	0.41	0.71	0.50	0.46	0.43	0.53	0.30	0.07	0.61	0.85
Control Delay	52.5	48.6	19.8	54.1	45.9	8.7	46.2	31.2	4.8	43.5	33.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.5	48.6	19.8	54.1	45.9	8.7	46.2	31.2	4.8	43.5	33.0
Queue Length 50th (m)	8.7	24.0	12.3	22.1	34.2	0.0	28.9	29.2	0.1	58.0	153.0
Queue Length 95th (m)	15.9	31.9	37.4	33.3	43.1	17.1	40.8	57.8	m3.8	76.2	#246.4
Internal Link Dist (m)		205.6			162.2			285.5			95.1
Turn Bay Length (m)	60.0		40.0	50.0		30.0	60.0			60.0	
Base Capacity (vph)	330	1103	654	413	1181	637	499	1345	634	874	1767
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.19	0.47	0.47	0.25	0.29	0.52	0.30	0.07	0.61	0.85

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	183	273	172	264	165	230	353	41	477	1230	101
Future Volume (vph)	68	183	273	172	264	165	230	353	41	477	1230	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.98	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	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3309	3579	1563	3309	3544	1542	3404	3444	1455	3471	3535	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3309	3579	1563	3309	3544	1542	3404	3444	1455	3471	3535	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	76	206	307	193	297	185	258	397	46	536	1382	113
RTOR Reduction (vph)	0	0	213	0	0	151	0	0	28	0	4	0
Lane Group Flow (vph)	76	206	94	193	297	34	258	397	18	536	1491	0
Confl. Peds. (#/hr)	6		2	2		6			7	7		
Heavy Vehicles (%)	7%	2%	3%	7%	3%	4%	4%	6%	10%	2%	2%	3%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	6.7	15.6	15.6	11.1	20.0	20.0	14.3	44.1	44.1	27.2	57.0	
Effective Green, g (s)	9.7	17.6	17.6	14.1	22.0	22.0	17.3	46.1	46.1	30.2	59.0	
Actuated g/C Ratio	0.08	0.15	0.15	0.12	0.18	0.18	0.14	0.38	0.38	0.25	0.49	
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	267	524	229	388	649	282	490	1323	558	873	1738	
v/s Ratio Prot	0.02	0.06		c0.06	c0.08		0.08	0.12		c0.15	c0.42	
v/s Ratio Perm			0.06			0.02			0.01			
v/c Ratio	0.28	0.39	0.41	0.50	0.46	0.12	0.53	0.30	0.03	0.61	0.86	
Uniform Delay, d1	51.9	46.4	46.5	49.6	43.7	40.9	47.6	25.7	23.0	39.7	26.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.90	1.17	1.00	1.00	1.00	
Incremental Delay, d2	0.6	0.5	1.2	1.0	0.5	0.2	0.9	0.5	0.1	1.3	5.7	
Delay (s)	52.5	46.9	47.7	50.6	44.2	41.1	43.9	30.5	23.1	41.0	32.5	
Level of Service	D	D	D	D	D	D	D	C	C	D	C	
Approach Delay (s)		48.0			45.2			35.0			34.8	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	38.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	186	213	27	413	77	1250	199	1606
v/c Ratio	0.71	0.34	0.09	0.70	0.31	0.51	0.48	0.61
Control Delay	68.3	20.9	30.6	30.5	10.3	19.9	38.4	30.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.3	20.9	30.6	30.5	10.3	19.9	38.4	30.2
Queue Length 50th (m)	22.3	10.8	4.7	24.8	4.9	65.1	23.7	110.2
Queue Length 95th (m)	#37.9	20.8	10.9	39.2	11.7	94.4	m29.0	156.6
Internal Link Dist (m)		196.0		171.4		239.0		127.7
Turn Bay Length (m)	55.0		110.0		55.0		50.0	
Base Capacity (vph)	262	1103	311	1176	256	2453	443	2620
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.19	0.09	0.35	0.30	0.51	0.45	0.61

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	92	108	25	148	241	72	1093	82	187	1020	490
Future Volume (vph)	175	92	108	25	148	241	72	1093	82	187	1020	490
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	1.0	5.0		1.0	5.0		1.0	5.0		1.0	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.91		0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.91		1.00	0.99		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	2788	2810		1570	2919		1587	4619		3133	4352	
Flt Permitted	0.95	1.00		0.62	1.00		0.11	1.00		0.95	1.00	
Satd. Flow (perm)	2788	2810		1022	2919		191	4619		3133	4352	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	186	98	115	27	157	256	77	1163	87	199	1085	521
RTOR Reduction (vph)	0	93	0	0	171	0	0	5	0	0	48	0
Lane Group Flow (vph)	186	120	0	27	242	0	77	1245	0	199	1558	0
Confl. Peds. (#/hr)			5	5								
Heavy Vehicles (%)	27%	21%	16%	16%	19%	10%	15%	12%	17%	13%	14%	16%
Turn Type	Prot	NA		pm+pt	NA		pm+pt	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases				8			2					
Actuated Green, G (s)	8.3	20.9		21.0	16.8		66.2	60.0		12.9	66.7	
Effective Green, g (s)	11.3	22.9		27.0	18.8		72.2	62.0		15.9	68.7	
Actuated g/C Ratio	0.09	0.19		0.22	0.16		0.60	0.52		0.13	0.57	
Clearance Time (s)	4.0	7.0		4.0	7.0		4.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	262	536		262	457		221	2386		415	2491	
v/s Ratio Prot	c0.07	0.04		0.01	c0.08		0.03	0.27		c0.06	c0.36	
v/s Ratio Perm				0.02			0.18					
v/c Ratio	0.71	0.22		0.10	0.53		0.35	0.52		0.48	0.63	
Uniform Delay, d1	52.8	41.0		36.7	46.5		11.1	19.2		48.2	17.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.75	1.87	
Incremental Delay, d2	8.5	0.2		0.2	1.1		1.0	0.8		0.6	0.8	
Delay (s)	61.3	41.3		36.8	47.6		12.0	20.0		36.7	32.6	
Level of Service	E	D		D	D		B	C		D	C	
Approach Delay (s)		50.6			47.0			19.5			33.1	
Approach LOS		D			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	31.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	33	830	198	551	179	104	121	402	379	239
v/c Ratio	0.09	0.59	0.53	0.33	0.21	0.32	0.44	0.78	0.87	0.63
Control Delay	13.2	30.0	17.4	18.5	3.7	28.9	48.9	19.9	54.5	45.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.2	30.0	17.4	18.5	3.7	28.9	48.9	19.9	54.5	45.7
Queue Length 50th (m)	2.8	72.1	18.5	37.6	0.0	17.6	26.7	13.7	77.2	48.7
Queue Length 95th (m)	9.0	#130.2	39.7	63.8	13.5	25.4	39.4	44.8	91.3	67.3
Internal Link Dist (m)		332.3		134.2			105.5			149.5
Turn Bay Length (m)	90.0		80.0		100.0	35.0		35.0		
Base Capacity (vph)	496	1404	407	1689	850	423	513	664	434	490
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.59	0.49	0.33	0.21	0.25	0.24	0.61	0.87	0.49

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	695	60	180	501	163	95	110	366	345	148	69
Future Volume (vph)	30	695	60	180	501	163	95	110	366	345	148	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96	1.00	1.00	0.95	1.00	0.99	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	0.99	1.00	1.00	0.98	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1429	3229		1613	3174	1440	1718	1762	1459	1695	1632	
Flt Permitted	0.45	1.00		0.22	1.00	1.00	0.57	1.00	1.00	0.50	1.00	
Satd. Flow (perm)	671	3229		365	3174	1440	1025	1762	1459	901	1632	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	33	764	66	198	551	179	104	121	402	379	163	76
RTOR Reduction (vph)	0	5	0	0	0	85	0	0	285	0	16	0
Lane Group Flow (vph)	33	825	0	198	551	94	104	121	117	379	223	0
Confl. Peds. (#/hr)	16		13	13		16	27		37	37		27
Heavy Vehicles (%)	27%	10%	25%	13%	15%	9%	5%	9%	6%	6%	9%	14%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8		8	4		
Actuated Green, G (s)	55.5	51.1		69.2	61.8	61.8	27.6	17.6	17.6	38.6	25.6	
Effective Green, g (s)	55.5	52.0		69.2	62.7	62.7	27.6	18.9	18.9	38.6	26.9	
Actuated g/C Ratio	0.46	0.43		0.58	0.52	0.52	0.23	0.16	0.16	0.32	0.22	
Clearance Time (s)	3.0	5.9		3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	
Vehicle Extension (s)	2.5	5.5		2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	
Lane Grp Cap (vph)	338	1399		367	1658	752	293	277	229	408	365	
v/s Ratio Prot	0.00	c0.26		c0.07	0.17		0.03	0.07		c0.14	0.14	
v/s Ratio Perm	0.04			0.24		0.06	0.05		0.08	c0.16		
v/c Ratio	0.10	0.59		0.54	0.33	0.12	0.35	0.44	0.51	0.93	0.61	
Uniform Delay, d1	17.7	25.9		14.7	16.6	14.6	37.9	45.7	46.3	37.2	41.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	1.8		1.2	0.5	0.3	0.5	1.5	2.6	27.2	3.5	
Delay (s)	17.8	27.7		15.9	17.1	15.0	38.4	47.2	48.9	64.4	45.3	
Level of Service	B	C		B	B	B	D	D	D	E	D	
Approach Delay (s)		27.3			16.4			46.8			57.0	
Approach LOS		C			B			D			E	

Intersection Summary			
HCM 2000 Control Delay	34.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	86.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	NBT	SBT
Lane Group Flow (vph)	332	353	595
v/c Ratio	0.66	0.17	0.31
Control Delay	18.4	6.0	7.2
Queue Delay	0.0	0.0	0.0
Total Delay	18.4	6.0	7.2
Queue Length 50th (m)	19.9	7.7	15.6
Queue Length 95th (m)	38.1	17.2	32.3
Internal Link Dist (m)	145.2	149.5	96.2
Turn Bay Length (m)			
Base Capacity (vph)	573	2139	1935
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.58	0.17	0.31

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	95	211	275	50	78	469
Future Volume (vph)	95	211	275	50	78	469
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0			4.0
Lane Util. Factor	1.00		0.95			0.95
Frpb, ped/bikes	0.98		1.00			1.00
Flpb, ped/bikes	1.00		1.00			1.00
Frt	0.91		0.98			1.00
Flt Protected	0.98		1.00			0.99
Satd. Flow (prot)	1616		3417			3487
Flt Permitted	0.98		1.00			0.85
Satd. Flow (perm)	1616		3417			2980
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	103	229	299	54	85	510
RTOR Reduction (vph)	120	0	14	0	0	0
Lane Group Flow (vph)	212	0	339	0	0	595
Confl. Peds. (#/hr)	5	10		4	4	
Heavy Vehicles (%)	7%	3%	3%	9%	3%	4%
Turn Type	Perm		NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8				6	
Actuated Green, G (s)	15.8		42.5			44.5
Effective Green, g (s)	16.5		43.5			44.5
Actuated g/C Ratio	0.24		0.62			0.64
Clearance Time (s)	5.7		6.0			4.0
Vehicle Extension (s)	5.0		3.5			3.5
Lane Grp Cap (vph)	380		2123			1894
v/s Ratio Prot			0.10			
v/s Ratio Perm	c0.13					c0.20
v/c Ratio	0.56		0.16			0.31
Uniform Delay, d1	23.5		5.6			5.8
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	3.0		0.2			0.1
Delay (s)	26.5		5.7			5.9
Level of Service	C		A			A
Approach Delay (s)	26.5		5.7			5.9
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	14.7
Intersection Capacity Utilization	60.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	266	252	456	195	345	613	375	1033	74	262	796
v/c Ratio	0.69	0.22	0.66	0.50	0.30	0.91	0.71	0.81	0.13	0.63	0.70
Control Delay	61.6	29.9	17.9	54.8	30.6	42.3	47.7	53.9	40.4	57.9	39.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.6	29.9	17.9	54.8	30.6	42.3	47.7	53.9	40.4	57.9	39.8
Queue Length 50th (m)	31.5	22.0	34.4	22.4	30.5	88.0	43.2	129.4	15.8	30.8	88.1
Queue Length 95th (m)	45.6	32.0	69.9	34.3	42.3	#155.3	m58.1	m157.4	m25.6	44.5	111.1
Internal Link Dist (m)		205.6			162.2			285.5			95.1
Turn Bay Length (m)	60.0		40.0	50.0		30.0	60.0			60.0	
Base Capacity (vph)	385	1222	719	404	1264	711	537	1282	557	418	1133
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.21	0.63	0.48	0.27	0.86	0.70	0.81	0.13	0.63	0.70

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	263	249	451	193	342	607	371	1023	73	259	654	134
Future Volume (vph)	263	249	451	193	342	607	371	1023	73	259	654	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.98	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	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3541	3579	1575	3471	3614	1591	3541	3650	1587	3506	3490	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3541	3579	1575	3471	3614	1591	3541	3650	1587	3506	3490	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	266	252	456	195	345	613	375	1033	74	262	661	135
RTOR Reduction (vph)	0	0	187	0	0	161	0	0	0	0	14	0
Lane Group Flow (vph)	266	252	269	195	345	452	375	1033	74	262	782	0
Confl. Peds. (#/hr)	14		14	14		14	3		6	6		3
Heavy Vehicles (%)	0%	2%	1%	2%	1%	0%	0%	0%	1%	1%	2%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	10.1	36.2	36.2	10.5	36.6	36.6	14.9	40.1	40.1	11.2	36.4	
Effective Green, g (s)	13.1	38.2	38.2	13.5	38.6	38.6	17.9	42.1	42.1	14.2	38.4	
Actuated g/C Ratio	0.11	0.32	0.32	0.11	0.32	0.32	0.15	0.35	0.35	0.12	0.32	
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	386	1139	501	390	1162	511	528	1280	556	414	1116	
v/s Ratio Prot	c0.08	0.07		0.06	0.10		c0.11	c0.28		0.07	0.22	
v/s Ratio Perm			0.17			c0.28			0.05			
v/c Ratio	0.69	0.22	0.54	0.50	0.30	0.88	0.71	0.81	0.13	0.63	0.70	
Uniform Delay, d1	51.5	30.0	33.6	50.1	30.5	38.6	48.6	35.3	26.5	50.4	35.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.85	1.37	1.40	1.00	1.00	
Incremental Delay, d2	5.1	0.1	1.1	1.0	0.1	16.5	3.4	4.2	0.4	3.1	3.7	
Delay (s)	56.6	30.1	34.7	51.1	30.7	55.0	44.8	52.6	37.5	53.6	39.5	
Level of Service	E	C	C	D	C	E	D	D	D	D	D	
Approach Delay (s)		39.5			47.1			49.9			42.9	
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	0.80		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	517	297	53	543	74	1221	133	1203
v/c Ratio	0.89	0.28	0.15	0.98dr	0.26	0.62	0.37	0.57
Control Delay	68.0	16.3	22.5	36.7	14.5	29.6	41.9	38.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.0	16.3	22.5	36.7	14.5	29.6	41.9	38.6
Queue Length 50th (m)	63.4	13.9	7.6	44.5	7.2	78.7	14.7	100.1
Queue Length 95th (m)	#105.6	23.5	14.7	58.9	15.5	105.8	m23.6	120.1
Internal Link Dist (m)		196.0		171.4		239.0		127.7
Turn Bay Length (m)	55.0		110.0		55.0		50.0	
Base Capacity (vph)	579	1342	353	1163	292	1977	361	2116
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.22	0.15	0.47	0.25	0.62	0.37	0.57

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	517	146	151	53	110	433	74	1184	37	133	986	217
Future Volume (vph)	517	146	151	53	110	433	74	1184	37	133	986	217
Ideal Flow (vphpl)	2000	1900	1900	1900	2000	2000	1900	1900	1900	1900	1900	1900
Total Lost time (s)	1.0	5.0		1.0	5.0		1.0	5.0		1.0	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.91		0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.88		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3269	3129		1586	3088		1690	4751		3248	4632	
Flt Permitted	0.95	1.00		0.57	1.00		0.16	1.00		0.95	1.00	
Satd. Flow (perm)	3269	3129		952	3088		290	4751		3248	4632	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	517	146	151	53	110	433	74	1184	37	133	986	217
RTOR Reduction (vph)	0	105	0	0	131	0	0	2	0	0	24	0
Lane Group Flow (vph)	517	192	0	53	412	0	74	1219	0	133	1179	0
Confl. Peds. (#/hr)	1		2	2		1	1		2	2		1
Heavy Vehicles (%)	14%	8%	6%	15%	10%	8%	8%	10%	5%	9%	9%	14%
Turn Type	Prot	NA		pm+pt	NA		pm+pt	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases				8			2					
Actuated Green, G (s)	18.3	34.9		28.2	22.4		53.8	47.1		10.2	50.6	
Effective Green, g (s)	21.3	36.9		34.2	24.4		59.8	49.1		13.2	52.6	
Actuated g/C Ratio	0.18	0.31		0.29	0.20		0.50	0.41		0.11	0.44	
Clearance Time (s)	4.0	7.0		4.0	7.0		4.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	580	962		317	627		257	1943		357	2030	
v/s Ratio Prot	c0.16	0.06		0.01	c0.13		0.02	c0.26		c0.04	0.25	
v/s Ratio Perm				0.04			0.12					
v/c Ratio	0.89	0.20		0.17	0.98dr		0.29	0.63		0.37	0.58	
Uniform Delay, d1	48.2	30.7		31.7	43.9		16.7	28.2		49.6	25.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.81	1.55	
Incremental Delay, d2	15.8	0.1		0.3	2.5		0.6	1.5		0.5	0.9	
Delay (s)	64.1	30.8		32.0	46.4		17.3	29.7		40.5	40.3	
Level of Service	E	C		C	D		B	C		D	D	
Approach Delay (s)		51.9			45.1			29.0			40.4	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	39.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		

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

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	65	600	303	915	523	150	172	221	263	349
v/c Ratio	0.24	0.49	0.66	0.59	0.55	0.54	0.41	0.43	0.59	0.79
Control Delay	18.0	31.1	24.2	28.5	4.7	30.1	41.2	7.0	30.0	53.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	31.1	24.2	28.5	4.7	30.1	41.2	7.0	30.0	53.9
Queue Length 50th (m)	7.0	55.4	37.9	85.3	0.0	22.7	34.8	0.0	42.6	74.6
Queue Length 95th (m)	16.2	81.2	65.3	125.1	24.7	32.9	50.5	17.7	56.4	103.1
Internal Link Dist (m)		332.3		134.2			105.5			149.5
Turn Bay Length (m)	90.0		80.0		100.0	35.0		35.0		
Base Capacity (vph)	393	1215	478	1552	956	339	549	596	456	504
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.49	0.63	0.59	0.55	0.44	0.31	0.37	0.58	0.69

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	446	118	285	860	492	141	162	208	247	271	57
Future Volume (vph)	61	446	118	285	860	492	141	162	208	247	271	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.94	1.00	1.00	0.95	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00	0.99	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1626	3166		1748	3380	1466	1604	1883	1509	1702	1689	
Flt Permitted	0.24	1.00		0.30	1.00	1.00	0.28	1.00	1.00	0.47	1.00	
Satd. Flow (perm)	416	3166		554	3380	1466	473	1883	1509	845	1689	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	65	474	126	303	915	523	150	172	221	263	288	61
RTOR Reduction (vph)	0	17	0	0	0	285	0	0	171	0	7	0
Lane Group Flow (vph)	65	583	0	303	915	238	150	172	50	263	342	0
Confl. Peds. (#/hr)	27		18	18		27	50		33	33		50
Heavy Vehicles (%)	12%	10%	10%	4%	8%	5%	13%	2%	3%	6%	10%	7%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8		8	4		
Actuated Green, G (s)	51.0	44.5		63.1	53.6	53.6	37.9	25.7	25.7	44.7	29.5	
Effective Green, g (s)	51.0	45.4		63.1	54.5	54.5	37.9	27.0	27.0	44.7	30.8	
Actuated g/C Ratio	0.42	0.38		0.53	0.45	0.45	0.32	0.22	0.22	0.37	0.26	
Clearance Time (s)	3.0	5.9		3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	
Vehicle Extension (s)	2.5	5.5		2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	
Lane Grp Cap (vph)	242	1197		446	1535	665	264	423	339	429	433	
v/s Ratio Prot	0.01	0.18		c0.09	0.27		0.06	0.09		c0.08	c0.20	
v/s Ratio Perm	0.10			c0.27		0.16	0.12		0.03	0.15		
v/c Ratio	0.27	0.49		0.68	0.60	0.36	0.57	0.41	0.15	0.61	0.79	
Uniform Delay, d1	21.1	28.4		17.6	24.5	21.3	31.8	39.7	37.3	28.3	41.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.4	1.4		3.7	1.7	1.5	2.3	0.9	0.3	2.2	10.0	
Delay (s)	21.6	29.8		21.3	26.2	22.8	34.0	40.5	37.5	30.5	51.6	
Level of Service	C	C		C	C	C	C	D	D	C	D	
Approach Delay (s)		29.0			24.4			37.5			42.5	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	30.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	85.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	NBT	SBT
Lane Group Flow (vph)	244	758	682
v/c Ratio	0.57	0.34	0.44
Control Delay	18.1	6.3	7.3
Queue Delay	0.0	0.0	0.0
Total Delay	18.1	6.3	7.3
Queue Length 50th (m)	14.9	18.2	18.0
Queue Length 95th (m)	30.9	35.0	37.0
Internal Link Dist (m)	145.2	149.5	96.2
Turn Bay Length (m)			
Base Capacity (vph)	529	2242	1560
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.46	0.34	0.44

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	88	143	620	100	153	495
Future Volume (vph)	88	143	620	100	153	495
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0			4.0
Lane Util. Factor	1.00		0.95			0.95
Frpb, ped/bikes	0.99		1.00			1.00
Flpb, ped/bikes	0.99		1.00			1.00
Frt	0.92		0.98			1.00
Flt Protected	0.98		1.00			0.99
Satd. Flow (prot)	1626		3427			3474
Flt Permitted	0.98		1.00			0.66
Satd. Flow (perm)	1626		3427			2334
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	93	151	653	105	161	521
RTOR Reduction (vph)	91	0	11	0	0	0
Lane Group Flow (vph)	153	0	747	0	0	682
Confl. Peds. (#/hr)	12	5		6	6	
Heavy Vehicles (%)	7%	3%	3%	9%	3%	4%
Turn Type	Perm		NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8				6	
Actuated Green, G (s)	13.7		44.6			46.6
Effective Green, g (s)	14.4		45.6			46.6
Actuated g/C Ratio	0.21		0.65			0.67
Clearance Time (s)	5.7		6.0			4.0
Vehicle Extension (s)	5.0		3.5			3.5
Lane Grp Cap (vph)	334		2232			1553
v/s Ratio Prot			0.22			
v/s Ratio Perm	c0.09					c0.29
v/c Ratio	0.46		0.33			0.44
Uniform Delay, d1	24.4		5.4			5.5
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	2.1		0.4			0.1
Delay (s)	26.4		5.8			5.7
Level of Service	C		A			A
Approach Delay (s)	26.4		5.8			5.7
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	8.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	14.7
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	76	185	307	193	269	193	258	378	46	539	1428
v/c Ratio	0.25	0.38	0.71	0.50	0.42	0.44	0.53	0.28	0.07	0.61	0.80
Control Delay	52.5	48.2	20.0	54.1	45.5	8.8	46.6	32.4	5.4	43.4	30.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.5	48.2	20.0	54.1	45.5	8.8	46.6	32.4	5.4	43.4	30.9
Queue Length 50th (m)	8.7	21.5	12.2	22.1	30.9	0.0	29.2	29.7	0.1	58.4	139.8
Queue Length 95th (m)	15.9	29.2	37.2	33.3	39.4	17.3	40.5	58.4	m4.3	76.6	#229.0
Internal Link Dist (m)		205.6			162.2			285.5			95.1
Turn Bay Length (m)	60.0		40.0	50.0		30.0	60.0			60.0	
Base Capacity (vph)	330	1103	655	413	1181	642	499	1348	636	881	1774
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.17	0.47	0.47	0.23	0.30	0.52	0.28	0.07	0.61	0.80

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	165	273	172	239	172	230	336	41	480	1170	101
Future Volume (vph)	68	165	273	172	239	172	230	336	41	480	1170	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.98	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	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3309	3579	1563	3309	3544	1542	3404	3444	1455	3471	3533	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3309	3579	1563	3309	3544	1542	3404	3444	1455	3471	3533	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	76	185	307	193	269	193	258	378	46	539	1315	113
RTOR Reduction (vph)	0	0	215	0	0	158	0	0	28	0	4	0
Lane Group Flow (vph)	76	185	92	193	269	35	258	378	18	539	1424	0
Confl. Peds. (#/hr)	6		2	2		6			7	7		
Heavy Vehicles (%)	7%	2%	3%	7%	3%	4%	4%	6%	10%	2%	2%	3%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	6.7	15.3	15.3	11.1	19.7	19.7	14.3	44.1	44.1	27.5	57.3	
Effective Green, g (s)	9.7	17.3	17.3	14.1	21.7	21.7	17.3	46.1	46.1	30.5	59.3	
Actuated g/C Ratio	0.08	0.14	0.14	0.12	0.18	0.18	0.14	0.38	0.38	0.25	0.49	
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	267	515	225	388	640	278	490	1323	558	882	1745	
v/s Ratio Prot	0.02	0.05		c0.06	c0.08		0.08	0.11		c0.16	c0.40	
v/s Ratio Perm			0.06			0.02			0.01			
v/c Ratio	0.28	0.36	0.41	0.50	0.42	0.13	0.53	0.29	0.03	0.61	0.82	
Uniform Delay, d1	51.9	46.3	46.7	49.6	43.6	41.2	47.6	25.6	23.0	39.5	25.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.22	1.00	1.00	1.00	
Incremental Delay, d2	0.6	0.4	1.2	1.0	0.4	0.2	0.9	0.5	0.1	1.3	4.3	
Delay (s)	52.5	46.8	47.9	50.6	44.0	41.4	44.3	31.8	23.1	40.8	30.1	
Level of Service	D	D	D	D	D	D	D	C	C	D	C	
Approach Delay (s)		48.2			45.2			35.9			33.0	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	37.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	186	203	27	453	77	1192	206	1553
v/c Ratio	0.69	0.30	0.08	0.72	0.31	0.50	0.49	0.61
Control Delay	66.8	18.9	28.8	32.1	10.9	21.1	39.5	31.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.8	18.9	28.8	32.1	10.9	21.1	39.5	31.4
Queue Length 50th (m)	22.3	9.5	4.6	29.5	5.2	63.4	23.9	103.4
Queue Length 95th (m)	#37.9	18.8	10.6	44.2	12.4	92.3	m30.9	151.1
Internal Link Dist (m)		196.0		171.4		239.0		127.7
Turn Bay Length (m)	55.0		110.0		55.0		50.0	
Base Capacity (vph)	269	1099	327	1171	259	2366	447	2547
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.18	0.08	0.39	0.30	0.50	0.46	0.61

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	83	108	25	134	291	72	1039	82	194	970	490
Future Volume (vph)	175	83	108	25	134	291	72	1039	82	194	970	490
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	1.0	5.0		1.0	5.0		1.0	5.0		1.0	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.91		0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.90		1.00	0.99		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	2788	2800		1570	2903		1587	4616		3133	4343	
Flt Permitted	0.95	1.00		0.62	1.00		0.12	1.00		0.95	1.00	
Satd. Flow (perm)	2788	2800		1032	2903		201	4616		3133	4343	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	186	88	115	27	143	310	77	1105	87	206	1032	521
RTOR Reduction (vph)	0	91	0	0	170	0	0	6	0	0	53	0
Lane Group Flow (vph)	186	112	0	27	283	0	77	1186	0	206	1500	0
Confl. Peds. (#/hr)			5	5								
Heavy Vehicles (%)	27%	21%	16%	16%	19%	10%	15%	12%	17%	13%	14%	16%
Turn Type	Prot	NA		pm+pt	NA		pm+pt	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases				8			2					
Actuated Green, G (s)	8.6	22.9		22.7	18.5		64.2	57.8		13.1	64.5	
Effective Green, g (s)	11.6	24.9		28.7	20.5		70.2	59.8		16.1	66.5	
Actuated g/C Ratio	0.10	0.21		0.24	0.17		0.59	0.50		0.13	0.55	
Clearance Time (s)	4.0	7.0		4.0	7.0		4.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	269	581		279	495		226	2300		420	2406	
v/s Ratio Prot	c0.07	0.04		0.01	c0.10		0.03	0.26		c0.07	c0.35	
v/s Ratio Perm				0.02			0.17					
v/c Ratio	0.69	0.19		0.10	0.57		0.34	0.52		0.49	0.62	
Uniform Delay, d1	52.5	39.3		35.3	45.7		11.9	20.3		48.1	18.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.77	1.82	
Incremental Delay, d2	7.5	0.2		0.2	1.6		0.9	0.8		0.6	0.8	
Delay (s)	59.9	39.4		35.5	47.3		12.8	21.2		37.7	34.1	
Level of Service	E	D		D	D		B	C		D	C	
Approach Delay (s)		49.2			46.6			20.6			34.5	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	33.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	46	757	198	499	192	104	113	402	410	262
v/c Ratio	0.11	0.55	0.52	0.32	0.24	0.32	0.40	0.77	0.88	0.65
Control Delay	13.6	29.2	18.0	20.2	3.8	27.9	47.4	19.1	53.4	44.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.6	29.2	18.0	20.2	3.8	27.9	47.4	19.1	53.4	44.0
Queue Length 50th (m)	4.1	64.1	19.3	34.4	0.0	17.2	24.8	13.3	83.7	51.8
Queue Length 95th (m)	11.4	107.7	39.7	58.0	14.0	25.4	37.1	44.2	#105.5	72.9
Internal Link Dist (m)		332.3		134.2			105.5			96.6
Turn Bay Length (m)	90.0		80.0		100.0	35.0		35.0		
Base Capacity (vph)	505	1382	418	1579	813	427	513	666	467	486
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.55	0.47	0.32	0.24	0.24	0.22	0.60	0.88	0.54

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	629	60	180	454	175	95	103	366	373	141	97
Future Volume (vph)	42	629	60	180	454	175	95	103	366	373	141	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96	1.00	1.00	0.95	1.00	0.98	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	0.99	1.00	1.00	0.98	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1428	3220		1613	3174	1440	1718	1762	1459	1693	1596	
Flt Permitted	0.47	1.00		0.24	1.00	1.00	0.57	1.00	1.00	0.53	1.00	
Satd. Flow (perm)	705	3220		416	3174	1440	1031	1762	1459	942	1596	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	46	691	66	198	499	192	104	113	402	410	155	107
RTOR Reduction (vph)	0	5	0	0	0	97	0	0	286	0	22	0
Lane Group Flow (vph)	46	752	0	198	499	95	104	113	116	410	240	0
Confl. Peds. (#/hr)	16		13	13		16	27		37	37		27
Heavy Vehicles (%)	27%	10%	25%	13%	15%	9%	5%	9%	6%	6%	9%	14%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8		8	4		
Actuated Green, G (s)	56.5	50.4		67.3	58.2	58.2	27.8	17.9	17.9	40.5	27.6	
Effective Green, g (s)	56.5	51.3		67.3	59.1	59.1	27.8	19.2	19.2	40.5	28.9	
Actuated g/C Ratio	0.47	0.43		0.56	0.49	0.49	0.23	0.16	0.16	0.34	0.24	
Clearance Time (s)	3.0	5.9		3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	
Vehicle Extension (s)	2.5	5.5		2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	
Lane Grp Cap (vph)	368	1376		371	1563	709	295	281	233	440	384	
v/s Ratio Prot	0.01	0.23		c0.06	0.16		0.03	0.06		c0.15	0.15	
v/s Ratio Perm	0.05			c0.24		0.07	0.05		0.08	c0.16		
v/c Ratio	0.12	0.55		0.53	0.32	0.13	0.35	0.40	0.50	0.93	0.62	
Uniform Delay, d1	17.4	25.7		15.1	18.3	16.5	37.7	45.2	46.0	36.2	40.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	1.6		1.1	0.5	0.4	0.5	1.3	2.3	26.6	3.6	
Delay (s)	17.5	27.2		16.2	18.9	16.9	38.2	46.5	48.3	62.8	44.3	
Level of Service	B	C		B	B	B	D	D	D	E	D	
Approach Delay (s)		26.7			17.9			46.3			55.6	
Approach LOS		C			B			D			E	

Intersection Summary			
HCM 2000 Control Delay	34.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	NBT	SBT
Lane Group Flow (vph)	332	325	546
v/c Ratio	0.66	0.15	0.29
Control Delay	18.4	5.8	7.0
Queue Delay	0.0	0.0	0.0
Total Delay	18.4	5.8	7.0
Queue Length 50th (m)	19.9	6.8	14.1
Queue Length 95th (m)	38.1	15.6	29.2
Internal Link Dist (m)	145.2	28.9	96.2
Turn Bay Length (m)			
Base Capacity (vph)	573	2134	1933
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.58	0.15	0.28

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	95	211	249	50	78	424
Future Volume (vph)	95	211	249	50	78	424
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0			4.0
Lane Util. Factor	1.00		0.95			0.95
Frpb, ped/bikes	0.98		1.00			1.00
Flpb, ped/bikes	1.00		1.00			1.00
Frt	0.91		0.98			1.00
Flt Protected	0.98		1.00			0.99
Satd. Flow (prot)	1616		3407			3485
Flt Permitted	0.98		1.00			0.85
Satd. Flow (perm)	1616		3407			2975
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	103	229	271	54	85	461
RTOR Reduction (vph)	120	0	16	0	0	0
Lane Group Flow (vph)	212	0	309	0	0	546
Confl. Peds. (#/hr)	5	10		4	4	
Heavy Vehicles (%)	7%	3%	3%	9%	3%	4%
Turn Type	Perm		NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8				6	
Actuated Green, G (s)	15.8		42.5			44.5
Effective Green, g (s)	16.5		43.5			44.5
Actuated g/C Ratio	0.24		0.62			0.64
Clearance Time (s)	5.7		6.0			4.0
Vehicle Extension (s)	5.0		3.5			3.5
Lane Grp Cap (vph)	380		2117			1891
v/s Ratio Prot			0.09			
v/s Ratio Perm	c0.13					c0.18
v/c Ratio	0.56		0.15			0.29
Uniform Delay, d1	23.5		5.5			5.7
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	3.0		0.1			0.1
Delay (s)	26.5		5.7			5.8
Level of Service	C		A			A
Approach Delay (s)	26.5		5.7			5.8
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	11.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	14.7
Intersection Capacity Utilization	60.6%	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)	57	63	26	299	582	24
Future Volume (Veh/h)	57	63	26	299	582	24
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	62	68	28	325	633	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				121	53	
pX, platoon unblocked	0.95	0.95	0.95			
vC, conflicting volume	864	330	659			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	744	179	527			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	81	91	97			
cM capacity (veh/h)	322	788	981			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	130	136	217	422	237
Volume Left	62	28	0	0	0
Volume Right	68	0	0	0	26
cSH	466	981	1700	1700	1700
Volume to Capacity	0.28	0.03	0.13	0.25	0.14
Queue Length 95th (m)	8.6	0.7	0.0	0.0	0.0
Control Delay (s)	15.7	2.0	0.0	0.0	0.0
Lane LOS	C	A			
Approach Delay (s)	15.7	0.8		0.0	
Approach LOS	C				

Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	41.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	266	228	456	195	313	621	375	983	74	272	763
v/c Ratio	0.68	0.20	0.66	0.50	0.27	0.92	0.71	0.78	0.13	0.65	0.68
Control Delay	60.7	29.4	17.2	54.8	30.1	43.6	47.2	54.2	39.8	58.4	39.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.7	29.4	17.2	54.8	30.1	43.6	47.2	54.2	39.8	58.4	39.2
Queue Length 50th (m)	31.5	19.7	33.0	22.4	27.3	90.1	43.8	129.9	16.3	32.1	83.1
Queue Length 95th (m)	45.6	29.3	68.3	34.3	38.5	#159.1	m58.1	m151.0	m25.0	46.2	105.5
Internal Link Dist (m)		205.6			162.2			285.5			95.1
Turn Bay Length (m)	60.0		40.0	50.0		30.0	60.0			60.0	
Base Capacity (vph)	393	1222	723	404	1264	712	537	1267	550	421	1121
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.19	0.63	0.48	0.25	0.87	0.70	0.78	0.13	0.65	0.68

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	263	226	451	193	310	615	371	973	73	269	622	134
Future Volume (vph)	263	226	451	193	310	615	371	973	73	269	622	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.98	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	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3541	3579	1575	3471	3614	1591	3541	3650	1587	3506	3486	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3541	3579	1575	3471	3614	1591	3541	3650	1587	3506	3486	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	266	228	456	195	313	621	375	983	74	272	628	135
RTOR Reduction (vph)	0	0	191	0	0	163	0	0	0	0	14	0
Lane Group Flow (vph)	266	228	265	195	313	458	375	983	74	272	749	0
Confl. Peds. (#/hr)	14		14	14		14	3		6	6		3
Heavy Vehicles (%)	0%	2%	1%	2%	1%	0%	0%	0%	1%	1%	2%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	10.3	36.5	36.5	10.5	36.7	36.7	14.9	39.7	39.7	11.3	36.1	
Effective Green, g (s)	13.3	38.5	38.5	13.5	38.7	38.7	17.9	41.7	41.7	14.3	38.1	
Actuated g/C Ratio	0.11	0.32	0.32	0.11	0.32	0.32	0.15	0.35	0.35	0.12	0.32	
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	392	1148	505	390	1165	513	528	1268	551	417	1106	
v/s Ratio Prot	c0.08	0.06		0.06	0.09		c0.11	c0.27		0.08	0.21	
v/s Ratio Perm			0.17			c0.29			0.05			
v/c Ratio	0.68	0.20	0.53	0.50	0.27	0.89	0.71	0.78	0.13	0.65	0.68	
Uniform Delay, d1	51.3	29.6	33.3	50.1	30.2	38.7	48.6	35.0	26.8	50.5	35.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.84	1.40	1.37	1.00	1.00	
Incremental Delay, d2	4.6	0.1	1.0	1.0	0.1	17.7	3.3	3.5	0.4	3.6	3.3	
Delay (s)	55.9	29.6	34.3	51.1	30.3	56.4	44.3	52.5	37.0	54.1	38.9	
Level of Service	E	C	C	D	C	E	D	D	D	D	D	
Approach Delay (s)		39.2			48.2			49.6			42.9	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	45.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	517	283	53	589	74	1163	157	1155
v/c Ratio	0.87	0.25	0.14	1.04dr	0.26	0.63	0.41	0.58
Control Delay	65.3	14.4	20.8	36.6	15.8	32.3	42.0	39.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.3	14.4	20.8	36.6	15.8	32.3	42.0	39.7
Queue Length 50th (m)	62.3	12.0	7.2	49.9	7.8	79.1	18.2	95.9
Queue Length 95th (m)	#105.6	21.4	14.2	64.3	16.2	104.1	m27.0	115.2
Internal Link Dist (m)		196.0		171.4		239.0		127.7
Turn Bay Length (m)	55.0		110.0		55.0		50.0	
Base Capacity (vph)	591	1337	375	1158	291	1834	381	2005
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.21	0.14	0.51	0.25	0.63	0.41	0.58

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	517	132	151	53	100	489	74	1126	37	157	938	217
Future Volume (vph)	517	132	151	53	100	489	74	1126	37	157	938	217
Ideal Flow (vphpl)	2000	1900	1900	1900	2000	2000	1900	1900	1900	1900	1900	1900
Total Lost time (s)	1.0	5.0		1.0	5.0		1.0	5.0		1.0	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.91		0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.88		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3269	3117		1586	3071		1690	4750		3248	4625	
Flt Permitted	0.95	1.00		0.58	1.00		0.17	1.00		0.95	1.00	
Satd. Flow (perm)	3269	3117		965	3071		305	4750		3248	4625	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	517	132	151	53	100	489	74	1126	37	157	938	217
RTOR Reduction (vph)	0	101	0	0	129	0	0	2	0	0	28	0
Lane Group Flow (vph)	517	182	0	53	460	0	74	1161	0	157	1127	0
Confl. Peds. (#/hr)	1		2	2		1	1		2	2		1
Heavy Vehicles (%)	14%	8%	6%	15%	10%	8%	8%	10%	5%	9%	9%	14%
Turn Type	Prot	NA		pm+pt	NA		pm+pt	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases				8			2					
Actuated Green, G (s)	18.7	37.7		30.6	24.8		50.2	43.4		11.1	47.7	
Effective Green, g (s)	21.7	39.7		36.6	26.8		56.2	45.4		14.1	49.7	
Actuated g/C Ratio	0.18	0.33		0.31	0.22		0.47	0.38		0.12	0.41	
Clearance Time (s)	4.0	7.0		4.0	7.0		4.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	591	1031		339	685		255	1797		381	1915	
v/s Ratio Prot	c0.16	0.06		0.01	c0.15		0.02	c0.24		c0.05	0.24	
v/s Ratio Perm				0.04			0.11					
v/c Ratio	0.87	0.18		0.16	1.04dr		0.29	0.65		0.41	0.59	
Uniform Delay, d1	47.8	28.5		30.0	42.6		18.5	30.7		49.1	27.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.81	1.49	
Incremental Delay, d2	13.6	0.1		0.2	2.6		0.6	1.8		0.6	1.1	
Delay (s)	61.4	28.6		30.2	45.2		19.1	32.5		40.3	41.6	
Level of Service	E	C		C	D		B	C		D	D	
Approach Delay (s)		49.8			43.9			31.7			41.5	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	40.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.0%	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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	106	556	303	829	565	150	167	221	297	365
v/c Ratio	0.36	0.46	0.65	0.58	0.60	0.55	0.39	0.43	0.64	0.81
Control Delay	19.3	30.4	23.9	30.4	5.4	30.2	40.5	7.0	31.5	54.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.3	30.4	23.9	30.4	5.4	30.2	40.5	7.0	31.5	54.2
Queue Length 50th (m)	12.0	50.5	38.7	77.8	0.0	22.3	33.3	0.0	48.5	76.7
Queue Length 95th (m)	24.2	73.7	65.3	115.2	27.7	32.9	49.2	17.7	64.1	108.0
Internal Link Dist (m)		332.3		134.2			105.5			91.5
Turn Bay Length (m)	90.0		80.0		100.0	35.0		35.0		
Base Capacity (vph)	397	1201	489	1433	947	337	549	596	466	504
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.46	0.62	0.58	0.60	0.45	0.30	0.37	0.64	0.72

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	404	118	285	779	531	141	157	208	279	254	89
Future Volume (vph)	100	404	118	285	779	531	141	157	208	279	254	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.94	1.00	1.00	0.95	1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00	0.99	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1626	3154		1746	3380	1466	1605	1883	1509	1701	1661	
Flt Permitted	0.25	1.00		0.33	1.00	1.00	0.27	1.00	1.00	0.48	1.00	
Satd. Flow (perm)	433	3154		598	3380	1466	454	1883	1509	864	1661	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	106	430	126	303	829	565	150	167	221	297	270	95
RTOR Reduction (vph)	0	20	0	0	0	325	0	0	171	0	11	0
Lane Group Flow (vph)	106	536	0	303	829	240	150	167	50	297	354	0
Confl. Peds. (#/hr)	27		18	18		27	50		33	33		50
Heavy Vehicles (%)	12%	10%	10%	4%	8%	5%	13%	2%	3%	6%	10%	7%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8		8	4		
Actuated Green, G (s)	53.5	44.1		62.4	50.0	50.0	38.0	25.9	25.9	45.4	30.3	
Effective Green, g (s)	53.5	45.0		62.4	50.9	50.9	38.0	27.2	27.2	45.4	31.6	
Actuated g/C Ratio	0.45	0.38		0.52	0.42	0.42	0.32	0.23	0.23	0.38	0.26	
Clearance Time (s)	3.0	5.9		3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	
Vehicle Extension (s)	2.5	5.5		2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	
Lane Grp Cap (vph)	286	1182		457	1433	621	259	426	342	441	437	
v/s Ratio Prot	0.03	0.17		c0.08	0.25		0.06	0.09		c0.09	c0.21	
v/s Ratio Perm	0.14			c0.26		0.16	0.12		0.03	0.16		
v/c Ratio	0.37	0.45		0.66	0.58	0.39	0.58	0.39	0.15	0.67	0.81	
Uniform Delay, d1	20.4	28.2		17.8	26.4	23.8	31.8	39.4	37.1	28.4	41.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.6	1.3		3.2	1.7	1.8	2.6	0.8	0.3	3.7	11.2	
Delay (s)	20.9	29.5		21.0	28.1	25.6	34.3	40.2	37.4	32.1	52.6	
Level of Service	C	C		C	C	C	C	D	D	C	D	
Approach Delay (s)		28.1			26.0			37.4			43.4	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	31.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	87.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	NBT	SBT
Lane Group Flow (vph)	244	697	633
v/c Ratio	0.57	0.31	0.40
Control Delay	18.2	6.0	6.9
Queue Delay	0.0	0.0	0.0
Total Delay	18.2	6.0	6.9
Queue Length 50th (m)	14.9	16.2	16.1
Queue Length 95th (m)	31.1	31.2	33.0
Internal Link Dist (m)	145.2	34.0	96.2
Turn Bay Length (m)			
Base Capacity (vph)	528	2238	1574
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.46	0.31	0.40

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	88	143	562	100	153	448
Future Volume (vph)	88	143	562	100	153	448
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0			4.0
Lane Util. Factor	1.00		0.95			0.95
Frpb, ped/bikes	0.99		1.00			1.00
Flpb, ped/bikes	0.99		1.00			1.00
Frt	0.92		0.98			1.00
Flt Protected	0.98		1.00			0.99
Satd. Flow (prot)	1626		3417			3470
Flt Permitted	0.98		1.00			0.67
Satd. Flow (perm)	1626		3417			2353
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	93	151	592	105	161	472
RTOR Reduction (vph)	91	0	13	0	0	0
Lane Group Flow (vph)	153	0	684	0	0	633
Confl. Peds. (#/hr)	12	5		6	6	
Heavy Vehicles (%)	7%	3%	3%	9%	3%	4%
Turn Type	Perm		NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8				6	
Actuated Green, G (s)	13.7		44.6			46.6
Effective Green, g (s)	14.4		45.6			46.6
Actuated g/C Ratio	0.21		0.65			0.67
Clearance Time (s)	5.7		6.0			4.0
Vehicle Extension (s)	5.0		3.5			3.5
Lane Grp Cap (vph)	334		2225			1566
v/s Ratio Prot			0.20			
v/s Ratio Perm	c0.09					c0.27
v/c Ratio	0.46		0.31			0.40
Uniform Delay, d1	24.4		5.3			5.4
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	2.1		0.4			0.1
Delay (s)	26.4		5.7			5.5
Level of Service	C		A			A
Approach Delay (s)	26.4		5.7			5.5
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	8.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	14.7
Intersection Capacity Utilization	61.5%	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)	64	72	87	662	536	78
Future Volume (Veh/h)	64	72	87	662	536	78
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	70	78	95	720	583	85
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				116	58	
pX, platoon unblocked	0.95	0.95	0.95			
vC, conflicting volume	1176	334	668			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1083	199	550			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	61	90	90			
cM capacity (veh/h)	182	770	967			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	148	335	480	389	279
Volume Left	70	95	0	0	0
Volume Right	78	0	0	0	85
cSH	304	967	1700	1700	1700
Volume to Capacity	0.49	0.10	0.28	0.23	0.16
Queue Length 95th (m)	19.1	2.5	0.0	0.0	0.0
Control Delay (s)	27.5	3.3	0.0	0.0	0.0
Lane LOS	D	A			
Approach Delay (s)	27.5	1.4		0.0	
Approach LOS	D				

Intersection Summary				
Average Delay	3.2			
Intersection Capacity Utilization	56.1%	ICU Level of Service	B	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	76	206	307	193	297	193	258	397	46	539	1495
v/c Ratio	0.25	0.41	0.71	0.50	0.46	0.44	0.53	0.30	0.07	0.61	0.85
Control Delay	52.5	48.6	19.8	54.1	45.9	8.7	46.0	33.9	6.0	43.4	33.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.5	48.6	19.8	54.1	45.9	8.7	46.0	33.9	6.0	43.4	33.0
Queue Length 50th (m)	8.7	24.0	12.3	22.1	34.2	0.0	29.1	32.9	0.2	58.4	153.0
Queue Length 95th (m)	15.9	31.9	37.4	33.3	43.1	17.3	40.8	62.3	m4.2	76.7	#246.4
Internal Link Dist (m)		205.6			162.2			285.5			95.1
Turn Bay Length (m)	60.0		40.0	50.0		30.0	60.0			60.0	
Base Capacity (vph)	330	1103	654	413	1181	642	499	1339	632	880	1767
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.19	0.47	0.47	0.25	0.30	0.52	0.30	0.07	0.61	0.85

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	183	273	172	264	172	230	353	41	480	1230	101
Future Volume (vph)	68	183	273	172	264	172	230	353	41	480	1230	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.98	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	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3309	3579	1563	3309	3544	1542	3404	3444	1455	3471	3535	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3309	3579	1563	3309	3544	1542	3404	3444	1455	3471	3535	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	76	206	307	193	297	193	258	397	46	539	1382	113
RTOR Reduction (vph)	0	0	213	0	0	158	0	0	28	0	4	0
Lane Group Flow (vph)	76	206	94	193	297	35	258	397	18	539	1491	0
Confl. Peds. (#/hr)	6		2	2		6			7	7		
Heavy Vehicles (%)	7%	2%	3%	7%	3%	4%	4%	6%	10%	2%	2%	3%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	6.7	15.6	15.6	11.1	20.0	20.0	14.3	43.9	43.9	27.4	57.0	
Effective Green, g (s)	9.7	17.6	17.6	14.1	22.0	22.0	17.3	45.9	45.9	30.4	59.0	
Actuated g/C Ratio	0.08	0.15	0.15	0.12	0.18	0.18	0.14	0.38	0.38	0.25	0.49	
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	267	524	229	388	649	282	490	1317	556	879	1738	
v/s Ratio Prot	0.02	0.06		c0.06	c0.08		0.08	0.12		c0.16	c0.42	
v/s Ratio Perm			0.06			0.02			0.01			
v/c Ratio	0.28	0.39	0.41	0.50	0.46	0.13	0.53	0.30	0.03	0.61	0.86	
Uniform Delay, d1	51.9	46.4	46.5	49.6	43.7	41.0	47.6	25.9	23.2	39.6	26.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.90	1.27	1.00	1.00	1.00	
Incremental Delay, d2	0.6	0.5	1.2	1.0	0.5	0.2	0.9	0.5	0.1	1.3	5.7	
Delay (s)	52.5	46.9	47.7	50.6	44.2	41.2	43.8	33.2	23.2	40.9	32.5	
Level of Service	D	D	D	D	D	D	D	C	C	D	C	
Approach Delay (s)		48.0			45.2			36.5			34.8	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	38.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	186	213	27	467	77	1250	206	1606
v/c Ratio	0.71	0.31	0.08	0.73	0.32	0.53	0.49	0.63
Control Delay	68.3	19.5	28.4	32.8	11.5	21.9	39.0	32.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.3	19.5	28.4	32.8	11.5	21.9	39.0	32.4
Queue Length 50th (m)	22.3	10.5	4.6	31.5	5.3	68.7	23.7	110.5
Queue Length 95th (m)	#37.9	20.1	10.5	46.2	12.6	99.5	m29.8	156.7
Internal Link Dist (m)		196.0		171.4		239.0		127.7
Turn Bay Length (m)	55.0		110.0		55.0		50.0	
Base Capacity (vph)	262	1103	330	1171	250	2355	447	2533
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.19	0.08	0.40	0.31	0.53	0.46	0.63

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	92	108	25	148	291	72	1093	82	194	1020	490
Future Volume (vph)	175	92	108	25	148	291	72	1093	82	194	1020	490
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	1.0	5.0		1.0	5.0		1.0	5.0		1.0	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.91		0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.90		1.00	0.99		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	2788	2810		1570	2908		1587	4619		3133	4352	
Flt Permitted	0.95	1.00		0.62	1.00		0.11	1.00		0.95	1.00	
Satd. Flow (perm)	2788	2810		1022	2908		184	4619		3133	4352	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	186	98	115	27	157	310	77	1163	87	206	1085	521
RTOR Reduction (vph)	0	91	0	0	167	0	0	5	0	0	50	0
Lane Group Flow (vph)	186	122	0	27	300	0	77	1245	0	206	1556	0
Confl. Peds. (#/hr)			5	5								
Heavy Vehicles (%)	27%	21%	16%	16%	19%	10%	15%	12%	17%	13%	14%	16%
Turn Type	Prot	NA		pm+pt	NA		pm+pt	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases				8			2					
Actuated Green, G (s)	8.3	23.2		23.3	19.1		63.9	57.5		13.1	64.2	
Effective Green, g (s)	11.3	25.2		29.3	21.1		69.9	59.5		16.1	66.2	
Actuated g/C Ratio	0.09	0.21		0.24	0.18		0.58	0.50		0.13	0.55	
Clearance Time (s)	4.0	7.0		4.0	7.0		4.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	262	590		282	511		217	2290		420	2400	
v/s Ratio Prot	c0.07	0.04		0.01	c0.10		0.03	0.27		c0.07	c0.36	
v/s Ratio Perm				0.02			0.18					
v/c Ratio	0.71	0.21		0.10	0.59		0.35	0.54		0.49	0.65	
Uniform Delay, d1	52.8	39.1		34.9	45.4		12.3	20.9		48.1	18.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.76	1.79	
Incremental Delay, d2	8.5	0.2		0.1	1.7		1.0	0.9		0.6	0.9	
Delay (s)	61.3	39.3		35.0	47.2		13.3	21.8		37.3	34.6	
Level of Service	E	D		D	D		B	C		D	C	
Approach Delay (s)		49.6			46.5			21.3			34.9	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	33.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	46	830	198	551	192	104	124	402	410	277
v/c Ratio	0.12	0.61	0.54	0.35	0.24	0.34	0.42	0.77	0.91	0.69
Control Delay	14.0	31.3	18.7	20.7	3.9	28.1	47.0	19.4	58.7	46.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.0	31.3	18.7	20.7	3.9	28.1	47.0	19.4	58.7	46.5
Queue Length 50th (m)	4.2	75.4	19.8	39.6	0.0	16.9	26.7	14.7	82.4	55.5
Queue Length 95th (m)	11.6	#130.2	40.1	65.3	14.1	25.2	39.9	46.2	#106.1	77.4
Internal Link Dist (m)		332.3		134.2			105.5			96.6
Turn Bay Length (m)	90.0		80.0		100.0	35.0		35.0		
Base Capacity (vph)	488	1364	396	1586	815	408	513	660	450	488
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.61	0.50	0.35	0.24	0.25	0.24	0.61	0.91	0.57

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	695	60	180	501	175	95	113	366	373	155	97
Future Volume (vph)	42	695	60	180	501	175	95	113	366	373	155	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96	1.00	1.00	0.95	1.00	0.98	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	0.99	1.00	1.00	0.98	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1429	3229		1613	3174	1440	1722	1762	1459	1695	1605	
Flt Permitted	0.45	1.00		0.21	1.00	1.00	0.49	1.00	1.00	0.51	1.00	
Satd. Flow (perm)	671	3229		354	3174	1440	886	1762	1459	911	1605	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	46	764	66	198	551	192	104	124	402	410	170	107
RTOR Reduction (vph)	0	5	0	0	0	97	0	0	276	0	21	0
Lane Group Flow (vph)	46	825	0	198	551	95	104	124	126	410	256	0
Confl. Peds. (#/hr)	16		13	13		16	27		37	37		27
Heavy Vehicles (%)	27%	10%	25%	13%	15%	9%	5%	9%	6%	6%	9%	14%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8		8	4		
Actuated Green, G (s)	55.7	49.6		67.6	58.5	58.5	28.8	18.9	18.9	40.2	27.3	
Effective Green, g (s)	55.7	50.5		67.6	59.4	59.4	28.8	20.2	20.2	40.2	28.6	
Actuated g/C Ratio	0.46	0.42		0.56	0.49	0.49	0.24	0.17	0.17	0.34	0.24	
Clearance Time (s)	3.0	5.9		3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	
Vehicle Extension (s)	2.5	5.5		2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	
Lane Grp Cap (vph)	349	1358		356	1571	712	281	296	245	424	382	
v/s Ratio Prot	0.01	c0.26		c0.07	0.17		0.03	0.07		c0.15	0.16	
v/s Ratio Perm	0.05			0.24		0.07	0.06		0.09	c0.18		
v/c Ratio	0.13	0.61		0.56	0.35	0.13	0.37	0.42	0.51	0.97	0.67	
Uniform Delay, d1	17.8	27.0		15.7	18.5	16.4	36.9	44.6	45.4	37.1	41.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	2.0		1.5	0.6	0.4	0.6	1.3	2.4	34.8	5.0	
Delay (s)	17.9	29.1		17.2	19.1	16.8	37.5	46.0	47.8	71.9	46.4	
Level of Service	B	C		B	B	B	D	D	D	E	D	
Approach Delay (s)		28.5			18.2			45.8			61.7	
Approach LOS		C			B			D			E	

Intersection Summary			
HCM 2000 Control Delay	36.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	88.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	NBT	SBT
Lane Group Flow (vph)	332	353	595
v/c Ratio	0.66	0.17	0.31
Control Delay	18.4	6.0	7.2
Queue Delay	0.0	0.0	0.0
Total Delay	18.4	6.0	7.2
Queue Length 50th (m)	19.9	7.7	15.6
Queue Length 95th (m)	38.1	17.2	32.3
Internal Link Dist (m)	145.2	28.9	96.2
Turn Bay Length (m)			
Base Capacity (vph)	573	2139	1935
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.58	0.17	0.31

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	95	211	275	50	78	469
Future Volume (vph)	95	211	275	50	78	469
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0			4.0
Lane Util. Factor	1.00		0.95			0.95
Frpb, ped/bikes	0.98		1.00			1.00
Flpb, ped/bikes	1.00		1.00			1.00
Frt	0.91		0.98			1.00
Flt Protected	0.98		1.00			0.99
Satd. Flow (prot)	1616		3417			3487
Flt Permitted	0.98		1.00			0.85
Satd. Flow (perm)	1616		3417			2980
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	103	229	299	54	85	510
RTOR Reduction (vph)	120	0	14	0	0	0
Lane Group Flow (vph)	212	0	339	0	0	595
Confl. Peds. (#/hr)	5	10		4	4	
Heavy Vehicles (%)	7%	3%	3%	9%	3%	4%
Turn Type	Perm		NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8				6	
Actuated Green, G (s)	15.8		42.5			44.5
Effective Green, g (s)	16.5		43.5			44.5
Actuated g/C Ratio	0.24		0.62			0.64
Clearance Time (s)	5.7		6.0			4.0
Vehicle Extension (s)	5.0		3.5			3.5
Lane Grp Cap (vph)	380		2123			1894
v/s Ratio Prot			0.10			
v/s Ratio Perm	c0.13					c0.20
v/c Ratio	0.56		0.16			0.31
Uniform Delay, d1	23.5		5.6			5.8
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	3.0		0.2			0.1
Delay (s)	26.5		5.7			5.9
Level of Service	C		A			A
Approach Delay (s)	26.5		5.7			5.9
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	14.7
Intersection Capacity Utilization	60.9%	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)	57	63	26	325	627	24
Future Volume (Veh/h)	57	63	26	325	627	24
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	62	68	28	353	682	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				121	53	
pX, platoon unblocked	0.94	0.94	0.94			
vC, conflicting volume	928	354	708			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	790	179	556			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	79	91	97			
cM capacity (veh/h)	298	782	948			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	130	146	235	455	253
Volume Left	62	28	0	0	0
Volume Right	68	0	0	0	26
cSH	440	948	1700	1700	1700
Volume to Capacity	0.30	0.03	0.14	0.27	0.15
Queue Length 95th (m)	9.3	0.7	0.0	0.0	0.0
Control Delay (s)	16.6	1.9	0.0	0.0	0.0
Lane LOS	C	A			
Approach Delay (s)	16.6	0.7		0.0	
Approach LOS	C				

Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	42.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	266	252	456	195	345	621	375	1033	74	272	796
v/c Ratio	0.69	0.22	0.66	0.50	0.29	0.92	0.71	0.82	0.13	0.65	0.71
Control Delay	61.6	29.7	17.8	54.8	30.4	43.4	47.5	55.0	39.5	58.4	40.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.6	29.7	17.8	54.8	30.4	43.4	47.5	55.0	39.5	58.4	40.1
Queue Length 50th (m)	31.5	22.0	34.4	22.4	30.5	90.5	43.8	136.6	16.3	32.1	88.1
Queue Length 95th (m)	45.6	32.0	69.9	34.3	42.3	#159.8	m58.1	m#158.8	m25.0	46.2	111.1
Internal Link Dist (m)		205.6			162.2			285.5			95.1
Turn Bay Length (m)	60.0		40.0	50.0		30.0	60.0			60.0	
Base Capacity (vph)	385	1222	719	404	1264	711	537	1267	551	421	1123
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.21	0.63	0.48	0.27	0.87	0.70	0.82	0.13	0.65	0.71

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	263	249	451	193	342	615	371	1023	73	269	654	134
Future Volume (vph)	263	249	451	193	342	615	371	1023	73	269	654	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.98	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	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3541	3579	1575	3471	3614	1591	3541	3650	1587	3506	3490	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3541	3579	1575	3471	3614	1591	3541	3650	1587	3506	3490	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	266	252	456	195	345	621	375	1033	74	272	661	135
RTOR Reduction (vph)	0	0	187	0	0	161	0	0	0	0	14	0
Lane Group Flow (vph)	266	252	269	195	345	460	375	1033	74	272	782	0
Confl. Peds. (#/hr)	14		14	14		14	3		6	6		3
Heavy Vehicles (%)	0%	2%	1%	2%	1%	0%	0%	0%	1%	1%	2%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	10.1	36.5	36.5	10.5	36.9	36.9	14.9	39.7	39.7	11.3	36.1	
Effective Green, g (s)	13.1	38.5	38.5	13.5	38.9	38.9	17.9	41.7	41.7	14.3	38.1	
Actuated g/C Ratio	0.11	0.32	0.32	0.11	0.32	0.32	0.15	0.35	0.35	0.12	0.32	
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	386	1148	505	390	1171	515	528	1268	551	417	1108	
v/s Ratio Prot	c0.08	0.07		0.06	0.10		c0.11	c0.28		0.08	0.22	
v/s Ratio Perm			0.17			c0.29			0.05			
v/c Ratio	0.69	0.22	0.53	0.50	0.29	0.89	0.71	0.81	0.13	0.65	0.71	
Uniform Delay, d1	51.5	29.8	33.4	50.1	30.3	38.6	48.6	35.6	26.8	50.5	36.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.85	1.38	1.36	1.00	1.00	
Incremental Delay, d2	5.1	0.1	1.1	1.0	0.1	17.7	3.3	4.4	0.4	3.6	3.8	
Delay (s)	56.6	29.9	34.5	51.1	30.4	56.2	44.6	53.6	36.8	54.1	39.8	
Level of Service	E	C	C	D	C	E	D	D	D	D	D	
Approach Delay (s)		39.3			47.7			50.5			43.5	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	45.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	517	283	53	589	74	1163	157	1155
v/c Ratio	0.87	0.25	0.14	1.04dr	0.26	0.63	0.41	0.58
Control Delay	65.3	14.4	20.8	36.6	15.8	32.3	41.6	40.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.3	14.4	20.8	36.6	15.8	32.3	41.6	40.8
Queue Length 50th (m)	62.3	12.0	7.2	49.9	7.8	79.1	18.3	96.8
Queue Length 95th (m)	#105.6	21.4	14.2	64.3	16.2	104.1	m26.7	115.8
Internal Link Dist (m)		196.0		171.4		239.0		127.7
Turn Bay Length (m)	55.0		110.0		55.0		50.0	
Base Capacity (vph)	591	1337	375	1158	291	1834	381	2005
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.21	0.14	0.51	0.25	0.63	0.41	0.58

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	517	132	151	53	100	489	74	1126	37	157	938	217
Future Volume (vph)	517	132	151	53	100	489	74	1126	37	157	938	217
Ideal Flow (vphpl)	2000	1900	1900	1900	2000	2000	1900	1900	1900	1900	1900	1900
Total Lost time (s)	1.0	5.0		1.0	5.0		1.0	5.0		1.0	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.91		0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.88		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3269	3117		1586	3071		1690	4750		3248	4625	
Flt Permitted	0.95	1.00		0.58	1.00		0.17	1.00		0.95	1.00	
Satd. Flow (perm)	3269	3117		965	3071		305	4750		3248	4625	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	517	132	151	53	100	489	74	1126	37	157	938	217
RTOR Reduction (vph)	0	101	0	0	129	0	0	2	0	0	28	0
Lane Group Flow (vph)	517	182	0	53	460	0	74	1161	0	157	1127	0
Confl. Peds. (#/hr)	1		2	2		1	1		2	2		1
Heavy Vehicles (%)	14%	8%	6%	15%	10%	8%	8%	10%	5%	9%	9%	14%
Turn Type	Prot	NA		pm+pt	NA		pm+pt	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases				8			2					
Actuated Green, G (s)	18.7	37.7		30.6	24.8		50.2	43.4		11.1	47.7	
Effective Green, g (s)	21.7	39.7		36.6	26.8		56.2	45.4		14.1	49.7	
Actuated g/C Ratio	0.18	0.33		0.31	0.22		0.47	0.38		0.12	0.41	
Clearance Time (s)	4.0	7.0		4.0	7.0		4.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	591	1031		339	685		255	1797		381	1915	
v/s Ratio Prot	c0.16	0.06		0.01	c0.15		0.02	c0.24		c0.05	0.24	
v/s Ratio Perm				0.04			0.11					
v/c Ratio	0.87	0.18		0.16	1.04dr		0.29	0.65		0.41	0.59	
Uniform Delay, d1	47.8	28.5		30.0	42.6		18.5	30.7		49.1	27.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.80	1.54	
Incremental Delay, d2	13.6	0.1		0.2	2.6		0.6	1.8		0.5	1.0	
Delay (s)	61.4	28.6		30.2	45.2		19.1	32.5		40.0	42.9	
Level of Service	E	C		C	D		B	C		D	D	
Approach Delay (s)		49.8			43.9			31.7			42.5	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	40.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.0%	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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	106	600	303	915	565	150	183	221	297	392
v/c Ratio	0.41	0.52	0.69	0.66	0.60	0.56	0.40	0.42	0.64	0.83
Control Delay	21.4	32.5	26.9	33.5	5.6	29.8	39.8	6.7	30.3	54.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.4	32.5	26.9	33.5	5.6	29.8	39.8	6.7	30.3	54.4
Queue Length 50th (m)	12.4	58.2	40.2	91.8	0.0	21.7	36.0	0.0	47.1	82.4
Queue Length 95th (m)	24.2	81.2	65.3	130.9	27.9	32.9	53.7	17.7	64.1	118.0
Internal Link Dist (m)		332.3		134.2			105.5			91.5
Turn Bay Length (m)	90.0		80.0		100.0	35.0		35.0		
Base Capacity (vph)	359	1159	455	1385	934	334	549	596	471	510
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.52	0.67	0.66	0.60	0.45	0.33	0.37	0.63	0.77

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	446	118	285	860	531	141	172	208	279	279	89
Future Volume (vph)	100	446	118	285	860	531	141	172	208	279	279	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.94	1.00	1.00	0.95	1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00	0.99	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1627	3166		1748	3380	1466	1607	1883	1509	1703	1667	
Flt Permitted	0.20	1.00		0.29	1.00	1.00	0.25	1.00	1.00	0.47	1.00	
Satd. Flow (perm)	346	3166		536	3380	1466	418	1883	1509	838	1667	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	106	474	126	303	915	565	150	183	221	297	297	95
RTOR Reduction (vph)	0	18	0	0	0	333	0	0	168	0	10	0
Lane Group Flow (vph)	106	582	0	303	915	232	150	183	53	297	382	0
Confl. Peds. (#/hr)	27		18	18		27	50		33	33		50
Heavy Vehicles (%)	12%	10%	10%	4%	8%	5%	13%	2%	3%	6%	10%	7%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8		8	4		
Actuated Green, G (s)	51.9	42.4		60.8	48.3	48.3	39.6	27.6	27.6	47.0	32.0	
Effective Green, g (s)	51.9	43.3		60.8	49.2	49.2	39.6	28.9	28.9	47.0	33.3	
Actuated g/C Ratio	0.43	0.36		0.51	0.41	0.41	0.33	0.24	0.24	0.39	0.28	
Clearance Time (s)	3.0	5.9		3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	
Vehicle Extension (s)	2.5	5.5		2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	
Lane Grp Cap (vph)	251	1142		427	1385	601	256	453	363	446	462	
v/s Ratio Prot	0.03	0.18		c0.09	0.27		0.06	0.10		c0.09	c0.23	
v/s Ratio Perm	0.15			c0.27		0.16	0.13		0.04	0.17		
v/c Ratio	0.42	0.51		0.71	0.66	0.39	0.59	0.40	0.15	0.67	0.83	
Uniform Delay, d1	21.8	30.0		19.1	28.6	24.8	30.8	38.3	35.8	27.3	40.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.8	1.6		5.0	2.5	1.9	2.8	0.8	0.3	3.4	12.0	
Delay (s)	22.7	31.7		24.0	31.1	26.7	33.6	39.1	36.1	30.7	52.7	
Level of Service	C	C		C	C	C	C	D	D	C	D	
Approach Delay (s)		30.3			28.5			36.4			43.2	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	32.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	NBT	SBT
Lane Group Flow (vph)	244	758	682
v/c Ratio	0.57	0.34	0.44
Control Delay	18.1	6.3	7.3
Queue Delay	0.0	0.0	0.0
Total Delay	18.1	6.3	7.3
Queue Length 50th (m)	14.9	18.2	18.0
Queue Length 95th (m)	30.9	35.0	37.0
Internal Link Dist (m)	145.2	34.0	96.2
Turn Bay Length (m)			
Base Capacity (vph)	529	2242	1560
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.46	0.34	0.44

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	88	143	620	100	153	495
Future Volume (vph)	88	143	620	100	153	495
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0			4.0
Lane Util. Factor	1.00		0.95			0.95
Frpb, ped/bikes	0.99		1.00			1.00
Flpb, ped/bikes	0.99		1.00			1.00
Frt	0.92		0.98			1.00
Flt Protected	0.98		1.00			0.99
Satd. Flow (prot)	1626		3427			3474
Flt Permitted	0.98		1.00			0.66
Satd. Flow (perm)	1626		3427			2334
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	93	151	653	105	161	521
RTOR Reduction (vph)	91	0	11	0	0	0
Lane Group Flow (vph)	153	0	747	0	0	682
Confl. Peds. (#/hr)	12	5		6	6	
Heavy Vehicles (%)	7%	3%	3%	9%	3%	4%
Turn Type	Perm		NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8				6	
Actuated Green, G (s)	13.7		44.6			46.6
Effective Green, g (s)	14.4		45.6			46.6
Actuated g/C Ratio	0.21		0.65			0.67
Clearance Time (s)	5.7		6.0			4.0
Vehicle Extension (s)	5.0		3.5			3.5
Lane Grp Cap (vph)	334		2232			1553
v/s Ratio Prot			0.22			
v/s Ratio Perm	c0.09					c0.29
v/c Ratio	0.46		0.33			0.44
Uniform Delay, d1	24.4		5.4			5.5
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	2.1		0.4			0.1
Delay (s)	26.4		5.8			5.7
Level of Service	C		A			A
Approach Delay (s)	26.4		5.8			5.7
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	8.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	14.7
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		

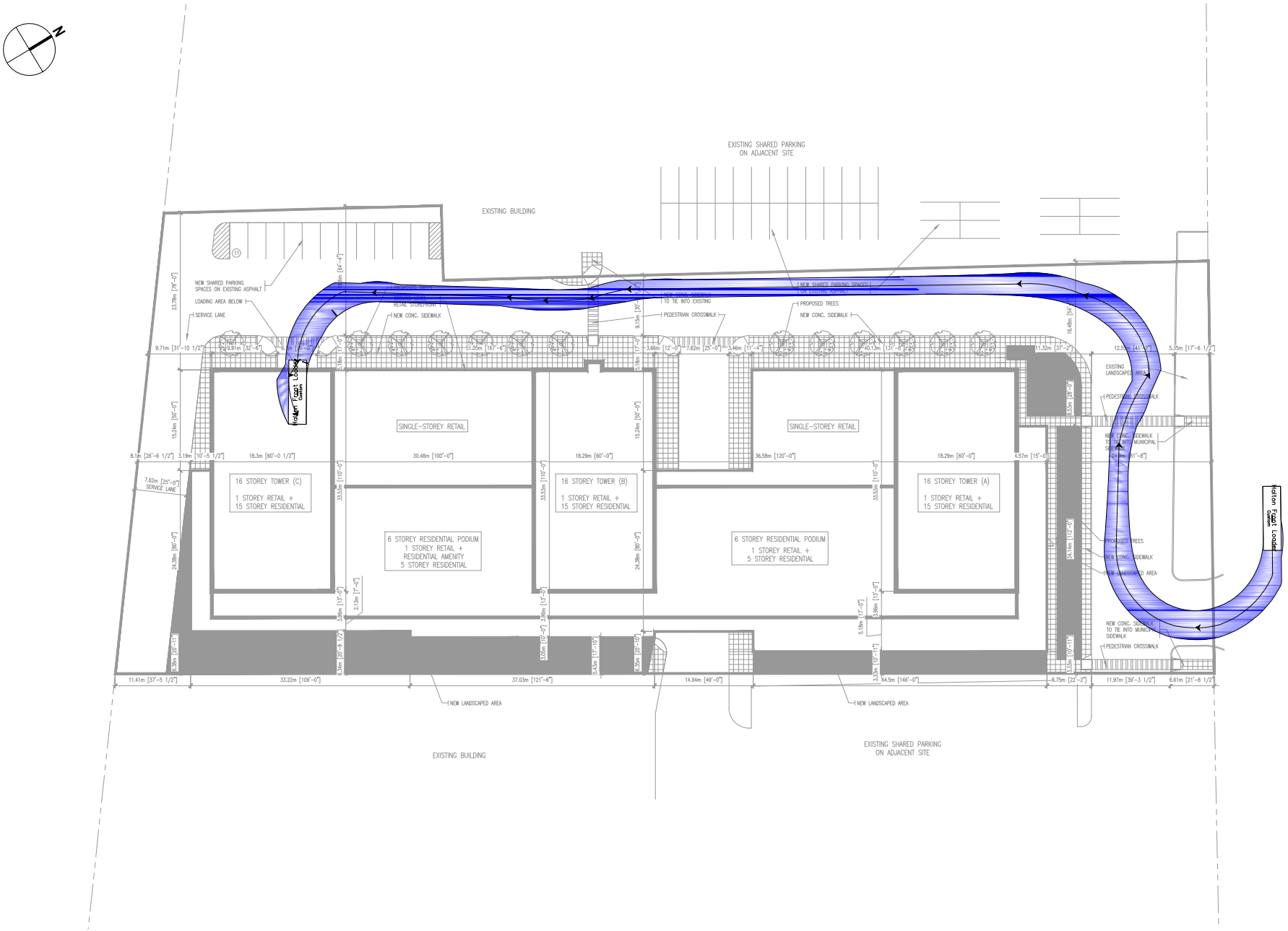
c Critical Lane Group

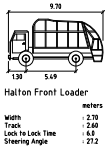
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	64	72	87	720	583	78
Future Volume (Veh/h)	64	72	87	720	583	78
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	70	78	95	783	634	85
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				116	58	
pX, platoon unblocked	0.94	0.94	0.94			
vC, conflicting volume	1258	360	719			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1150	196	578			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	57	90	90			
cM capacity (veh/h)	162	765	934			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	148	356	522	423	296
Volume Left	70	95	0	0	0
Volume Right	78	0	0	0	85
cSH	277	934	1700	1700	1700
Volume to Capacity	0.53	0.10	0.31	0.25	0.17
Queue Length 95th (m)	22.1	2.6	0.0	0.0	0.0
Control Delay (s)	31.9	3.3	0.0	0.0	0.0
Lane LOS	D	A			
Approach Delay (s)	31.9	1.3		0.0	
Approach LOS	D				

Intersection Summary				
Average Delay	3.4			
Intersection Capacity Utilization	59.0%	ICU Level of Service	B	
Analysis Period (min)	15			

Appendix D
Vehicle Swept Path Analysis





550 Kerr Street
Traffic Impact Study

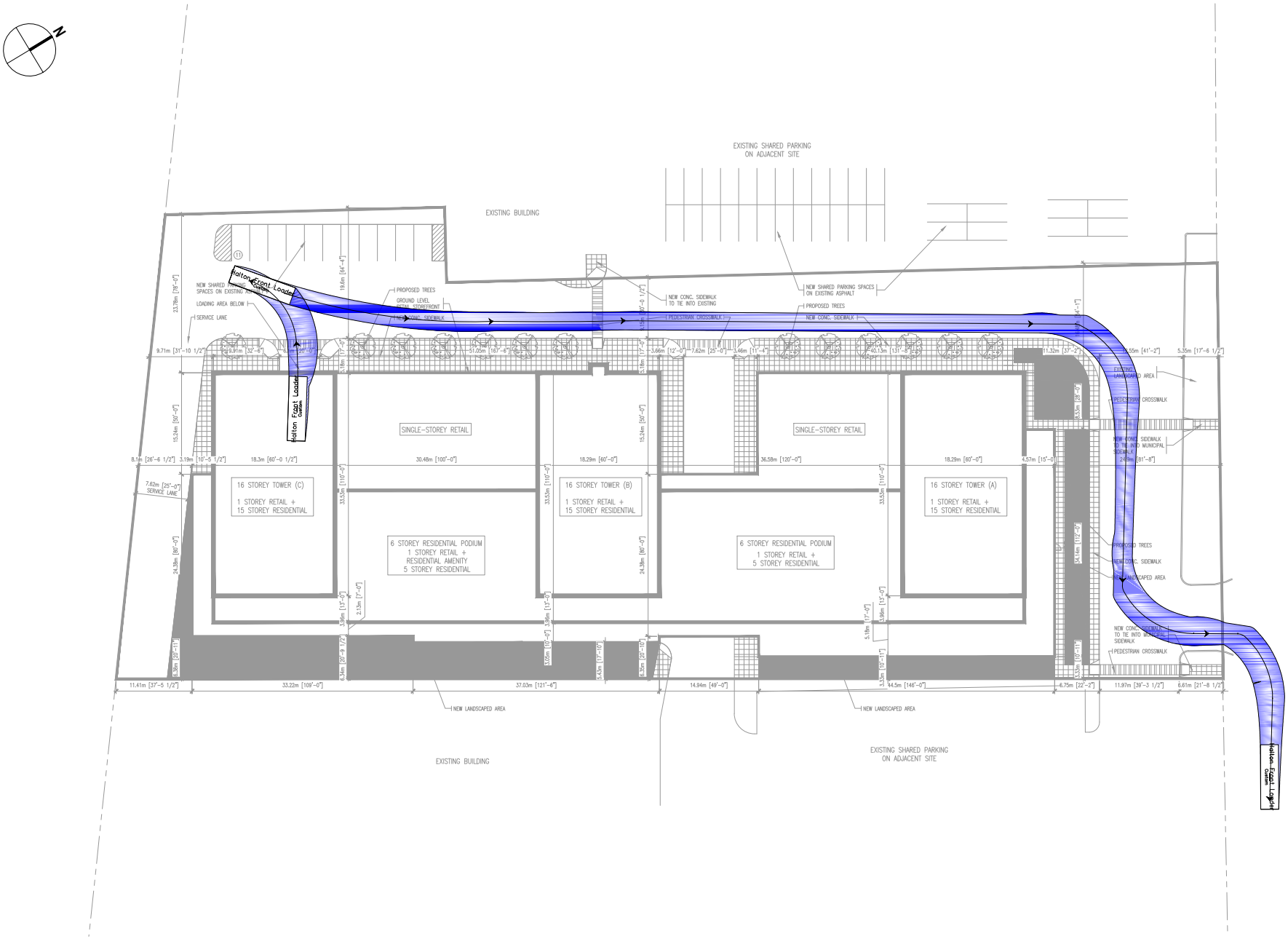
Vehicle Swept Path Analysis
Halton Front Loader - Inbound

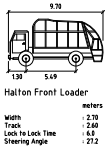
Job Number
Revision
Date 06.27.2019

Figure 1

6705 Millcreek Drive, Unit 1, Mississauga, ON L5N 5M4 **T** 1 416 213 7121 **F** 1 905 890 8499 **W** www.ghd.com

Plot Date: 27 June 2019 - 12:09 PM
Plotted by: Ivan Drewnitski
Cad File No: G:\Legacy\SernasTransTech\Projects\2018\550 Kerr Street\Drawing\550 Kerr - AutoTurn - GHD_27June2019.dwg





550 Kerr Street
Traffic Impact Study

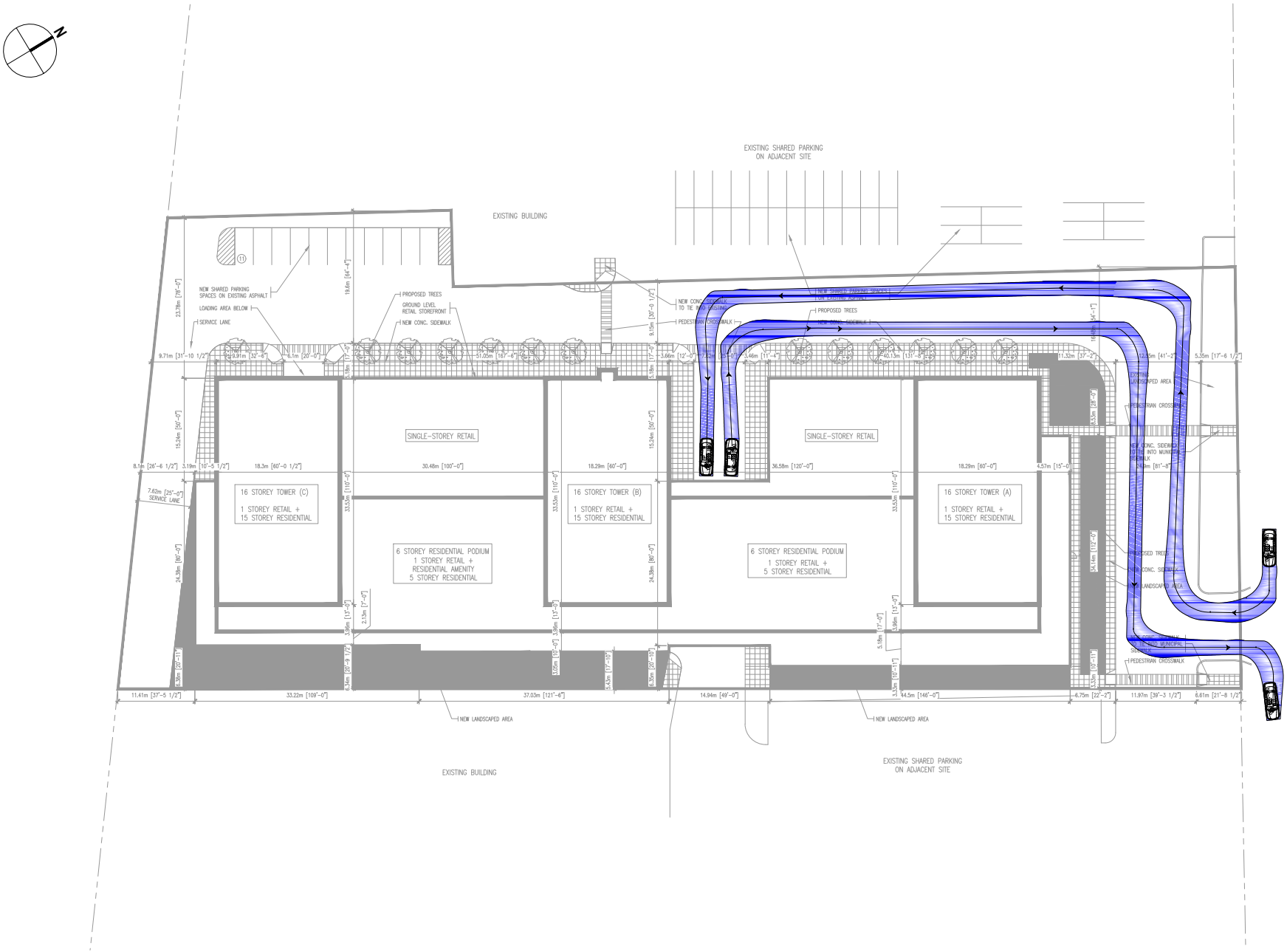
Vehicle Swept Path Analysis
Halton Front Loader - Outbound

Job Number
Revision
Date 06.27.2019

Figure 2

6705 Millcreek Drive, Unit 1, Mississauga, ON L5N 5M4 **T** 1 416 213 7121 **F** 1 905 890 8499 **W** www.ghd.com

Plot Date: 27 June 2019 - 12:09 PM
Plotted by: Ivan Drewnitski
Cad File No: G:\Legacy\SernasTransTech\Projects\2018\550 Kerr Street\Drawing\550 Kerr - AutoTurn - GHD_27June2019.dwg



5600

1100 3200

P

	mm
Width	: 2000
Track	: 2000
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

550 Kerr Street
Traffic Impact Study

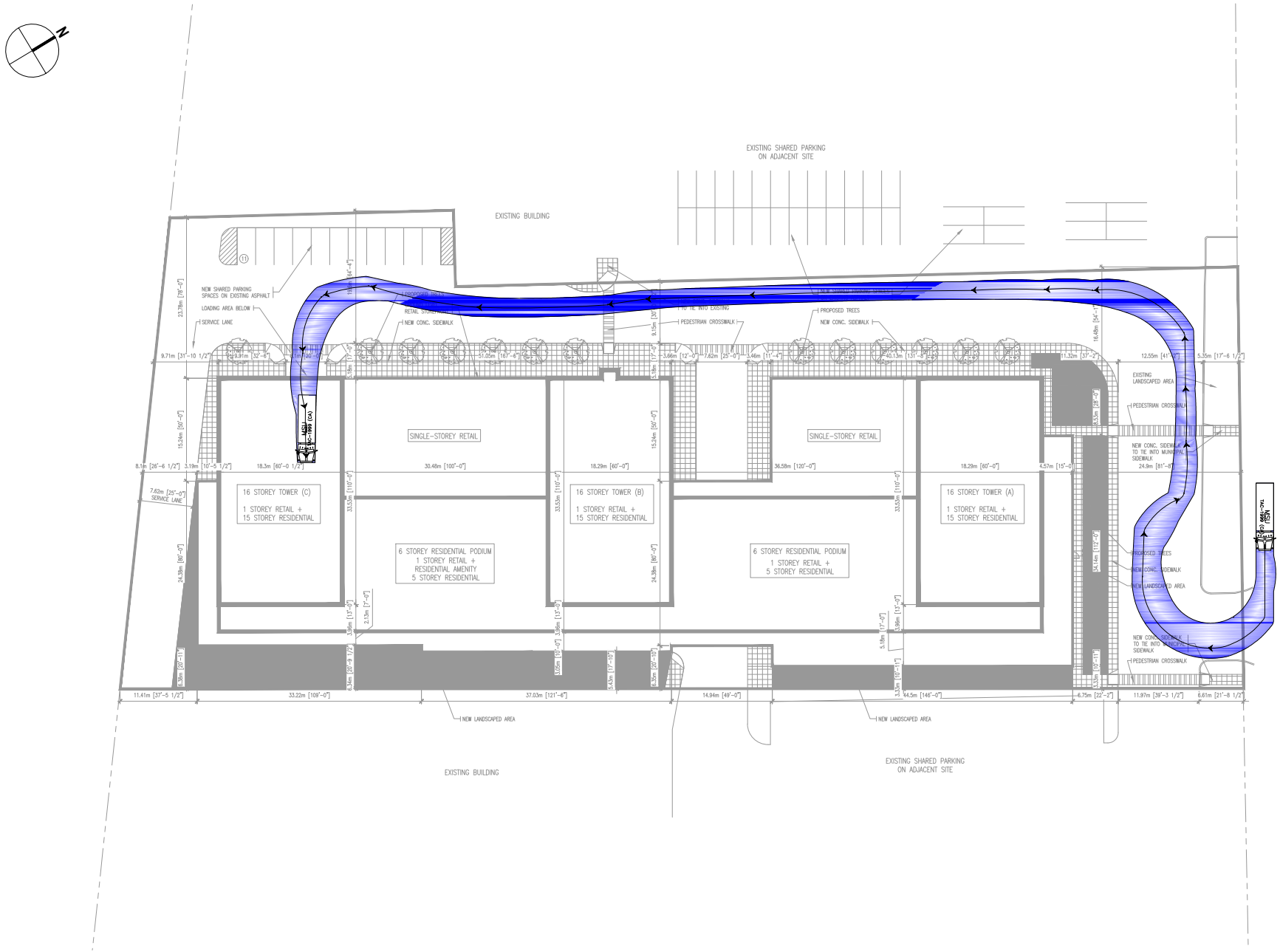
Vehicle Swept Path Analysis
Passenger Vehicle

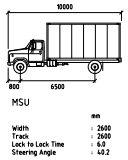
Job Number
Revision
Date 06.27.2019

Figure 3

6705 Millcreek Drive, Unit 1, Mississauga, ON L5N 5M4 **T** 1 416 213 7121 **F** 1 905 890 8499 **W** www.ghd.com

Plot Date: 27 June 2019 - 12:09 PM
Plotted by: Ivan Drewnitski
Cad File No: G:\Legacy\SernasTransTech\Projects\2018\550 Kerr Street\Drawing\550 Kerr - AutoTurn - GHD_27June2019.dwg





550 Kerr Street
Traffic Impact Study

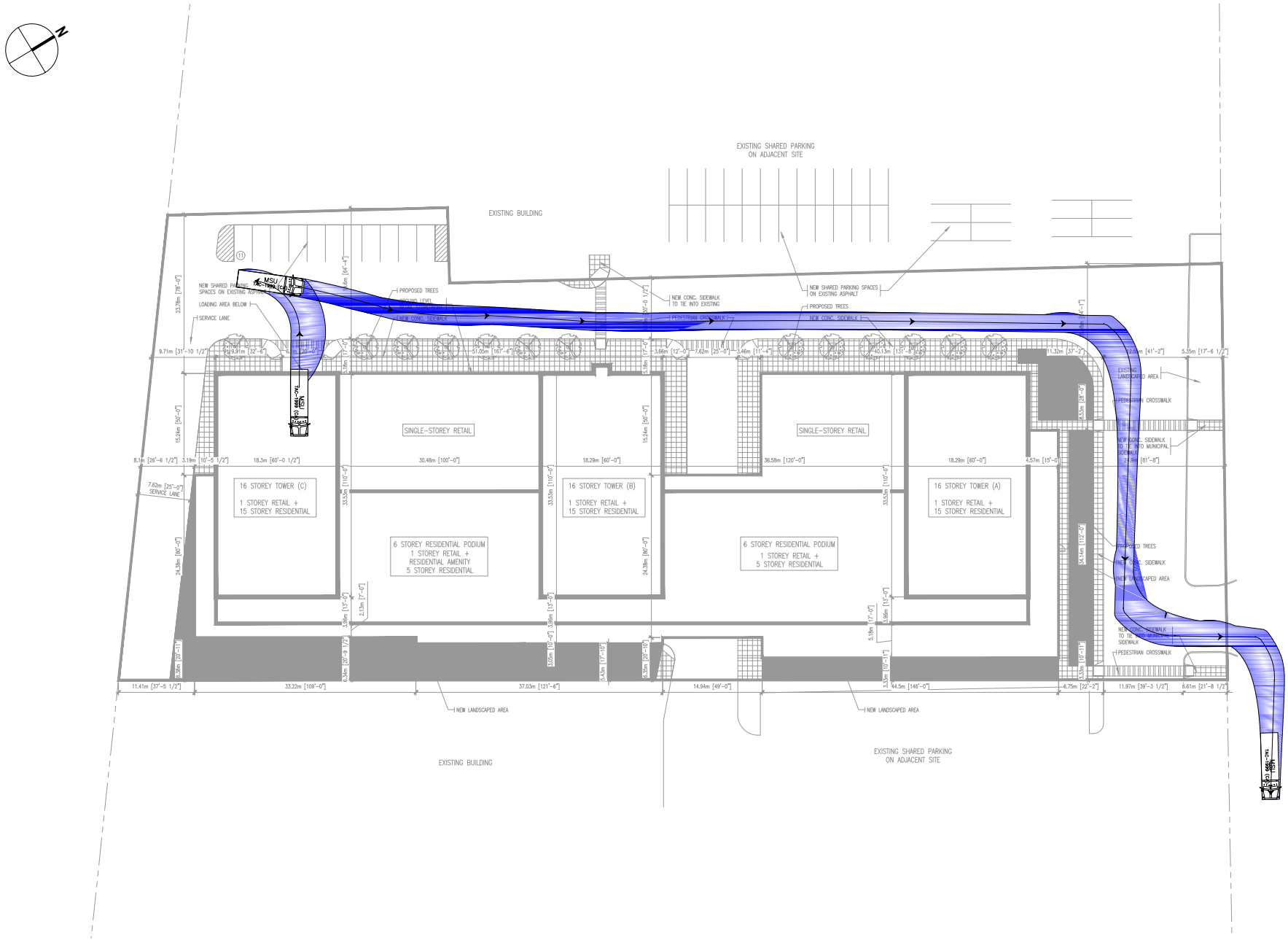
Vehicle Swept Path Analysis
MSU Truck - Inbound

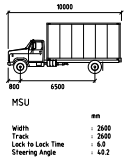
Job Number
Revision
Date 06.27.2019

Figure 4

6705 Millcreek Drive, Unit 1, Mississauga, ON L5N 5M4 **T** 1 416 213 7121 **F** 1 905 890 8499 **W** www.ghd.com

Plot Date: 27 June 2019 - 12:09 PM
Plotted by: Ivan Drewnitski
Cad File No: G:\Legacy\SernasTransTech\Projects\2018\550 Kerr Street\Drawing\550 Kerr - AutoTurn - GHD_27June2019.dwg





550 Kerr Street
Traffic Impact Study

Vehicle Swept Path Analysis
MSU Truck - Outbound

Job Number
Revision
Date 06.27.2019

Figure 5

6705 Millcreek Drive, Unit 1, Mississauga, ON L5N 5M4 **T** 1 416 213 7121 **F** 1 905 890 8499 **W** www.ghd.com

Plot Date: 27 June 2019 - 12:09 PM
Plotted by: Ivan Drewnitski
Cad File No: G:\Legacy\SernasTransTech\Projects\2018\550 Kerr Street\Drawing\550 Kerr - AutoTurn - GHD_27June2019.dwg