South Niagara Falls Development

Traffic Impact Study

FINAL

November 4, 2021

arva

CAN-DAS BEST MANAGED COMPANIES Platinum member

Prepared for:

Panoramic Properties Inc.

EXECUTIVE SUMMARY

R.V. Anderson Associates Limited (RVA) has been retained by Panoramic Properties Inc. to undertake a Traffic Impact Study (TIS) for the proposed South Niagara Falls development, situated on the north side of Lyons Creek Road (Regional Road 47) in the vicinity of Stanley Avenue (Regional Road 102), in the City of Niagara Falls.

The overall development is planned to be completed in two (2) phases:

- Phase 1, lands west of Stanley Avenue, estimated completion in 2024; and
- Phase 2, lands east of Stanley Avenue, estimated completion in 2026.

The proposed development is to be situated primarily on the north side of Lyons Creek Road, encompassing the lands west of Stanley Avenue formerly occupied by the Oaklands Tent and Trailer Park, and the lands east of Stanley Avenue formerly occupied by the Oaklands Golf Course. Additionally, there is one parcel located south of Lyons Creek Road encompassing an existing agricultural field.

Both Stanley Avenue and Lyons Creek Road are two-lane arterial roads (one lane per direction) with on-street bike lanes in the vicinity of the site, and no dedicated pedestrian facilities. As per the Region's proposed Strategic Cycling Network as illustrated in the TMP, there are currently no future changes planned for the existing on-street bike lanes on both Regional roads. It is expected pedestrian facilities (i.e., sidewalk and/or multi-use path) will be introduced along both roads in conjunction with future roadway capacity improvements. The Region's 2017 TMP recommends future roadway capacity expansion projects (i.e., road widening) on both Stanley Avenue and Lyons Creek Road in response to projected capacity constraints by 2031.

Confirmation of the future active transportation facilities and ultimate cross-sections to be introduced along both Regional roads will likely be determined within the future Environmental Assessment (EA) process to be completed for each road.

The estimated vehicular trip generation for Phase 1 of the subject development is approximately 59 inbound and 175 outbound trips during the weekday a.m. peak hour, and 193 inbound and 115 outbound trips during the weekday p.m. peak hour peak hour.

The estimated vehicular trip generation for Phase 2 of the subject development is approximately 191 inbound and 430 outbound trips during the weekday a.m. peak hour, and 607 inbound and 454 outbound trips during the weekday p.m. peak hour peak hour.

This results in a total site trip generation of 250 inbound and 605 outbound trips during the weekday a.m. peak hour, and 800 inbound and 569 outbound trips during the weekday p.m. peak hour peak hour.

Approved Traffic Impact Study (TIS) reports for the planned Niagara Village and Riverfront Community developments have recommended signalizing both the Chippawa Parkway and Lyons Creek Road intersections on Stanley Avenue, as well as introducing auxiliary turn lanes at the intersection of Chippawa Parkway and Stanley Avenue in order to maintain an acceptable level of service to the 2031 horizon year.

The findings of the intersection capacity analysis undertaken for this Study confirms the proposed intersection improvements recommended in the aforementioned background development TIS reports, and in addition identifies the need for a southbound auxiliary left-turn lane at the intersection of Stanley Avenue at Lyons Creek Road.

The proposed Concept Plan of Subdivision includes five (5) new roads intersecting the regional road network. They include opposing Roads 1 and 2 intersecting Stanley Avenue generally midway between Chippawa Parkway and Lyons Creek Road, and Roads 3, 4 and 5 intersecting Lyons Creek Road along the south frontage of the development lands.

Based on the results of the capacity analysis, the proposed new intersection of Roads 1 and with Stanley Avenue will need to be signalized with a southbound auxiliary left-turn lane in order to maintain an acceptable level of service to the 2031 horizon year.

Furthermore, based on the results of the capacity analysis, the three (3) proposed new intersections on Lyons Creek Road (Roads 3, 4 and 5) can be unsignalized (free flow operation for Lyons Creek Road) with auxiliary left-turn lanes on Lyons Creek Road per completed left turn lane warrants, and will maintain an acceptable level of service up to the ultimate 2031 horizon year.

Panoramic Properties Inc.

South Niagara Falls Development

Traffic Impact Study

FINAL

Panoramic Properties Inc.

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1.1 Study Objective

R.V. Anderson Associates Limited (RVA) has been retained by Panoramic Properties Inc. to undertake a Traffic Impact Study (TIS) for the proposed South Niagara Falls development, situated on the north side of Lyons Creek Road (Regional Road 47) in the vicinity of Stanley Avenue (Regional Road 102), in the City of Niagara Falls. The overall development is planned to be completed in two (2) phases:

- Phase 1, lands west of Stanley Avenue, estimated completion in 2024; and
- Phase 2, lands east of Stanley Avenue, estimated completion in 2026.

1.2 Site Location

The proposed development is to be situated primarily on the north side of Lyons Creek Road, encompassing the lands west of Stanley Avenue formerly occupied by the Oaklands Tent and Trailer Park, and the lands east of Stanley Avenue formerly occupied by the Oaklands Golf Course. Additionally, there is one parcel located south of Lyons Creek Road encompassing an existing agricultural field.

The site is afforded close proximity to the QEW interchange at Lyons Creek Road to the west, which provides primary routes to Fort Erie and the City of Buffalo (New York State) to the south, and the City of Niagara Falls and Greater Toronto Hamilton Area (GTHA) to the north. Access to various communities within the City of Niagara Falls can also be made via Stanley Avenue.

The project site location and the surrounding roadway network is shown in **Figure 1**.

1.3 Study Area

Based on consultation with City and Regional staff, the study intersections considered for traffic impact analysis in this study are listed below:

- Stanley Avenue at Chippawa Parkway;
- Stanley Avenue (north approach) at Lyons Creek Road;
- Stanley Avenue (south approach) at Lyons Creek Road;
- Sodom Road at Lyons Creek Road; and
- The five (5) proposed site access intersections along Stanley Avenue and Lyons Creek Road.

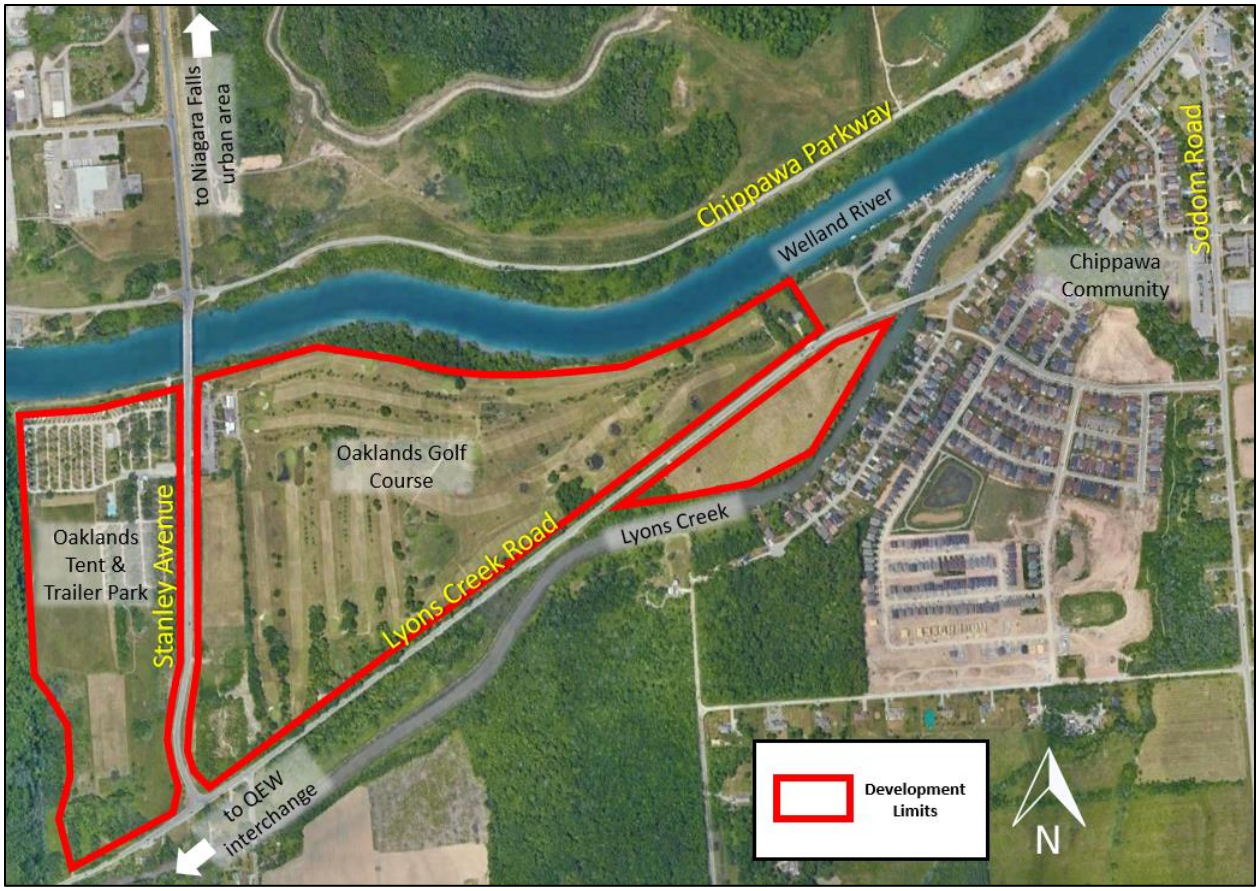


Figure 1: Site Location

2.0 EXISTING CONDITIONS

2.1 Existing Road Network

Stanley Avenue (Regional Road 102) is a north-south arterial roadway under the jurisdiction of Niagara Region north of Lyons Creek Road and the City of Niagara Falls south of Lyons Creek Road, with a two-lane rural cross-section and a posted speed limit of 60km/h. In the vicinity of the site, it has a slight downgrade in the southbound direction towards Lyons Creek Road, and a horizontal curve just north of Lyons Creek Road. Stanley Avenue intersects Lyons Creek Road with two offset intersections, separated by approximately 110 metres (measured centreline-to-centreline).

Lyons Creek Road (Regional Road 47) is an east-west arterial roadway under the jurisdiction of Niagara Region, with a primarily two-lane rural cross-section. Lyons Creek Road has a posted speed limit of 80km/h approximately 170 metres west of Stanley Avenue, which transitions to 70km/h approaching Stanley Avenue and continues as such to approximately 1 km east of Stanley Avenue where it transitions down to 50 km/h. In the vicinity of the site,

2.2 Transit

There are currently no transit stops provided on the Regional Roads fronting the subject development lands. The nearest City of Niagara Falls transit stops include stops near the intersection of Lyons Creek at Sodom Road (Route 112) and stops near Stanley Avenue at Don Murie Street just north of Chippawa Parkway (Route 106). Regional transit service is not provided in the area.

2.3 Active Transportation

Both Stanley Avenue and Lyons Creek Road have on-street bike lanes in the vicinity of the site, with no dedicated pedestrian facilities provided.

2.4 Existing Traffic Data

Intersection turning movement count (TMC) data was collected at the existing study intersections in 2021 during the weekday a.m. and p.m. peak periods.

An analysis of the data determined that the overall peak hours for the study area road network generally occurred between 7:15 a.m. and 8:15 a.m. during the weekday a.m. peak period and between 4:00 p.m. and 5:00 p.m. during the weekday p.m. peak period.

The existing intersection traffic volumes for the weekday a.m. and p.m. peak hours are presented in **Figure 2**.

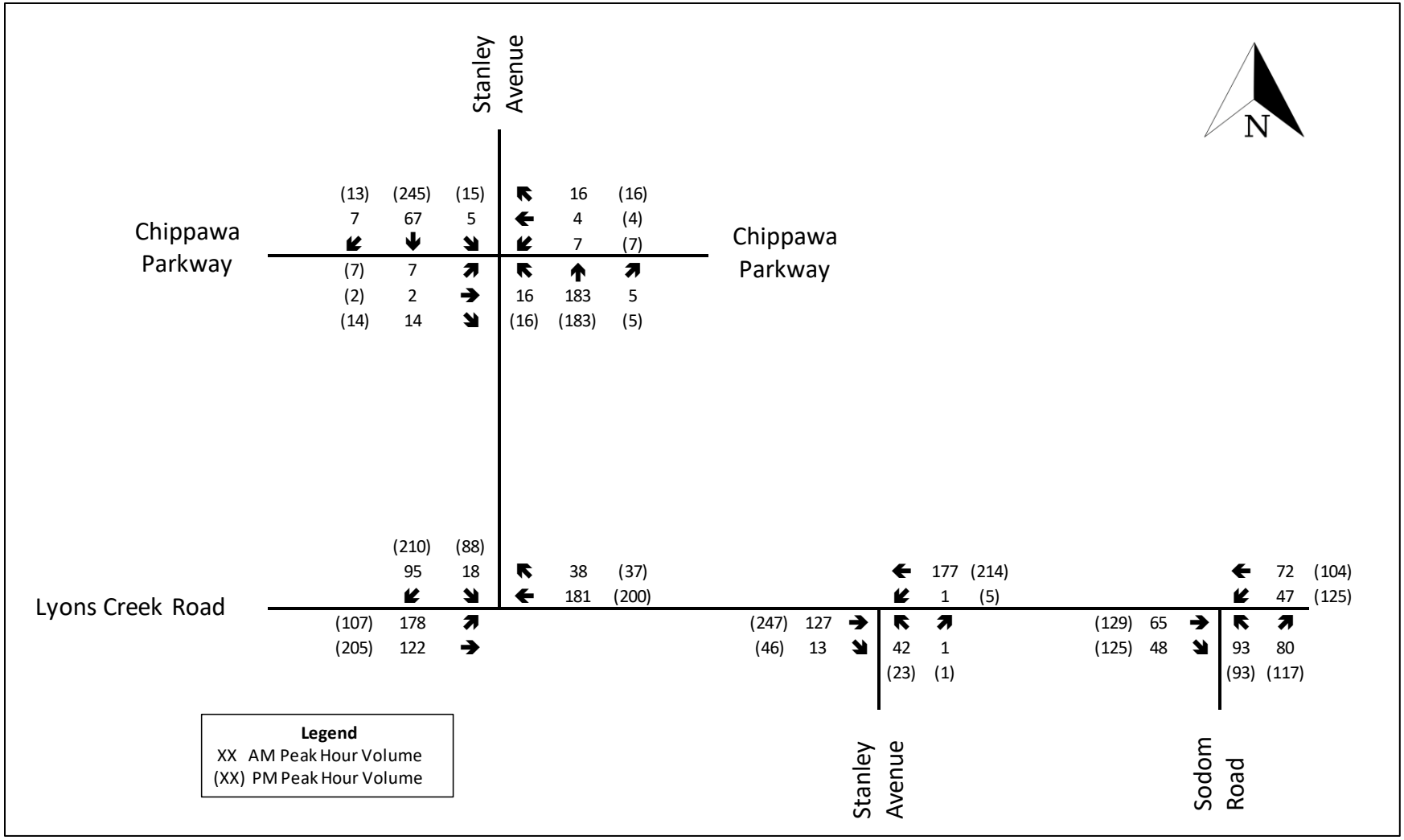


Figure 2: 2021 Existing Traffic Volume

3.0 FUTURE BACKGROUND TRAFFIC

3.1 Study Horizon Years

Based on consultation with City and Regional staff, the analysis included future planning horizons of 2024 for the opening year of Phase 1, 2026 for the opening year of Phase 2 (full build-out of overall development), and 2031 for 5 years post full build-out.

3.2 Future Planned Study Area Road Network Improvements

3.2.1 Planned Regional Capacity Expansions

In response to projected capacity constraints, the Niagara Region 2017 Transportation Master Plan (TMP) recommends the following road network capacity expansion projects:

- Stanley Avenue, from Marineland Parkway to Lyons Creek Road (2022-2031);
- Lyons Creek Road, from Stanley Avenue to Sodom Road (2022-2031); and
- Lyons Creek Road, from Montrose Road to Stanley Avenue (2032-2041).

The TMP does not provide additional details concerning the capacity expansion projects, but it is expected the existing two-lane cross-section (one lane per direction) of the subject roads would be expanded to a four-lane cross-section in order to provide the additional link capacity that is required per the TMP study findings.

Confirmation of the required Regional link capacities and associated corridor lane configurations will likely be determined within the Environmental Assessment (EA) to be completed for each road.

3.2.2 Planned Regional Active Transportation and Transit Network

Both Stanley Avenue and Lyons Creek Road have on-street bike lanes in the vicinity of the site. As per the Region's proposed Strategic Cycling Network as illustrated in the TMP, there are currently no future changes planned for the existing on-street bike lanes on Lyons Creek Road and Stanley Avenue. It is expected pedestrian facilities (i.e., sidewalk and/or multi-use path) will be introduced along both corridors in conjunction with the future capacity expansion projects of Lyons Creek Road and Stanley Avenue.

The nearest City transit stops include stops near the intersection Lyons Creek at Sodom Road (Route 112) and stops near Stanley Avenue at Don Murie Street just north of Chippawa Parkway (Route 106). Although any planned modifications to City transit routing is not known at this time, the City may consider extending Route 112 further west and/or extend Route 106 further south (i.e., closer to the intersection of Stanley Avenue at Lyons Creek Road) to improve transit accessibility for future residents and employees of the area.

Confirmation of the future active transportation facilities to be introduced along both Regional corridors will likely be determined within the Environmental Assessment (EA) to be completed for each road.

3.2.3 Planned Regional ROW Expansions

Regional staff have provided RVA with a map illustrating the proposed right-of-way (ROW) widenings for Stanley Avenue and Lyons Creek Road as consistent with Official Plan (OP) requirements. The Stanley Avenue ROW is planned to widen to 30.5 metres, and the Lyons Creek Road ROW is planned to widen to 26.2 metres.

3.2.4 Planned Regional Road Cross-Sections

The Region's Complete Streets Design Guidelines (2017) provides six Regional Road Typologies. Although the specific future cross-sections of Stanley Avenue and Lyons Creek Road are not known at this time, based on the planned capacity expansions, the planned ROW widening, and the future character of the area upon build-out of the planned developments, it is expected the "Transitioning" Regional Road Typologies will generally be adopted. This cross-section generally includes 26-30m ROWs, four-lane cross-section, and can accommodate dedicated pedestrian and cycling facilities and transit service.

Confirmation of the cross-sections for both Regional roads will likely be determined within the Environmental Assessment (EA) to be completed for each road.

3.2.5 Identified Regional Intersection Improvements

City of Niagara Falls staff have provided RVA with the approved TIS report for the planned Niagara Village development (report dated 2020), and the approved TIS report for the planned Riverfront Community development (report dated 2018). The following intersection improvements have been recommended in the aforementioned TIS reports in order to maintain an acceptable level of service at the study area intersections to a 2031 horizon year:

- Stanley Avenue (north approach) at Lyons Creek Road
  - Signalize the intersection
- Stanley Avenue (south approach) at Lyons Creek Road
  - No improvements recommended
- Stanley Avenue at Chippawa Parkway
  - Signalize the intersection
  - Introduce auxiliary left-turn lanes on all approaches
  - Introduce an auxiliary right-turn lane on the north approach

For the purpose of the existing traffic analysis in this TIS report, the baseline capacity analysis of the study area intersections has not assumed the intersection improvements recommended in the aforementioned TIS report completed for the background developments, nor the potential future widening of both Stanley Avenue and Lyons Creek Road to increase capacity as per the Region's TMP recommendations. The capacity analysis in this TIS assumes the existing intersection and link configurations for the baseline scenario and recommends targeted improvements at each horizon in order to maintain an acceptable level of service up to the 2031 horizon year.

3.3 Future Background Development Traffic

As discussed in Section 3.2.5, City of Niagara Falls staff have provided TIS reports for the two (2) background developments near the study area to be considered within the background traffic forecasts. RVA has assigned the site traffic generated from these background developments to the study area intersections accordingly.

The background developments and their general locations within the surrounding road network is described below, with their respective trip assignment figures provided in **Appendix A**:

- Niagara Village (Mixed-use residential and commercial), the existing Thundering Waters Golf Club; and
- Riverfront Community (Mixed-use residential and commercial), located west of Stanley Avenue on the vacant lands between Chippawa Parkway and Oldfield Road.

3.4 Future Background Traffic Growth

As confirmed with Regional staff, a 2% per annum growth rate has been applied to all turning movements at the existing study area intersections to forecast the 2024, 2026, and 2031 corridor growth volumes, which excludes the site traffic generated from the considered background developments. This is higher (double) than the 1% per annum growth rate that was assumed in the TIS reports completed for the Niagara Village and Riverfront Community developments.

The resulting 2024, 2026 and 2031 corridor growth volumes are presented in **Appendix B**.

3.5 Future Background Traffic Volumes

The future background intersection traffic volumes for the future horizon years were derived by combining the site generated traffic from the background developments with the projected corridor growth (at 2% per annum) at each horizon year. The resulting 2024, 2026 and 2031 future background intersection traffic volumes are presented in **Figure 3, Figure 4,** and **Figure 5**, respectively.

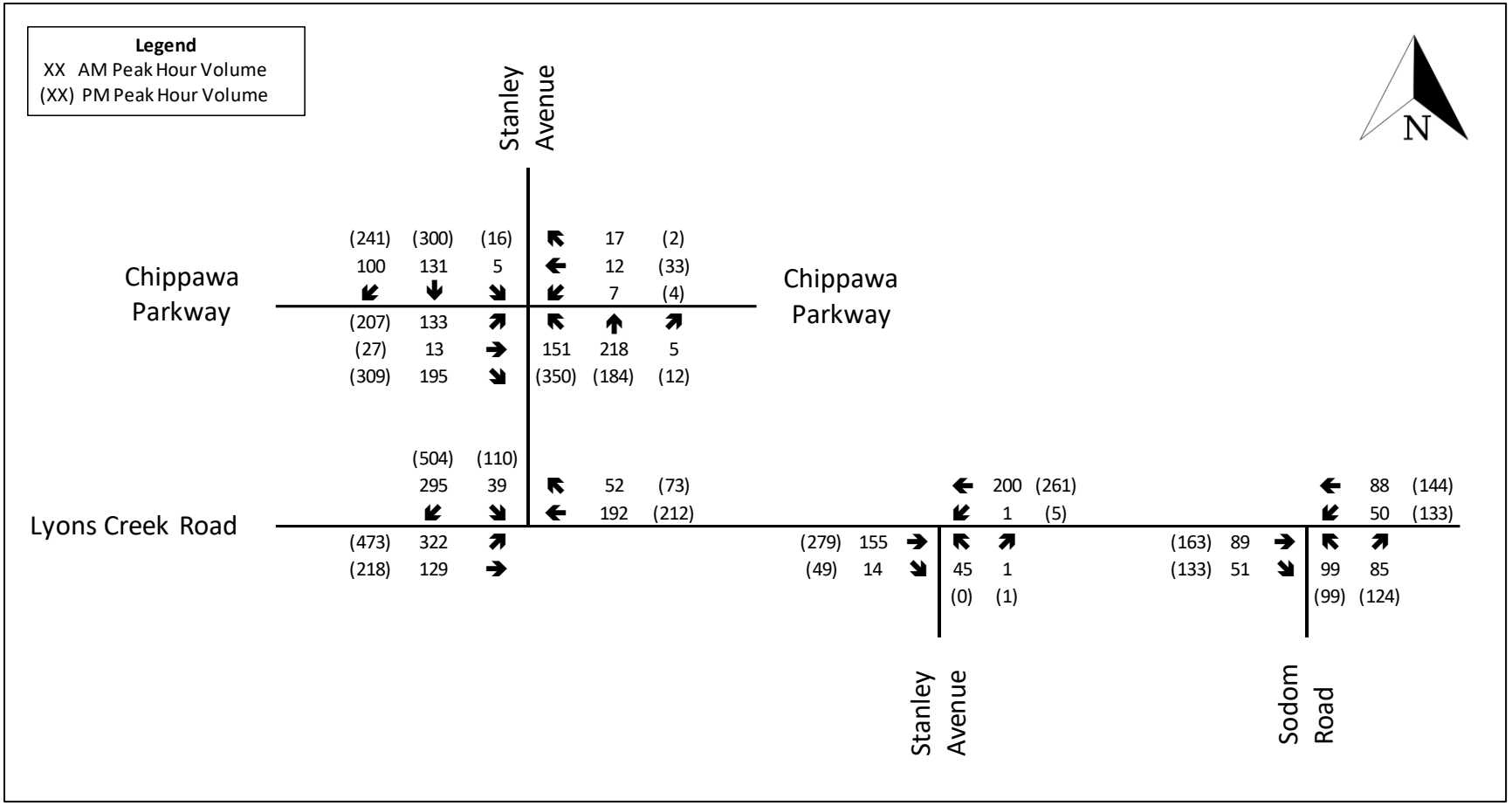


Figure 3: 2024 Future Background Volumes

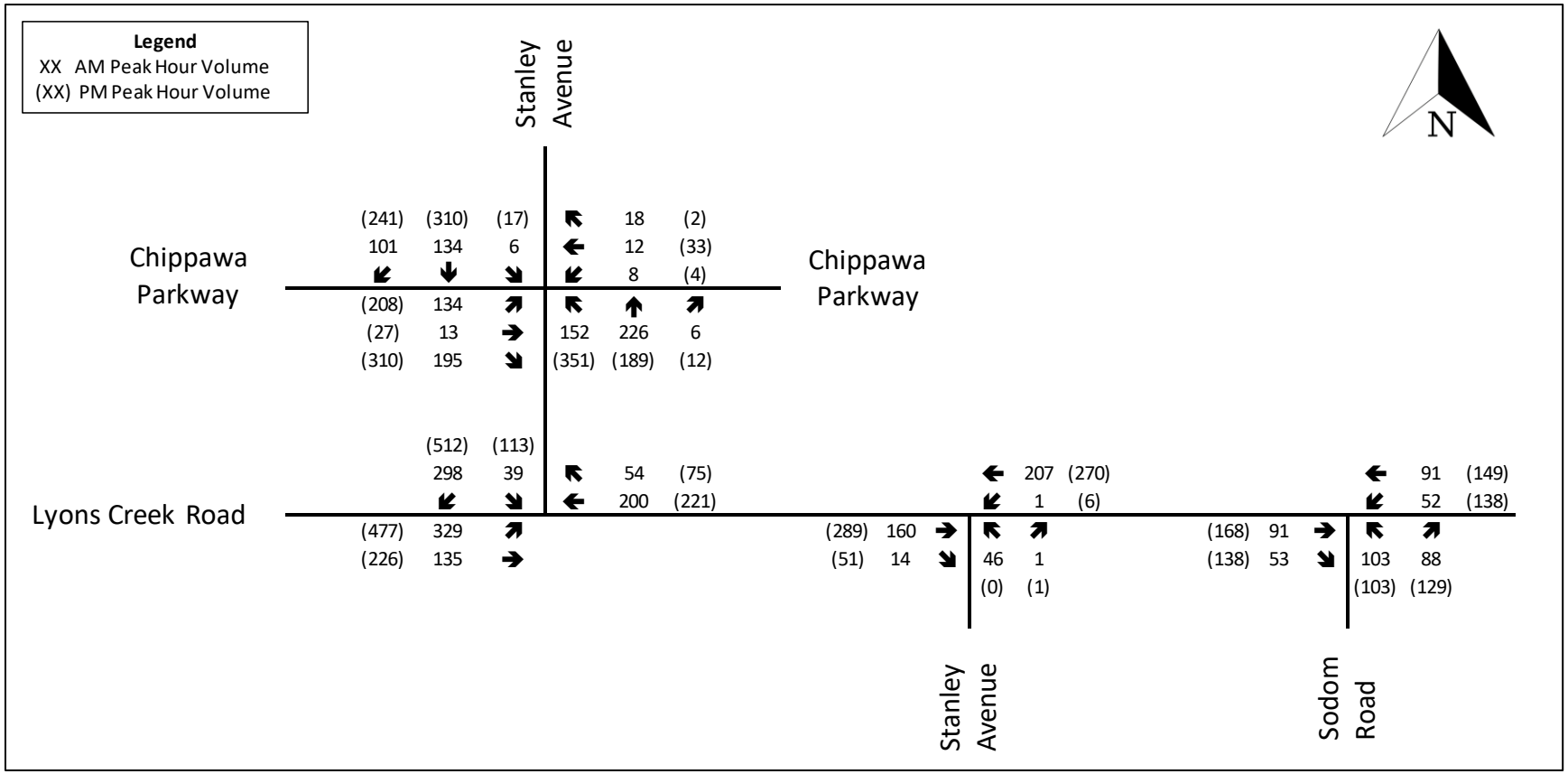


Figure 4: 2026 Future Background Volumes

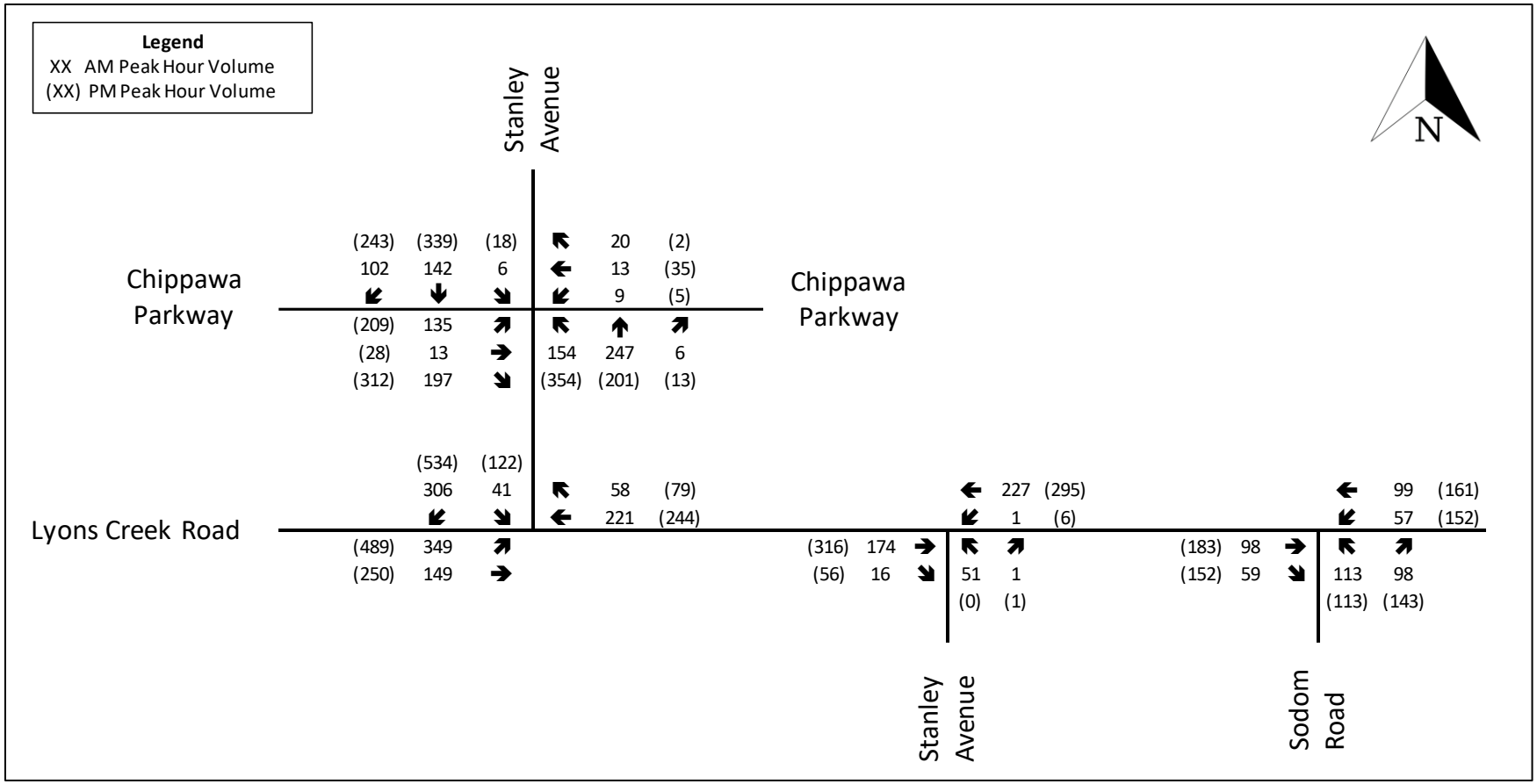


Figure 5: 2031 Future Background Volumes

4.0 SITE GENERATED TRAFFIC

4.1 Site Plan Layout

The proposed Concept Plan of Subdivision, prepared by Upper Canada Consultants and dated July 2021, is provided in **Appendix C**, and consists of the following key features relevant to this study:

Phase 1, lands west of Stanley Avenue (occupancy in 2024)

- 262 single family detached dwellings;
- 46 townhomes; and
- 50 multi-family homes.

Phase 2, lands east of Stanley Avenue (occupancy in 2026)

- 417 single family detached dwellings;
- 109 townhomes;
- 460 multi-family homes; and
- 2.33 hectares of total neighbourhood commercial lands.

As shown in the Concept Plan of Subdivision, the following new intersections on the Regional road network are proposed:

- Proposed intersection of Road 1 and Road 2 on Stanley Avenue (approximately 450 metres north of the intersection at Lyons Creek Road, and approximately 500 metres south of the intersection at Chippawa Parkway); and
- Three (3) new proposed intersections on Lyons Creek Road:
    - Road 3 (approximately 210 metres west of Stanley Avenue);
    - Road 4 (approximately 660 metres east of Stanley Avenue, and 440 metres west of proposed Road 5 intersection); and
    - Road 5 (approximately 400 metres east of proposed Road 4 intersection).

4.2 Site Trip Generation

Trip generation from the subject site was estimated utilizing the Institute of Transportation Engineer's (ITE) *Trip Generation Manual, 10th Edition*. The overall development is planned to be completed in two (2) phases:

- Phase 1, lands west of Stanley Avenue, estimated completion in 2024; and
- Phase 2, lands east of Stanley Avenue, estimated completion in 2026.

Table 1 presents the results of the trip generation analysis for each phase during weekday a.m. and p.m. peak hours. A transit modal split reduction was not applied, reflecting the limited transit service currently provided in the vicinity of the site. No trip generation was assumed for the proposed 4.6 hectares of park lands, as it is expected park users during weekday peak commuting hours will primarily be residents of the subject development (internal traffic and/or active transportation modes utilized).

The estimated vehicular trip generation for Phase 1 of the subject site is approximately 59 inbound and 175 outbound trips during the weekday a.m. peak hour, and 193 inbound and 115 outbound trips during the weekday p.m. peak hour peak hour.

The estimated vehicular trip generation for Phase 2 of the subject site is approximately 191 inbound and 430 outbound trips during the weekday a.m. peak hour, and 607 inbound and 454 outbound trips during the weekday p.m. peak hour peak hour.

This results in a total site trip generation of 250 inbound and 605 outbound trips during the weekday a.m. peak hour, and 800 inbound and 569 outbound trips during the weekday p.m. peak hour peak hour.

Table 1: Trip Generation

Land Use	Unit Count	ITE LUC[1]	Weekday a.m. peak hour				Weekday p.m. peak hour			
			Trip Rate	Total Trips	In/Out %	In/Out Trips	Trip Rate	Total Trips	In/Out %	In/Out Trips
Phase 1 (west of Stanley Avenue)										
Single Family	262	#210	0.74	194	25%/75%	49/145	0.99	260	63%/37%	164/96
Townhomes	46	#220	0.46	22	23%/77%	5/17	0.56	26	63%/37%	16/10
Multi-Family	50	#221	0.36	26	26%/74%	5/13	0.44	22	61%/39%	13/9
		Total	**-**	**234**	-	**59/175**	**-**	**308**	**-**	**193/115**
Phase 2 (east of Stanley Avenue)										
Single Family	417	#210	0.74	309	25%/75%	77/232	0.99	413	63%/37%	260/153
Townhomes	109	#220	0.46	51	23%/77%	12/39	0.56	62	63%/37%	39/23
Multi-Family	460	#221	0.36	166	26%/74%	43/123	0.44	203	61%/39%	124/79
Commercial[2]	100.3[3]	#820	0.94	95	62%/38%	59/36	3.81	383	48%/52%	184/199
		Total	**-**	**621**	**-**	**191/430**	**-**	**1061**	**-**	**607/454**
Overall Development										
		Total	**-**	**855**	**-**	**250/605**	**-**	**1369**	**-**	**800/569**

[1] Land Used Code (LUC)

[2] LUC #820 (Shopping Centre) assumed, which may include integrated groups of commercial, retail, office, restaurants, and servicing establishments, as well as separated peripheral buildings, with on-site parking,

[3] 100,300 ft^2 of commercial gross floor area (gfa) based on assumed 40% maximum lot coverage (per Neighbourhood Commercial Zone by-law) of 2.33 ha of total neighbourhood commercial lands.

4.3 Site Trip Distribution

Given the majority of trips generated by the site during the weekday a.m. and p.m. peak hours will primarily be commuter trips, and given the residential nature of the development, 2016 Transportation Tomorrow Survey (TTS) commuter data was reviewed to estimate the distribution of the site generated traffic to the surrounding road network. There are currently no existing major residential developments situated in TTS Zone 6247 (GTA06), which is the TTS Zone that the subject property is located within. RVA has therefore reviewed the historical commuter patterns for residents of TTS Zone 6249 (GTA06), which represents the Chippawa community immediately to the east.

The TTS data for Zone 6249 is provided in **Appendix D**, including an origin-destination matrix prepared by RVA that presents the anticipated routing patterns of residents of the subject site based on these trip distribution assumptions.

The resulting Trip Distribution assumptions for the subject site are summarized below in **Table 2**.

Table 2: Site Distribution

Direction	Distribution Percentages
North on Stanley Avenue	42%
South on Stanley Avenue	1%
West on Chippawa Parkway	1%
East on Chippawa Parkway	1%
West on Lyons Creek Road	53%
East on Lyons Creek Road	1%
South on Sodom Road	1%
Total	**100%**

As shown, a nominal level of site trips (approximately 1%) have been assigned to each of the "minor routes" in the immediate study area which provide no real direct connection to key employment destinations, but nonetheless may still service a small amount of site generated traffic during peak hours, likely related to miscellaneous non-employment-based trips.

The vast majority of site trips however have been assigned to the two "major routes": Stanley Avenue (north of Lyons Creek Road) and Lyons Creek Road (west of Stanley Avenue). Approximately 83% of future residents are anticipated to be employed in the City of Niagara Falls as per the TTS data, with both the Stanley Avenue corridor and the QEW providing future residents good access and connectivity to the City's major employment areas.

4.4 Site Trip Assignment

In order to estimate the assignment of site generated trips to individual turning movements at the study area intersections, the development has been segregated into Zones, with the traffic generation for each Zone being individually determined, and subsequently routed through the study area road network based on the trip distribution assumptions described in Section 4.3.

Furthermore, several of the proposed higher-density and commercial blocks may have private driveways fronting the Regional Road network and the proposed local roads. At this early time, determination of driveway locations has not been determined. In order to consider site generated traffic entering/exiting the study area road network from potential private driveways for the higher-density and commercial blocks (as this has implications for the estimated traffic volumes at each of the study area intersections), midblock driveway locations were assumed at several locations. These potential driveway locations (which could represent one of multiple future driveways) are not considered study area intersections and are therefore not included in the intersection capacity analysis. Such analysis and the determination of private driveway locations and configurations would be determined at a later stage in the site planning process.

The trip assignment for each zone, including turning movements at the potential midblock driveway locations, is provided in **Appendix E**. These trip assignments for each zone were combined to derive the estimated site trip assignments at the study area intersections for Phase 1, Phase 2 (exclusive of Phase 1), and total site build-out (Phases 1 and 2), as shown in **Figure 6, Figure 7,** and **Figure 8**, respectively.

Given a proportion of site traffic have been assumed to be entering/exiting the Regional road network via potential future midblock private driveways, their will be some imbalances (additions/loses) in site traffic travelling between the study area intersections as shown in the figures below.

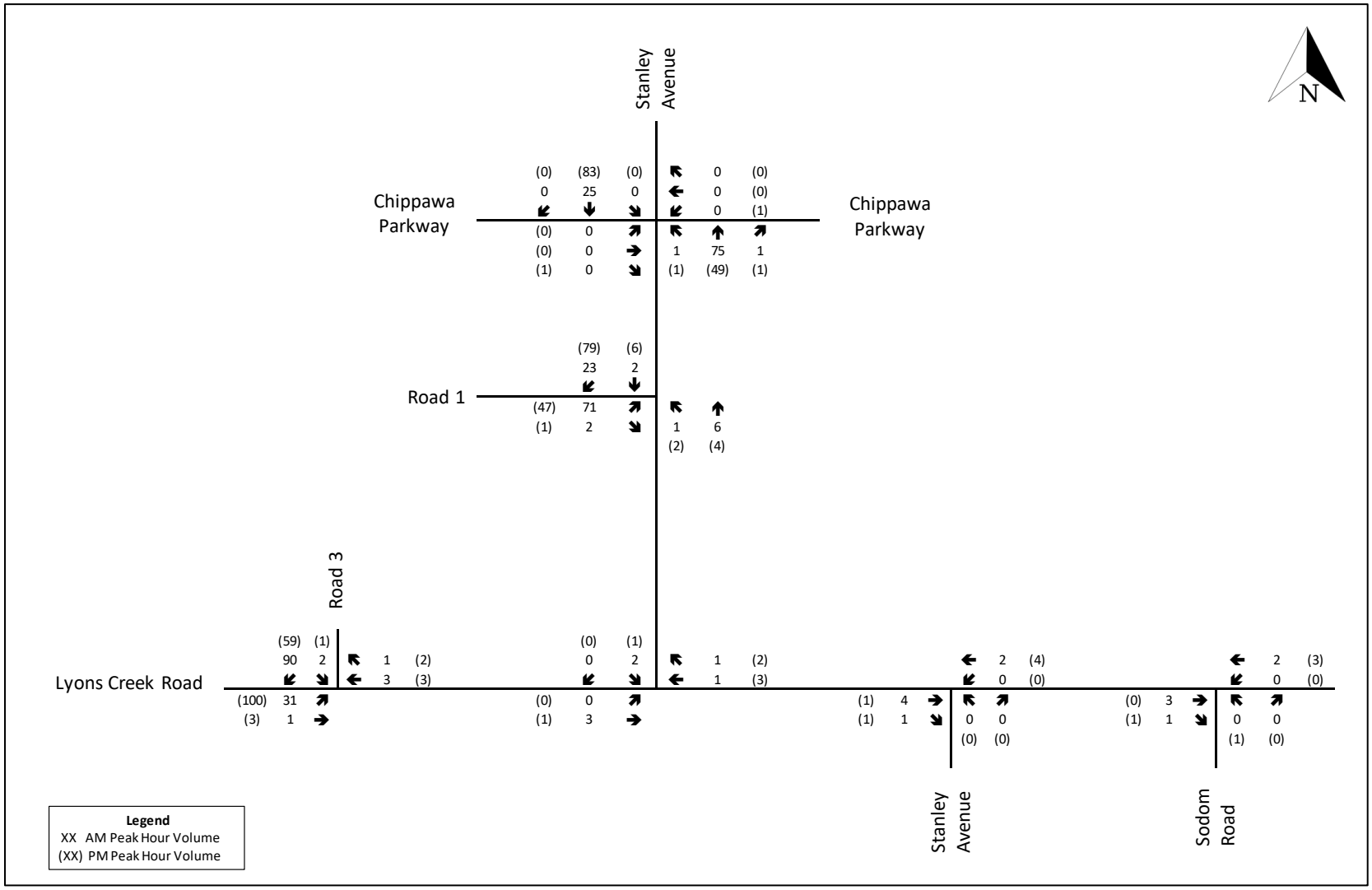


Figure 6: Estimated Site Generated Traffic (Phase 1)

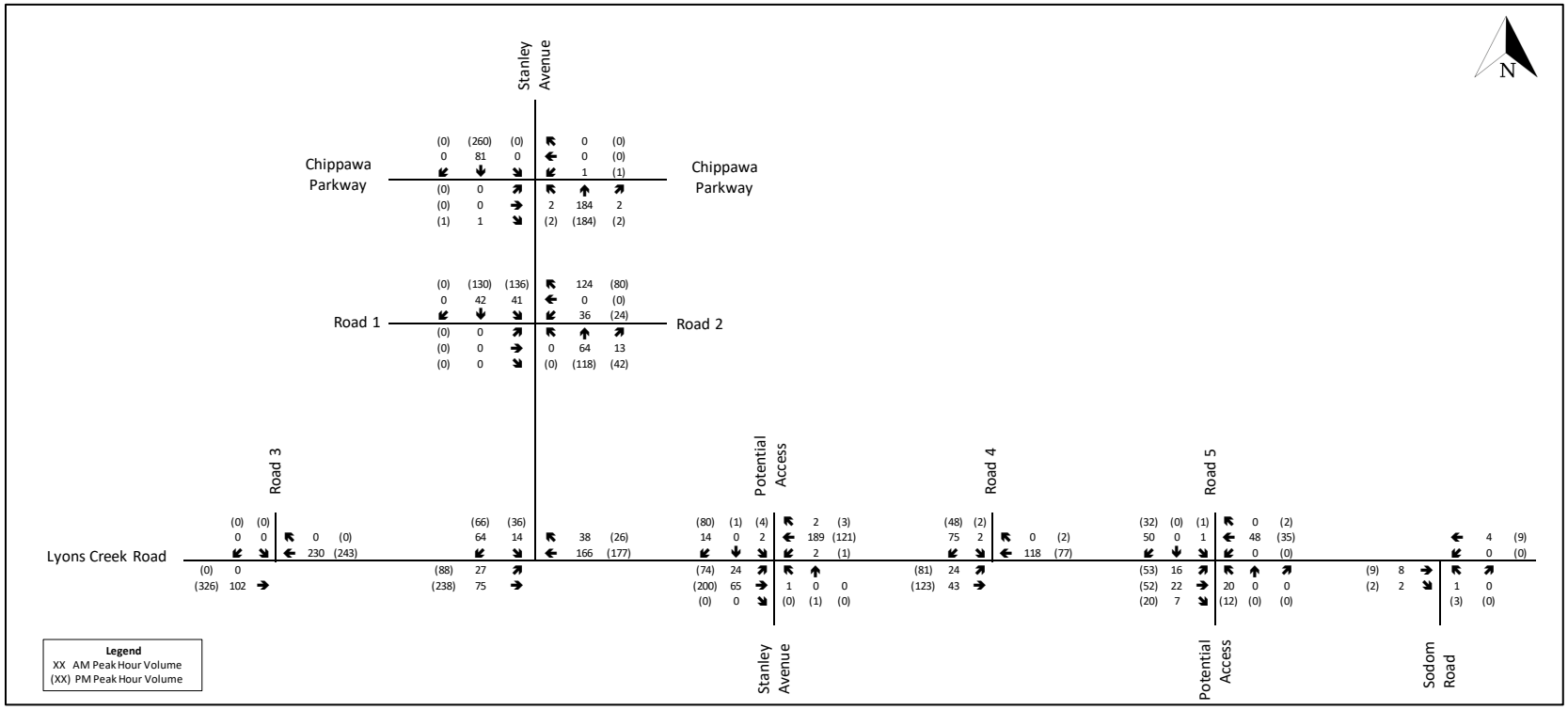


Figure 7: Estimated Site Generated Traffic (Phase 2)

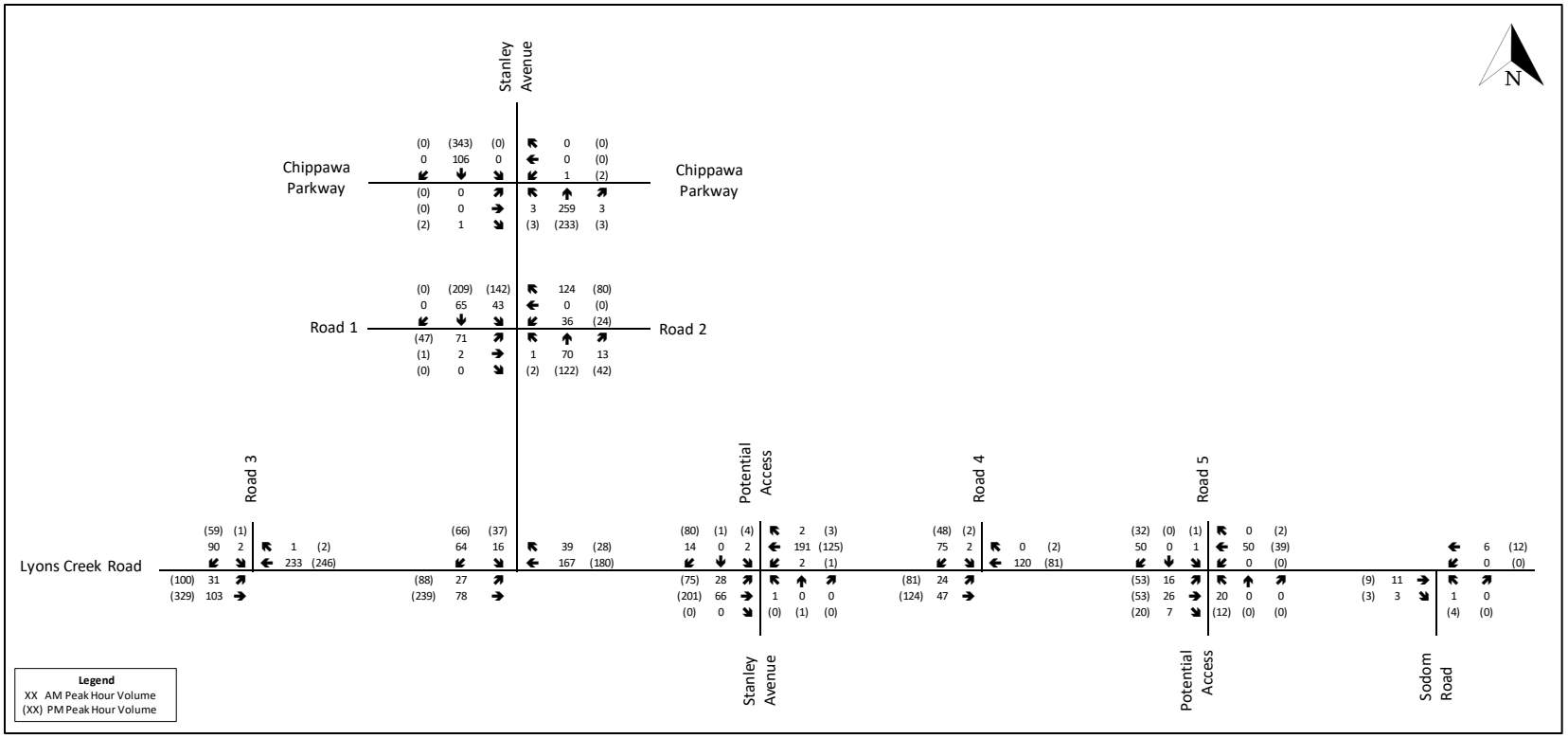


Figure 8: Estimated Site Generated Traffic (Total)

5.0 FUTURE TOTAL TRAFFIC

The future total intersection volumes for each future horizon year were derived by combining the future background traffic volumes with the site traffic assignment for each horizon year. The resulting 2023, 2025, 2030 and 2035 future total intersection volumes are presented in **Figure 9**, **Figure 10**, and **Figure 11,** respectively.

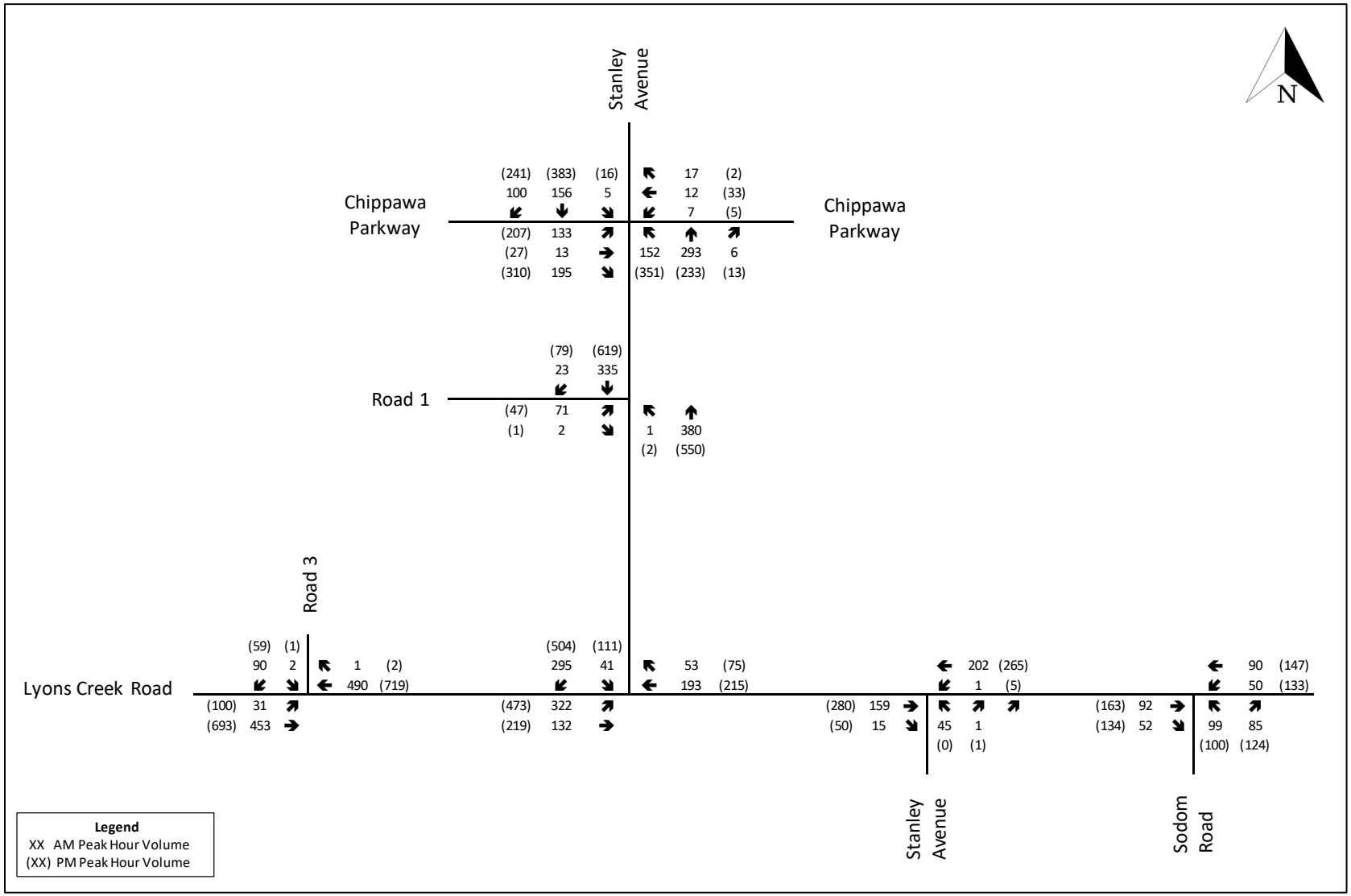


Figure 9: 2024 Future Total Traffic Volumes

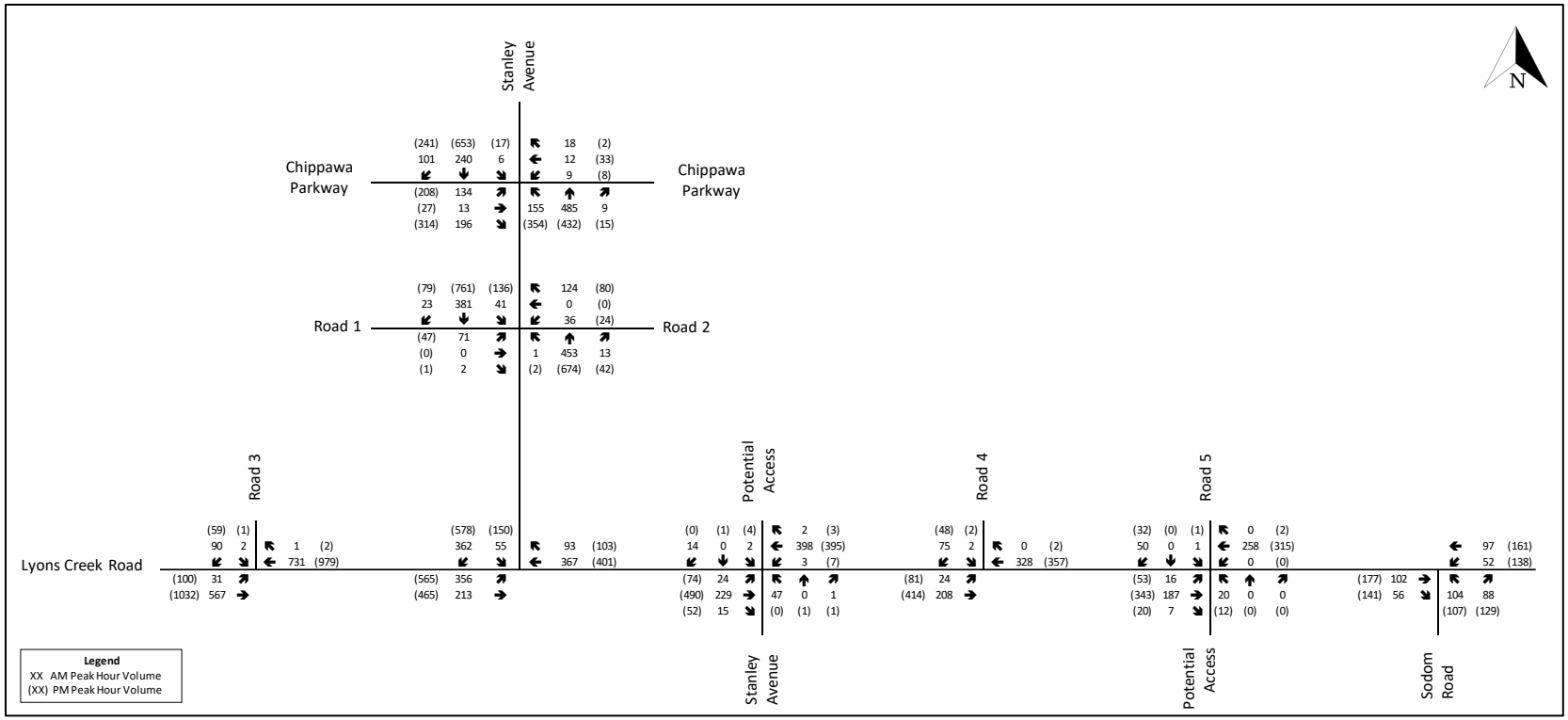


Figure 10: 2026 Future Total Traffic Volumes

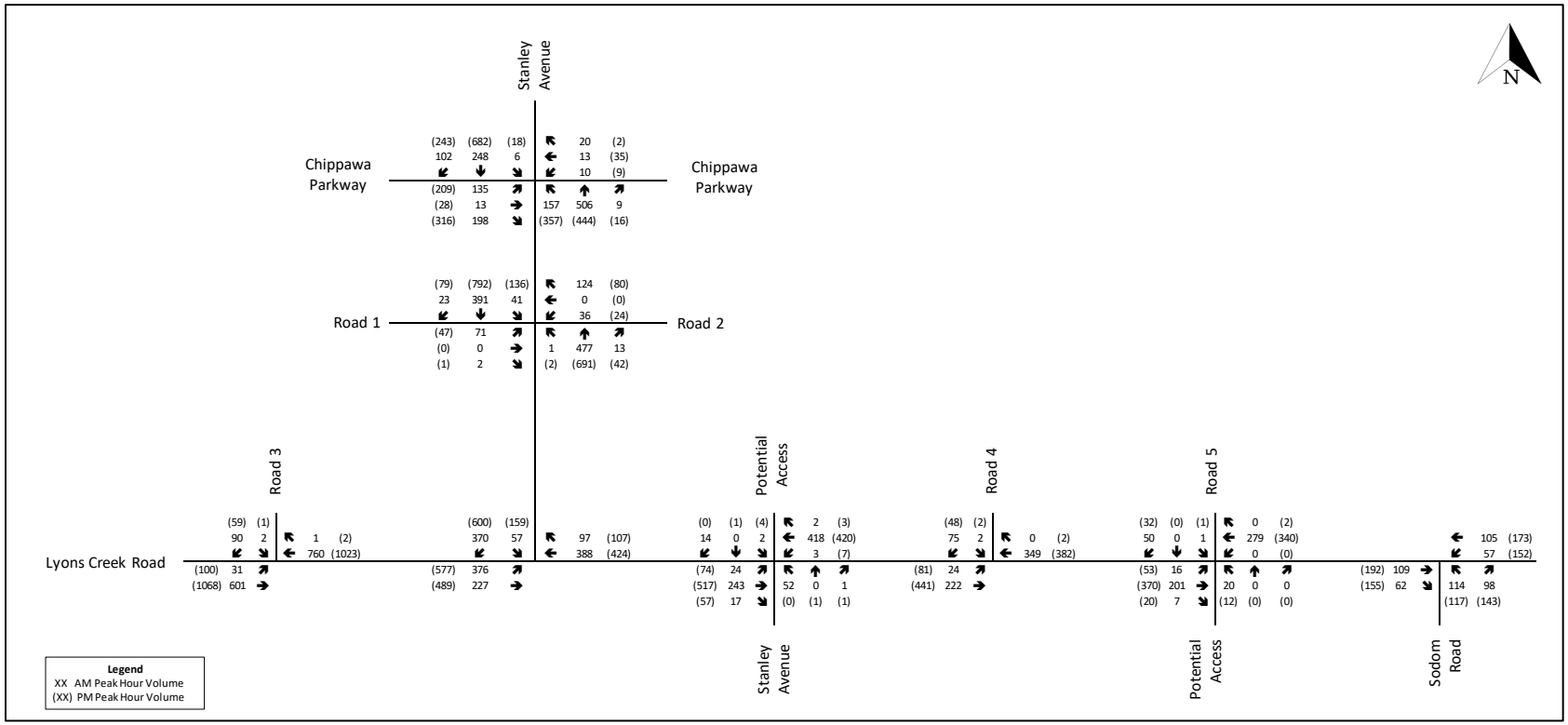


Figure 11: 2031 Future Total Traffic Volumes

6.0 TRAFFIC SIGNAL AND LEFT-TURN LANE WARRANTS

6.1 Signal Warrants

RVA has completed Ontario Traffic Manual (OTM) signal warrants for each unsignalized study area intersection, to confirm if signals will be warranted based on OTM warrant methodology. The results of the signal warrants are shown below in **Table 3**, indicating that signals are not warranted at the unsignalized study area intersections due to insufficient peak hour intersection volumes. As per OTM methodology, the required threshold is increased from 100% to 150% for the new intersections using forecasted traffic volumes, and to 120% for existing intersections using forecasted traffic volumes. Given signals are not warranted for the Future Total 2031 horizon year, it is assumed that signals will also not be warranted for the earlier horizon years (due to those horizon years having comparatively less intersection volumes). Completed signal warrant sheets are provided in **Appendix F**. Further details concerning the signal warrant procedure can be found in Section 4 of OTM *Book 12 Traffic Signals* guidelines.

Despite traffic signals not being warranted based on the OTM signal warrant methodology, the need for future traffic signals will be confirmed through intersection capacity analysis, the methodology and results of which are presented in Section 7 of this report.

Table 3: Signal Warrants

Intersection	Required Minimum Threshold	Justification 1 (minimum vehicle volume)			Justification 2 (delay to cross traffic)			Signal Warranted?
		Warrant 1A	Warrant 1B	Warrant Satisfied?	Warrant 2A	Warrant 2B	Warrant Satisfied?	
Chippawa Parkway at Stanley Avenue	120%	**131%**	**145%**	YES	97%	**295%**	NO	**NO**
Lyons Creek Road at Stanley Avenue (North Leg)	120%	**134%**	116%	NO	93%	108%	NO	**NO**
Stanley Avenue at Road 1/Road 2	150%	107%	57%	NO	93%	89%	NO	**NO**
Lyons Creek Road at Road 3	150%	130%	15%	NO	125%	2%	NO	**NO**
Lyons Creek Road at Stanley Avenue/Potential Access	120%	65%	11%	NO	62%	30%	NO	**NO**
Lyons Creek Road at Road 4	150%	57%	12%	NO	52%	2%	NO	**NO**
Lyons Creek Road at Road 5/Potential Access	150%	45%	15%	NO	41%	7%	NO	**NO**
Lyons Creek Road at Sodom Road	120%	51%	46%	NO	35%	116%	NO	**NO**

6.2 Left-Turn Lane Warrants

RVA has completed Ministry of Transportation of Ontario (MTO) left-turn lane warrants for each study area intersection, where applicable, to confirm if left-turn lanes will be warranted based on OTM warrant methodology. The results of the warrants are shown below in **Table 4**, indicating that left-turn lanes are warranted at almost all unsignalized study area intersections by the 2031 horizon year. Completed left-turn lane warrant sheets are provided in **Appendix G**.

The capacity analysis completed for each intersection under future conditions (as presented in Section 7 of this report) reflects the auxiliary left-turn lanes warranted in this table.

Table 4: MTO Left-Turn Lane Warrants

Intersection (left-turn movement)	Left-Turn Lane Warranted?
Road 3 at Lyons Creek Road (eastbound left-turn)	YES
Stanley Avenue at Lyons Creek Road (westbound left-turn)	YES
Stanley Avenue at Lyons Creek Road (eastbound left-turn)	YES
Road 4 at Lyons Creek Road (eastbound left-turn)	YES
Road 5 at Lyons Creek Road (eastbound left-turn)	YES
Road 5 at Lyons Creek Road (westbound left-turn)	NO
Sodom Road at Lyons Creek Road (westbound left-turn)	YES
Stanley Avenue at Road 1 / Road 2 (Northbound left-turn)	YES
Stanley Avenue at Road 1 / Road 2 (Southbound left-turn)	YES
Stanley Avenue at Chippawa Parkway (Northbound left-turn)	YES
Stanley Avenue at Chippawa Parkway (Southbound left-turn)	YES

7.0 CAPACITY ANALYSIS

7.1 Methodology

The industry standard Synchro macroscopic traffic analysis software was utilized to analyse the study intersections. Key performance measures such as Level of Service (LOS), volume-to-capacity ratio (v/c ratio), and 95th percentile queuing were reported, and are defined below:

- **Average vehicle control delay** is used to characterize LOS for the entire intersection, an approach, or movement. Delay quantifies the variations in travel time and is also a surrogate measure of driver discomfort and fuel consumption.
- **V/c ratio** quantifies the degree to which the capacity of each signal phase or movement is utilized by a defined lane group.
- **95th percentile queue** is the queue length which is expected to be exceeded only 5% of the time; it is common practice to identify preferred storage length requirements for auxiliary turn lanes based on estimated peak hour 95th percentile queueing.

Table 5 identifies the control delay thresholds (seconds of delay per vehicle) for each LOS based on Highway Capacity Manual (HCM) methodology.

Table 5: Characteristics of Level of Service at Intersections

LEVEL OF SERVICE (LOS)	CONTROL DELAY (seconds / vehicle)	
	SIGNALIZED INTERSECTION	UNSIGNALIZED INTERSECTION
A	≤ 10	≤ 10
B	> 10 to 20	> 10 to 15
C	> 20 to 35	> 15 to 25
D	> 35 to 55	> 25 to 35
E	> 55 to 80	> 35 to 50
F	> 80	> 50

Detailed Highway Capacity Manual (HCM) output reports from the capacity analysis are provided in **Appendix H**.

The following sections present and describe the results of the intersection capacity analysis at each study area intersection.

7.2 Stanley Avenue at Chippawa Parkway

Under existing conditions, the intersection of Stanley Avenue at Chippawa Parkway is stop-controlled in the east/west directions, with no auxiliary turn lanes. The intersection is operating with reserve capacity, delays not exceeding LOS “B” (10-15 seconds of delay) and no notable queuing concerns.

With background traffic growth to the 2024 horizon year (Future Background 2024), delays for the eastbound and westbound approaches are expected to be high during the weekday p.m. peak hour (LOS “F”), with the eastbound approach exceeding capacity.

Based on a sensitivity analysis of potential mitigation measures, it was determined that signalization of the intersection, with auxiliary left-turn lanes for all approaches, and an auxiliary right-turn lane for the north approach, would be required to maintain the intersection at an acceptable level of service. These improvements are consistent with the recommendations from the Niagara Village and Riverfront Community TIS reports.

With the implementation of these improvements in the Future Background 2024 scenario, the intersection is expected to operate acceptably up to the final Future Total 2031 horizon year.

In the Future Total 2031 horizon year during the weekday p.m. peak hour, the northbound left-turn and southbound through movements are expected to slightly exceed the Region’s maximum recommended v/c ratio threshold of 0.85, with the eastbound left-turn movement nearing that threshold. Therefore, additional growth beyond the 2031 horizon year will likely result in capacity constraints for several movements during the weekday p.m. peak hour.

A sensitivity analysis of potential mitigation measures determined that additional signal phasing and/or timing adjustments would not be sufficient to provide the additional capacity needed to meet the Region’s maximum v/c ratio thresholds. Therefore, with auxiliary left-turn lanes already proposed for each approach, and a southbound auxiliary right-turn lane already proposed for the north approach, it is expected the future signalized intersection may require additional capacity for its general-purpose lanes (i.e., corridor widening) in order to sufficiently accommodate continued growth beyond the 2031 horizon year.

These findings are consistent with the findings of the network capacity analysis undertaken for the Region’s TMP, which also found that capacity expansion would be required for this corridor for the 2031 horizon year.

In summary, based on the findings of the capacity analysis it is recommended the intersection be signalized with auxiliary left-turn lanes for all approaches, and an auxiliary right-turn lane for the north approach, to sufficiently accommodate traffic growth up to the 2031 horizon year. Additional intersection capacity will be required beyond 2031 should growth continue at the Region’s assumed 2% per annum growth rate.

Table 6: Capacity Analysis Results – Stanley Avenue at Chippawa Parkway

SCENARIO	MOVE.	WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR			STORAGE LENGTH
		V/C	LOS	95TH % QUEUE (M)	V/C	LOS	95TH % QUEUE (M)	
Existing 2021	EBLTR	0.03	A	<1 veh	0.07	B	<1 veh	-
	WBLTR	0.04	B	<1 veh	0.04	B	<1 veh	-
	NBLTR	0.01	A	<1 veh	0.02	A	<1 veh	-
	SBLTR	0.00	A	<1 veh	0.01	A	<1 veh	-
Future Background 2024	EBLTR	0.86	**E**	69m	**6.24**	**F**	**infinite**	-
	WBLTR	0.13	C	<1 veh	0.84	**F**	28m	-
	NBLTR	0.12	A	<1 veh	0.38	A	15m	-
	SBLTR	0.00	A	<1 veh	0.01	A	<1 veh	-
Future Background 2024 (Improved)	EBL	0.35	A	17m	0.60	B	62m	70m
	EBTR	0.17	A	10m	0.29	B	28m	-
	WBL	0.02	A	<1 veh	0.02	B	<1 veh	-
	WBTR	0.04	A	<1 veh	0.07	B	13m	-
	NBL	0.34	A	17m	0.74	B	74m	100m
	NBTR	0.34	A	21m	0.22	A	24m	-
	SBL	0.01	A	<1 veh	0.03	A	<1 veh	15m
	SBT	0.20	A	13m	0.34	A	38m	-
	SBR	0.07	A	<1 veh	0.18	A	8m	15m
Future Total 2024	EBL	0.35	A	19m	0.63	C	68m	70m
	EBTR	0.17	A	11m	0.30	B	30m	-
	WBL	0.02	A	<1 veh	0.03	B	<1 veh	-
	WBTR	0.04	A	<1 veh	0.08	B	14m	-
	NBL	0.34	A	18m	0.80	C	95m	100m
	NBTR	0.43	A	31m	0.26	A	32m	-
	SBL	0.01	A	<1 veh	0.03	A	<1 veh	15m
	SBT	0.23	A	16m	0.40	A	53m	-
	SBR	0.07	A	<1 veh	0.18	A	8m	15m
Future Background 2026	EBL	0.35	A	17m	0.60	C	62m	65m
	EBTR	0.17	A	10m	0.29	B	28m	-
	WBL	0.03	A	<1 veh	0.02	B	<1 veh	-
	WBTR	0.04	A	<1 veh	0.07	B	13m	-
	NBL	0.35	A	17m	0.75	B	76m	80m
	NBTR	0.35	A	22m	0.22	A	25m	-
	SBL	0.02	A	<1 veh	0.03	A	<1 veh	15m
	SBT	0.20	A	13m	0.35	A	39m	-
	SBR	0.08	A	<1 veh	0.18	A	8m	15m
Future Total 2026	EBL	0.40	B	28m	0.89	E	104m	100m
	EBTR	0.18	B	15m	0.33	C	37m	-
	WBL	0.03	B	<1 veh	0.11	C	1 veh	-
	WBTR	0.04	B	<1 veh	0.11	C	16m	-
	NBL	0.31	A	20m	0.90	D	103m	100m
	NBTR	0.60	A	62m	0.41	A	40m	-
	SBL	0.02	A	<1 veh	0.04	B	<1 veh	15m
	SBT	0.29	A	26m	0.85	C	138m	-
	SBR	0.08	A	<1 veh	0.24	B	19m	20m

SCENARIO	MOVE.	WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR			STORAGE LENGTH
		V/C	LOS	95TH % QUEUE (M)	V/C	LOS	95TH % QUEUE (M)	
Future Background 2031	EBL	0.35	A	19m	0.66	C	70m	120m
	EBTR	0.17	A	11m	0.30	B	28m	-
	WBL	0.03	A	<1 veh	0.03	B	<1 veh	-
	WBTR	0.04	A	<1 veh	0.08	B	13m	140m
	NBL	0.35	A	17m	0.82	C	90m	-
	NBTR	0.38	A	25m	0.23	A	26m	15m
	SBL	0.02	A	<1 veh	0.03	A	4m	-
	SBT	0.21	A	14m	0.37	A	44m	15m
	SBR	0.08	A	<1 veh	0.18	A	8m	
Future Total 2031	EBL	0.40	B	29m	0.89	E	113m	115m
	EBTR	0.18	B	15m	0.35	C	41m	-
	WBL	0.04	B	<1 veh	0.13	C	8m	15m
	WBTR	0.05	B	1 veh	0.011	C	18m	-
	NBL	0.32	A	20m	**0.91**	D	122m	125m
	NBTR	0.62	A	67m	0.41	A	45m	-
	SBL	0.02	A	<1 veh	0.05	B	<1 veh	15m
	SBT	0.30	A	27m	**0.88**	C	167m	-
	SBR	0.08	A	<1 veh	0.26	B	24m	25m

7.3 Stanley Avenue at Road 1/Road 2

With the introduction of Road 1 intersecting Stanley Avenue in 2024 in conjunction with Phase 1 of the subject development, with Road 1 assumed to be stop-controlled and Stanley Avenue free-flow, the eastbound approach (traffic approach the intersection on Road 1) is expected to experience high delays (LOS “F”) during the weekday p.m. peak hour due to limited gaps in the free-flow north/south approaches on Stanley Avenue.

With the introduction of Road 2 opposite Road 1 in 2026 in conjunction with Phase 2 of the subject development, delays for both the eastbound and westbound approaches are expected to be high (LOS “F”), with both approaches exceeding capacity.

Based on a sensitivity analysis of potential mitigation measures, it was determined that signalization of the intersection with an auxiliary left-turn lane for the north approach would be required to maintain the intersection at an acceptable level of service in 2026. With the implementation of these improvements, the intersection is expected to operate acceptably up to the final Future Total 2031 horizon year, with v/c ratios not exceeding 0.75, delays of LOS “C” or better, and no critical queueing concerns.

It is therefore recommended the proposed intersection be signalized with an auxiliary left-turn lane for the north approach, to sufficiently accommodate traffic growth up to the 2031 horizon year.

Table 7: Capacity Analysis Results – Stanley Avenue at Road 1/Road 2

SCENARIO	MOVE.	WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR			STORAGE LENGTH
		V/C	LOS	95TH % QUEUE (M)	V/C	LOS	95TH % QUEUE (M)	
Future Total 2024	EBLTR	0.25	C	8m	0.41	**F**	14m	-
	NBLTR	0.00	A	<1 veh	0.00	A	<1 veh	-
	SBLTR	0.00	-	<1 veh	0.00	-	<1 veh	-
Future Total 2026	EBLTR	0.60	**F**	25m	**4.75**	**F**	**infinite**	-
	WBLTR	0.42	C	16m	**1.73**	**F**	71m	-
	NBLTR	0.00	A	<1 veh	0.00	A	<1 veh	-
	SBLTR	0.04	A	<1 veh	0.18	B	<1 veh	-
Future Total 2026 (Improved)	EBLTR	0.17	B	11m	0.18	C	13m	-
	WBLTR	0.19	B	13m	0.22	C	18m	-
	NBLTR	0.51	A	40m	0.62	A	68m	-
	SBL	0.09	A	<1 veh	0.31	A	12m	15m
	SBTR	0.44	A	33m	0.73	A	97m	-
Future Total 2031	EBLTR	0.18	B	20m	0.19	C	14m	-
	WBLTR	0.20	B	26m	0.22	C	20m	-
	NBLTR	0.53	A	49m	0.63	A	70m	-
	SBL	0.09	A	16m	0.31	A	12m	20m
	SBTR	0.45	A	39m	0.75	A	102m	-

7.4 Lyons Creek Road at Stanley Avenue (North Approach)

Under existing conditions, the intersection of Stanley Avenue at Lyons Creek Road is stop controlled at the north approach, with auxiliary left-turn lanes on the north and west approaches, and an auxiliary right-turn lane on the north approach.

With background traffic growth to the 2024 horizon year (Future Background 2024), both the eastbound left-turn and southbound right-turn movements are forecasted to be exceeding capacity during the weekday p.m. peak hour.

Based on a sensitivity analysis of potential mitigation measures, it was determined that signalization of the intersection would be required to maintain the intersection at an acceptable level of service. This improvement is consistent with the recommendations from the Niagara Village and Riverfront Community TIS reports.

Under signalization, the intersection is expected to operate acceptably up to the Future Total 2026 scenario, at which point the westbound shared through/right-turn lane is expected to be nearing capacity. Introducing an auxiliary right-turn lane for the east approach is expected to provide the required additional capacity in order to maintain an acceptable level of service. Under this configuration, the intersection is expected to operate acceptably up to the final 2031 horizon year, with v/c ratios not exceeding 0.86 for auxiliary turn lanes and 0.82 for through movements, delays of LOS “E” or better, and no critical queueing concerns.

It is therefore recommended the intersection be signalized with a new auxiliary right-turn lane on the east approach, as well as increasing the left-turn storage length to 115 metres and 80 metres for the eastbound and southbound left-turn movements, respectively, to sufficiently accommodate traffic growth up to the 2031 horizon year.

Table 8: Capacity Analysis Results – Lyons Creek Road at Stanley Avenue (North Approach)

SCENARIO	MOVE.	WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR			STORAGE LENGTH
		V/C	LOS	95TH % QUEUE (M)	V/C	LOS	95TH % QUEUE (M)	
Existing 2021	EBL	0.15	A	18m	0.09	A	15m	45m
	EBT	0.08	-	-	0.13	-	-	-
	WBTR	0.14	-	<1 veh	0.15	-	<1 veh	-
	SBL	0.06	C	<1 veh	0.26	C	13m	30m
	SBR	0.13	B	9m	0.28	B	18m	-
Future Background 2024	EBL	0.31	C	28m	1.11	F	51m	45m
	EBT	0.24	-	19m	0.48	-	53m	-
	WBTR	0.45	B	25m	0.62	C	32m	-
	SBL	0.08	B	8m	0.26	F	18m	30m
	SBR	0.53	-	21m	1.01	-	36m	-
Future Background 2024 (Improved)	EBL	0.62	A	41m	0.65	A	82m	85m
	EBT	0.15	A	12m	0.20	A	28m	-
	WBTR	0.27	A	19m	0.70	C	84m	-
	SBL	0.11	B	11m	0.38	C	30m	30m
	SBR	0.22	B	17m	0.38	C	27m	-
2024 Future Total	EBL	0.78	C	60m	0.66	A	84m	85m
	EBT	0.18	A	15m	0.20	A	28m	-
	WBTR	0.32	A	25m	0.71	C	88m	-
	SBL	0.07	B	12m	0.39	C	30m	30m
	SBR	0.22	B	17m	0.38	C	28m	-
2026 Future Background	EBL	0.63	A	43m	0.66	A	86m	85m
	EBT	0.15	A	12m	0.21	A	29m	-
	WBTR	0.28	A	20m	0.71	C	89m	-
	SBL	0.11	B	11m	0.39	C	31m	30m
	SBR	0.22	B	18m	0.38	C	28m	-
2026 Future Total	EBL	0.94	D	**112m**	0.96	D	**172m**	85m
	EBT	0.22	A	23m	041	A	57m	-
	WBTR	0.47	A	52m	0.96	D	170m	-
	SBL	0.11	B	19m	0.55	C	**44m**	30m
	SBR	0.25	B	23m	0.43	C	35m	-
2026 Future Total (Improved)	EBL	0.70	B	63m	0.79	B	111m	115m
	EBT	0.23	A	28m	0.40	A	29m	-
	WBT	0.78	C	96m	0.83	C	107m	-
	WBR	0.07	C	10m	0.08	B	11m	15m
	SBL	0.11	C	20m	0.86	E	76m	80m
	SBR	0.27	C	24m	0.66	C	85m	-
2031 Future Background	EBL	0.61	B	47m	0.64	A	66m	115m
	EBT	0.18	A	21m	0.22	A	24m	-
	WBT	0.64	C	57m	0.58	C	62m	-
	WBR	004	C	9m	0.06	B	10m	15m
	SBL	0.08	B	13m	0.53	C	37m	80m
	SBR	0.23	B	18m	0.40	B	24m	-

SCENARIO	MOVE.	WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR			STORAGE LENGTH
		V/C	LOS	95TH % QUEUE (M)	V/C	LOS	95TH % QUEUE (M)	
Future Total 2031	EBL	0.76	C	60m	0.79	B	110m	115m
	EBT	0.25	A	28m	0.40	A	29m	-
	WBT	0.81	D	104m	0.82	C	107m	-
	WBR	0.07	C	11m	0.08	B	11m	15m
	SBL	0.12	B	21m	0.86	E	76m	80m
	SBR	0.28	C	25m	0.70	C	95m	-

7.5 Lyons Creek Road at Road 3

The Road 3 intersection on Lyons Creek Road is proposed to be stop controlled on the north approach, with an auxiliary left-turn lane for the west approach (as warranted by the MTO left-turn lane warrant). Under this configuration, the intersection is expected to operate with reserve capacity, delays not exceeding LOS “D” (25 to 35 seconds of delay) and no queueing concerns, up to the final 2031 horizon year.

Table 9: Capacity Analysis Results – Lyons Creek Road at Road 3

SCENARIO	MOVE.	WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR			STORAGE LENGTH
		V/C	LOS	95TH % QUEUE (M)	V/C	LOS	95TH % QUEUE (M)	
Future Total 2024	EBL	0.03	A	<1 veh	0.13	A	<1 veh	15m
	EBTR	0.29	-	<1 veh	0.44	-	<1 veh	-
	WBLTR	0.31	-	<1 veh	0.46	-	<1 veh	-
	SBLTR	0.19	B	<1 veh	0.17	C	<1 veh	-
Future Total 2026	EBL	0.04	A	<1 veh	0.17	B	<1 veh	15m
	EBTR	0.36	-	<1 veh	0.66	-	<1 veh	-
	WBLTR	0.47	-	<1 veh	0.63	-	<1 veh	-
	SBLTR	0.27	C	9m	0.27	D	8m	-
Future Total 2031	EBL	0.04	A	<1 veh	0.17	B	<1 veh	15m
	EBTR	0.38	-	<1 veh	0.68	-	<1 veh	-
	WBLTR	0.49	-	<1 veh	0.66	-	<1 veh	-
	SBLTR	0.28	C	9m	0.29	D	9m	-

7.6 Lyons Creek Road at Stanley Avenue (South Approach)

The intersection of Lyons Creek Road at Stanley Avenue is stop controlled at the south approach (Stanley Avenue), with no auxiliary turn lanes. Under existing and all future conditions, the intersection is expected to operate with reserve capacity, delays not exceeding LOS “D” (25 to 35 seconds of delay), and no queueing concerns. Based on the completed MTO left-turn lane warrants, it is recommended a westbound auxiliary left-turn lane be introduced on Lyons Creek Road in conjunction with build-out of the subject development, and that an eastbound auxiliary left-turn lane be introduced on Lyons Creek Road in conjunction with a new north approach at the

intersection (should a private driveway be introduced at the north side of the intersection to service the future commercial lands).

Table 10: Capacity Analysis Results – Lyons Creek Road at Stanley Avenue

SCENARIO	MOVE.	WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR			STORAGE LENGTH
		V/C	LOS	95TH % QUEUE (M)	V/C	LOS	95TH % QUEUE (M)	
Existing 2021	EBTR	0.09	-	-	0.19	-	-	-
	WBLT	0.00	A	<1 veh	0.00	A	<1 veh	-
	NBLR	0.07	B	<1 veh	0.05	B	<1 veh	-
Future Background 2024	EBTR	0.11	-	<1 veh	0.21	-	<1 veh	-
	WBL	0.00	A	<1 veh	0.00	A	<1 veh	15m
	WBT	0.13	-	<1 veh	0.17	-	<1 veh	-
	NBLR	0.08	B	<1 veh	0.00	B	<1 veh	-
Future Total 2024	EBTR	0.11	-	<1 veh	0.21	-	<1 veh	-
	WBL	0.00	A	<1 veh	0.00	A	<1 veh	15m
	WBT	0.13	-	<1 veh	0.17	-	<1 veh	-
	NBLR	0.08	B	<1 veh	0.00	B	<1 veh	-
Future Background 2026	EBTR	0.11	-	<1 veh	0.22	-	<1 veh	-
	WBL	0.00	A	<1 veh	0.00	A	<1 veh	15m
	WBT	0.13	-	<1 veh	0.17	-	<1 veh	-
	NBLR	0.08	B	<1 veh	0.00	B	<1 veh	-
Future Total 2026	EBL	0.02	A	<1 veh	0.07	A	<1 veh	15m
	EBTR	0.16	-	<1 veh	0.35	-	<1 veh	-
	WBL	0.00	A	<1 veh	0.01	A	<1 veh	15m
	WBTR	0.26	-	<1 veh	0.25	-	<1 veh	-
	NBLTR	0.17	C	<1 veh	0.01	C	<1 veh	-
	SBLTR	0.03	B	<1 veh	0.03	D	<1 veh	-
Future Background 2031	EBTR	0.12	-	<1 veh	0.24	-	<1 veh	-
	WBL	0.00	A	<1 veh	0.01	A	<1 veh	15m
	WBT	0.15	-	<1 veh	0.19	-	<1 veh	-
	NBLR	0.10	B	<1 veh	0.00	B	<1 veh	-
Future Total 2031	EBL	0.02	A	<1 veh	0.07	A	<1 veh	15m
	EBTR	0.17	-	<1 veh	0.37	-	<1 veh	-
	WBL	0.00	A	<1 veh	0.01	A	<1 veh	15m
	WBTR	0.27	-	<1 veh	0.27	-	<1 veh	-
	NBLTR	0.20	C	<1 veh	0.01	C	<1 veh	-
	SBLTR	0.03	B	<1 veh	0.03	D	<1 veh	-

7.7 Lyons Creek Road at Road 4

The proposed Road 4 intersection on Lyons Creek Road is proposed to be stop controlled for the north approach, with an auxiliary left-turn lane for the west approach (as warranted by the MTO left-turn lane warrant). Under this configuration, the intersection is expected to operate with reserve capacity, delays not exceeding LOS “B” (10 to 15 seconds of delay) and no queueing concerns, up to the final 2031 horizon year.

Table 11: Capacity Analysis Results – Lyons Creek Road at Road 4

SCENARIO	MOVE.	WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR			STORAGE LENGTH
		V/C	LOS	95TH % QUEUE (M)	V/C	LOS	95TH % QUEUE (M)	
Future Total 2024	EBL	0.00	-	<1 veh	0.00	-	<1 veh	15m
	EBTR	0.10	-	<1 veh	0.18	-	<1 veh	-
	WBTR	0.13	-	<1 veh	0.17	-	<1 veh	-
	SBLR	0.00	A	<1 veh	0.00	A	<1 veh	-
Future Total 2026	EBL	0.02	A	<1 veh	0.08	A	<1 veh	15m
	EBTR	0.13	-	<1 veh	0.26	-	<1 veh	-
	WBTR	0.21	-	<1 veh	0.23	-	<1 veh	-
	SBLR	0.12	B	<1 veh	0.09	B	<1 veh	-
Future Total 2031	EBL	0.02	A	<1 veh	0.08	A	<1 veh	15m
	EBTR	0.14	-	<1 veh	0.28	-	<1 veh	-
	WBTR	0.22	-	<1 veh	0.25	-	<1 veh	-
	SBLR	0.13	B	<1 veh	0.09	B	<1 veh	-

7.8 Lyons Creek Road at Road 5

The proposed Road 5 intersection on Lyons Creek Road is proposed to be stop controlled for the north approach, with an auxiliary left-turn lanes on the west approach (as warranted by the MTO left-turn lane warrant). Under this configuration, the intersection is expected to operate with reserve capacity, delays not exceeding LOS “C” (15 to 25 seconds of delay) and no queueing concerns, up to the final 2031 horizon year.

Table 12: Capacity Analysis Results – Lyons Creek Road at Road 5

SCENARIO	MOVE.	WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR			STORAGE LENGTH
		V/C	LOS	95TH % QUEUE (M)	V/C	LOS	95TH % QUEUE (M)	
Future Total 2026	EBL	0.01	A	<1 veh	0.05	A	<1 veh	15m
	EBTR	0.12	A	<1 veh	0.23	A	<1 veh	-
	WBLTR	0.16	A	<1 veh	0.20	A	<1 veh	-
	NBLTR	0.06	B	<1 veh	0.05	C	<1 veh	-
	SBLTR	0.07	B	<1 veh	0.05	B	<1 veh	-
Future Total 2031	EBL	0.01	A	<1 veh	0.05	A	<1 veh	15m
	EBTR	0.13	A	<1 veh	0.25	A	<1 veh	-
	WBLTR	0.18	A	<1 veh	0.22	A	<1 veh	-
	NBLTR	0.06	C	<1 veh	0.06	C	<1 veh	-
	SBLTR	0.08	B	<1 veh	0.06	B	<1 veh	-

7.9 Lyons Creek Road at Sodom Road

The intersection of Stanley Avenue at Sodom Road is stop controlled at the south approach with no auxiliary turn lanes. Under existing and all future conditions scenarios, the intersection is

expected to operate with reserve capacity, delays not exceeding LOS “D” (25 to 35 seconds of delay), and no queueing concerns. No improvements are recommended at this intersection in response to the subject development.

Table 13: Capacity Analysis Results – Lyons Creek Road at Sodom Road

SCENARIO	MOVE.	WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR			STORAGE LENGTH
		V/C	LOS	95TH % QUEUE (M)	V/C	LOS	95TH % QUEUE (M)	
Existing 2021	EBTR WBLT NBLR	0.07 0.03 0.24	A A B	<1 veh 1 veh 15m	0.16 0.11 0.39	A A C	<1 veh 21m 20m	- - -
Future Background 2024	EBTR WBLT NBLR	0.09 0.04 0.27	A A B	<1 veh <1 veh 9m	0.19 0.12 0.47	A A C	<1 veh <1 veh 20m	- - -
Future Total 2024	EBTR WBLT NBLR	0.09 0.04 0.27	A A B	<1 veh <1 veh 9m	0.19 0.12 0.47	A A C	<1 veh <1 veh 20m	- - -
Future Background 2026	EBTR WBLT NBLR	0.09 0.04 0.28	A A B	<1 veh <1 veh 9m	0.20 0.12 0.50	A A C	<1 veh <1 veh 22m	- - -
Future Total 2026	EBTR WBLT NBLR	0.10 0.04 0.29	A A B	<1 veh <1 veh 9m	0.20 0.12 0.53	A A C	<1 veh <1 veh 24m	- - -
Future Background 2031	EBTR WBLT NBLR	0.10 0.04 0.32	A A B	<1 veh <1 veh 11m	0.21 0.14 0.60	A A C	<1 veh <1 veh 31m	- - -
Future Total 2031	EBTR WBLT NBLR	0.11 0.04 0.33	A A B	<1 veh <1 veh 12m	0.22 0.14 0.63	A A D	<1 veh <1 veh 34m	- - -

8.0 PROPOSED INTERSECTION LOCATIONS ON REGIONAL ROAD NETWORK

As shown in the appended Concept Plan of Subdivision, several new roadway connections are proposed from the development to Stanley Avenue and Lyons Creek Road. The Transportation Association of Canada (TAC) Geometric Design Guide recommends a minimum intersection spacing of 200 metres on arterial roads. All proposed intersections on Stanley Avenue and Lyons Creek Road meet this intersection spacing guideline, as described below:

- Road 1 and Road 2 intersection on Stanley Avenue, approximately 450 metres north of the intersection at Lyons Creek Road (future signal), and approximately 500 metres south of the intersection at Chippawa Parkway (future signal).
- Road 3 intersection on Lyons Creek Road (stop control on proposed north approach, free flow on Lyons Creek Road): Approximately 210 metres west of Stanley Avenue (future signal).

- Road 4 intersection on Lyons Creek Road (stop control on proposed north approach, free flow on Lyons Creek Road): Approximately 660 metres east of Stanley Avenue (future signal), and 440 metres west of proposed Road 5 intersection.
- Road 5 intersection on Lyons Creek Road (stop control on proposed north approach, free flow on Lyons Creek Road): Approximately 440 metres east of proposed Road 4 intersection.

9.0 ACTIVE TRANSPORTATION

It is expected pedestrian facilities (i.e., sidewalk and/or multi-use path) will be introduced along both the Stanley Avenue and Lyons Creek Road corridors in conjunction with the future capacity expansions (i.e., widening, urbanization). Sidewalk is to be provided on both sides of all proposed roads internal to the subject subdivision.

Both Stanley Avenue and Lyons Creek Road have on-street bike lanes in the vicinity of the site. As per the Region's proposed Strategic Cycling Network as illustrated in the TMP, there are currently no future changes planned for the existing on-street bike lanes on Lyons Creek Road and Stanley Avenue. Dedicated cycling facilities are not proposed internal to the subdivision.

The nearest City transit stops include stops near the intersection Lyons Creek at Sodom Road (Route 112) and stops near Stanley Avenue at Don Murie Street just north of Chippawa Parkway (Route 106). Although any planned modifications to City transit routing is not known at this time, the City may consider extending Route 112 further west and/or extend Route 106 further south to improve transit accessibility for future residents and employees of the subject site.

Confirmation of the future active transportation facilities to be introduced along both Regional corridors will likely be determined within the Environmental Assessments (EA) to be completed for each road.

10.0 SUMMARY OF FINDINGS

The findings of the traffic impact study can be summarized as follows:

- Both Stanley Avenue and Lyons Creek Road have on-street bike lanes in the vicinity of the site. As per the Region's proposed Strategic Cycling Network as illustrated in the TMP, there are currently no future changes planned for the existing on-street bike lanes on Lyons Creek Road and Stanley Avenue.
- It is expected pedestrian facilities (i.e., sidewalk and/or multi-use path) will be introduced along both corridors in conjunction with the future widening of Lyons Creek Road and Stanley Avenue.

- The nearest City transit stops include stops near the intersection Lyons Creek at Sodom Road (Route 112) and stops near Stanley Avenue at Don Murie Street just north of Chippawa Parkway (Route 106).
- In response to projected capacity constraints, the Region's 2017 TMP recommends future road network capacity expansion projects on both Stanley Avenue and Lyons Creek Road.
- Confirmation of the future ultimate cross-sections for both Regional roads will likely be determined within the Environmental Assessment (EA) to be completed for each road.
- The estimated vehicular trip generation for Phase 1 of the subject development is approximately 59 inbound and 175 outbound trips during the weekday a.m. peak hour, and 193 inbound and 115 outbound trips during the weekday p.m. peak hour peak hour.
- The estimated vehicular trip generation for Phase 2 of the subject development is approximately 191 inbound and 430 outbound trips during the weekday a.m. peak hour, and 607 inbound and 454 outbound trips during the weekday p.m. peak hour peak hour.
- This results in a total site trip generation of 250 inbound and 605 outbound trips during the weekday a.m. peak hour, and 800 inbound and 569 outbound trips during the weekday p.m. peak hour peak hour.
- Approved Traffic Impact Study (TIS) reports for the planned Niagara Village and Riverfront Community developments have recommended signalizing both the Chippawa Parkway and Lyons Creek Road intersections on Stanley Avenue, as well as introducing auxiliary turn lanes at the intersection of Chippawa Parkway and Stanley Avenue in order to maintain an acceptable level of service to the 2031 horizon year.
- The findings of the intersection capacity analysis undertaken for this Study confirms the proposed intersection improvements recommended in the aforementioned background development TIS reports, and in addition identifies the need for a southbound auxiliary left-turn lane at the intersection of Stanley Avenue at Lyons Creek Road.
- The proposed Concept Plan of Subdivision includes five (5) new roads intersecting the regional road network. They include opposing Roads 1 and 2 intersecting Stanley Avenue generally midway between Chippawa Parkway and Lyons Creek Road, and Roads 3, 4 and 5 intersecting Lyons Creek Road along the south frontage of the development lands.
- Based on the results of the capacity analysis, the proposed new intersection of Roads 1 and with Stanley Avenue will need to be signalized with a southbound auxiliary left-turn lane in order to maintain an acceptable level of service to the 2031 horizon year.
- Furthermore, based on the results of the capacity analysis, the three (3) proposed new intersections on Lyons Creek Road (Roads 3, 4 and 5) can be unsignalized (free flow

operation for Lyons Creek Road) with auxiliary left-turn lanes on Lyons Creek Road per completed left turn lane warrants, and will maintain an acceptable level of service up to the ultimate 2031 horizon year.

11.0 RECOMMENDATIONS

Based on the results of our traffic analysis, the following intersection improvements to existing study area intersections are recommended in order to maintain an acceptable level of service at each intersection to the ultimate 2031 horizon year:

- Stanley Avenue at Chippawa Parkway
  - Signalize the intersection
  - Introduce auxiliary left-turn lanes on all approaches
  - Introduce an auxiliary right-turn lane on the north approach
- Stanley Avenue (north approach) at Lyons Creek Road
  - Signalized the intersection
  - Introduce an auxiliary right-turn lane on the east approach
  - Increase the storage capacities of the existing auxiliary eastbound and southbound left-turn lanes
- Stanley Avenue (south approach) at Lyons Creek Road
  - Introduce an auxiliary left-turn lane on the east approach in conjunction with build-out of the subject development, and an auxiliary left-turn lane on the west approach should a private driveway be introduced at the north side of the intersection to service the future commercial lands.
- Stanley Avenue at Sodom Road
  - No improvements recommended

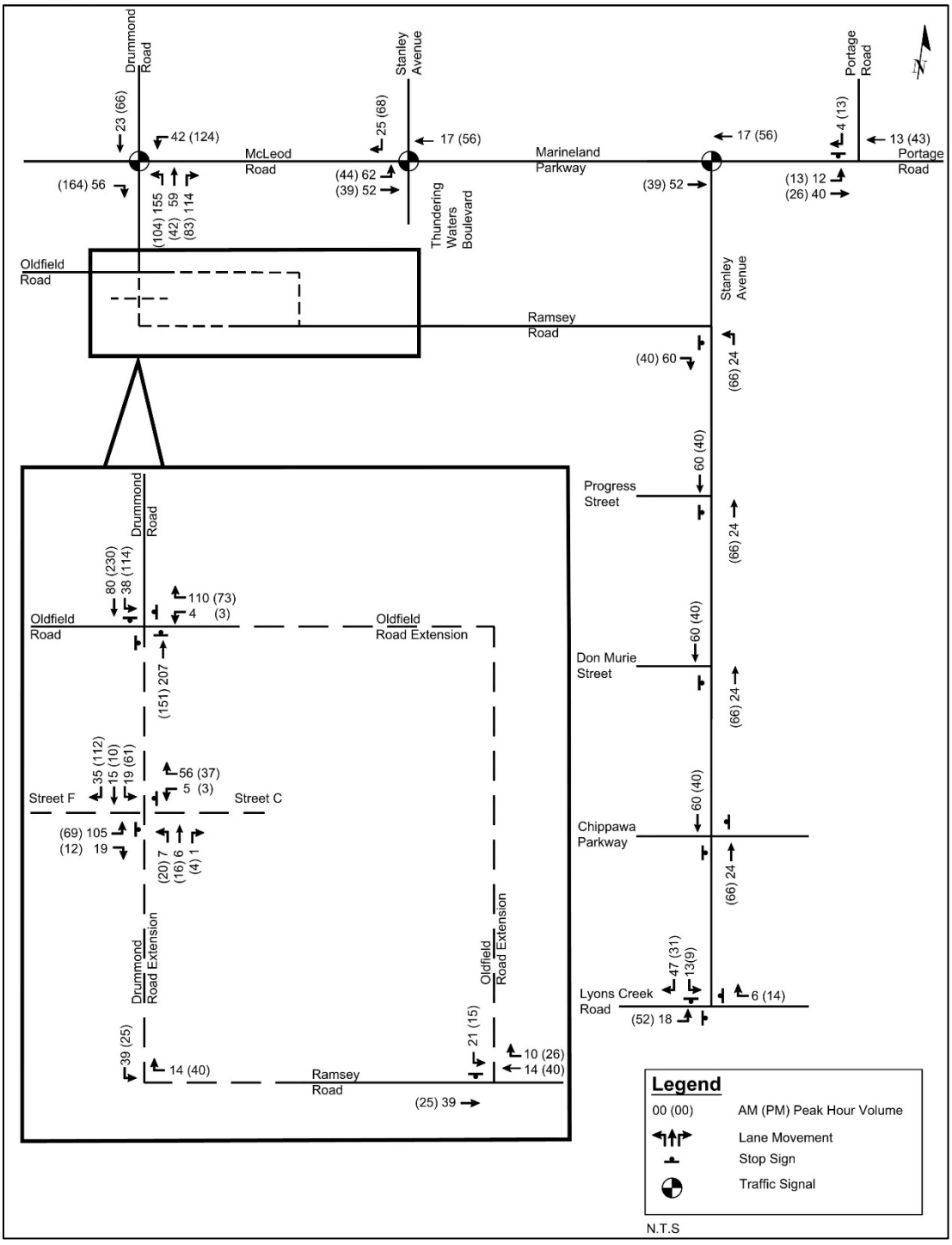
Based on the results of our traffic analysis and completed MTO Left-turn Lane Warrants for the 2031 horizon year, the following intersection configurations are recommended for the new proposed intersections on the Regional Road network in order to maintain an acceptable level of service to the ultimate 2031 horizon year:

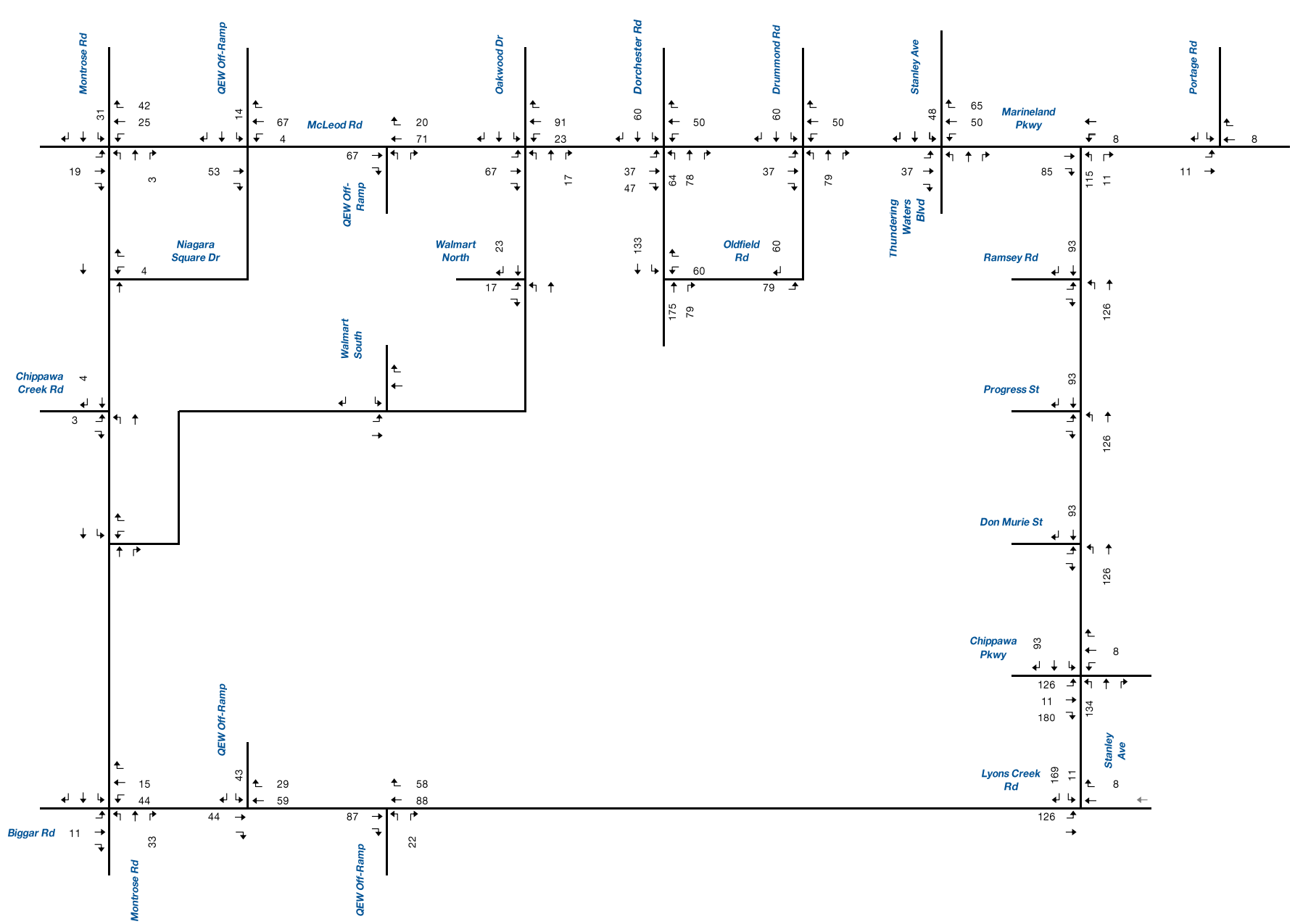
- Road 1 / Road 2 on Stanley Avenue
  - New signalized intersection on Stanley Avenue
  - Introduce an auxiliary left-turn lane on the north approach
- Three (3) proposed unsignalized intersections on Lyons Creek Road (Roads 3, 4, and 5), with auxiliary left-turn lanes on the west approach on Lyons Creek Road at each future intersection.

APPENDIX A

BACKGROUND DEVELOPMENT TRIP ASSIGNMENTS

Figure 10: New Development Trips



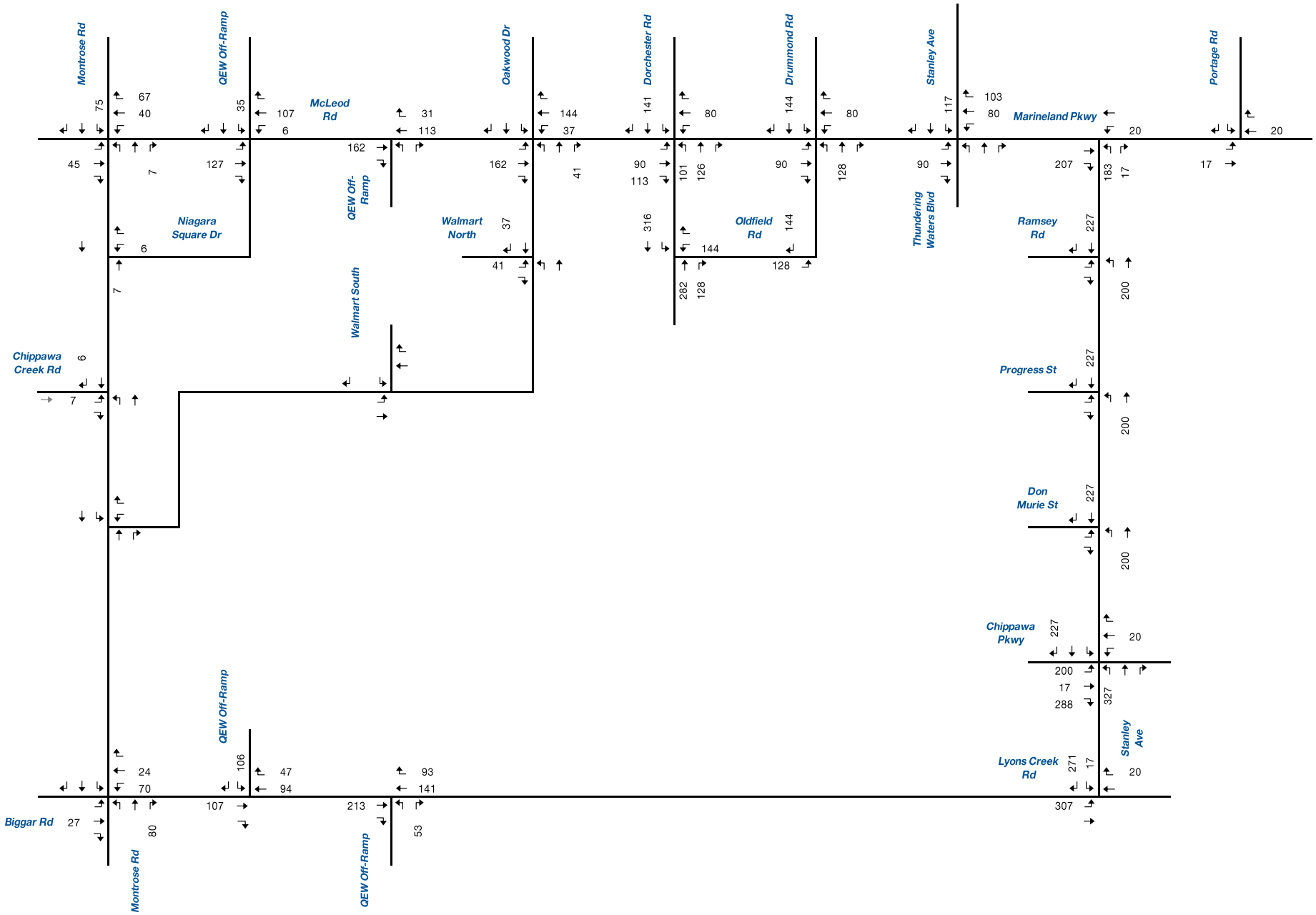


Development Generated Traffic Volumes

AM Peak Hour

Riverfront Community Transportation Assessment
151385

Figure 3.11



Development Generated Traffic Volumes

PM Peak Hour

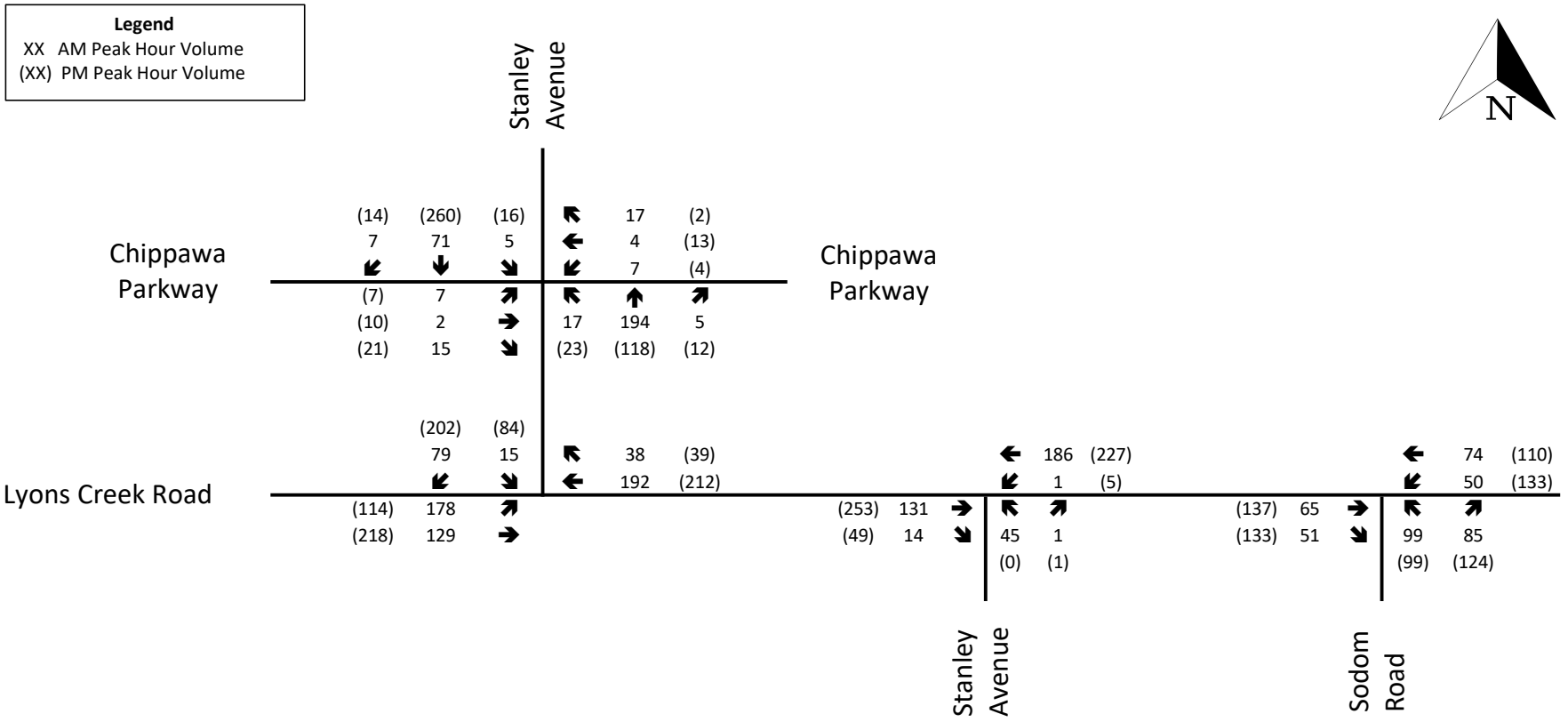
Riverfront Community Transportation Assessment
151385

Figure 3.12

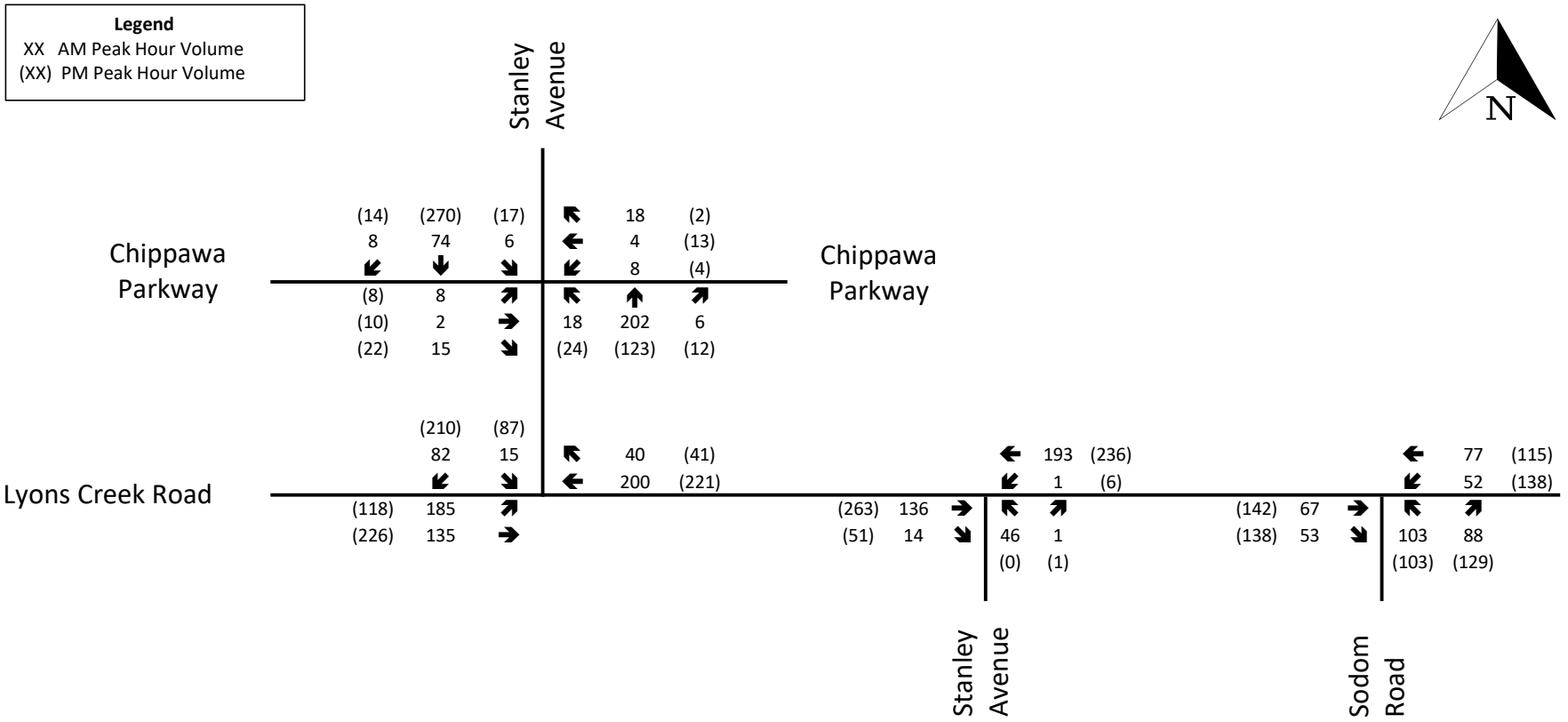
APPENDIX B

CORRIDOR GROWTH TURNING MOVEMENT DIAGRAMS

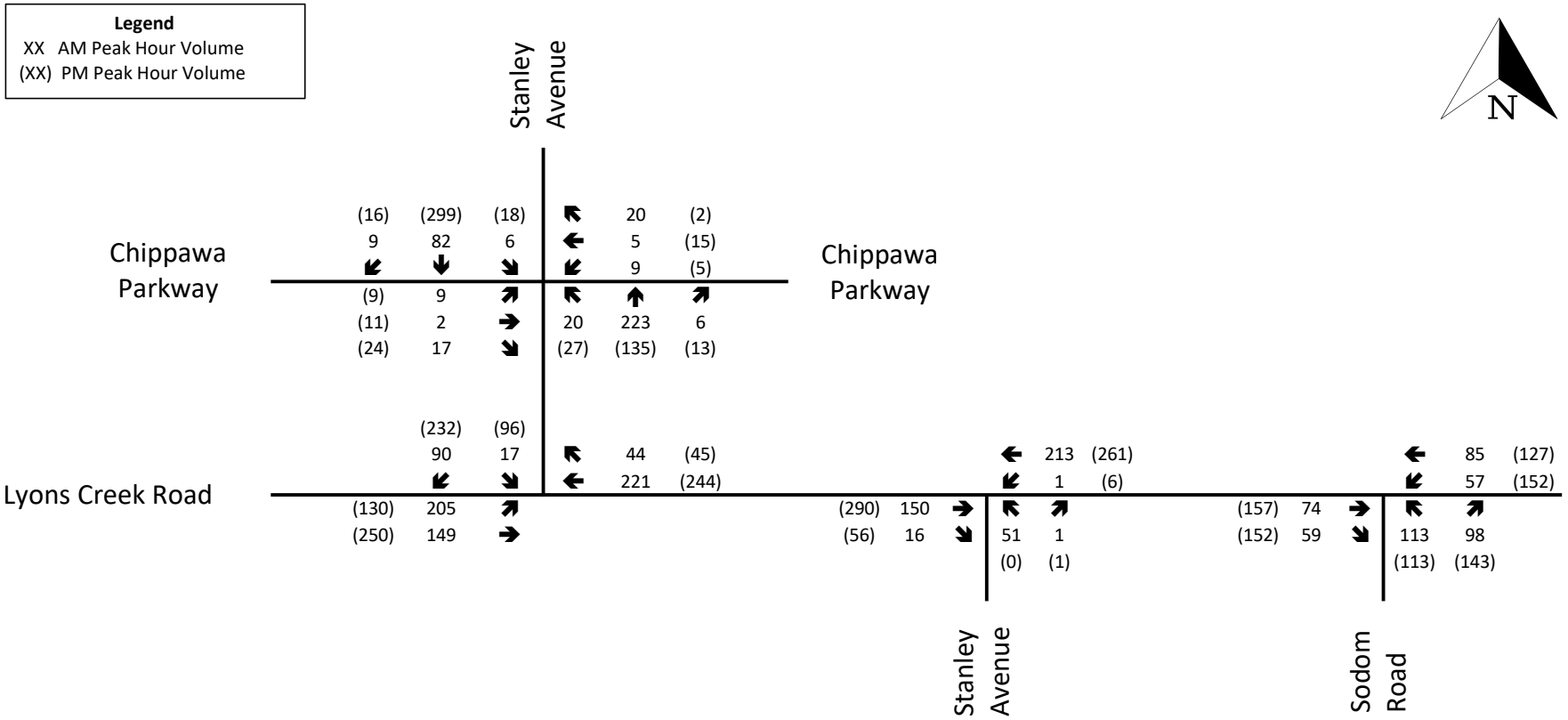
2024 Growth


Legend
XX AM Peak Hour Volume
(XX) PM Peak Hour Volume
N
Stanley Avenue
Chippawa Parkway
Chippawa Parkway
Lyons Creek Road
Stanley Avenue
Sodom Road
(14) (260) (16) 17 (2)
7 71 5 4 (13)
7 (4)
(7) 7 17 194 5
(10) 2 (21) 15 (23) (118) (12)
(202) (84)
79 15 38 (39)
192 (212)
(114) 178
(218) 129
(253) 131
(49) 14
186 (227)
1 (5)
45 1
(0) (1)
(137) 65
(133) 51
74 (110)
50 (133)
99 85
(99) (124)

2026 Growth


Legend
XX AM Peak Hour Volume
(XX) PM Peak Hour Volume
N
Stanley Avenue
Chippawa Parkway
Chippawa Parkway
Lyons Creek Road
Stanley Avenue
Sodom Road
(14) (270) (17) 18 (2)
8 74 6 4 (13)
8 8
(8) 8 (4)
(10) 2 18 202 6
(22) 15 (24) (123) (12)
(210) (87)
82 15 40 (41)
200 (221)
(118) 185
(226) 135
(263) 136
(51) 14
193 (236)
1 (6)
46 1
(0) (1)
(142) 67
(138) 53
77 (115)
52 (138)
103 88
(103) (129)

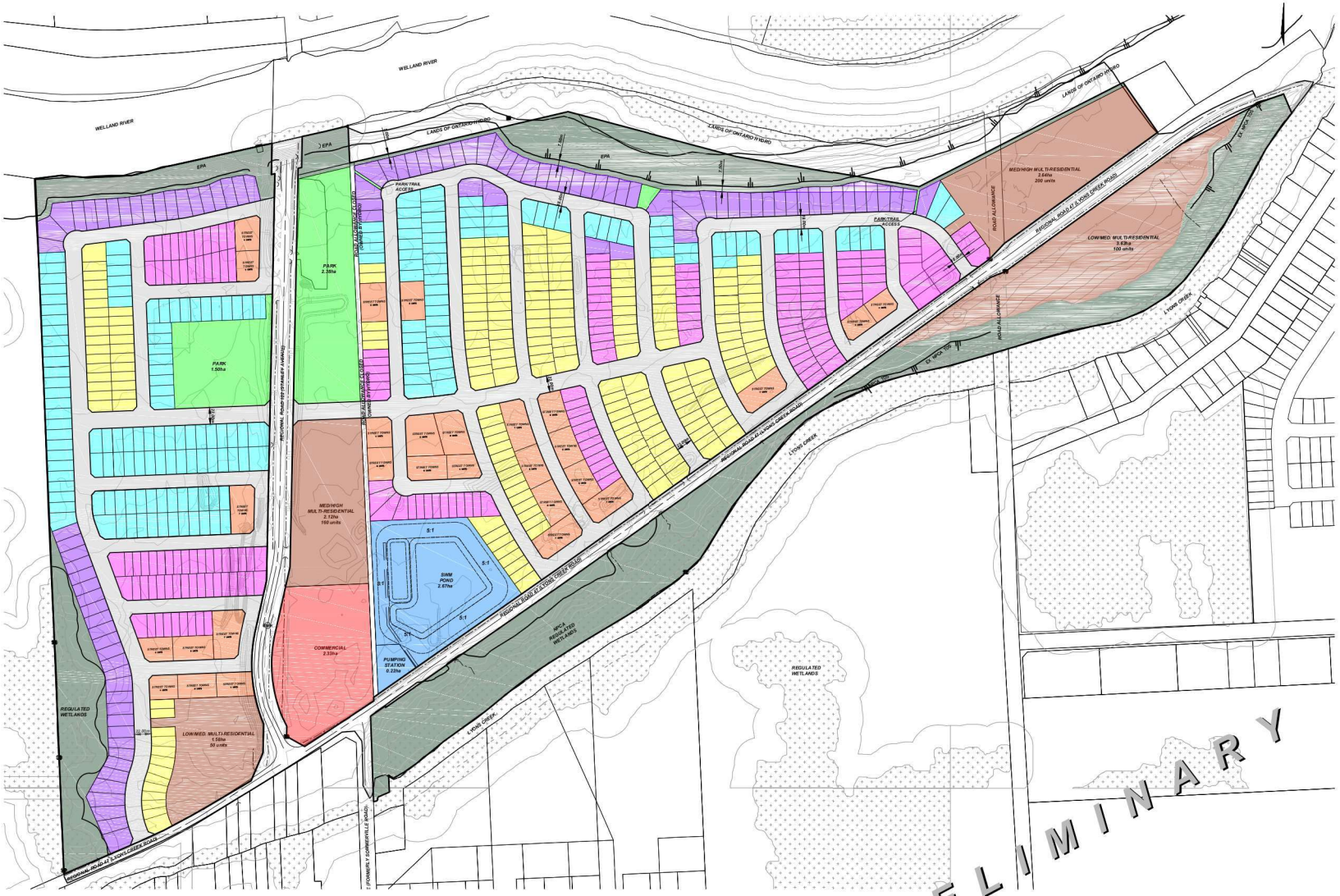
2031 Growth


Legend
XX AM Peak Hour Volume
(XX) PM Peak Hour Volume
N
Stanley Avenue
Chippawa Parkway
Chippawa Parkway
Lyons Creek Road
Stanley Avenue
Sodom Road
(16) (299) (18) 20 (2)
9 82 6 5 (15)
9 (5)
(9) 9 223 6
(11) 2 20
(24) 17 (27) (135) (13)
(232) (96)
90 17 44 (45)
221 (244)
(130) 205
(250) 149
(290) 150
(56) 16
213 (261)
1 (6)
51 1
(0) (1)
(157) 74
(152) 59
85 (127)
57 (152)
113 98
(113) (143)

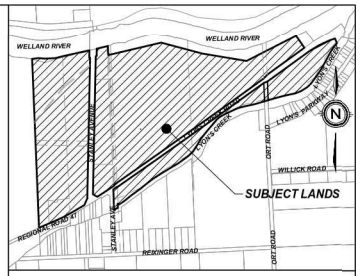
APPENDIX C

CONCEPT PLAN OF SUBDIVISION

CONCEPTUAL DEVELOPMENT PLAN
SOUTH NIAGARA FALLS REDEVELOPMENT



PRELIMINARY



KEY PLAN
N.T.S.

CONCEPT PLAN OF SUBDIVISION

LEGAL DESCRIPTION

PART OF LOTS 1, 2 & 3
BROKEN FRONT CONCESSION WELLAND RIVER
and
PART OF THE ROAD ALLOWANCE BETWEEN
LOTS 2 & 3 (CLOSED BY BY-LAW)
BROKEN FRONT CONCESSION WELLAND RIVER
and
PART OF LOTS 19 & 20 - CONCESSION 3
all being in the former Township of Willoughby,
now the
CITY OF NIAGARA FALLS
REGIONAL MUNICIPALITY OF NIAGARA

- STREET TOWNS
- SINGLE RESIDENTIAL - 10.67m (35')
- SINGLE RESIDENTIAL - 12.20m (40')
- SINGLE RESIDENTIAL - 13.72m (45')
- SINGLE RESIDENTIAL - 15.24m (50')
- MULTI- RESIDENTIAL
- COMMERCIAL
- PARK
- EPA LANDS

LAND USE SCHEDULE

LAND USE	LOT/BLOCK	# OF UNITS	AREA(ha)	AREA(%)
SINGLE RESIDENTIAL 10.67m		180	6.84	8.27
SINGLE RESIDENTIAL 12.20m		217	9.01	10.90
SINGLE RESIDENTIAL 13.72m		182	8.67	10.48
SINGLE RESIDENTIAL 15.24m		100	5.91	7.15
STREET TOWNS		155	4.68	5.66
MULTI-RESIDENTIAL		510	10.02	12.12
STORMWATER MGMT FACILITY			2.89	3.50
PARKS/TRAILS			4.60	5.56
NEIGHBOURHOOD COMMERCIAL			2.33	2.82
ROADWAY			13.92	16.83
ENVIRONMENTAL PROTECTION			13.83	16.72
TOTAL		1344	82.88	100.00

DEVELOPABLE AREA = 69.05ha
DEVELOPABLE DENSITY = 19.46 units/ha

#	REVISION	DATE	INIT
.	.	.	.
.	.	.	.
0	ISSUED FOR REVIEW	2021-07-06	TA

UPPER CANADA CONSULTANTS
ENGINEERS / PLANNERS

DRAWING TITLE
CONCEPTUAL DEVELOPMENT PLAN OF SUBDIVISION

DRAFTING	MK/TA
DATE	JULY 6, 2021
PRINTED	JULY 7, 2021
SCALE	1:2500
DWG No.	REV
17105-CDP	0

DRAWING FILE: P:\17105\Concepts\17105-CONCEPTUAL DEVELOPMENT PLAN.dwg PLOTTED: Jul 07, 2021 - 8:51am PLOTTED BY: TAllen

APPENDIX D

TTS DATA

Tue Aug 31 2021 9:27:15 GMT-0400 (Eastern Daylight Time) - Run Time: 2392ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of origin - pd_orig
Column: Planning district of employment - pd_emp

Filters:
(2006 GTA zone of origin - gta06_orig In 6249)

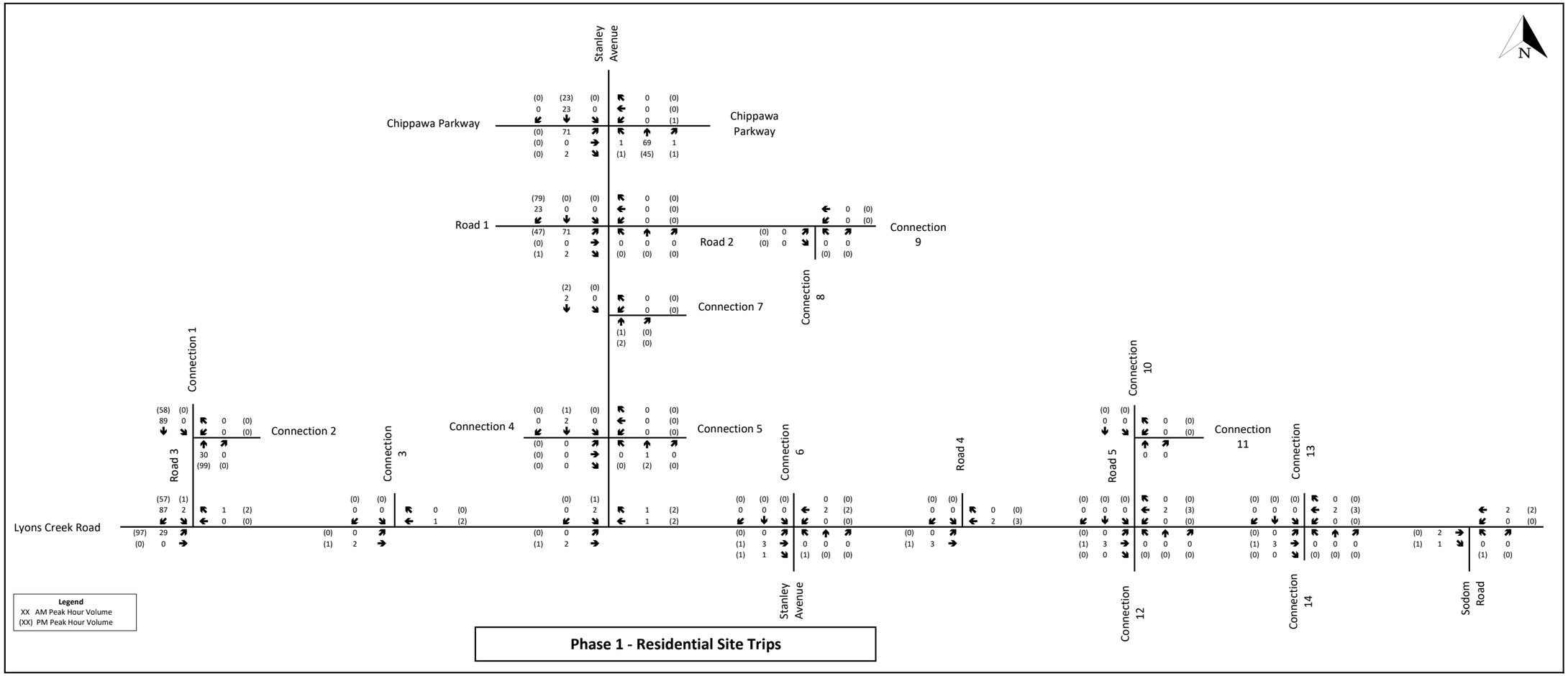
Trip 2016
Table:

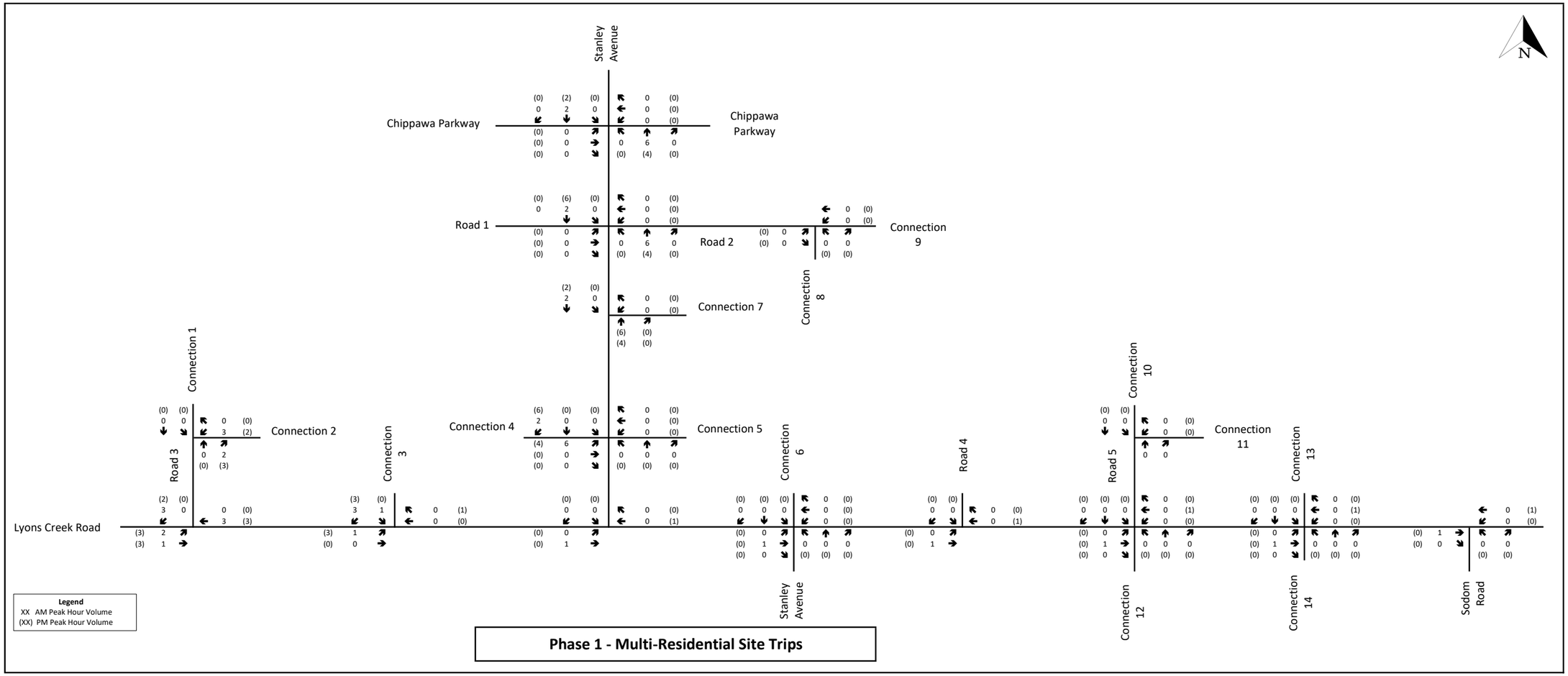
	Not employed	Mississauga	Milton	Niagara-on-the-Lake	St. Catharines	Niagara Falls	Welland	No Usual Place	
Niagara Falls	1338	47	74	59	10	1669	21	123	3341
	Employed								
	2003	2%	4%	3%	1%	83%	1%	6%	100%

ORIGIN-DESTINATION MATRIX								
Routes	**Mississauga**	**Milton**	**Niagara-on-the-Lake**	**St. Catharines**	**Niagara Falls**	**Welland**	**No Usual Place**	**TOTAL**
North Stanley	0%	0%	0%	0%	50%	0%	20%	**43%**
West Chippawa	0%	0%	0%	0%	0%	0%	10%	**1%**
East Chippawa	0%	0%	0%	0%	0%	0%	10%	**1%**
West Lyons	100%	100%	100%	100%	50%	100%	20%	**54%**
South Stanley	0%	0%	0%	0%	0%	0%	10%	**1%**
South Sodom	0%	0%	0%	0%	0%	0%	10%	**1%**
East Lyons	0%	0%	0%	0%	0%	0%	20%	**1%**
TOTAL	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

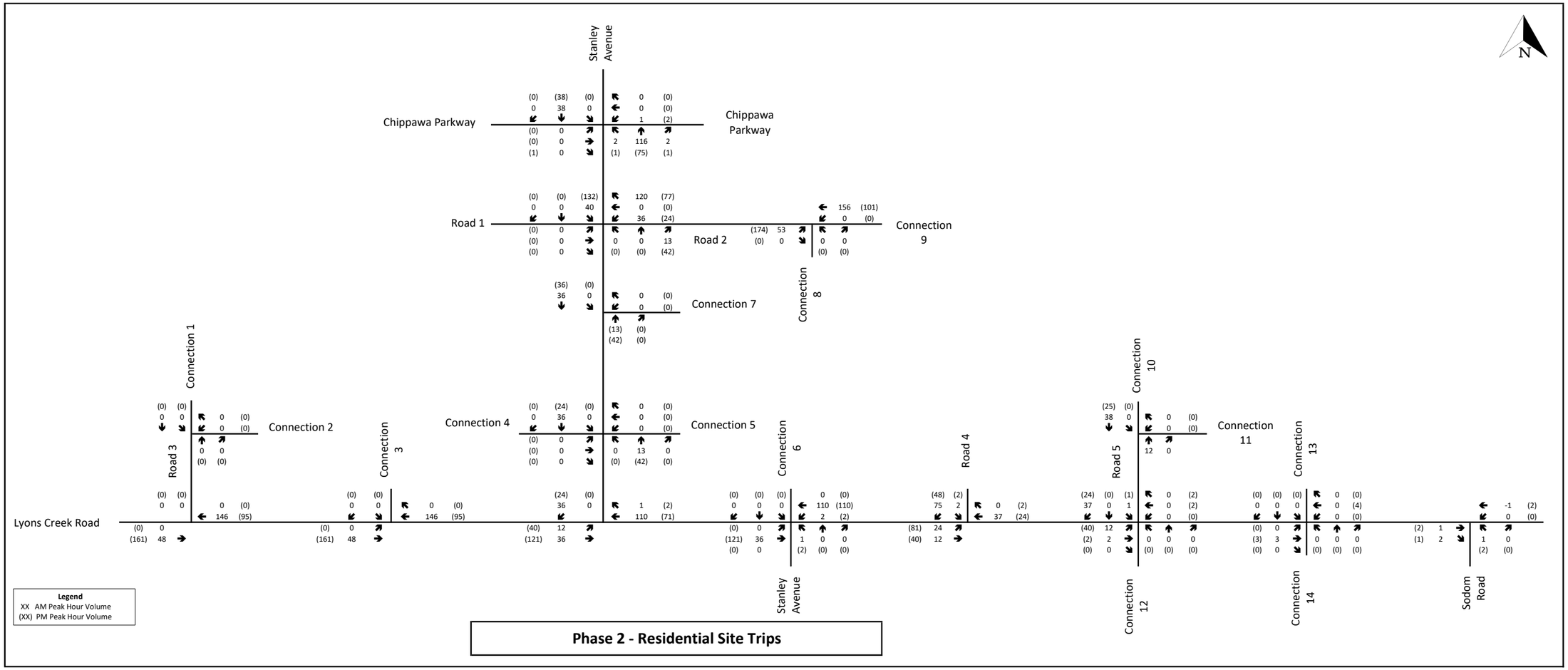
APPENDIX E

SUBDIVISION ZONES TURNING MOVEMENT DIAGRAMS

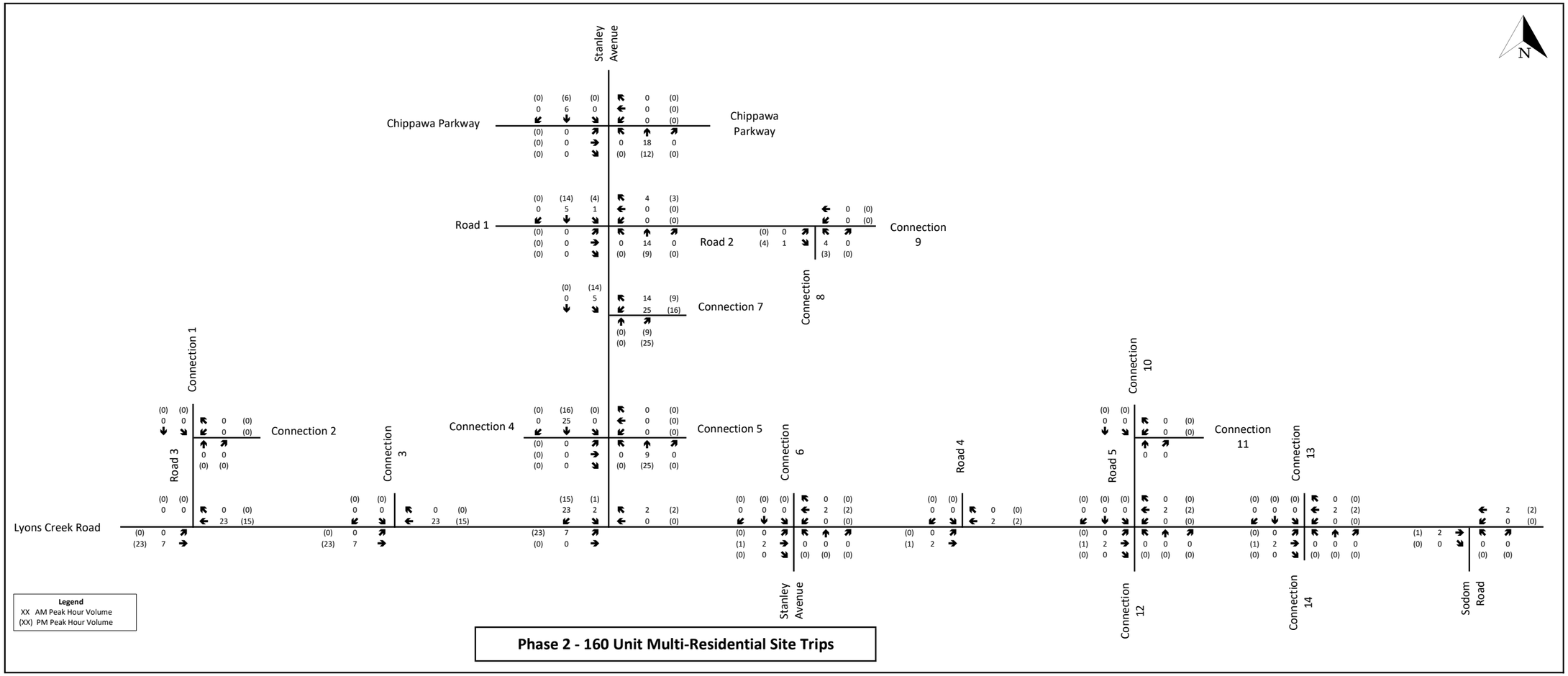

N
Stanley Avenue
Chippawa Parkway
Chippawa Parkway
Road 1
Road 2
Connection 9
Connection 8
Connection 7
Connection 1
Connection 10
Road 3
Connection 2
Connection 3
Connection 4
Connection 5
Connection 6
Road 4
Road 5
Connection 11
Connection 13
Lyons Creek Road
Stanley Avenue
Connection 12
Connection 14
Sodom Road
Legend
XX AM Peak Hour Volume
(XX) PM Peak Hour Volume
Phase 1 - Residential Site Trips



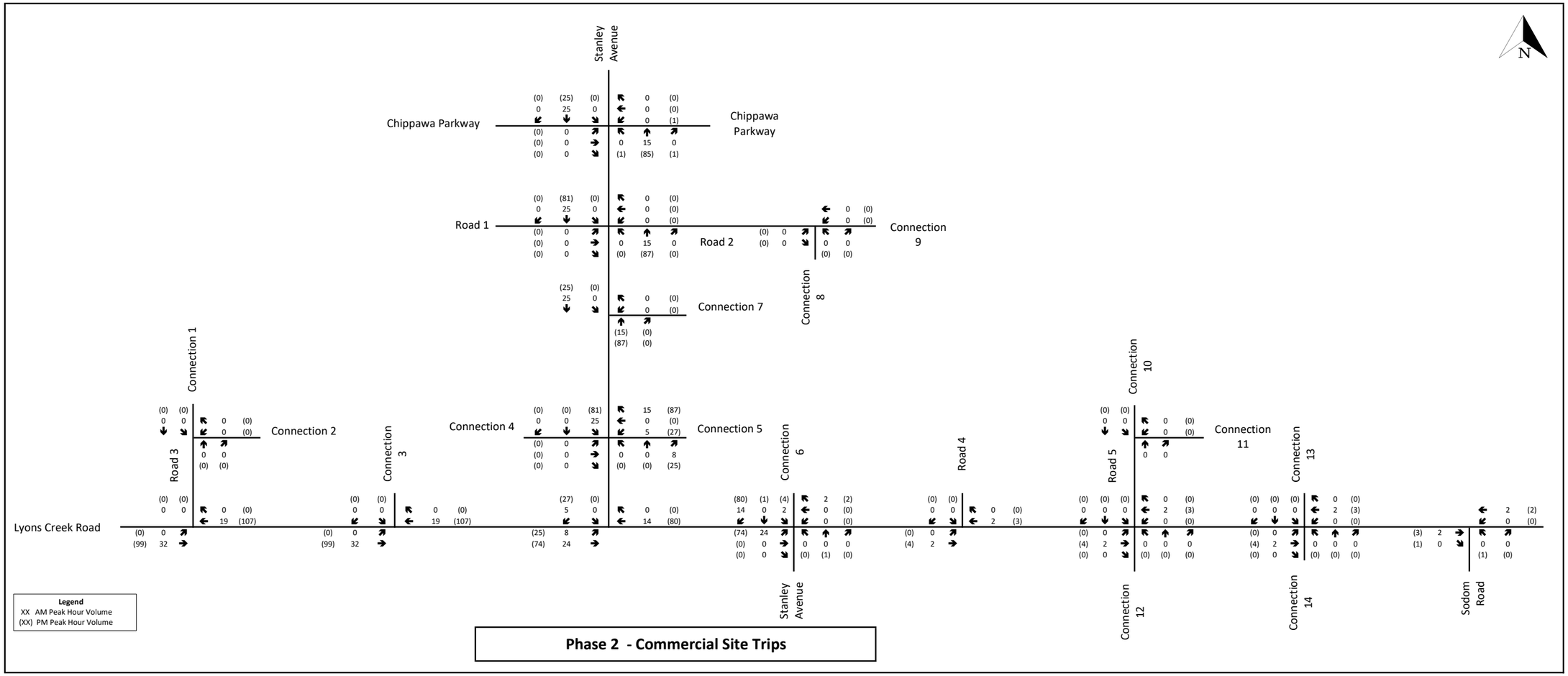
Phase 1 - Multi-Residential Site Trips



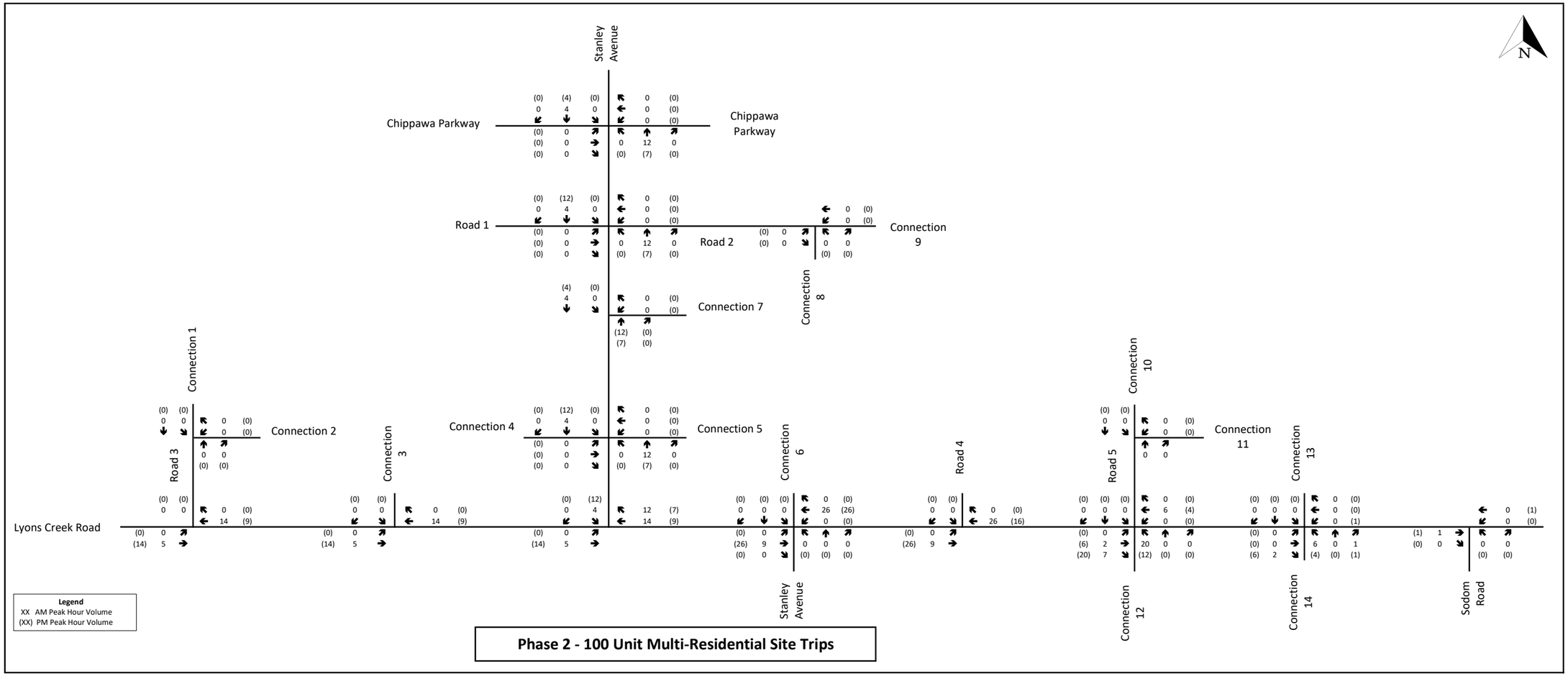
Phase 2 - Residential Site Trips



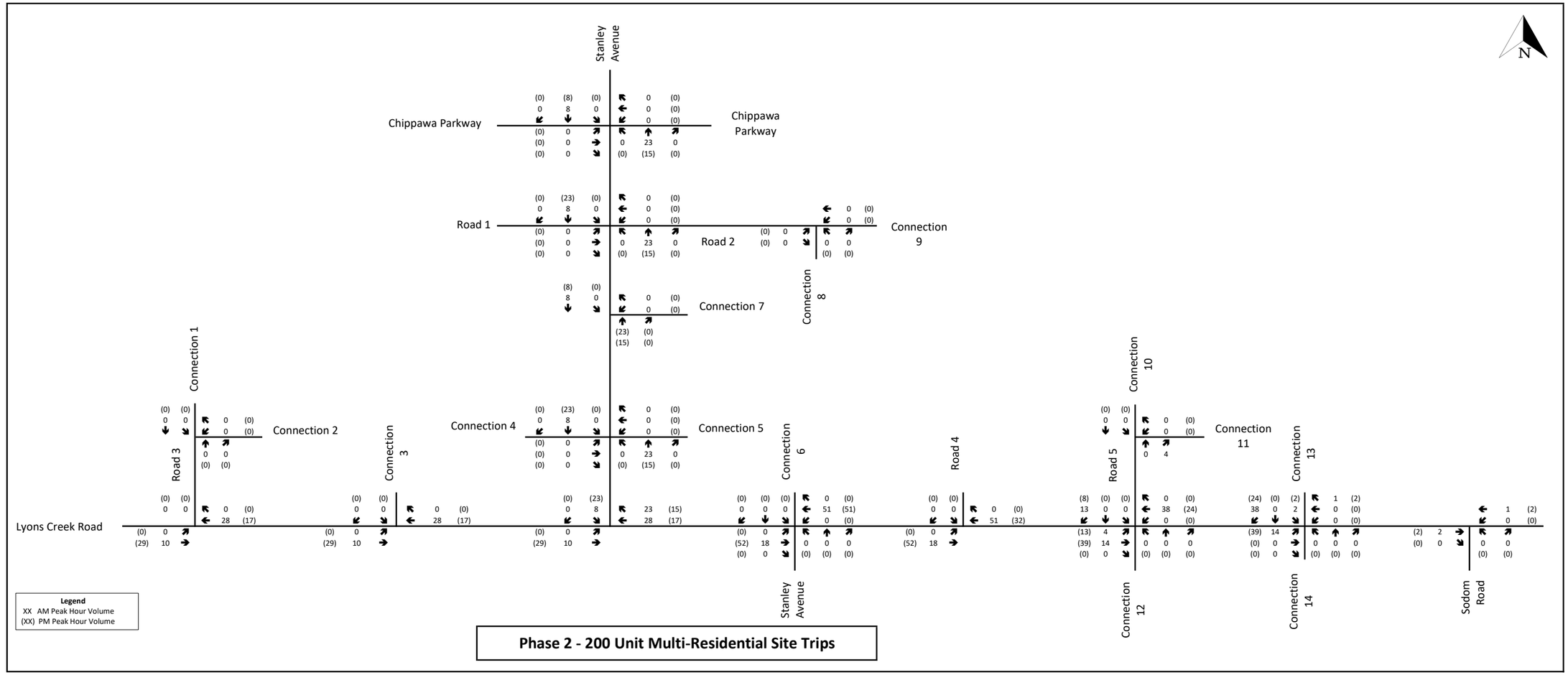
Phase 2 - 160 Unit Multi-Residential Site Trips



Phase 2 - Commercial Site Trips



Phase 2 - 100 Unit Multi-Residential Site Trips



Phase 2 - 200 Unit Multi-Residential Site Trips

APPENDIX F

TRAFFIC SIGNAL WARRANTS

Signal Warrant Analysis

South Niagara TIS

Major Street:	**Stanley Avenue**			
Minor Street:	**Chippawa Creek Road**			
Comment	**2031 Future Total Traffic Volumes**			
Number of Approach Lanes:	1	X	2	
T-Intersection Configuration:	Yes		No	X
Flow Condition:	Free Flow		Free Flow (Rural)	
			Restricted Flow (Urban)	X

VOLUME	AM	PM	FACTOR *
1A - All	1,417	2,359	944
1B - Minor	389	599	247
2A - Major	1,028	1,760	697
2B - Crossing	158	432	147

OVERALL WARRANT

150% Satisfied:	Yes	No X	Warrant for new intersection with forecast traffic
120% Satisfied:	Yes	No X	Warrant for existing intersection with forecast traffic
100% Satisfied:	Yes	No X	Warrant for existing intersection with existing traffic *
80% Satisfied:	Yes X	No	Warrant for existing intersection with existing traffic

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	
ALL APPROACHES	480	720	600	900	944
		% FULFILLED			131.1%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	
MINOR STREET APPROACHES	120	170	120	170	247
		% FULFILLED			145.3%

150% Satisfied:	Yes		No	X
120% Satisfied:	Yes	X	No	
100% Satisfied:	Yes	X	No	
80% Satisfied:	Yes	X	No	

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	
MAJOR STREET APPROACHES	480	720	600	900	697
		% FULFILLED			96.8%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW **50**	REST. FLOW **75**	FREE FLOW **120**	REST. FLOW **170**	
TRAFFIC CROSSING MAJOR STREET	50	75	120	170	147
		% FULFILLED			294.8%

150% Satisfied:	Yes		No	X
120% Satisfied:	Yes		No	X
100% Satisfied:	Yes		No	X
80% Satisfied:	Yes	X	No	

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Signal Warrant Analysis

South Niagara TIS

Major Street:	**Stanley Avenue (North Approach)**			
Minor Street:	**Lyons Creek Road**			
Comment	**2031 Future Total Traffic Volumes**			
Number of Approach Lanes:	1	X	2	
T-Intersection Configuration:	Yes	X	No	
Flow Condition:	Free Flow		Free Flow (Rural)	
			Restricted Flow (Urban)	X

VOLUME	AM	PM	FACTOR *
1A - All	1,515	2,356	968
1B - Minor	427	759	297
2A - Major	1,088	1,597	671
2B - Crossing	57	159	54

OVERALL WARRANT

150% Satisfied:	Yes		No	X
120% Satisfied:	Yes		No	X
100% Satisfied:	Yes		No	X
80% Satisfied:	Yes	X	No	

Warrant for new intersection with forecast traffic
Warrant for existing intersection with forecast traffic
Warrant for existing intersection with existing traffic *
Warrant for existing intersection with existing traffic
* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	
ALL APPROACHES	480	720	600	900	968
		% FULFILLED			134.4%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	
MINOR STREET APPROACHES	180	255	180	255	297
		% FULFILLED			116.3%

150% Satisfied:	Yes		No	X
120% Satisfied:	Yes		No	X
100% Satisfied:	Yes	X	No	
80% Satisfied:	Yes	X	No	

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	
MAJOR STREET APPROACHES	480	720	600	900	671
		% FULFILLED			93.2%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW **50**	REST. FLOW **75**	FREE FLOW **120**	REST. FLOW **170**	
TRAFFIC CROSSING MAJOR STREET	50	75	120	170	54
		% FULFILLED			108.0%

150% Satisfied:	Yes		No	X
120% Satisfied:	Yes		No	X
100% Satisfied:	Yes		No	X
80% Satisfied:	Yes	X	No	

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day
1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets
2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day
2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Signal Warrant Analysis

South Niagara TIS

Major Street:	**Stanley Avenue**			
Minor Street:	**Road 1/Road 2**			
Comment	**2031 Future Total Traffic Volumes**			
Number of Approach Lanes:	1 X	2		
T-Intersection Configuration:	Yes	No X		
Flow Condition:	Free Flow	Free Flow (Rural)		
		Restricted Flow (Urban) X		

VOLUME	AM	PM	FACTOR *
1A - All	1,179	1,894	768
1B - Minor	233	152	96
2A - Major	946	1,742	672
2B - Crossing	107	71	45

OVERALL WARRANT

150% Satisfied:	Yes	No X	Warrant for new intersection with forecast traffic
120% Satisfied:	Yes	No X	Warrant for existing intersection with forecast traffic
100% Satisfied:	Yes	No X	Warrant for existing intersection with existing traffic *
80% Satisfied:	Yes	No X	Warrant for existing intersection with existing traffic

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	
ALL APPROACHES	480	720	600	900	768
		% FULFILLED			106.7%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	
MINOR STREET APPROACHES	120	170	120	170	96
		% FULFILLED			56.6%

150% Satisfied:	Yes		No	X
120% Satisfied:	Yes		No	X
100% Satisfied:	Yes		No	X
80% Satisfied:	Yes		No	X

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	
MAJOR STREET APPROACHES	480	720	600	900	672
		% FULFILLED			93.3%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW **50**	REST. FLOW **75**	FREE FLOW **120**	REST. FLOW **170**	
TRAFFIC CROSSING MAJOR STREET	50	75	120	170	45
		% FULFILLED			89.0%

150% Satisfied:	Yes		No	X
120% Satisfied:	Yes		No	X
100% Satisfied:	Yes		No	X
80% Satisfied:	Yes	X	No	

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Signal Warrant Analysis

South Niagara TIS

Major Street:	**Lyons Creek Road**		
Minor Street:	**Road 3**		
Comment	**2031 Future Total Traffic Volumes**		
Number of Approach Lanes:	1 X	2	
T-Intersection Configuration:	Yes X	No	
Flow Condition:	Free Flow	Free Flow (Rural)	
		Restricted Flow (Urban)	X

VOLUME	AM	PM	FACTOR *
1A - All	1,485	2,253	935
1B - Minor	92	60	38
2A - Major	1,393	2,193	897
2B - Crossing	2	1	1

OVERALL WARRANT

150% Satisfied:	Yes	No X	Warrant for new intersection with forecast traffic
120% Satisfied:	Yes	No X	Warrant for existing intersection with forecast traffic
100% Satisfied:	Yes	No X	Warrant for existing intersection with existing traffic *
80% Satisfied:	Yes	No X	Warrant for existing intersection with existing traffic

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	
ALL APPROACHES	480	720	600	900	935
	% FULFILLED				129.8%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	
MINOR STREET APPROACHES	180	255	180	255	38
	% FULFILLED				14.9%

150% Satisfied:	Yes		No	X
120% Satisfied:	Yes		No	X
100% Satisfied:	Yes		No	X
80% Satisfied:	Yes		No	X

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	
MAJOR STREET APPROACHES	480	720	600	900	897
	% FULFILLED				124.5%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW **50**	REST. FLOW **75**	FREE FLOW **120**	REST. FLOW **170**	
TRAFFIC CROSSING MAJOR STREET	50	75	120	170	1
	% FULFILLED				1.5%

150% Satisfied:	Yes		No	X
120% Satisfied:	Yes		No	X
100% Satisfied:	Yes		No	X
80% Satisfied:	Yes		No	X

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Signal Warrant Analysis

South Niagara TIS

Major Street:	**Lyons Creek Road**			
Minor Street:	**Stanley Avenue (South Approach)**			
Comment	**2031 Future Total Traffic Volumes**			
Number of Approach Lanes:	1	X	2	
T-Intersection Configuration:	Yes		No	X
Flow Condition:	Free Flow		Free Flow (Rural)	
			Restricted Flow (Urban)	X

VOLUME	AM	PM	FACTOR *
1A - All	776	1,085	465
1B - Minor	69	7	19
2A - Major	707	1,078	446
2B - Crossing	54	5	15

OVERALL WARRANT

150% Satisfied:	Yes	No X	Warrant for new intersection with forecast traffic
120% Satisfied:	Yes	No X	Warrant for existing intersection with forecast traffic
100% Satisfied:	Yes	No X	Warrant for existing intersection with existing traffic *
80% Satisfied:	Yes	No X	Warrant for existing intersection with existing traffic

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	
ALL APPROACHES	480	720	600	900	465
		% FULFILLED			64.6%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	
MINOR STREET APPROACHES	120	170	120	170	19
		% FULFILLED			11.2%

150% Satisfied:	Yes		No	X
120% Satisfied:	Yes		No	X
100% Satisfied:	Yes		No	X
80% Satisfied:	Yes		No	X

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	
MAJOR STREET APPROACHES	480	720	600	900	446
		% FULFILLED			62.0%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW **50**	REST. FLOW **75**	FREE FLOW **120**	REST. FLOW **170**	
TRAFFIC CROSSING MAJOR STREET	50	75	120	170	15
		% FULFILLED			29.5%

150% Satisfied:	Yes		No	X
120% Satisfied:	Yes		No	X
100% Satisfied:	Yes		No	X
80% Satisfied:	Yes		No	X

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Signal Warrant Analysis

South Niagara TIS

Major Street:	**Lyons Creek Road**		
Minor Street:	**Road 4**		
Comment	**2031 Future Total Traffic Volumes**		
Number of Approach Lanes:	1 X	2	
T-Intersection Configuration:	Yes X	No	
Flow Condition:	Free Flow	Free Flow (Rural)	
		Restricted Flow (Urban)	X

VOLUME	AM	PM	FACTOR *
1A - All	672	956	407
1B - Minor	77	50	32
2A - Major	595	906	375
2B - Crossing	2	2	1

OVERALL WARRANT

150% Satisfied:	Yes	No X	Warrant for new intersection with forecast traffic
120% Satisfied:	Yes	No X	Warrant for existing intersection with forecast traffic
100% Satisfied:	Yes	No X	Warrant for existing intersection with existing traffic *
80% Satisfied:	Yes	No X	Warrant for existing intersection with existing traffic

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	
ALL APPROACHES	480	720	600	900	407
		% FULFILLED			56.5%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	
MINOR STREET APPROACHES	180	255	180	255	32
		% FULFILLED			12.5%

150% Satisfied:	Yes		No	X
120% Satisfied:	Yes		No	X
100% Satisfied:	Yes		No	X
80% Satisfied:	Yes		No	X

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	
MAJOR STREET APPROACHES	480	720	600	900	375
		% FULFILLED			52.1%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW **50**	REST. FLOW **75**	FREE FLOW **120**	REST. FLOW **170**	
TRAFFIC CROSSING MAJOR STREET	50	75	120	170	1
		% FULFILLED			2.0%

150% Satisfied:	Yes		No	X
120% Satisfied:	Yes		No	X
100% Satisfied:	Yes		No	X
80% Satisfied:	Yes		No	X

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Signal Warrant Analysis

South Niagara TIS

Major Street:	**Lyons Creek Road**		
Minor Street:	**Road 5**		
Comment	**2031 Future Total Traffic Volumes**		
Number of Approach Lanes:	1 X	2	
T-Intersection Configuration:	Yes	No X	
Flow Condition:	Free Flow	Free Flow (Rural)	
		Restricted Flow (Urban) X	

VOLUME	AM	PM	FACTOR *
1A - All	574	719	323
1B - Minor	71	31	26
2A - Major	503	688	298
2B - Crossing	8	6	4

OVERALL WARRANT

150% Satisfied:	Yes	No X	Warrant for new intersection with forecast traffic
120% Satisfied:	Yes	No X	Warrant for existing intersection with forecast traffic
100% Satisfied:	Yes	No X	Warrant for existing intersection with existing traffic *
80% Satisfied:	Yes	No X	Warrant for existing intersection with existing traffic

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	AVERAGE HOUR PERIOD
ALL APPROACHES	480	720	600	900	323
		% FULFILLED			44.9%
APPROACH LANES	1		2 OR MORE		
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	AVERAGE HOUR PERIOD
MINOR STREET APPROACHES	120	170	120	170	26
		% FULFILLED			15.0%

150% Satisfied:	Yes		No	X
120% Satisfied:	Yes		No	X
100% Satisfied:	Yes		No	X
80% Satisfied:	Yes		No	X

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	AVERAGE HOUR PERIOD
MAJOR STREET APPROACHES	480	720	600	900	298
		% FULFILLED			41.4%
APPROACH LANES	1		2 OR MORE		
FLOW CONDITION	FREE FLOW **50**	REST. FLOW **75**	FREE FLOW **120**	REST. FLOW **170**	AVERAGE HOUR PERIOD
TRAFFIC CROSSING MAJOR STREET	50	75	120	170	4
		% FULFILLED			7.0%

150% Satisfied:	Yes		No	X
120% Satisfied:	Yes		No	X
100% Satisfied:	Yes		No	X
80% Satisfied:	Yes		No	X

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Signal Warrant Analysis

South Niagara TIS

Major Street:	**Lyons Creek Road**		
Minor Street:	**Sodom Road**		
Comment	**2031 Future Total Traffic Volumes**		
Number of Approach Lanes:	1 X	2	
T-Intersection Configuration:	Yes X	No	
Flow Condition:	Free Flow	Free Flow (Rural)	
		Restricted Flow (Urban)	X

VOLUME	AM	PM	FACTOR *
1A - All	545	932	369
1B - Minor	212	260	118
2A - Major	333	672	251
2B - Crossing	114	117	58

OVERALL WARRANT

150% Satisfied:	Yes	No X	Warrant for new intersection with forecast traffic
120% Satisfied:	Yes	No X	Warrant for existing intersection with forecast traffic
100% Satisfied:	Yes	No X	Warrant for existing intersection with existing traffic *
80% Satisfied:	Yes	No X	Warrant for existing intersection with existing traffic

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	
ALL APPROACHES	480	720	600	900	369
		% FULFILLED			51.3%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	
MINOR STREET APPROACHES	180	255	180	255	118
		% FULFILLED			46.3%

150% Satisfied:	Yes		No	X
120% Satisfied:	Yes		No	X
100% Satisfied:	Yes		No	X
80% Satisfied:	Yes		No	X

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW X	FREE FLOW	REST. FLOW	
MAJOR STREET APPROACHES	480	720	600	900	251
		% FULFILLED			34.9%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW **50**	REST. FLOW **75**	FREE FLOW **120**	REST. FLOW **170**	
TRAFFIC CROSSING MAJOR STREET	50	75	120	170	58
		% FULFILLED			115.5%

150% Satisfied:	Yes		No	X
120% Satisfied:	Yes		No	X
100% Satisfied:	Yes		No	X
80% Satisfied:	Yes		No	X

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

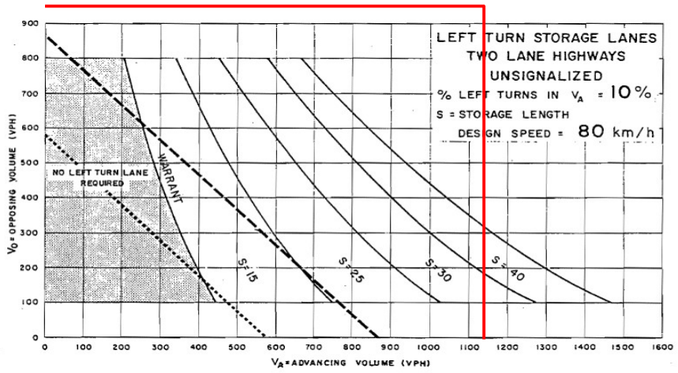
2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

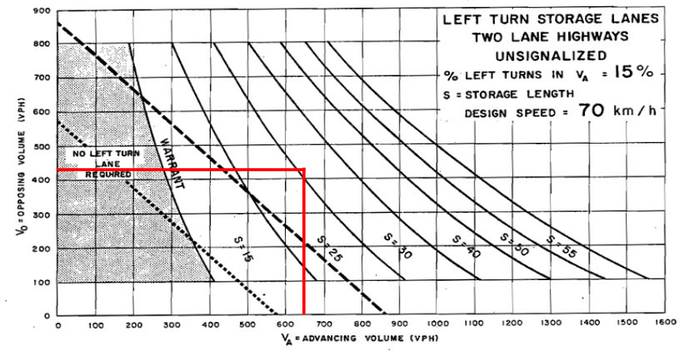
APPENDIX G

LEFT-TURN LANE WARRANTS

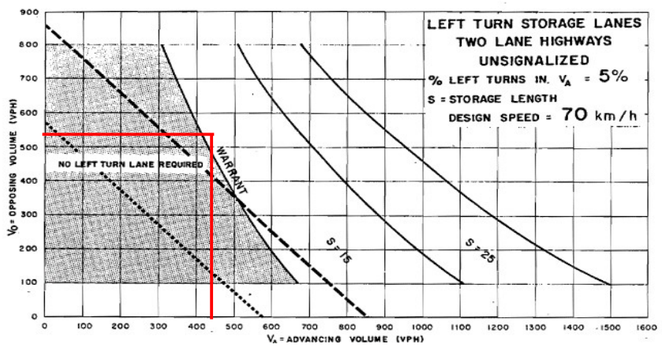
Lyons Creek at Road 3



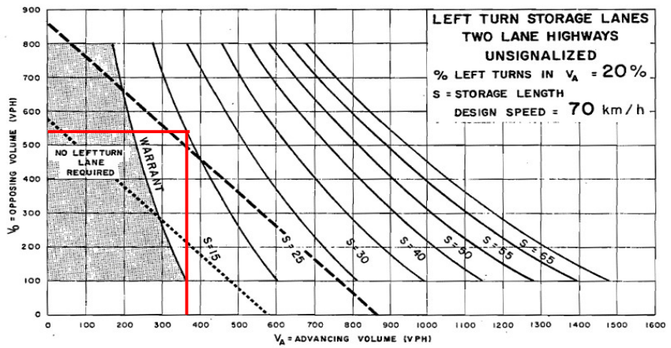
Stanley/Southern Access at Lyons Creek EBL



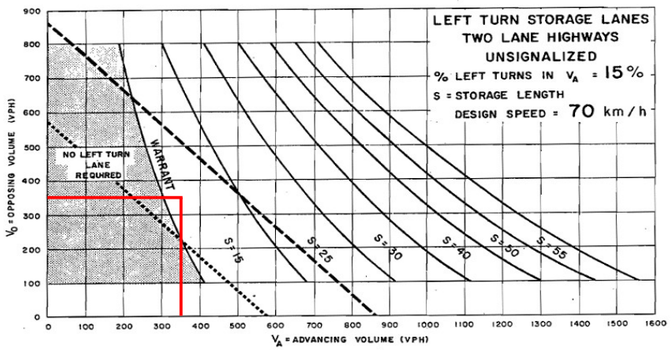
Stanley/Southern Access at Lyons Creek WBL



Road 4 at Lyons Creek

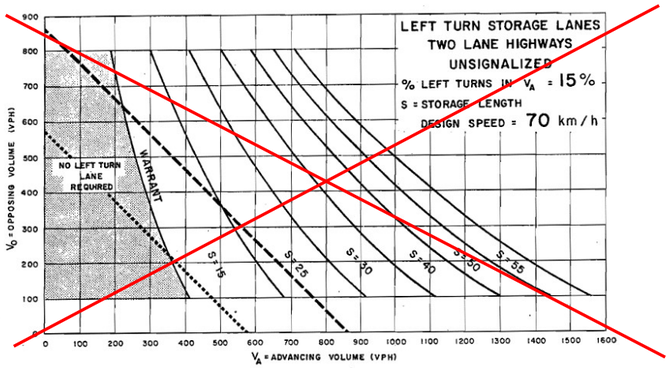


Road 5 at Lyons Creek EBL

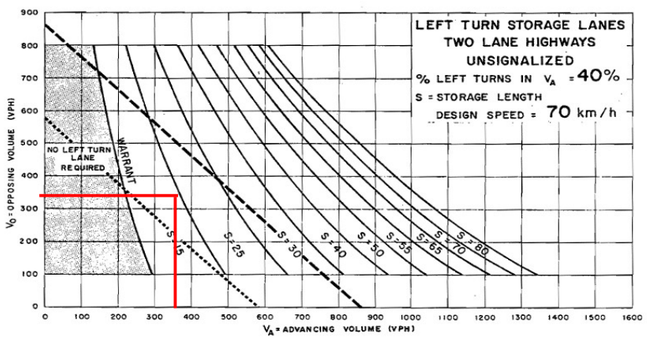


Road 5 at Lyons Creek WBL

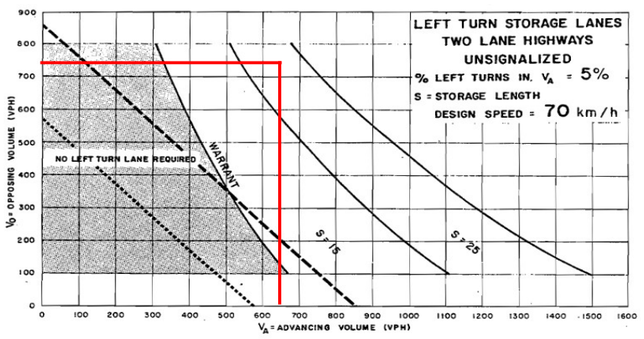
NOT WARRANTED (0 left turns expected)



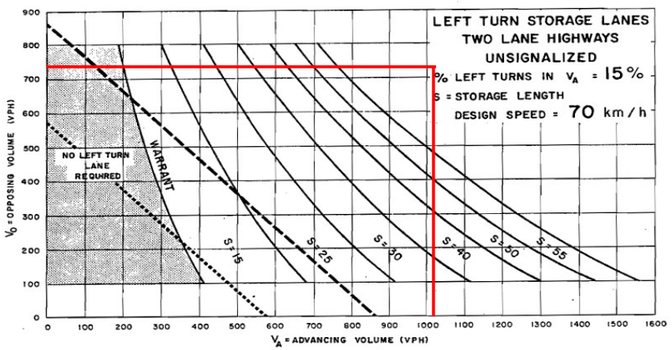
Sodom Road WBL



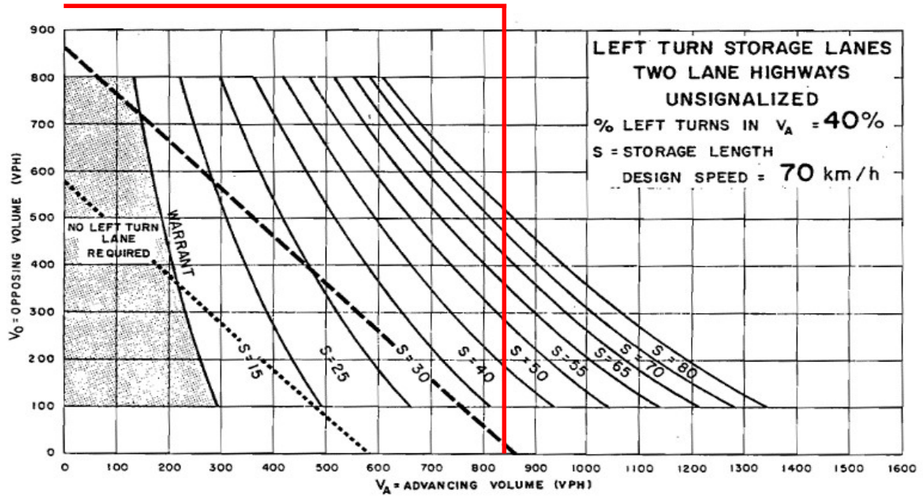
Road 1/Road 2 at Stanley Avenue NBL



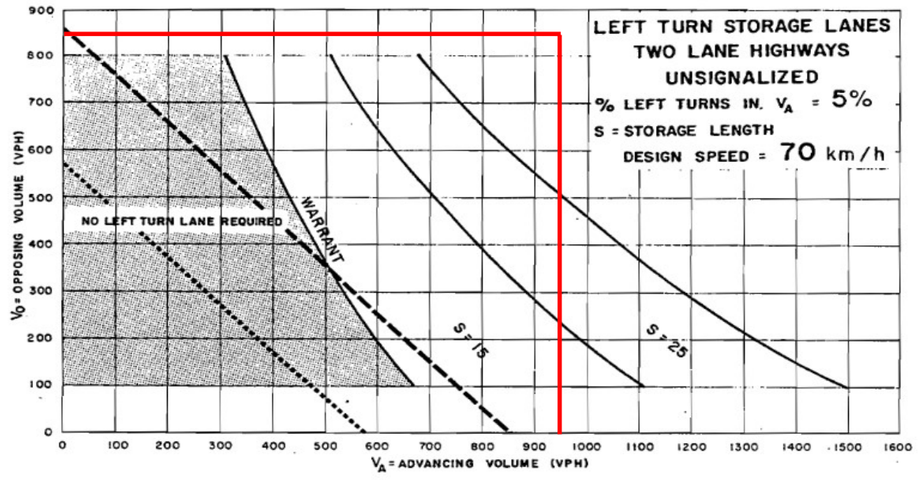
Road 1/Road 2 at Stanley Avenue SBL



Stanley Avenue at Chippawa Parkway NBL

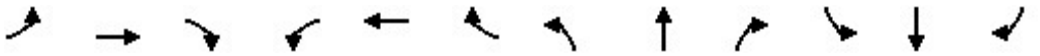


Stanley Avenue at Chippawa Parkway SBL



APPENDIX H

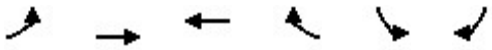
HCM REPORTS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	2	14	7	4	16	16	183	5	5	67	7
Future Volume (Veh/h)	7	2	14	7	4	16	16	183	5	5	67	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	2	15	8	4	17	17	199	5	5	73	8
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	342	325	77	338	326	202	81			204		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	342	325	77	338	326	202	81			204		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	98	99	99	98	99			100		
cM capacity (veh/h)	590	584	984	598	583	839	1517			1368		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	25	29	221	86
Volume Left	8	8	17	5
Volume Right	15	17	5	8
cSH	776	716	1517	1368
Volume to Capacity	0.03	0.04	0.01	0.00
Queue Length 95th (m)	0.8	1.0	0.3	0.1
Control Delay (s)	9.8	10.2	0.7	0.5
Lane LOS	A	B	A	A
Approach Delay (s)	9.8	10.2	0.7	0.5
Approach LOS	A	B		

Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	26.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	178	122	181	38	18	95
Future Volume (vph)	178	122	181	38	18	95
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	193	133	197	41	20	103

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total (vph)	193	133	238	20	103
Volume Left (vph)	193	0	0	20	0
Volume Right (vph)	0	0	41	0	103
Hadj (s)	0.53	0.03	-0.07	0.53	-0.67
Departure Headway (s)	5.6	5.1	5.0	6.4	5.2
Degree Utilization, x	0.30	0.19	0.33	0.04	0.15
Capacity (veh/h)	619	684	702	522	636
Control Delay (s)	9.8	8.1	10.3	8.4	7.9
Approach Delay (s)	9.1		10.3	8.0	
Approach LOS	A		B	A	

Intersection Summary			
Delay	9.3		
Level of Service	A		
Intersection Capacity Utilization	36.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	127	13	1	177	42	1
Future Volume (Veh/h)	127	13	1	177	42	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	138	14	1	192	46	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			152		339	145
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			152		339	145
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		93	100
cM capacity (veh/h)			1429		656	902

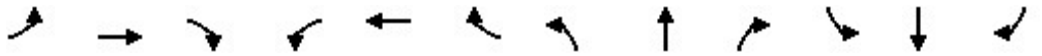
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	152	193	47
Volume Left	0	1	46
Volume Right	14	0	1
cSH	1700	1429	660
Volume to Capacity	0.09	0.00	0.07
Queue Length 95th (m)	0.0	0.0	1.8
Control Delay (s)	0.0	0.0	10.9
Lane LOS		A	B
Approach Delay (s)	0.0	0.0	10.9
Approach LOS			B

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	21.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	65	48	47	72	93	80
Future Volume (Veh/h)	65	48	47	72	93	80
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	71	52	51	78	101	87
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			123		277	97
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			123		277	97
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		85	91
cM capacity (veh/h)			1464		688	959

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	123	129	188
Volume Left	0	51	101
Volume Right	52	0	87
cSH	1700	1464	792
Volume to Capacity	0.07	0.03	0.24
Queue Length 95th (m)	0.0	0.9	7.4
Control Delay (s)	0.0	3.2	11.0
Lane LOS		A	B
Approach Delay (s)	0.0	3.2	11.0
Approach LOS			B

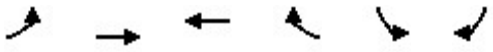
Intersection Summary			
Average Delay		5.6	
Intersection Capacity Utilization		31.2%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	9	20	4	12	2	22	131	11	15	245	13
Future Volume (Veh/h)	7	9	20	4	12	2	22	131	11	15	245	13
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	10	22	4	13	2	24	142	12	16	266	14
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	510	507	273	528	508	148	280			154		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	510	507	273	528	508	148	280			154		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	98	97	99	97	100	98			99		
cM capacity (veh/h)	452	454	766	430	454	899	1283			1426		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	40	19	178	296
Volume Left	8	4	24	16
Volume Right	22	2	12	14
cSH	585	473	1283	1426
Volume to Capacity	0.07	0.04	0.02	0.01
Queue Length 95th (m)	1.8	1.0	0.5	0.3
Control Delay (s)	11.6	12.9	1.2	0.5
Lane LOS	B	B	A	A
Approach Delay (s)	11.6	12.9	1.2	0.5
Approach LOS	B	B		

Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	27.7%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	107	205	200	37	88	210
Future Volume (vph)	107	205	200	37	88	210
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	116	223	217	40	96	228

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total (vph)	116	223	257	96	228
Volume Left (vph)	116	0	0	96	0
Volume Right (vph)	0	0	40	0	228
Hadj (s)	0.53	0.03	-0.06	0.53	-0.67
Departure Headway (s)	6.3	5.8	5.6	6.6	5.4
Degree Utilization, x	0.20	0.36	0.40	0.18	0.34
Capacity (veh/h)	544	596	614	515	626
Control Delay (s)	9.7	10.8	12.3	9.9	10.0
Approach Delay (s)	10.4		12.3	10.0	
Approach LOS	B		B	A	

Intersection Summary			
Delay	10.8		
Level of Service	B		
Intersection Capacity Utilization	35.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	247	46	5	214	23	1
Future Volume (Veh/h)	247	46	5	214	23	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	268	50	5	233	25	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			318		536	293
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			318		536	293
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		95	100
cM capacity (veh/h)			1242		503	746

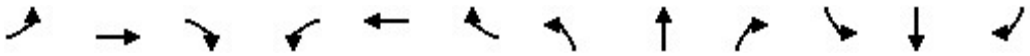
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	318	238	26
Volume Left	0	5	25
Volume Right	50	0	1
cSH	1700	1242	510
Volume to Capacity	0.19	0.00	0.05
Queue Length 95th (m)	0.0	0.1	1.3
Control Delay (s)	0.0	0.2	12.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.2	12.4
Approach LOS			B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	27.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	129	125	125	104	93	117
Future Volume (Veh/h)	129	125	125	104	93	117
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	140	136	136	113	101	127
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			276		593	208
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			276		593	208
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			89		76	85
cM capacity (veh/h)			1287		419	832

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	276	249	228
Volume Left	0	136	101
Volume Right	136	0	127
cSH	1700	1287	579
Volume to Capacity	0.16	0.11	0.39
Queue Length 95th (m)	0.0	2.8	15.0
Control Delay (s)	0.0	4.9	15.2
Lane LOS		A	C
Approach Delay (s)	0.0	4.9	15.2
Approach LOS			C

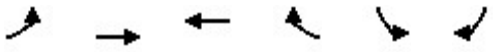
Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	133	13	195	7	12	17	151	218	5	5	131	100
Future Volume (Veh/h)	133	13	195	7	12	17	151	218	5	5	131	100
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	145	14	212	8	13	18	164	237	5	5	142	109
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	798	776	196	993	828	240	251			242		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	798	776	196	993	828	240	251			242		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	44	95	75	95	95	98	88			100		
cM capacity (veh/h)	258	286	845	146	267	799	1314			1324		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	371	39	406	256
Volume Left	145	8	164	5
Volume Right	212	18	5	109
cSH	431	310	1314	1324
Volume to Capacity	0.86	0.13	0.12	0.00
Queue Length 95th (m)	69.2	3.4	3.4	0.1
Control Delay (s)	47.1	18.3	4.0	0.2
Lane LOS	E	C	A	A
Approach Delay (s)	47.1	18.3	4.0	0.2
Approach LOS	E	C		

Intersection Summary				
Average Delay	18.5			
Intersection Capacity Utilization	74.7%	ICU Level of Service	D	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	322	129	192	52	39	295
Future Volume (vph)	322	129	192	52	39	295
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	350	140	209	57	42	321

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total (vph)	350	140	266	42	321
Volume Left (vph)	350	0	0	42	0
Volume Right (vph)	0	0	57	0	321
Hadj (s)	0.53	0.03	-0.09	0.53	-0.67
Departure Headway (s)	6.6	6.1	6.1	7.1	5.9
Degree Utilization, x	0.64	0.24	0.45	0.08	0.53
Capacity (veh/h)	533	571	568	479	568
Control Delay (s)	19.3	9.7	13.9	9.6	14.1
Approach Delay (s)	16.6		13.9	13.6	
Approach LOS	C		B	B	

Intersection Summary			
Delay	15.0		
Level of Service	B		
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	155	14	1	200	45	1
Future Volume (Veh/h)	155	14	1	200	45	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	168	15	1	217	49	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			183		394	176
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			183		394	176
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		92	100
cM capacity (veh/h)			1392		610	868

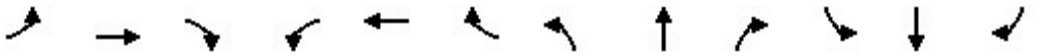
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	183	218	50
Volume Left	0	1	49
Volume Right	15	0	1
cSH	1700	1392	613
Volume to Capacity	0.11	0.00	0.08
Queue Length 95th (m)	0.0	0.0	2.1
Control Delay (s)	0.0	0.0	11.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.0	11.4
Approach LOS			B

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	22.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	89	51	50	88	99	85
Future Volume (Veh/h)	89	51	50	88	99	85
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	97	55	54	96	108	92
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			152		328	124
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			152		328	124
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		83	90
cM capacity (veh/h)			1429		641	926

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	152	150	200
Volume Left	0	54	108
Volume Right	55	0	92
cSH	1700	1429	747
Volume to Capacity	0.09	0.04	0.27
Queue Length 95th (m)	0.0	0.9	8.6
Control Delay (s)	0.0	2.9	11.6
Lane LOS		A	B
Approach Delay (s)	0.0	2.9	11.6
Approach LOS			B

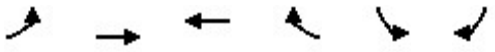
Intersection Summary			
Average Delay	5.5		
Intersection Capacity Utilization	38.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	207	27	309	4	33	2	350	184	12	16	300	241
Future Volume (Veh/h)	207	27	309	4	33	2	350	184	12	16	300	241
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	225	29	336	4	36	2	380	200	13	17	326	262
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1478	1464	457	1808	1588	206	588			213		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1478	1464	457	1808	1588	206	588			213		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	63	44	71	45	100	62			99		
cM capacity (veh/h)	42	78	604	14	65	834	987			1357		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	590	42	593	605
Volume Left	225	4	380	17
Volume Right	336	2	13	262
cSH	94	50	987	1357
Volume to Capacity	6.24	0.84	0.38	0.01
Queue Length 95th (m)	Err	28.1	14.7	0.3
Control Delay (s)	Err	212.1	8.7	0.4
Lane LOS	F	F	A	A
Approach Delay (s)	Err	212.1	8.7	0.4
Approach LOS	F	F		

Intersection Summary				
Average Delay	3231.5			
Intersection Capacity Utilization	117.7%	ICU Level of Service	H	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	473	218	212	73	110	504
Future Volume (vph)	473	218	212	73	110	504
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	514	237	230	79	120	548

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total (vph)	514	237	309	120	548
Volume Left (vph)	514	0	0	120	0
Volume Right (vph)	0	0	79	0	548
Hadj (s)	0.53	0.03	-0.12	0.53	-0.67
Departure Headway (s)	7.8	7.3	7.2	7.8	6.7
Degree Utilization, x	1.11	0.48	0.62	0.26	1.01
Capacity (veh/h)	463	492	487	453	548
Control Delay (s)	100.3	15.5	21.2	12.4	66.5
Approach Delay (s)	73.5		21.2	56.8	
Approach LOS	F		C	F	

Intersection Summary			
Delay	57.7		
Level of Service	F		
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	279	49	5	261	0	1
Future Volume (Veh/h)	279	49	5	261	0	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	303	53	5	284	0	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			356		624	330
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			356		624	330
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1203		448	712

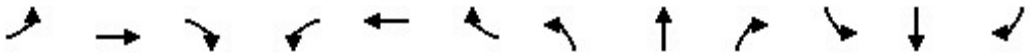
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	356	289	1
Volume Left	0	5	0
Volume Right	53	0	1
cSH	1700	1203	712
Volume to Capacity	0.21	0.00	0.00
Queue Length 95th (m)	0.0	0.1	0.0
Control Delay (s)	0.0	0.2	10.1
Lane LOS		A	B
Approach Delay (s)	0.0	0.2	10.1
Approach LOS			B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	29.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	163	133	133	144	99	124
Future Volume (Veh/h)	163	133	133	144	99	124
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	177	145	145	157	108	135
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			322		696	250
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			322		696	250
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			88		70	83
cM capacity (veh/h)			1238		360	789

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	322	302	243
Volume Left	0	145	108
Volume Right	145	0	135
cSH	1700	1238	516
Volume to Capacity	0.19	0.12	0.47
Queue Length 95th (m)	0.0	3.2	19.9
Control Delay (s)	0.0	4.5	18.1
Lane LOS		A	C
Approach Delay (s)	0.0	4.5	18.1
Approach LOS			C

Intersection Summary			
Average Delay	6.6		
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		



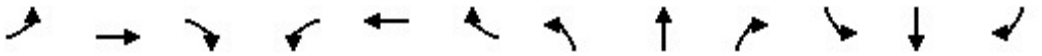
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	133	13	195	7	12	17	152	293	6	5	156	100
Future Volume (Veh/h)	133	13	195	7	12	17	152	293	6	5	156	100
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	145	14	212	8	13	18	165	318	7	5	170	109
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								118				
pX, platoon unblocked	0.92	0.92		0.92	0.92	0.92				0.92		
vC, conflicting volume	910	890	224	1105	940	322	279			325		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	861	838	224	1072	894	223	279			226		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	32	94	74	93	94	98	87			100		
cM capacity (veh/h)	213	242	815	116	225	754	1284			1238		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	371	39	490	284
Volume Left	145	8	165	5
Volume Right	212	18	7	109
cSH	372	259	1284	1238
Volume to Capacity	1.00	0.15	0.13	0.00
Queue Length 95th (m)	93.8	4.2	3.5	0.1
Control Delay (s)	79.9	21.3	3.6	0.2
Lane LOS	F	C	A	A
Approach Delay (s)	79.9	21.3	3.6	0.2
Approach LOS	F	C		

Intersection Summary				
Average Delay	27.3			
Intersection Capacity Utilization	80.5%	ICU Level of Service	D	
Analysis Period (min)	15			

Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	79	414	389
v/c Ratio	0.25	0.32	0.30
Control Delay	12.3	4.8	4.7
Queue Delay	0.0	0.0	0.0
Total Delay	12.3	4.8	4.7
Queue Length 50th (m)	3.5	13.1	11.9
Queue Length 95th (m)	11.2	30.9	28.1
Internal Link Dist (m)	131.2	542.2	93.8
Turn Bay Length (m)			
Base Capacity (vph)	852	1714	1699
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.09	0.24	0.23

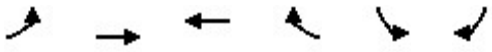
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	0	2	0	0	0	1	380	0	0	335	23
Future Volume (vph)	71	0	2	0	0	0	1	380	0	0	335	23
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		1.00						1.00			1.00	
Frt		1.00						1.00			0.99	
Flt Protected		0.95						1.00			1.00	
Satd. Flow (prot)		1630						1715			1699	
Flt Permitted		0.73						1.00			1.00	
Satd. Flow (perm)		1251						1715			1699	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	77	0	2	0	0	0	1	413	0	0	364	25
RTOR Reduction (vph)	0	26	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	53	0	0	0	0	0	414	0	0	387	0
Turn Type	Perm	NA					Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		4.4						25.9			25.9	
Effective Green, g (s)		5.9						27.4			27.4	
Actuated g/C Ratio		0.14						0.66			0.66	
Clearance Time (s)		5.5						5.5			5.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		178						1137			1127	
v/s Ratio Prot											0.23	
v/s Ratio Perm		c0.04						0.24				
v/c Ratio		0.30						0.36			0.34	
Uniform Delay, d1		15.8						3.1			3.0	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.9						0.2			0.2	
Delay (s)		16.8						3.3			3.2	
Level of Service		B						A			A	
Approach Delay (s)		16.8			0.0			3.3			3.2	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	4.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	41.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	33.6%	ICU Level of Service	A
Analysis Period (min)	15		

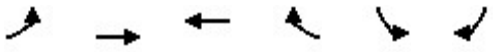
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	31	453	490	1	2	90
Future Volume (Veh/h)	31	453	490	1	2	90
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	34	492	533	1	2	98
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	534				1094	534
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	534				1094	534
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				99	82
cM capacity (veh/h)	1034				229	546

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	34	492	534	100
Volume Left	34	0	0	2
Volume Right	0	0	1	98
cSH	1034	1700	1700	532
Volume to Capacity	0.03	0.29	0.31	0.19
Queue Length 95th (m)	0.8	0.0	0.0	5.5
Control Delay (s)	8.6	0.0	0.0	13.3
Lane LOS	A			B
Approach Delay (s)	0.6		0.0	13.3
Approach LOS				B

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	40.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	322	132	193	53	41	295
Future Volume (vph)	322	132	193	53	41	295
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	350	143	210	58	45	321

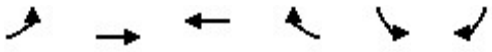
Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total (vph)	350	143	268	45	321
Volume Left (vph)	350	0	0	45	0
Volume Right (vph)	0	0	58	0	321
Hadj (s)	0.53	0.03	-0.10	0.53	-0.67
Departure Headway (s)	6.6	6.1	6.1	7.1	5.9
Degree Utilization, x	0.64	0.24	0.45	0.09	0.53
Capacity (veh/h)	532	570	567	478	567
Control Delay (s)	19.4	9.8	14.0	9.6	14.2
Approach Delay (s)	16.6		14.0	13.6	
Approach LOS	C		B	B	

Intersection Summary			
Delay	15.0		
Level of Service	C		
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	159	15	1	202	45	1
Future Volume (Veh/h)	159	15	1	202	45	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	173	16	1	220	49	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			189		403	181
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			189		403	181
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		92	100
cM capacity (veh/h)			1385		603	862

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	189	1	220	50
Volume Left	0	1	0	49
Volume Right	16	0	0	1
cSH	1700	1385	1700	607
Volume to Capacity	0.11	0.00	0.13	0.08
Queue Length 95th (m)	0.0	0.0	0.0	2.1
Control Delay (s)	0.0	7.6	0.0	11.5
Lane LOS		A		B
Approach Delay (s)	0.0	0.0		11.5
Approach LOS				B

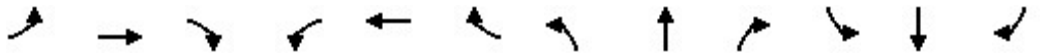
Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	21.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	160	203	0	0	0
Future Volume (Veh/h)	0	160	203	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	174	221	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	221				395	221
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	221				395	221
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1348				610	819

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	0	174	221	0
Volume Left	0	0	0	0
Volume Right	0	0	0	0
cSH	1700	1700	1700	1700
Volume to Capacity	0.00	0.10	0.13	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS				A
Approach Delay (s)	0.0		0.0	0.0
Approach LOS				A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	14.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	160	0	0	203	0	0	0	0	0	0	0
Future Volume (Veh/h)	0	160	0	0	203	0	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	174	0	0	221	0	0	0	0	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	221			174			395	395	174	395	395	221
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	221			174			395	395	174	395	395	221
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	1348			1403			565	542	869	565	542	819

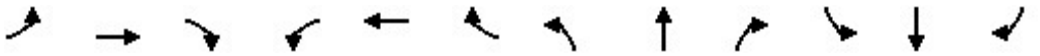
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	0	174	0	221	0	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.10	0.00	0.13	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS					A	A
Approach Delay (s)	0.0		0.0		0.0	0.0
Approach LOS					A	A

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	14.9%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	92	52	50	90	99	85
Future Volume (Veh/h)	92	52	50	90	99	85
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	100	57	54	98	108	92
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			157		334	128
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			157		334	128
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		83	90
cM capacity (veh/h)			1423		636	921

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	157	152	200
Volume Left	0	54	108
Volume Right	57	0	92
cSH	1700	1423	741
Volume to Capacity	0.09	0.04	0.27
Queue Length 95th (m)	0.0	0.9	8.7
Control Delay (s)	0.0	2.9	11.6
Lane LOS		A	B
Approach Delay (s)	0.0	2.9	11.6
Approach LOS			B

Intersection Summary			
Average Delay		5.4	
Intersection Capacity Utilization		38.5%	ICU Level of Service
Analysis Period (min)		15	



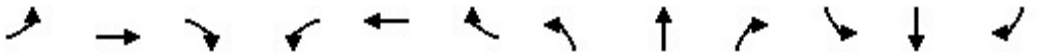
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	207	27	310	5	33	2	351	233	13	16	383	241
Future Volume (Veh/h)	207	27	310	5	33	2	351	233	13	16	383	241
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	225	29	337	5	36	2	382	253	14	17	416	262
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								118				
pX, platoon unblocked	0.85	0.85		0.85	0.85	0.85				0.85		
vC, conflicting volume	1625	1612	547	1956	1736	260	678			267		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1646	1631	547	2034	1776	49	678			57		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	42	37	1	11	100	58			99		
cM capacity (veh/h)	12	50	537	5	41	871	914			1322		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	591	43	649	695
Volume Left	225	5	382	17
Volume Right	337	2	14	262
cSH	29	23	914	1322
Volume to Capacity	20.43	1.88	0.42	0.01
Queue Length 95th (m)	Err	43.7	16.7	0.3
Control Delay (s)	Err	776.2	9.3	0.4
Lane LOS	F	F	A	A
Approach Delay (s)	Err	776.2	9.3	0.4
Approach LOS	F	F		

Intersection Summary				
Average Delay	3007.6			
Intersection Capacity Utilization	125.4%	ICU Level of Service	H	
Analysis Period (min)	15			

Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	52	600	759
v/c Ratio	0.20	0.43	0.53
Control Delay	15.6	4.4	4.6
Queue Delay	0.0	0.0	0.0
Total Delay	15.6	4.4	4.6
Queue Length 50th (m)	1.9	20.3	23.3
Queue Length 95th (m)	11.3	46.2	59.3
Internal Link Dist (m)	131.2	542.2	93.8
Turn Bay Length (m)			
Base Capacity (vph)	602	1685	1670
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.09	0.36	0.45

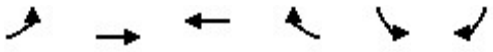
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	0	1	0	0	0	2	550	0	0	619	79
Future Volume (vph)	47	0	1	0	0	0	2	550	0	0	619	79
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0						4.0			2.0	
Lane Util. Factor		1.00						1.00			1.00	
Frt		1.00						1.00			0.98	
Flt Protected		0.95						1.00			1.00	
Satd. Flow (prot)		1631						1715			1687	
Flt Permitted		0.73						1.00			1.00	
Satd. Flow (perm)		1255						1713			1687	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	0	1	0	0	0	2	598	0	0	673	86
RTOR Reduction (vph)	0	27	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	25	0	0	0	0	0	600	0	0	755	0
Turn Type	Perm	NA					Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		3.9						34.7			36.7	
Effective Green, g (s)		5.4						36.2			38.2	
Actuated g/C Ratio		0.11						0.73			0.77	
Clearance Time (s)		5.5						5.5			3.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		136						1250			1299	
v/s Ratio Prot											c0.45	
v/s Ratio Perm		c0.02						0.35				
v/c Ratio		0.19						0.48			0.58	
Uniform Delay, d1		20.1						2.8			2.4	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.7						0.3			0.7	
Delay (s)		20.8						3.1			3.0	
Level of Service		C						A			A	
Approach Delay (s)		20.8			0.0			3.1			3.0	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	3.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	49.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		

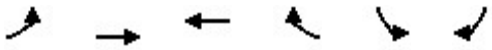
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	100	693	719	2	1	59
Future Volume (Veh/h)	100	693	719	2	1	59
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	109	753	782	2	1	64
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	784				1754	783
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	784				1754	783
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	87				99	84
cM capacity (veh/h)	834				81	394

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	109	753	784	65
Volume Left	109	0	0	1
Volume Right	0	0	2	64
cSH	834	1700	1700	372
Volume to Capacity	0.13	0.44	0.46	0.17
Queue Length 95th (m)	3.6	0.0	0.0	5.0
Control Delay (s)	10.0	0.0	0.0	16.7
Lane LOS	A			C
Approach Delay (s)	1.3		0.0	16.7
Approach LOS				C

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	473	219	215	75	111	504
Future Volume (Veh/h)	473	219	215	75	111	504
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	514	238	234	82	121	548
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	316				1541	275
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	316				1541	275
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	59				0	28
cM capacity (veh/h)	1244				74	764

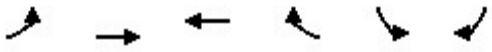
Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	514	238	316	121	548
Volume Left	514	0	0	121	0
Volume Right	0	0	82	0	548
cSH	1244	1700	1700	74	764
Volume to Capacity	0.41	0.14	0.19	1.63	0.72
Queue Length 95th (m)	16.5	0.0	0.0	82.0	49.6
Control Delay (s)	9.9	0.0	0.0	429.1	20.7
Lane LOS	A			F	C
Approach Delay (s)	6.8		0.0	94.6	
Approach LOS				F	

Intersection Summary			
Average Delay	39.4		
Intersection Capacity Utilization	62.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	280	50	5	265	0	1
Future Volume (Veh/h)	280	50	5	265	0	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	304	54	5	288	0	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			358		629	331
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			358		629	331
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1201		444	711

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	358	5	288	1
Volume Left	0	5	0	0
Volume Right	54	0	0	1
cSH	1700	1201	1700	711
Volume to Capacity	0.21	0.00	0.17	0.00
Queue Length 95th (m)	0.0	0.1	0.0	0.0
Control Delay (s)	0.0	8.0	0.0	10.1
Lane LOS		A		B
Approach Delay (s)	0.0	0.1		10.1
Approach LOS				B

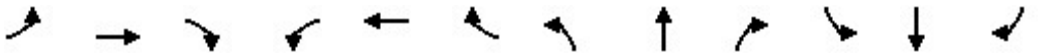
Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	29.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	281	270	0	0	0
Future Volume (Veh/h)	0	281	270	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	305	293	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	293				598	293
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	293				598	293
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1269				465	746

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	0	305	293	0
Volume Left	0	0	0	0
Volume Right	0	0	0	0
cSH	1700	1700	1700	1700
Volume to Capacity	0.00	0.18	0.17	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS				A
Approach Delay (s)	0.0		0.0	0.0
Approach LOS				A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	19.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	281	0	0	270	0	0	0	0	0	0	0
Future Volume (Veh/h)	0	281	0	0	270	0	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	305	0	0	293	0	0	0	0	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	293			305			598	598	305	598	598	293
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	293			305			598	598	305	598	598	293
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	1269			1256			414	416	735	414	416	746

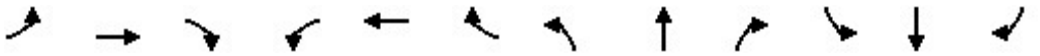
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	0	305	0	293	0	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.18	0.00	0.17	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS					A	A
Approach Delay (s)	0.0		0.0		0.0	0.0
Approach LOS					A	A

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	19.4%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	163	134	133	147	100	124
Future Volume (Veh/h)	163	134	133	147	100	124
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	177	146	145	160	109	135
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			323		700	250
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			323		700	250
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			88		70	83
cM capacity (veh/h)			1237		358	789

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	323	305	244
Volume Left	0	145	109
Volume Right	146	0	135
cSH	1700	1237	513
Volume to Capacity	0.19	0.12	0.48
Queue Length 95th (m)	0.0	3.2	20.2
Control Delay (s)	0.0	4.5	18.2
Lane LOS		A	C
Approach Delay (s)	0.0	4.5	18.2
Approach LOS			C

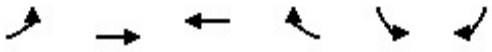
Intersection Summary			
Average Delay		6.7	
Intersection Capacity Utilization		58.9%	ICU Level of Service B
Analysis Period (min)		15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	134	13	195	8	12	18	152	226	6	6	134	101
Future Volume (Veh/h)	134	13	195	8	12	18	152	226	6	6	134	101
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	146	14	212	9	13	20	165	246	7	7	146	110
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	821	798	201	1014	850	250	256			253		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	821	798	201	1014	850	250	256			253		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	41	95	75	94	95	97	87			99		
cM capacity (veh/h)	248	277	840	141	259	789	1309			1312		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	372	42	418	263
Volume Left	146	9	165	7
Volume Right	212	20	7	110
cSH	417	301	1309	1312
Volume to Capacity	0.89	0.14	0.13	0.01
Queue Length 95th (m)	74.7	3.8	3.5	0.1
Control Delay (s)	53.1	18.9	3.9	0.3
Lane LOS	F	C	A	A
Approach Delay (s)	53.1	18.9	3.9	0.3
Approach LOS	F	C		

Intersection Summary				
Average Delay	20.3			
Intersection Capacity Utilization	75.6%	ICU Level of Service	D	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	329	135	200	54	39	298
Future Volume (vph)	329	135	200	54	39	298
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	358	147	217	59	42	324

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total (vph)	358	147	276	42	324
Volume Left (vph)	358	0	0	42	0
Volume Right (vph)	0	0	59	0	324
Hadj (s)	0.53	0.03	-0.09	0.53	-0.67
Departure Headway (s)	6.6	6.1	6.1	7.2	6.0
Degree Utilization, x	0.66	0.25	0.47	0.08	0.54
Capacity (veh/h)	530	568	565	475	563
Control Delay (s)	20.2	9.9	14.4	9.6	14.5
Approach Delay (s)	17.2		14.4	14.0	
Approach LOS	C		B	B	

Intersection Summary			
Delay	15.5		
Level of Service	C		
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	160	14	1	207	46	1
Future Volume (Veh/h)	160	14	1	207	46	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	174	15	1	225	50	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			189		408	182
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			189		408	182
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		92	100
cM capacity (veh/h)			1385		599	861

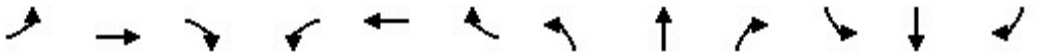
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	189	226	51
Volume Left	0	1	50
Volume Right	15	0	1
cSH	1700	1385	602
Volume to Capacity	0.11	0.00	0.08
Queue Length 95th (m)	0.0	0.0	2.2
Control Delay (s)	0.0	0.0	11.5
Lane LOS		A	B
Approach Delay (s)	0.0	0.0	11.5
Approach LOS			B

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	22.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	91	53	52	91	103	88
Future Volume (Veh/h)	91	53	52	91	103	88
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	99	58	57	99	112	96
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			157		341	128
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			157		341	128
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		82	90
cM capacity (veh/h)			1423		629	922

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	157	156	208
Volume Left	0	57	112
Volume Right	58	0	96
cSH	1700	1423	737
Volume to Capacity	0.09	0.04	0.28
Queue Length 95th (m)	0.0	1.0	9.3
Control Delay (s)	0.0	3.0	11.8
Lane LOS		A	B
Approach Delay (s)	0.0	3.0	11.8
Approach LOS			B

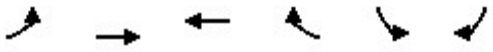
Intersection Summary			
Average Delay	5.6		
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	208	27	310	4	33	2	351	189	12	17	310	241
Future Volume (Veh/h)	208	27	310	4	33	2	351	189	12	17	310	241
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	226	29	337	4	36	2	382	205	13	18	337	262
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1500	1486	468	1831	1610	212	599			218		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1500	1486	468	1831	1610	212	599			218		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	61	43	68	43	100	61			99		
cM capacity (veh/h)	39	75	595	13	63	829	978			1352		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	592	42	600	617
Volume Left	226	4	382	18
Volume Right	337	2	13	262
cSH	88	47	978	1352
Volume to Capacity	6.71	0.89	0.39	0.01
Queue Length 95th (m)	Err	29.3	15.0	0.3
Control Delay (s)	Err	234.6	8.8	0.4
Lane LOS	F	F	A	A
Approach Delay (s)	Err	234.6	8.8	0.4
Approach LOS	F	F		

Intersection Summary				
Average Delay	3206.3			
Intersection Capacity Utilization	118.8%	ICU Level of Service	H	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	477	226	221	75	113	512
Future Volume (vph)	477	226	221	75	113	512
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	518	246	240	82	123	557

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total (vph)	518	246	322	123	557
Volume Left (vph)	518	0	0	123	0
Volume Right (vph)	0	0	82	0	557
Hadj (s)	0.53	0.03	-0.12	0.53	-0.67
Departure Headway (s)	7.8	7.3	7.2	7.9	6.7
Degree Utilization, x	1.12	0.50	0.65	0.27	1.03
Capacity (veh/h)	466	490	488	451	543
Control Delay (s)	104.9	16.1	22.4	12.6	72.5
Approach Delay (s)	76.3		22.4	61.7	
Approach LOS	F		C	F	

Intersection Summary			
Delay	60.8		
Level of Service	F		
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	289	51	6	270	0	1
Future Volume (Veh/h)	289	51	6	270	0	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	314	55	7	293	0	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			369		648	342
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			369		648	342
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	100
cM capacity (veh/h)			1190		432	701

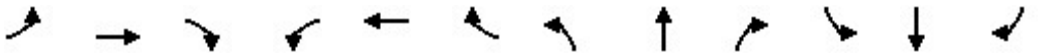
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	369	300	1
Volume Left	0	7	0
Volume Right	55	0	1
cSH	1700	1190	701
Volume to Capacity	0.22	0.01	0.00
Queue Length 95th (m)	0.0	0.1	0.0
Control Delay (s)	0.0	0.2	10.1
Lane LOS		A	B
Approach Delay (s)	0.0	0.2	10.1
Approach LOS			B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	30.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	168	138	138	149	103	129
Future Volume (Veh/h)	168	138	138	149	103	129
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	183	150	150	162	112	140
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			333		720	258
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			333		720	258
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			88		68	82
cM capacity (veh/h)			1226		346	781

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	333	312	252
Volume Left	0	150	112
Volume Right	150	0	140
cSH	1700	1226	501
Volume to Capacity	0.20	0.12	0.50
Queue Length 95th (m)	0.0	3.3	22.3
Control Delay (s)	0.0	4.6	19.2
Lane LOS		A	C
Approach Delay (s)	0.0	4.6	19.2
Approach LOS			C

Intersection Summary			
Average Delay	7.0		
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		



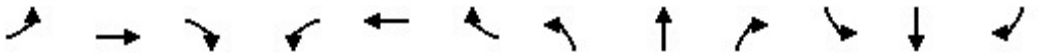
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	134	13	196	9	12	18	155	485	9	6	240	101
Future Volume (Veh/h)	134	13	196	9	12	18	155	485	9	6	240	101
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	146	14	213	10	13	20	168	527	10	7	261	110
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								118				
pX, platoon unblocked	0.83	0.83		0.83	0.83	0.83				0.83		
vC, conflicting volume	1224	1203	316	1418	1253	532	371			537		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1166	1140	316	1401	1201	327	371			334		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	90	71	82	90	97	86			99		
cM capacity (veh/h)	112	141	724	56	130	589	1188			1012		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	373	43	705	378
Volume Left	146	10	168	7
Volume Right	213	20	10	110
cSH	220	138	1188	1012
Volume to Capacity	1.70	0.31	0.14	0.01
Queue Length 95th (m)	198.5	9.8	3.9	0.2
Control Delay (s)	371.7	42.4	3.4	0.2
Lane LOS	F	E	A	A
Approach Delay (s)	371.7	42.4	3.4	0.2
Approach LOS	F	E		

Intersection Summary				
Average Delay	95.4			
Intersection Capacity Utilization	96.9%	ICU Level of Service	F	
Analysis Period (min)	15			

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	79	174	507	45	439
v/c Ratio	0.25	0.40	0.54	0.10	0.47
Control Delay	10.8	7.7	8.6	5.3	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	10.8	7.7	8.6	5.3	7.6
Queue Length 50th (m)	2.1	1.6	16.9	1.1	13.7
Queue Length 95th (m)	11.4	14.3	43.2	4.9	35.2
Internal Link Dist (m)	131.2	154.6	542.2		93.8
Turn Bay Length (m)				15.0	
Base Capacity (vph)	813	976	1707	841	1700
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.10	0.18	0.30	0.05	0.26

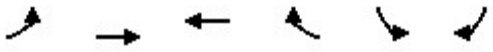
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	0	2	36	0	124	1	453	13	41	381	23
Future Volume (vph)	71	0	2	36	0	124	1	453	13	41	381	23
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0			4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frt		1.00			0.90			1.00		1.00	0.99	
Flt Protected		0.95			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		1630			1519			1709		1630	1701	
Flt Permitted		0.70			0.91			1.00		0.49	1.00	
Satd. Flow (perm)		1202			1394			1708		840	1701	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	77	0	2	39	0	135	1	492	14	45	414	25
RTOR Reduction (vph)	0	23	0	0	102	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	56	0	0	72	0	0	506	0	45	436	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.7			7.7			19.3		19.3	19.3	
Effective Green, g (s)		9.2			9.2			20.8		20.8	20.8	
Actuated g/C Ratio		0.24			0.24			0.55		0.55	0.55	
Clearance Time (s)		5.5			5.5			5.5		5.5	5.5	
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		291			337			934		459	931	
v/s Ratio Prot											0.26	
v/s Ratio Perm		0.05			c0.05			c0.30		0.05		
v/c Ratio		0.19			0.21			0.54		0.10	0.47	
Uniform Delay, d1		11.4			11.5			5.5		4.1	5.2	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.3			0.3			0.6		0.1	0.4	
Delay (s)		11.8			11.8			6.2		4.2	5.6	
Level of Service		B			B			A		A	A	
Approach Delay (s)		11.8			11.8			6.2			5.5	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	38.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

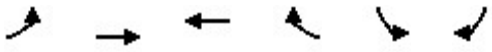
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	31	567	731	1	2	90
Future Volume (Veh/h)	31	567	731	1	2	90
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	34	616	795	1	2	98
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	796				1480	796
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	796				1480	796
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				98	75
cM capacity (veh/h)	826				133	387

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	34	616	796	100
Volume Left	34	0	0	2
Volume Right	0	0	1	98
cSH	826	1700	1700	373
Volume to Capacity	0.04	0.36	0.47	0.27
Queue Length 95th (m)	1.0	0.0	0.0	8.5
Control Delay (s)	9.5	0.0	0.0	18.2
Lane LOS	A			C
Approach Delay (s)	0.5		0.0	18.2
Approach LOS				C

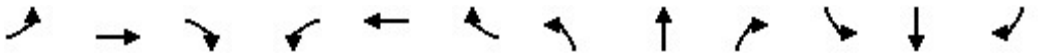
Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	356	213	367	93	55	362
Future Volume (vph)	356	213	367	93	55	362
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	387	232	399	101	60	393

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total (vph)	387	232	500	60	393
Volume Left (vph)	387	0	0	60	0
Volume Right (vph)	0	0	101	0	393
Hadj (s)	0.53	0.03	-0.09	0.53	-0.67
Departure Headway (s)	7.7	7.2	6.8	8.1	6.9
Degree Utilization, x	0.82	0.46	0.94	0.14	0.75
Capacity (veh/h)	458	493	525	436	517
Control Delay (s)	36.3	14.9	52.1	11.2	26.9
Approach Delay (s)	28.3		52.1	24.9	
Approach LOS	D		F	C	

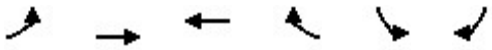
Intersection Summary			
Delay	34.9		
Level of Service	D		
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	229	15	3	398	2	47	0	1	2	0	14
Future Volume (Veh/h)	24	229	15	3	398	2	47	0	1	2	0	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	26	249	16	3	433	2	51	0	1	2	0	15
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	435			265			763	750	257	742	757	434
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	435			265			763	750	257	742	757	434
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			83	100	100	99	100	98
cM capacity (veh/h)	1125			1299			307	331	782	325	328	622

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	26	265	3	435	52	17
Volume Left	26	0	3	0	51	2
Volume Right	0	16	0	2	1	15
cSH	1125	1700	1299	1700	311	561
Volume to Capacity	0.02	0.16	0.00	0.26	0.17	0.03
Queue Length 95th (m)	0.6	0.0	0.1	0.0	4.7	0.7
Control Delay (s)	8.3	0.0	7.8	0.0	18.9	11.6
Lane LOS	A		A		C	B
Approach Delay (s)	0.7		0.1		18.9	11.6
Approach LOS					C	B

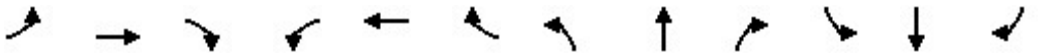
Intersection Summary				
Average Delay	1.8			
Intersection Capacity Utilization	39.1%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	24	208	328	0	2	75
Future Volume (Veh/h)	24	208	328	0	2	75
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	26	226	357	0	2	82
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	357				635	357
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	357				635	357
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				100	88
cM capacity (veh/h)	1202				433	687

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	26	226	357	84
Volume Left	26	0	0	2
Volume Right	0	0	0	82
cSH	1202	1700	1700	678
Volume to Capacity	0.02	0.13	0.21	0.12
Queue Length 95th (m)	0.5	0.0	0.0	3.4
Control Delay (s)	8.1	0.0	0.0	11.1
Lane LOS	A			B
Approach Delay (s)	0.8		0.0	11.1
Approach LOS				B

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	33.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	187	7	0	258	0	20	0	0	1	0	50
Future Volume (Veh/h)	16	187	7	0	258	0	20	0	0	1	0	50
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	17	203	8	0	280	0	22	0	0	1	0	54
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	280			211			575	521	207	517	525	280
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	280			211			575	521	207	517	525	280
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			94	100	100	100	100	93
cM capacity (veh/h)	1283			1360			394	454	833	464	451	759

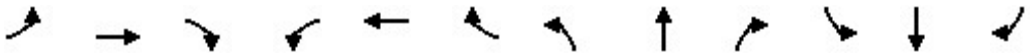
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	17	211	0	280	22	55
Volume Left	17	0	0	0	22	1
Volume Right	0	8	0	0	0	54
cSH	1283	1700	1700	1700	394	750
Volume to Capacity	0.01	0.12	0.00	0.16	0.06	0.07
Queue Length 95th (m)	0.3	0.0	0.0	0.0	1.4	1.9
Control Delay (s)	7.8	0.0	0.0	0.0	14.7	10.2
Lane LOS	A				B	B
Approach Delay (s)	0.6		0.0		14.7	10.2
Approach LOS					B	B

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	29.3%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	102	56	52	97	104	88
Future Volume (Veh/h)	102	56	52	97	104	88
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	111	61	57	105	113	96
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			172		360	142
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			172		360	142
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		82	89
cM capacity (veh/h)			1405		612	906

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	172	162	209
Volume Left	0	57	113
Volume Right	61	0	96
cSH	1700	1405	720
Volume to Capacity	0.10	0.04	0.29
Queue Length 95th (m)	0.0	1.0	9.6
Control Delay (s)	0.0	2.9	12.0
Lane LOS		A	B
Approach Delay (s)	0.0	2.9	12.0
Approach LOS			B

Intersection Summary			
Average Delay		5.5	
Intersection Capacity Utilization		40.3%	ICU Level of Service
Analysis Period (min)		15	



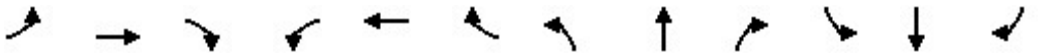
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	208	27	314	8	33	2	354	432	15	17	653	241
Future Volume (Veh/h)	208	27	314	8	33	2	354	432	15	17	653	241
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	226	29	341	9	36	2	385	470	16	18	710	262
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								118				
pX, platoon unblocked	0.75	0.75		0.75	0.75	0.75				0.75		
vC, conflicting volume	2145	2133	841	2480	2256	478	972			486		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2360	2344	841	2808	2508	137	972			147		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	0	6	0	0	100	46			98		
cM capacity (veh/h)	0	12	365	0	10	684	709			1075		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	596	47	871	990
Volume Left	226	9	385	18
Volume Right	341	2	16	262
cSH	0	0	709	1075
Volume to Capacity	Err	Err	0.54	0.02
Queue Length 95th (m)	Err	Err	26.4	0.4
Control Delay (s)	Err	Err	13.8	0.5
Lane LOS	F	F	B	A
Approach Delay (s)	Err	Err	13.8	0.5
Approach LOS	F	F		

Intersection Summary				
Average Delay	Err			
Intersection Capacity Utilization	152.8%	ICU Level of Service	H	
Analysis Period (min)	15			

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	52	113	781	148	913
v/c Ratio	0.21	0.35	0.61	0.30	0.69
Control Delay	16.7	13.2	7.1	5.6	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	16.7	13.2	7.1	5.6	7.7
Queue Length 50th (m)	1.7	2.0	31.9	4.3	34.7
Queue Length 95th (m)	13.0	17.9	79.7	14.5	99.3
Internal Link Dist (m)	131.2	154.6	542.2		93.8
Turn Bay Length (m)				15.0	
Base Capacity (vph)	522	618	1621	620	1622
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.10	0.18	0.48	0.24	0.56

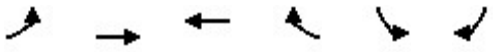
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	0	1	24	0	80	2	674	42	136	761	79
Future Volume (vph)	47	0	1	24	0	80	2	674	42	136	761	79
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0			4.0		4.0	2.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frt		1.00			0.90			0.99		1.00	0.99	
Flt Protected		0.95			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		1631			1520			1702		1630	1691	
Flt Permitted		0.72			0.91			1.00		0.38	1.00	
Satd. Flow (perm)		1238			1392			1700		650	1691	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	0	1	26	0	87	2	733	46	148	827	86
RTOR Reduction (vph)	0	26	0	0	75	0	0	2	0	0	4	0
Lane Group Flow (vph)	0	26	0	0	38	0	0	779	0	148	909	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		5.8			5.8			37.0		39.0	39.0	
Effective Green, g (s)		7.3			7.3			38.5		38.5	40.5	
Actuated g/C Ratio		0.14			0.14			0.72		0.72	0.75	
Clearance Time (s)		5.5			5.5			5.5		3.5	3.5	
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		167			188			1216		465	1272	
v/s Ratio Prot											c0.54	
v/s Ratio Perm		0.02			c0.03			0.46		0.23		
v/c Ratio		0.16			0.20			0.64		0.32	0.71	
Uniform Delay, d1		20.5			20.7			4.0		2.8	3.6	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.4			0.5			1.2		0.4	1.9	
Delay (s)		21.0			21.2			5.2		3.2	5.5	
Level of Service		C			C			A		A	A	
Approach Delay (s)		21.0			21.2			5.2			5.2	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	53.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	109.6%	ICU Level of Service	H
Analysis Period (min)	15		

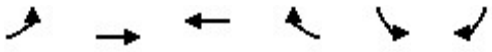
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	100	1032	979	2	1	59
Future Volume (Veh/h)	100	1032	979	2	1	59
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	109	1122	1064	2	1	64
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1066				2405	1065
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1066				2405	1065
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	83				97	76
cM capacity (veh/h)	654				30	270

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	109	1122	1066	65
Volume Left	109	0	0	1
Volume Right	0	0	2	64
cSH	654	1700	1700	241
Volume to Capacity	0.17	0.66	0.63	0.27
Queue Length 95th (m)	4.8	0.0	0.0	8.4
Control Delay (s)	11.6	0.0	0.0	25.3
Lane LOS	B			D
Approach Delay (s)	1.0		0.0	25.3
Approach LOS				D

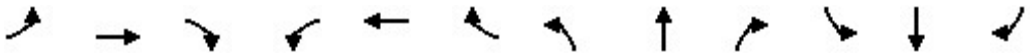
Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	76.1%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	565	465	401	103	150	578
Future Volume (Veh/h)	565	465	401	103	150	578
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	614	505	436	112	163	628
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	548				2225	492
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	548				2225	492
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	40				0	0
cM capacity (veh/h)	1021				19	577

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	614	505	548	163	628
Volume Left	614	0	0	163	0
Volume Right	0	0	112	0	628
cSH	1021	1700	1700	19	577
Volume to Capacity	0.60	0.30	0.32	8.61	1.09
Queue Length 95th (m)	33.4	0.0	0.0	Err	151.0
Control Delay (s)	13.7	0.0	0.0	Err	90.0
Lane LOS	B			F	F
Approach Delay (s)	7.5		0.0	2132.0	
Approach LOS				F	

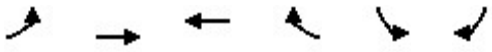
Intersection Summary			
Average Delay	689.5		
Intersection Capacity Utilization	82.7%	ICU Level of Service	E
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	74	490	52	7	395	3	0	1	1	4	1	80
Future Volume (Veh/h)	74	490	52	7	395	3	0	1	1	4	1	80
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	80	533	57	8	429	3	0	1	1	4	1	87
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	432			590			1254	1170	562	1141	1196	430
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	432			590			1254	1170	562	1141	1196	430
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			99			100	99	100	98	99	86
cM capacity (veh/h)	1128			985			120	178	527	166	171	625

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	80	590	8	432	2	92
Volume Left	80	0	8	0	0	4
Volume Right	0	57	0	3	1	87
cSH	1128	1700	985	1700	266	544
Volume to Capacity	0.07	0.35	0.01	0.25	0.01	0.17
Queue Length 95th (m)	1.8	0.0	0.2	0.0	0.2	4.8
Control Delay (s)	8.4	0.0	8.7	0.0	18.6	13.0
Lane LOS	A		A		C	B
Approach Delay (s)	1.0		0.2		18.6	13.0
Approach LOS					C	B

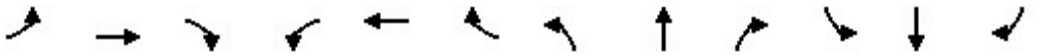
Intersection Summary				
Average Delay	1.6			
Intersection Capacity Utilization	54.3%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	81	414	357	2	2	48
Future Volume (Veh/h)	81	414	357	2	2	48
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	88	450	388	2	2	52
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	390				1015	389
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	390				1015	389
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	92				99	92
cM capacity (veh/h)	1169				244	659

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	88	450	390	54
Volume Left	88	0	0	2
Volume Right	0	0	2	52
cSH	1169	1700	1700	620
Volume to Capacity	0.08	0.26	0.23	0.09
Queue Length 95th (m)	2.0	0.0	0.0	2.3
Control Delay (s)	8.3	0.0	0.0	11.4
Lane LOS	A			B
Approach Delay (s)	1.4		0.0	11.4
Approach LOS				B

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	38.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	343	20	0	315	2	12	0	0	1	0	32
Future Volume (Veh/h)	53	343	20	0	315	2	12	0	0	1	0	32
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	58	373	22	0	342	2	13	0	0	1	0	35
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	344			395			877	844	384	832	854	343
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	344			395			877	844	384	832	854	343
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			95	100	100	100	100	95
cM capacity (veh/h)	1215			1164			246	286	664	278	282	700

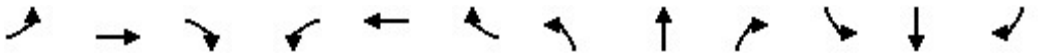
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	58	395	0	344	13	36
Volume Left	58	0	0	0	13	1
Volume Right	0	22	0	2	0	35
cSH	1215	1700	1700	1700	246	671
Volume to Capacity	0.05	0.23	0.00	0.20	0.05	0.05
Queue Length 95th (m)	1.2	0.0	0.0	0.0	1.3	1.4
Control Delay (s)	8.1	0.0	0.0	0.0	20.4	10.7
Lane LOS	A				C	B
Approach Delay (s)	1.0		0.0		20.4	10.7
Approach LOS					C	B

Intersection Summary				
Average Delay	1.3			
Intersection Capacity Utilization	41.6%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	177	141	138	161	107	129
Future Volume (Veh/h)	177	141	138	161	107	129
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	192	153	150	175	116	140
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			345		744	268
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			345		744	268
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			88		65	82
cM capacity (veh/h)			1214		335	770

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	345	325	256
Volume Left	0	150	116
Volume Right	153	0	140
cSH	1700	1214	485
Volume to Capacity	0.20	0.12	0.53
Queue Length 95th (m)	0.0	3.4	24.3
Control Delay (s)	0.0	4.5	20.4
Lane LOS		A	C
Approach Delay (s)	0.0	4.5	20.4
Approach LOS			C

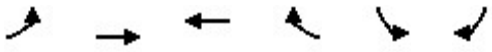
Intersection Summary			
Average Delay	7.2		
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	13	197	9	13	20	154	247	6	6	142	102
Future Volume (Veh/h)	135	13	197	9	13	20	154	247	6	6	142	102
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	147	14	214	10	14	22	167	268	7	7	154	111
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	858	832	210	1050	884	272	265			275		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	858	832	210	1050	884	272	265			275		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	36	95	74	92	94	97	87			99		
cM capacity (veh/h)	231	264	831	131	246	767	1299			1288		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	375	46	442	272
Volume Left	147	10	167	7
Volume Right	214	22	7	111
cSH	396	284	1299	1288
Volume to Capacity	0.95	0.16	0.13	0.01
Queue Length 95th (m)	84.8	4.5	3.5	0.1
Control Delay (s)	65.3	20.1	3.9	0.2
Lane LOS	F	C	A	A
Approach Delay (s)	65.3	20.1	3.9	0.2
Approach LOS	F	C		

Intersection Summary				
Average Delay	24.0			
Intersection Capacity Utilization	77.7%	ICU Level of Service	D	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	349	149	221	58	41	306
Future Volume (vph)	349	149	221	58	41	306
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	379	162	240	63	45	333

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total (vph)	379	162	303	45	333
Volume Left (vph)	379	0	0	45	0
Volume Right (vph)	0	0	63	0	333
Hadj (s)	0.53	0.03	-0.09	0.53	-0.67
Departure Headway (s)	6.7	6.2	6.2	7.4	6.1
Degree Utilization, x	0.71	0.28	0.52	0.09	0.57
Capacity (veh/h)	522	558	546	465	550
Control Delay (s)	23.4	10.5	15.9	9.9	15.7
Approach Delay (s)	19.5		15.9	15.0	
Approach LOS	C		C	C	

Intersection Summary			
Delay	17.2		
Level of Service	C		
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	174	16	1	227	51	1
Future Volume (Veh/h)	174	16	1	227	51	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	189	17	1	247	55	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			206		446	198
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			206		446	198
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		90	100
cM capacity (veh/h)			1365		569	844

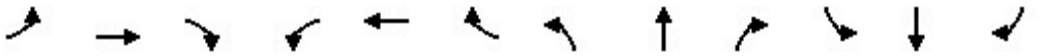
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	206	248	56
Volume Left	0	1	55
Volume Right	17	0	1
cSH	1700	1365	572
Volume to Capacity	0.12	0.00	0.10
Queue Length 95th (m)	0.0	0.0	2.6
Control Delay (s)	0.0	0.0	12.0
Lane LOS		A	B
Approach Delay (s)	0.0	0.0	12.0
Approach LOS			B

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	23.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	98	59	57	99	113	98
Future Volume (Veh/h)	98	59	57	99	113	98
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	107	64	62	108	123	107
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			171		371	139
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			171		371	139
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		80	88
cM capacity (veh/h)			1406		602	909

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	171	170	230
Volume Left	0	62	123
Volume Right	64	0	107
cSH	1700	1406	714
Volume to Capacity	0.10	0.04	0.32
Queue Length 95th (m)	0.0	1.1	11.1
Control Delay (s)	0.0	3.0	12.4
Lane LOS		A	B
Approach Delay (s)	0.0	3.0	12.4
Approach LOS			B

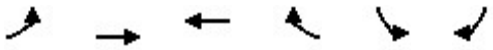
Intersection Summary			
Average Delay		5.9	
Intersection Capacity Utilization		41.9%	ICU Level of Service
Analysis Period (min)		15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	209	28	312	5	35	2	354	201	13	18	339	243
Future Volume (Veh/h)	209	28	312	5	35	2	354	201	13	18	339	243
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	227	30	339	5	38	2	385	218	14	20	368	264
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1556	1542	500	1889	1667	225	632			232		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1556	1542	500	1889	1667	225	632			232		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	56	41	50	33	100	60			99		
cM capacity (veh/h)	30	67	571	10	57	814	951			1336		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	596	45	617	652
Volume Left	227	5	385	20
Volume Right	339	2	14	264
cSH	69	38	951	1336
Volume to Capacity	8.61	1.18	0.40	0.01
Queue Length 95th (m)	Err	36.5	15.9	0.4
Control Delay (s)	Err	367.3	9.1	0.4
Lane LOS	F	F	A	A
Approach Delay (s)	Err	367.3	9.1	0.4
Approach LOS	F	F		

Intersection Summary				
Average Delay	3131.8			
Intersection Capacity Utilization	121.8%	ICU Level of Service	H	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	489	250	244	79	122	534
Future Volume (vph)	489	250	244	79	122	534
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	532	272	265	86	133	580

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total (vph)	532	272	351	133	580
Volume Left (vph)	532	0	0	133	0
Volume Right (vph)	0	0	86	0	580
Hadj (s)	0.53	0.03	-0.11	0.53	-0.67
Departure Headway (s)	7.9	7.4	7.2	8.0	6.8
Degree Utilization, x	1.16	0.56	0.70	0.29	1.09
Capacity (veh/h)	463	486	489	447	544
Control Delay (s)	119.7	18.0	25.6	13.0	89.7
Approach Delay (s)	85.3		25.6	75.4	
Approach LOS	F		D	F	

Intersection Summary			
Delay	70.3		
Level of Service	F		
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	316	56	6	295	0	1
Future Volume (Veh/h)	316	56	6	295	0	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	343	61	7	321	0	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			404		708	374
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			404		708	374
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	100
cM capacity (veh/h)			1155		398	673

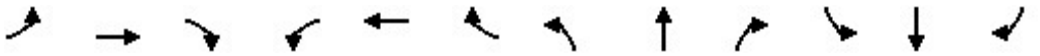
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	404	328	1
Volume Left	0	7	0
Volume Right	61	0	1
cSH	1700	1155	673
Volume to Capacity	0.24	0.01	0.00
Queue Length 95th (m)	0.0	0.1	0.0
Control Delay (s)	0.0	0.2	10.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.2	10.4
Approach LOS			B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	32.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	183	152	152	161	113	143
Future Volume (Veh/h)	183	152	152	161	113	143
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	199	165	165	175	123	155
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			364		786	282
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			364		786	282
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			86		60	80
cM capacity (veh/h)			1195		311	757

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	364	340	278
Volume Left	0	165	123
Volume Right	165	0	155
cSH	1700	1195	463
Volume to Capacity	0.21	0.14	0.60
Queue Length 95th (m)	0.0	3.8	30.9
Control Delay (s)	0.0	4.8	23.8
Lane LOS		A	C
Approach Delay (s)	0.0	4.8	23.8
Approach LOS			C

Intersection Summary			
Average Delay		8.4	
Intersection Capacity Utilization		65.2%	ICU Level of Service C
Analysis Period (min)		15	



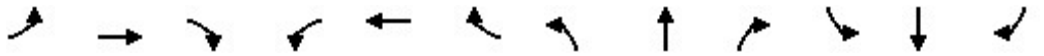
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	13	198	10	13	20	157	506	9	6	248	102
Future Volume (Veh/h)	135	13	198	10	13	20	157	506	9	6	248	102
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	147	14	215	11	14	22	171	550	10	7	270	111
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								118				
pX, platoon unblocked	0.81	0.81		0.81	0.81	0.81				0.81		
vC, conflicting volume	1266	1242	326	1458	1292	555	381			560		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1211	1181	326	1449	1244	335	381			341		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	89	70	78	88	96	85			99		
cM capacity (veh/h)	100	131	716	50	120	573	1177			988		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	376	47	731	388
Volume Left	147	11	171	7
Volume Right	215	22	10	111
cSH	201	126	1177	988
Volume to Capacity	1.87	0.37	0.15	0.01
Queue Length 95th (m)	217.0	12.4	4.1	0.2
Control Delay (s)	452.0	49.8	3.4	0.2
Lane LOS	F	E	A	A
Approach Delay (s)	452.0	49.8	3.4	0.2
Approach LOS	F	E		

Intersection Summary				
Average Delay	113.4			
Intersection Capacity Utilization	98.9%	ICU Level of Service	F	
Analysis Period (min)	15			

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	79	174	533	45	450
v/c Ratio	0.26	0.40	0.56	0.10	0.48
Control Delay	11.3	7.9	8.8	5.3	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	11.3	7.9	8.8	5.3	7.6
Queue Length 50th (m)	2.2	1.7	18.3	1.1	14.4
Queue Length 95th (m)	11.9	14.7	46.8	4.9	36.8
Internal Link Dist (m)	131.2	154.6	542.2		93.8
Turn Bay Length (m)				15.0	
Base Capacity (vph)	788	956	1707	813	1702
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.10	0.18	0.31	0.06	0.26

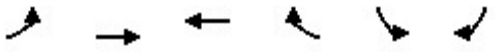
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	0	2	36	0	124	1	477	13	41	391	23
Future Volume (vph)	71	0	2	36	0	124	1	477	13	41	391	23
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0			4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frt		1.00			0.90			1.00		1.00	0.99	
Flt Protected		0.95			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		1630			1519			1709		1630	1701	
Flt Permitted		0.70			0.91			1.00		0.47	1.00	
Satd. Flow (perm)		1190			1394			1708		814	1701	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	77	0	2	39	0	135	1	518	14	45	425	25
RTOR Reduction (vph)	0	23	0	0	103	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	56	0	0	71	0	0	532	0	45	447	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.7			7.7			20.1		20.1	20.1	
Effective Green, g (s)		9.2			9.2			21.6		21.6	21.6	
Actuated g/C Ratio		0.24			0.24			0.56		0.56	0.56	
Clearance Time (s)		5.5			5.5			5.5		5.5	5.5	
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		282			330			950		453	946	
v/s Ratio Prot											0.26	
v/s Ratio Perm		0.05			c0.05			c0.31		0.06		
v/c Ratio		0.20			0.22			0.56		0.10	0.47	
Uniform Delay, d1		11.8			11.9			5.5		4.0	5.2	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.3			0.3			0.7		0.1	0.4	
Delay (s)		12.2			12.2			6.3		4.1	5.5	
Level of Service		B			B			A		A	A	
Approach Delay (s)		12.2			12.2			6.3			5.4	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	38.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

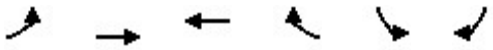
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	31	601	760	1	2	90
Future Volume (Veh/h)	31	601	760	1	2	90
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	34	653	826	1	2	98
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	827				1548	826
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	827				1548	826
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				98	74
cM capacity (veh/h)	804				120	372

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	34	653	827	100
Volume Left	34	0	0	2
Volume Right	0	0	1	98
cSH	804	1700	1700	357
Volume to Capacity	0.04	0.38	0.49	0.28
Queue Length 95th (m)	1.1	0.0	0.0	9.0
Control Delay (s)	9.7	0.0	0.0	19.0
Lane LOS	A			C
Approach Delay (s)	0.5		0.0	19.0
Approach LOS				C

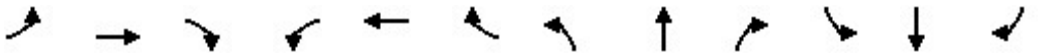
Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	56.3%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	376	227	388	97	57	370
Future Volume (vph)	376	227	388	97	57	370
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	409	247	422	105	62	402

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total (vph)	409	247	527	62	402
Volume Left (vph)	409	0	0	62	0
Volume Right (vph)	0	0	105	0	402
Hadj (s)	0.53	0.03	-0.09	0.53	-0.67
Departure Headway (s)	7.6	7.1	6.9	8.1	6.9
Degree Utilization, x	0.87	0.49	1.01	0.14	0.77
Capacity (veh/h)	462	498	527	436	511
Control Delay (s)	41.7	15.6	67.1	11.2	28.2
Approach Delay (s)	31.8		67.1	26.0	
Approach LOS	D		F	D	

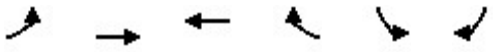
Intersection Summary			
Delay	41.5		
Level of Service	E		
Intersection Capacity Utilization	64.6%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	243	17	3	418	2	52	0	1	2	0	14
Future Volume (Veh/h)	24	243	17	3	418	2	52	0	1	2	0	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	26	264	18	3	454	2	57	0	1	2	0	15
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	456			282			800	787	273	778	795	455
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	456			282			800	787	273	778	795	455
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			80	100	100	99	100	98
cM capacity (veh/h)	1105			1280			290	315	766	307	312	605

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	26	282	3	456	58	17
Volume Left	26	0	3	0	57	2
Volume Right	0	18	0	2	1	15
cSH	1105	1700	1280	1700	293	543
Volume to Capacity	0.02	0.17	0.00	0.27	0.20	0.03
Queue Length 95th (m)	0.6	0.0	0.1	0.0	5.8	0.8
Control Delay (s)	8.3	0.0	7.8	0.0	20.3	11.8
Lane LOS	A		A		C	B
Approach Delay (s)	0.7		0.1		20.3	11.8
Approach LOS					C	B

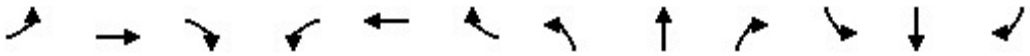
Intersection Summary				
Average Delay	1.9			
Intersection Capacity Utilization	40.5%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	24	222	349	0	2	75
Future Volume (Veh/h)	24	222	349	0	2	75
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	26	241	379	0	2	82
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	379				672	379
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	379				672	379
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				100	88
cM capacity (veh/h)	1179				412	668

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	26	241	379	84
Volume Left	26	0	0	2
Volume Right	0	0	0	82
cSH	1179	1700	1700	658
Volume to Capacity	0.02	0.14	0.22	0.13
Queue Length 95th (m)	0.5	0.0	0.0	3.5
Control Delay (s)	8.1	0.0	0.0	11.3
Lane LOS	A			B
Approach Delay (s)	0.8		0.0	11.3
Approach LOS				B

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	33.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	201	7	0	279	0	20	0	0	1	0	50
Future Volume (Veh/h)	16	201	7	0	279	0	20	0	0	1	0	50
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	17	218	8	0	303	0	22	0	0	1	0	54
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	303			226			613	559	222	555	563	303
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	303			226			613	559	222	555	563	303
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			94	100	100	100	100	93
cM capacity (veh/h)	1258			1342			371	432	818	438	429	737

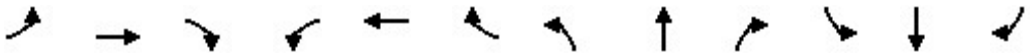
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	17	226	0	303	22	55
Volume Left	17	0	0	0	22	1
Volume Right	0	8	0	0	0	54
cSH	1258	1700	1700	1700	371	728
Volume to Capacity	0.01	0.13	0.00	0.18	0.06	0.08
Queue Length 95th (m)	0.3	0.0	0.0	0.0	1.5	2.0
Control Delay (s)	7.9	0.0	0.0	0.0	15.3	10.4
Lane LOS	A				C	B
Approach Delay (s)	0.6		0.0		15.3	10.4
Approach LOS					C	B

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	30.5%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	109	62	57	105	114	98
Future Volume (Veh/h)	109	62	57	105	114	98
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	118	67	62	114	124	107
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			185		390	152
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			185		390	152
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		79	88
cM capacity (veh/h)			1390		587	895

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	185	176	231
Volume Left	0	62	124
Volume Right	67	0	107
cSH	1700	1390	698
Volume to Capacity	0.11	0.04	0.33
Queue Length 95th (m)	0.0	1.1	11.6
Control Delay (s)	0.0	3.0	12.7
Lane LOS		A	B
Approach Delay (s)	0.0	3.0	12.7
Approach LOS			B

Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		



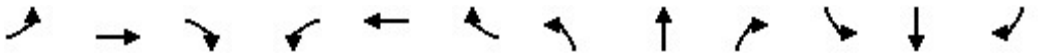
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	209	28	316	9	35	2	357	444	16	18	682	243
Future Volume (Veh/h)	209	28	316	9	35	2	357	444	16	18	682	243
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	227	30	343	10	38	2	388	483	17	20	741	264
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								118				
pX, platoon unblocked	0.75	0.75		0.75	0.75	0.75				0.75		
vC, conflicting volume	2202	2189	873	2538	2312	492	1005			500		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2440	2424	873	2892	2589	148	1005			159		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	0	2	0	0	100	44			98		
cM capacity (veh/h)	0	10	349	0	8	670	689			1059		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	600	50	888	1025
Volume Left	227	10	388	20
Volume Right	343	2	17	264
cSH	0	0	689	1059
Volume to Capacity	Err	Err	0.56	0.02
Queue Length 95th (m)	Err	Err	28.3	0.5
Control Delay (s)	Err	Err	14.8	0.5
Lane LOS	F	F	B	A
Approach Delay (s)	Err	Err	14.8	0.5
Approach LOS	F	F		

Intersection Summary				
Average Delay		Err		
Intersection Capacity Utilization		155.9%	ICU Level of Service	H
Analysis Period (min)		15		

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	52	113	799	148	947
v/c Ratio	0.22	0.36	0.62	0.30	0.71
Control Delay	17.6	13.8	7.1	5.5	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	17.6	13.8	7.1	5.5	8.0
Queue Length 50th (m)	1.8	2.1	33.4	4.3	37.8
Queue Length 95th (m)	13.5	18.3	82.7	14.5	107.6
Internal Link Dist (m)	131.2	154.6	542.2		93.8
Turn Bay Length (m)				15.0	
Base Capacity (vph)	497	602	1613	607	1613
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.10	0.19	0.50	0.24	0.59

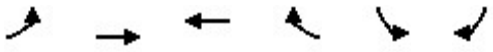
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	0	1	24	0	80	2	691	42	136	792	79
Future Volume (vph)	47	0	1	24	0	80	2	691	42	136	792	79
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0			4.0		4.0	2.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frt		1.00			0.90			0.99		1.00	0.99	
Flt Protected		0.95			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		1631			1520			1702		1630	1692	
Flt Permitted		0.71			0.91			1.00		0.37	1.00	
Satd. Flow (perm)		1212			1392			1700		639	1692	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	0	1	26	0	87	2	751	46	148	861	86
RTOR Reduction (vph)	0	26	0	0	76	0	0	2	0	0	3	0
Lane Group Flow (vph)	0	26	0	0	37	0	0	797	0	148	944	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		5.8			5.8			39.0		41.0	41.0	
Effective Green, g (s)		7.3			7.3			40.5		40.5	42.5	
Actuated g/C Ratio		0.13			0.13			0.73		0.73	0.76	
Clearance Time (s)		5.5			5.5			5.5		3.5	3.5	
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		158			182			1233		463	1288	
v/s Ratio Prot											c0.56	
v/s Ratio Perm		0.02			c0.03			0.47		0.23		
v/c Ratio		0.16			0.21			0.65		0.32	0.73	
Uniform Delay, d1		21.5			21.7			4.0		2.7	3.6	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.5			0.6			1.2		0.4	2.2	
Delay (s)		22.0			22.2			5.1		3.1	5.8	
Level of Service		C			C			A		A	A	
Approach Delay (s)		22.0			22.2			5.1			5.4	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	55.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	112.4%	ICU Level of Service	H
Analysis Period (min)	15		

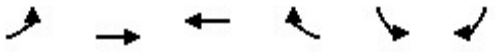
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	100	1068	1023	2	1	59
Future Volume (Veh/h)	100	1068	1023	2	1	59
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	109	1161	1112	2	1	64
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1114				2492	1113
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1114				2492	1113
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	83				96	75
cM capacity (veh/h)	627				27	254

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	109	1161	1114	65
Volume Left	109	0	0	1
Volume Right	0	0	2	64
cSH	627	1700	1700	224
Volume to Capacity	0.17	0.68	0.66	0.29
Queue Length 95th (m)	5.0	0.0	0.0	9.3
Control Delay (s)	11.9	0.0	0.0	27.5
Lane LOS	B			D
Approach Delay (s)	1.0		0.0	27.5
Approach LOS				D

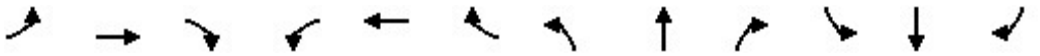
Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	577	489	424	107	159	600
Future Volume (Veh/h)	577	489	424	107	159	600
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	627	532	461	116	173	652
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	577				2305	519
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	577				2305	519
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	37				0	0
cM capacity (veh/h)	996				16	557

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	627	532	577	173	652
Volume Left	627	0	0	173	0
Volume Right	0	0	116	0	652
cSH	996	1700	1700	16	557
Volume to Capacity	0.63	0.31	0.34	11.05	1.17
Queue Length 95th (m)	37.0	0.0	0.0	Err	181.4
Control Delay (s)	14.5	0.0	0.0	Err	119.8
Lane LOS	B			F	F
Approach Delay (s)	7.9		0.0	2191.4	
Approach LOS				F	

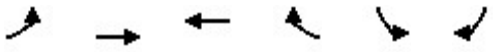
Intersection Summary			
Average Delay	709.5		
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	74	517	57	7	420	3	0	1	1	4	1	80
Future Volume (Veh/h)	74	517	57	7	420	3	0	1	1	4	1	80
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	80	562	62	8	457	3	0	1	1	4	1	87
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	460			624			1314	1229	593	1198	1258	458
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	460			624			1314	1229	593	1198	1258	458
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			99			100	99	100	97	99	86
cM capacity (veh/h)	1101			957			108	164	506	151	157	602

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	80	624	8	460	2	92
Volume Left	80	0	8	0	0	4
Volume Right	0	62	0	3	1	87
cSH	1101	1700	957	1700	247	519
Volume to Capacity	0.07	0.37	0.01	0.27	0.01	0.18
Queue Length 95th (m)	1.9	0.0	0.2	0.0	0.2	5.1
Control Delay (s)	8.5	0.0	8.8	0.0	19.7	13.4
Lane LOS	A		A		C	B
Approach Delay (s)	1.0		0.2		19.7	13.4
Approach LOS					C	B

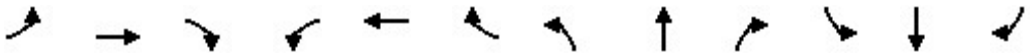
Intersection Summary				
Average Delay	1.6			
Intersection Capacity Utilization	56.1%	ICU Level of Service		B
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	81	441	382	2	2	48
Future Volume (Veh/h)	81	441	382	2	2	48
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	88	479	415	2	2	52
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	417				1071	416
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	417				1071	416
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	92				99	92
cM capacity (veh/h)	1142				226	637

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	88	479	417	54
Volume Left	88	0	0	2
Volume Right	0	0	2	52
cSH	1142	1700	1700	596
Volume to Capacity	0.08	0.28	0.25	0.09
Queue Length 95th (m)	2.0	0.0	0.0	2.4
Control Delay (s)	8.4	0.0	0.0	11.6
Lane LOS	A			B
Approach Delay (s)	1.3		0.0	11.6
Approach LOS				B

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	40.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	370	20	0	340	2	12	0	0	1	0	32
Future Volume (Veh/h)	53	370	20	0	340	2	12	0	0	1	0	32
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	58	402	22	0	370	2	13	0	0	1	0	35
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	372			424			934	901	413	889	911	371
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	372			424			934	901	413	889	911	371
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			94	100	100	100	100	95
cM capacity (veh/h)	1186			1135			225	264	639	254	261	675

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	58	424	0	372	13	36
Volume Left	58	0	0	0	13	1
Volume Right	0	22	0	2	0	35
cSH	1186	1700	1700	1700	225	645
Volume to Capacity	0.05	0.25	0.00	0.22	0.06	0.06
Queue Length 95th (m)	1.2	0.0	0.0	0.0	1.5	1.4
Control Delay (s)	8.2	0.0	0.0	0.0	22.0	10.9
Lane LOS	A				C	B
Approach Delay (s)	1.0		0.0		22.0	10.9
Approach LOS					C	B

Intersection Summary				
Average Delay	1.3			
Intersection Capacity Utilization	43.2%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	192	155	152	173	117	143
Future Volume (Veh/h)	192	155	152	173	117	143
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	209	168	165	188	127	155
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			377		811	293
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			377		811	293
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			86		58	79
cM capacity (veh/h)			1181		300	746

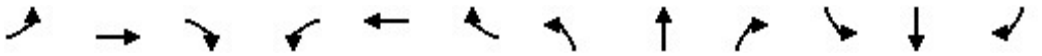
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	377	353	282
Volume Left	0	165	127
Volume Right	168	0	155
cSH	1700	1181	447
Volume to Capacity	0.22	0.14	0.63
Queue Length 95th (m)	0.0	3.9	34.0
Control Delay (s)	0.0	4.7	25.8
Lane LOS		A	D
Approach Delay (s)	0.0	4.7	25.8
Approach LOS			D

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		

CHIPPAWA CREEK ROAD AT STANLEY AVENUE

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	145	226	8	31	164	242	5	142	109
v/c Ratio	0.35	0.36	0.02	0.06	0.35	0.34	0.01	0.20	0.16
Control Delay	11.1	4.0	8.0	5.9	9.5	8.4	6.2	7.4	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.1	4.0	8.0	5.9	9.5	8.4	6.2	7.4	2.6
Queue Length 50th (m)	5.0	0.4	0.3	0.4	5.3	7.7	0.2	4.3	0.0
Queue Length 95th (m)	17.2	10.3	2.1	4.1	16.7	21.2	1.3	13.0	5.4
Internal Link Dist (m)		332.0		207.4		173.2		94.9	
Turn Bay Length (m)	60.0		15.0		110.0		15.0		35.0
Base Capacity (vph)	1083	1294	908	1345	1143	1711	1043	1716	1458
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.17	0.01	0.02	0.14	0.14	0.00	0.08	0.07

Intersection Summary



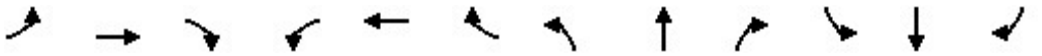
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	133	13	195	7	12	17	151	218	5	5	131	100
Future Volume (vph)	133	13	195	7	12	17	151	218	5	5	131	100
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.86		1.00	0.91		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1630	1474		1630	1566		1630	1710		1630	1716	1458
Flt Permitted	0.74	1.00		0.62	1.00		0.67	1.00		0.61	1.00	1.00
Satd. Flow (perm)	1264	1474		1059	1566		1143	1710		1044	1716	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	145	14	212	8	13	18	164	237	5	5	142	109
RTOR Reduction (vph)	0	142	0	0	12	0	0	1	0	0	0	64
Lane Group Flow (vph)	145	84	0	8	19	0	164	241	0	5	142	45
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	9.1	9.1		9.1	9.1		11.8	11.8		11.8	11.8	11.8
Effective Green, g (s)	10.6	10.6		10.6	10.6		13.3	13.3		13.3	13.3	13.3
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.42	0.42		0.42	0.42	0.42
Clearance Time (s)	5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	420	489		351	520		476	712		435	715	607
v/s Ratio Prot		0.06			0.01			0.14			0.08	
v/s Ratio Perm	c0.11			0.01			c0.14			0.00		0.03
v/c Ratio	0.35	0.17		0.02	0.04		0.34	0.34		0.01	0.20	0.07
Uniform Delay, d1	8.0	7.5		7.2	7.2		6.3	6.3		5.4	5.9	5.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.5	0.2		0.0	0.0		0.4	0.3		0.0	0.1	0.1
Delay (s)	8.5	7.7		7.2	7.2		6.8	6.6		5.5	6.0	5.7
Level of Service	A	A		A	A		A	A		A	A	A
Approach Delay (s)		8.0			7.2			6.7			5.9	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	31.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	225	365	4	38	380	213	17	326	262
v/c Ratio	0.60	0.54	0.02	0.07	0.75	0.23	0.03	0.35	0.29
Control Delay	29.6	7.4	21.2	19.6	21.3	7.3	6.4	8.5	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.6	7.4	21.2	19.6	21.3	7.3	6.4	8.5	1.8
Queue Length 50th (m)	20.3	2.2	0.3	2.8	27.2	9.9	0.7	16.9	0.0
Queue Length 95th (m)	61.9	27.6	3.1	12.5	73.7	23.9	3.4	38.0	8.2
Internal Link Dist (m)		332.0		207.4		173.2		94.9	
Turn Bay Length (m)	60.0		15.0		110.0		15.0		35.0
Base Capacity (vph)	599	881	285	813	807	1495	942	1508	1313
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.41	0.01	0.05	0.47	0.14	0.02	0.22	0.20

Intersection Summary



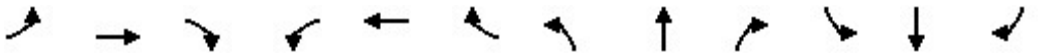
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	207	27	309	4	33	2	350	184	12	16	300	241
Future Volume (vph)	207	27	309	4	33	2	350	184	12	16	300	241
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.86		1.00	0.99		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1630	1479		1630	1702		1630	1700		1630	1716	1458
Flt Permitted	0.73	1.00		0.35	1.00		0.54	1.00		0.62	1.00	1.00
Satd. Flow (perm)	1256	1479		597	1702		918	1700		1072	1716	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	225	29	336	4	36	2	380	200	13	17	326	262
RTOR Reduction (vph)	0	235	0	0	1	0	0	3	0	0	0	115
Lane Group Flow (vph)	225	130	0	4	37	0	380	210	0	17	326	147
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	16.0	16.0		16.0	16.0		31.0	31.0		31.0	31.0	31.0
Effective Green, g (s)	17.5	17.5		17.5	17.5		32.5	32.5		32.5	32.5	32.5
Actuated g/C Ratio	0.30	0.30		0.30	0.30		0.56	0.56		0.56	0.56	0.56
Clearance Time (s)	5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	378	446		180	513		514	952		600	961	816
v/s Ratio Prot		0.09			0.02			0.12			0.19	
v/s Ratio Perm	c0.18			0.01			c0.41			0.02		0.10
v/c Ratio	0.60	0.29		0.02	0.07		0.74	0.22		0.03	0.34	0.18
Uniform Delay, d1	17.2	15.5		14.2	14.5		9.6	6.4		5.7	6.9	6.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.5	0.4		0.0	0.1		5.5	0.1		0.0	0.2	0.1
Delay (s)	19.7	15.9		14.3	14.5		15.1	6.5		5.7	7.1	6.3
Level of Service	B	B		B	B		B	A		A	A	A
Approach Delay (s)		17.4			14.5			12.0			6.7	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	12.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	58.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	145	226	8	31	165	325	5	170	109
v/c Ratio	0.35	0.36	0.02	0.06	0.34	0.44	0.01	0.23	0.16
Control Delay	11.9	4.1	8.7	6.3	9.6	9.5	6.4	7.7	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.9	4.1	8.7	6.3	9.6	9.5	6.4	7.7	2.6
Queue Length 50th (m)	5.5	0.5	0.3	0.5	5.6	11.5	0.2	5.4	0.0
Queue Length 95th (m)	18.8	10.9	2.3	4.4	18.1	31.0	1.4	16.2	5.7
Internal Link Dist (m)		332.0		207.4		173.2		94.9	
Turn Bay Length (m)	60.0		15.0		110.0		15.0		35.0
Base Capacity (vph)	1216	1426	1018	1507	1115	1711	950	1716	1458
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.16	0.01	0.02	0.15	0.19	0.01	0.10	0.07

Intersection Summary



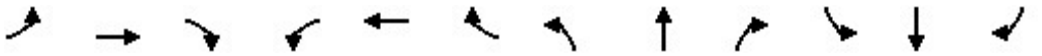
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	133	13	195	7	12	17	152	293	6	5	156	100
Future Volume (vph)	133	13	195	7	12	17	152	293	6	5	156	100
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.86		1.00	0.91		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1630	1474		1630	1566		1630	1710		1630	1716	1458
Flt Permitted	0.74	1.00		0.62	1.00		0.65	1.00		0.55	1.00	1.00
Satd. Flow (perm)	1264	1474		1059	1566		1115	1710		951	1716	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	145	14	212	8	13	18	165	318	7	5	170	109
RTOR Reduction (vph)	0	142	0	0	12	0	0	1	0	0	0	62
Lane Group Flow (vph)	145	84	0	8	19	0	165	324	0	5	170	47
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	9.8	9.8		9.8	9.8		13.4	13.4		13.4	13.4	13.4
Effective Green, g (s)	11.3	11.3		11.3	11.3		14.9	14.9		14.9	14.9	14.9
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.44	0.44		0.44	0.44	0.44
Clearance Time (s)	5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	417	487		349	517		485	745		414	747	635
v/s Ratio Prot		0.06			0.01			c0.19			0.10	
v/s Ratio Perm	c0.11			0.01			0.15			0.01		0.03
v/c Ratio	0.35	0.17		0.02	0.04		0.34	0.43		0.01	0.23	0.07
Uniform Delay, d1	8.7	8.1		7.7	7.8		6.4	6.7		5.5	6.0	5.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.5	0.2		0.0	0.0		0.4	0.4		0.0	0.2	0.1
Delay (s)	9.2	8.3		7.8	7.8		6.8	7.1		5.5	6.2	5.7
Level of Service	A	A		A	A		A	A		A	A	A
Approach Delay (s)		8.6			7.8			7.0			6.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	34.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	79	414	389
v/c Ratio	0.25	0.32	0.30
Control Delay	12.3	4.8	4.7
Queue Delay	0.0	0.0	0.0
Total Delay	12.3	4.8	4.7
Queue Length 50th (m)	3.5	13.1	11.9
Queue Length 95th (m)	11.2	30.9	28.1
Internal Link Dist (m)	131.2	467.7	173.2
Turn Bay Length (m)			
Base Capacity (vph)	852	1714	1699
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.09	0.24	0.23

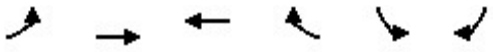
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	0	2	0	0	0	1	380	0	0	335	23
Future Volume (vph)	71	0	2	0	0	0	1	380	0	0	335	23
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		1.00						1.00			1.00	
Frt		1.00						1.00			0.99	
Flt Protected		0.95						1.00			1.00	
Satd. Flow (prot)		1630						1715			1699	
Flt Permitted		0.73						1.00			1.00	
Satd. Flow (perm)		1251						1715			1699	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	77	0	2	0	0	0	1	413	0	0	364	25
RTOR Reduction (vph)	0	26	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	53	0	0	0	0	0	414	0	0	387	0
Turn Type	Perm	NA					Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		4.4						25.9			25.9	
Effective Green, g (s)		5.9						27.4			27.4	
Actuated g/C Ratio		0.14						0.66			0.66	
Clearance Time (s)		5.5						5.5			5.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		178						1137			1127	
v/s Ratio Prot											0.23	
v/s Ratio Perm		c0.04						0.24				
v/c Ratio		0.30						0.36			0.34	
Uniform Delay, d1		15.8						3.1			3.0	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.9						0.2			0.2	
Delay (s)		16.8						3.3			3.2	
Level of Service		B						A			A	
Approach Delay (s)		16.8			0.0			3.3			3.2	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	4.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	41.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	33.6%	ICU Level of Service	A
Analysis Period (min)	15		

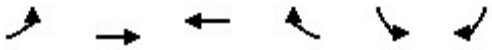
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	31	453	490	1	2	90
Future Volume (Veh/h)	31	453	490	1	2	90
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	34	492	533	1	2	98
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			371			
pX, platoon unblocked						
vC, conflicting volume	534				1094	534
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	534				1094	534
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				99	82
cM capacity (veh/h)	1034				229	546

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	526	534	100
Volume Left	34	0	2
Volume Right	0	1	98
cSH	1034	1700	532
Volume to Capacity	0.03	0.31	0.19
Queue Length 95th (m)	0.8	0.0	5.5
Control Delay (s)	0.9	0.0	13.3
Lane LOS	A		B
Approach Delay (s)	0.9	0.0	13.3
Approach LOS			B

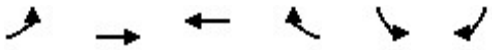
Intersection Summary			
Average Delay		1.6	
Intersection Capacity Utilization		66.4%	ICU Level of Service C
Analysis Period (min)		15	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	350	143	210	58	45	321
v/c Ratio	0.62	0.18	0.57	1.00	0.07	0.41
Control Delay	19.6	9.8	29.3	137.9	14.2	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.6	9.8	29.3	137.9	14.2	4.1
Queue Length 50th (m)	26.8	9.4	22.0	0.0	3.0	0.0
Queue Length 95th (m)	44.4	17.9	46.5	#22.6	11.2	16.2
Internal Link Dist (m)		347.1	94.8		467.7	
Turn Bay Length (m)	100.0			50.0	30.0	
Base Capacity (vph)	914	1686	1052	58	657	779
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.08	0.20	1.00	0.07	0.41

Intersection Summary

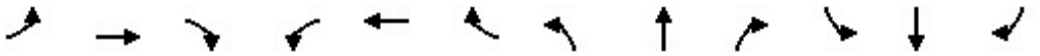
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	322	132	193	53	41	295
Future Volume (vph)	322	132	193	53	41	295
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	2.5	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1630	1716	1716	1458	1630	1458
Flt Permitted	0.54	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	921	1716	1716	1458	1630	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	350	143	210	58	45	321
RTOR Reduction (vph)	0	0	0	58	0	192
Lane Group Flow (vph)	350	143	210	0	45	129
Turn Type	pm+pt	NA	NA	NA	Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases	4					6
Actuated Green, G (s)	31.3	27.8	11.9	0.0	23.7	23.7
Effective Green, g (s)	29.3	29.3	13.4	0.0	25.2	25.2
Actuated g/C Ratio	0.47	0.47	0.21	0.00	0.40	0.40
Clearance Time (s)	2.0	5.5	5.5		5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	566	804	367	0	657	587
v/s Ratio Prot	c0.12	0.08	0.12		0.03	
v/s Ratio Perm	c0.17					c0.09
v/c Ratio	0.62	0.18	0.57	0.00	0.07	0.22
Uniform Delay, d1	14.6	9.6	22.0	31.2	11.4	12.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.0	0.1	2.2	0.0	0.2	0.9
Delay (s)	16.6	9.7	24.1	31.2	11.6	13.1
Level of Service	B	A	C	C	B	B
Approach Delay (s)		14.6	25.7		12.9	
Approach LOS		B	C		B	

Intersection Summary			
HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	62.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	44.6%	ICU Level of Service	A
Analysis Period (min)	15		

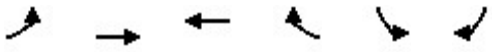
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	159	15	1	202	0	45	0	1	0	0	0
Future Volume (Veh/h)	0	159	15	1	202	0	45	0	1	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	173	16	1	220	0	49	0	1	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		119										
pX, platoon unblocked				0.99			0.99	0.99	0.99	0.99	0.99	
vC, conflicting volume	220			189			403	403	181	404	411	220
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	220			172			389	389	164	390	397	220
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			91	100	100	100	100	100
cM capacity (veh/h)	1349			1387			562	539	869	561	533	820

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	189	221	50	0
Volume Left	0	1	49	0
Volume Right	16	0	1	0
cSH	1349	1387	566	1700
Volume to Capacity	0.00	0.00	0.09	0.00
Queue Length 95th (m)	0.0	0.0	2.3	0.0
Control Delay (s)	0.0	0.0	12.0	0.0
Lane LOS		A	B	A
Approach Delay (s)	0.0	0.0	12.0	0.0
Approach LOS			B	A

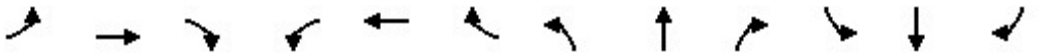
Intersection Summary				
Average Delay	1.3			
Intersection Capacity Utilization	22.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	160	203	0	0	0
Future Volume (Veh/h)	0	160	203	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	174	221	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		348				
pX, platoon unblocked						
vC, conflicting volume	221				395	221
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	221				395	221
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1348				610	819

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	174	221	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1348	1700	1700
Volume to Capacity	0.00	0.13	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		14.9%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	160	0	0	203	0	0	0	0	0	0	0
Future Volume (Veh/h)	0	160	0	0	203	0	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	174	0	0	221	0	0	0	0	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	221			174			395	395	174	395	395	221
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	221			174			395	395	174	395	395	221
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	1348			1403			565	542	869	565	542	819

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	174	221	0	0
Volume Left	0	0	0	0
Volume Right	0	0	0	0
cSH	1348	1403	1700	1700
Volume to Capacity	0.00	0.00	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	0.0	0.0
Approach LOS			A	A

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	14.9%	ICU Level of Service	A	
Analysis Period (min)	15			

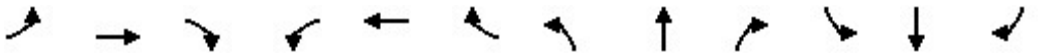
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	92	52	50	90	99	85
Future Volume (Veh/h)	92	52	50	90	99	85
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	100	57	54	98	108	92
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			157		334	128
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			157		334	128
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		83	90
cM capacity (veh/h)			1423		636	921

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	157	152	200
Volume Left	0	54	108
Volume Right	57	0	92
cSH	1700	1423	741
Volume to Capacity	0.09	0.04	0.27
Queue Length 95th (m)	0.0	0.9	8.7
Control Delay (s)	0.0	2.9	11.6
Lane LOS		A	B
Approach Delay (s)	0.0	2.9	11.6
Approach LOS			B

Intersection Summary			
Average Delay		5.4	
Intersection Capacity Utilization		38.5%	ICU Level of Service
Analysis Period (min)		15	

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	225	366	5	38	382	267	17	416	262
v/c Ratio	0.63	0.55	0.03	0.08	0.82	0.27	0.03	0.41	0.27
Control Delay	35.3	8.2	25.6	23.3	28.0	7.6	6.5	9.2	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.3	8.2	25.6	23.3	28.0	7.6	6.5	9.2	1.7
Queue Length 50th (m)	25.8	2.8	0.5	3.5	34.4	14.5	0.8	25.8	0.0
Queue Length 95th (m)	68.3	30.0	3.8	13.7	95.3	31.5	3.6	52.9	8.3
Internal Link Dist (m)		332.0		207.4		173.2		94.9	
Turn Bay Length (m)	60.0		15.0		110.0		15.0		35.0
Base Capacity (vph)	559	845	236	759	689	1470	863	1481	1294
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.43	0.02	0.05	0.55	0.18	0.02	0.28	0.20

Intersection Summary



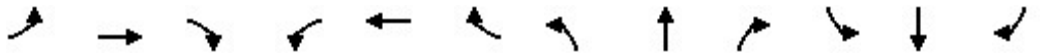
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	207	27	310	5	33	2	351	233	13	16	383	241
Future Volume (vph)	207	27	310	5	33	2	351	233	13	16	383	241
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.86		1.00	0.99		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1630	1479		1630	1702		1630	1702		1630	1716	1458
Flt Permitted	0.73	1.00		0.31	1.00		0.46	1.00		0.58	1.00	1.00
Satd. Flow (perm)	1256	1479		529	1702		797	1702		1001	1716	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	225	29	337	5	36	2	382	253	14	17	416	262
RTOR Reduction (vph)	0	241	0	0	1	0	0	2	0	0	0	106
Lane Group Flow (vph)	225	125	0	5	37	0	382	265	0	17	416	156
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	17.9	17.9		17.9	17.9		39.0	39.0		39.0	39.0	39.0
Effective Green, g (s)	19.4	19.4		19.4	19.4		40.5	40.5		40.5	40.5	40.5
Actuated g/C Ratio	0.29	0.29		0.29	0.29		0.60	0.60		0.60	0.60	0.60
Clearance Time (s)	5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	358	422		151	486		475	1015		597	1023	869
v/s Ratio Prot		0.08			0.02			0.16			0.24	
v/s Ratio Perm	c0.18			0.01			c0.48			0.02		0.11
v/c Ratio	0.63	0.30		0.03	0.08		0.80	0.26		0.03	0.41	0.18
Uniform Delay, d1	21.1	18.9		17.5	17.7		10.6	6.5		5.6	7.3	6.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.4	0.4		0.1	0.1		9.5	0.1		0.0	0.3	0.1
Delay (s)	24.5	19.3		17.6	17.8		20.2	6.7		5.6	7.6	6.3
Level of Service	C	B		B	B		C	A		A	A	A
Approach Delay (s)		21.3			17.7			14.6			7.0	
Approach LOS		C			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	67.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	52	600	759
v/c Ratio	0.20	0.42	0.54
Control Delay	16.8	4.0	5.1
Queue Delay	0.0	0.0	0.0
Total Delay	16.8	4.0	5.1
Queue Length 50th (m)	2.1	20.3	28.9
Queue Length 95th (m)	11.9	43.4	64.5
Internal Link Dist (m)	131.2	467.7	173.2
Turn Bay Length (m)			
Base Capacity (vph)	347	1714	1687
Starvation Cap Reductn	0	0	21
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.15	0.35	0.46

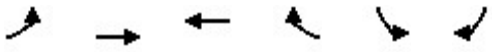
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	0	1	0	0	0	2	550	0	0	619	79
Future Volume (vph)	47	0	1	0	0	0	2	550	0	0	619	79
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		1.00						1.00			1.00	
Frt		1.00						1.00			0.98	
Flt Protected		0.95						1.00			1.00	
Satd. Flow (prot)		1631						1715			1687	
Flt Permitted		0.76						1.00			1.00	
Satd. Flow (perm)		1304						1713			1687	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	0	1	0	0	0	2	598	0	0	673	86
RTOR Reduction (vph)	0	27	0	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	25	0	0	0	0	0	600	0	0	753	0
Turn Type	Perm	NA					Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		3.7						37.2			37.2	
Effective Green, g (s)		5.2						38.7			38.7	
Actuated g/C Ratio		0.10						0.75			0.75	
Clearance Time (s)		5.5						5.5			5.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		130						1277			1257	
v/s Ratio Prot											c0.45	
v/s Ratio Perm		c0.02						0.35				
v/c Ratio		0.19						0.47			0.60	
Uniform Delay, d1		21.4						2.6			3.0	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.7						0.3			0.8	
Delay (s)		22.1						2.9			3.8	
Level of Service		C						A			A	
Approach Delay (s)		22.1			0.0			2.9			3.8	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	4.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	51.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		

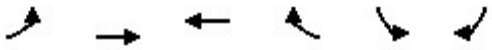
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	100	693	719	2	1	59
Future Volume (Veh/h)	100	693	719	2	1	59
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	109	753	782	2	1	64
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			371			
pX, platoon unblocked						
vC, conflicting volume	784				1754	783
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	784				1754	783
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	87				99	84
cM capacity (veh/h)	834				81	394

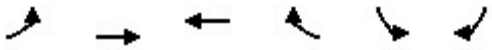
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	862	784	65
Volume Left	109	0	1
Volume Right	0	2	64
cSH	834	1700	372
Volume to Capacity	0.13	0.46	0.17
Queue Length 95th (m)	3.6	0.0	5.0
Control Delay (s)	3.3	0.0	16.7
Lane LOS	A		C
Approach Delay (s)	3.3	0.0	16.7
Approach LOS			C

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	100.8%	ICU Level of Service	G
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	514	238	234	82	121	548
v/c Ratio	0.59	0.21	0.57	0.20	0.40	0.38
Control Delay	6.8	4.2	28.5	7.3	29.0	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.8	4.2	28.5	7.3	29.0	0.7
Queue Length 50th (m)	17.8	7.8	23.5	0.0	12.2	0.0
Queue Length 95th (m)	40.2	17.9	52.5	10.1	32.0	0.0
Internal Link Dist (m)		347.1	94.8		467.7	
Turn Bay Length (m)	100.0			50.0	30.0	
Base Capacity (vph)	1055	1654	1020	900	440	1458
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.14	0.23	0.09	0.28	0.38

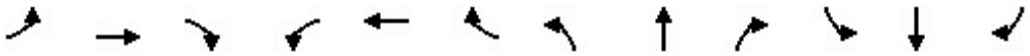
Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	473	219	215	75	111	504
Future Volume (vph)	473	219	215	75	111	504
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	2.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1630	1716	1716	1458	1630	1458
Flt Permitted	0.42	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	718	1716	1716	1458	1630	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	514	238	234	82	121	548
RTOR Reduction (vph)	0	0	0	62	0	0
Lane Group Flow (vph)	514	238	234	20	121	548
Turn Type	pm+pt	NA	NA	Perm	Perm	Free
Protected Phases	7	4	8			
Permitted Phases	4			8	6	Free
Actuated Green, G (s)	37.8	37.8	12.5	12.5	9.4	58.2
Effective Green, g (s)	37.8	39.3	14.0	14.0	10.9	58.2
Actuated g/C Ratio	0.65	0.68	0.24	0.24	0.19	1.00
Clearance Time (s)	2.0	5.5	5.5	5.5	5.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	831	1158	412	350	305	1458
v/s Ratio Prot	c0.25	0.14	c0.14			
v/s Ratio Perm	0.15			0.01	0.07	c0.38
v/c Ratio	0.62	0.21	0.57	0.06	0.40	0.38
Uniform Delay, d1	5.6	3.6	19.4	17.0	20.8	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.1	1.8	0.1	0.9	0.7
Delay (s)	7.0	3.7	21.2	17.1	21.6	0.7
Level of Service	A	A	C	B	C	A
Approach Delay (s)		5.9	20.2		4.5	
Approach LOS		A	C		A	

Intersection Summary			
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	58.2	Sum of lost time (s)	11.5
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		

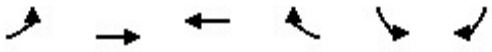
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	280	50	5	265	0	0	0	1	0	0	0
Future Volume (Veh/h)	0	280	50	5	265	0	0	0	1	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	304	54	5	288	0	0	0	1	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		119										
pX, platoon unblocked				0.96			0.96	0.96	0.96	0.96	0.96	
vC, conflicting volume	288			358			629	629	331	630	656	288
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	288			309			592	592	281	593	620	288
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	1274			1200			400	400	727	398	386	751

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	358	293	1	0
Volume Left	0	5	0	0
Volume Right	54	0	1	0
cSH	1274	1200	727	1700
Volume to Capacity	0.00	0.00	0.00	0.00
Queue Length 95th (m)	0.0	0.1	0.0	0.0
Control Delay (s)	0.0	0.2	10.0	0.0
Lane LOS		A	A	A
Approach Delay (s)	0.0	0.2	10.0	0.0
Approach LOS			A	A

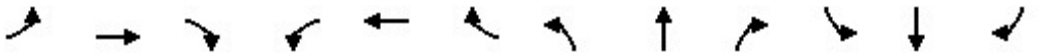
Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	29.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	281	270	0	0	0
Future Volume (Veh/h)	0	281	270	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	305	293	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		348				
pX, platoon unblocked						
vC, conflicting volume	293				598	293
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	293				598	293
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1269				465	746

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	305	293	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1269	1700	1700
Volume to Capacity	0.00	0.17	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		19.4%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	281	0	0	270	0	0	0	0	0	0	0
Future Volume (Veh/h)	0	281	0	0	270	0	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	305	0	0	293	0	0	0	0	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	293			305			598	598	305	598	598	293
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	293			305			598	598	305	598	598	293
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	1269			1256			414	416	735	414	416	746

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	305	293	0	0
Volume Left	0	0	0	0
Volume Right	0	0	0	0
cSH	1269	1256	1700	1700
Volume to Capacity	0.00	0.00	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	0.0	0.0
Approach LOS			A	A

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	19.4%	ICU Level of Service	A	
Analysis Period (min)	15			

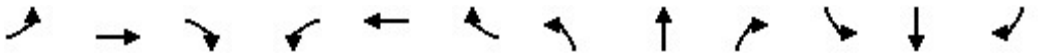
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	163	134	133	147	100	124
Future Volume (Veh/h)	163	134	133	147	100	124
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	177	146	145	160	109	135
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			323		700	250
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			323		700	250
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			88		70	83
cM capacity (veh/h)			1237		358	789

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	323	305	244
Volume Left	0	145	109
Volume Right	146	0	135
cSH	1700	1237	513
Volume to Capacity	0.19	0.12	0.48
Queue Length 95th (m)	0.0	3.2	20.2
Control Delay (s)	0.0	4.5	18.2
Lane LOS		A	C
Approach Delay (s)	0.0	4.5	18.2
Approach LOS			C

Intersection Summary			
Average Delay		6.7	
Intersection Capacity Utilization		58.9%	ICU Level of Service B
Analysis Period (min)		15	

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	146	226	9	33	165	253	7	146	110
v/c Ratio	0.35	0.36	0.03	0.06	0.35	0.35	0.02	0.20	0.16
Control Delay	11.2	4.0	8.1	5.7	9.5	8.5	6.3	7.4	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.2	4.0	8.1	5.7	9.5	8.5	6.3	7.4	2.6
Queue Length 50th (m)	5.0	0.4	0.3	0.4	5.3	8.0	0.2	4.4	0.0
Queue Length 95th (m)	17.4	10.3	2.3	4.2	16.9	22.2	1.6	13.3	5.5
Internal Link Dist (m)		332.0		207.4		173.2		94.9	
Turn Bay Length (m)	60.0		15.0		110.0		15.0		35.0
Base Capacity (vph)	1078	1289	904	1335	1139	1709	1033	1716	1458
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.18	0.01	0.02	0.14	0.15	0.01	0.09	0.08

Intersection Summary



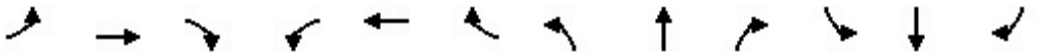
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	134	13	195	8	12	18	152	226	6	6	134	101
Future Volume (vph)	134	13	195	8	12	18	152	226	6	6	134	101
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.86		1.00	0.91		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1630	1474		1630	1560		1630	1709		1630	1716	1458
Flt Permitted	0.74	1.00		0.62	1.00		0.66	1.00		0.60	1.00	1.00
Satd. Flow (perm)	1262	1474		1059	1560		1139	1709		1033	1716	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	146	14	212	9	13	20	165	246	7	7	146	110
RTOR Reduction (vph)	0	142	0	0	13	0	0	2	0	0	0	64
Lane Group Flow (vph)	146	84	0	9	20	0	165	251	0	7	146	46
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	9.1	9.1		9.1	9.1		11.9	11.9		11.9	11.9	11.9
Effective Green, g (s)	10.6	10.6		10.6	10.6		13.4	13.4		13.4	13.4	13.4
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.42	0.42		0.42	0.42	0.42
Clearance Time (s)	5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	418	488		350	516		476	715		432	718	610
v/s Ratio Prot		0.06			0.01			c0.15			0.09	
v/s Ratio Perm	c0.12			0.01			0.14			0.01		0.03
v/c Ratio	0.35	0.17		0.03	0.04		0.35	0.35		0.02	0.20	0.08
Uniform Delay, d1	8.1	7.6		7.2	7.2		6.3	6.3		5.4	5.9	5.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.5	0.2		0.0	0.0		0.4	0.3		0.0	0.1	0.1
Delay (s)	8.6	7.8		7.2	7.3		6.8	6.6		5.5	6.0	5.6
Level of Service	A	A		A	A		A	A		A	A	A
Approach Delay (s)		8.1			7.3			6.7			5.9	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	32.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	226	366	4	38	382	218	18	337	262
v/c Ratio	0.61	0.54	0.02	0.08	0.77	0.23	0.03	0.36	0.28
Control Delay	30.1	7.4	21.5	19.8	22.2	7.3	6.5	8.6	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.1	7.4	21.5	19.8	22.2	7.3	6.5	8.6	1.8
Queue Length 50th (m)	21.0	2.3	0.3	2.8	28.1	10.3	0.8	17.8	0.0
Queue Length 95th (m)	62.2	27.6	3.1	12.5	76.1	24.5	3.6	39.4	8.2
Internal Link Dist (m)		332.0		207.4		173.2		94.9	
Turn Bay Length (m)	60.0		15.0		110.0		15.0		35.0
Base Capacity (vph)	590	874	276	802	789	1487	933	1500	1307
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.42	0.01	0.05	0.48	0.15	0.02	0.22	0.20

Intersection Summary



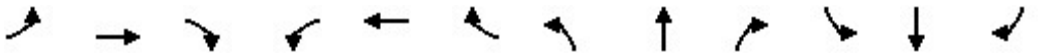
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	208	27	310	4	33	2	351	189	12	17	310	241
Future Volume (vph)	208	27	310	4	33	2	351	189	12	17	310	241
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.86		1.00	0.99		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1630	1479		1630	1702		1630	1700		1630	1716	1458
Flt Permitted	0.73	1.00		0.34	1.00		0.53	1.00		0.62	1.00	1.00
Satd. Flow (perm)	1256	1479		589	1702		902	1700		1067	1716	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	226	29	337	4	36	2	382	205	13	18	337	262
RTOR Reduction (vph)	0	236	0	0	1	0	0	3	0	0	0	114
Lane Group Flow (vph)	226	130	0	4	37	0	382	215	0	18	337	148
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	16.2	16.2		16.2	16.2		31.7	31.7		31.7	31.7	31.7
Effective Green, g (s)	17.7	17.7		17.7	17.7		33.2	33.2		33.2	33.2	33.2
Actuated g/C Ratio	0.30	0.30		0.30	0.30		0.56	0.56		0.56	0.56	0.56
Clearance Time (s)	5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	377	444		177	511		508	958		601	967	821
v/s Ratio Prot		0.09			0.02			0.13			0.20	
v/s Ratio Perm	c0.18			0.01			c0.42			0.02		0.10
v/c Ratio	0.60	0.29		0.02	0.07		0.75	0.22		0.03	0.35	0.18
Uniform Delay, d1	17.6	15.8		14.5	14.7		9.7	6.4		5.7	7.0	6.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.6	0.4		0.1	0.1		6.2	0.1		0.0	0.2	0.1
Delay (s)	20.1	16.2		14.6	14.8		15.9	6.5		5.7	7.2	6.3
Level of Service	C	B		B	B		B	A		A	A	A
Approach Delay (s)		17.7			14.8			12.5			6.8	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	58.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	146	227	10	33	168	537	7	261	110
v/c Ratio	0.40	0.39	0.03	0.07	0.32	0.61	0.02	0.29	0.14
Control Delay	17.7	5.6	13.7	9.2	8.5	11.1	6.0	7.3	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.7	5.6	13.7	9.2	8.5	11.1	6.0	7.3	2.1
Queue Length 50th (m)	8.3	0.7	0.5	0.7	6.2	24.1	0.2	9.5	0.0
Queue Length 95th (m)	27.6	14.8	3.8	6.4	19.7	61.7	1.8	25.8	5.4
Internal Link Dist (m)		332.0		207.4		173.2		94.9	
Turn Bay Length (m)	60.0		15.0		110.0		15.0		35.0
Base Capacity (vph)	855	1067	694	1063	1001	1669	613	1674	1425
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.21	0.01	0.03	0.17	0.32	0.01	0.16	0.08

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	134	13	196	9	12	18	155	485	9	6	240	101
Future Volume (vph)	134	13	196	9	12	18	155	485	9	6	240	101
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.86		1.00	0.91		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1630	1474		1630	1560		1630	1711		1630	1716	1458
Flt Permitted	0.74	1.00		0.60	1.00		0.60	1.00		0.37	1.00	1.00
Satd. Flow (perm)	1262	1474		1026	1560		1026	1711		629	1716	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	146	14	213	10	13	20	168	527	10	7	261	110
RTOR Reduction (vph)	0	151	0	0	14	0	0	1	0	0	0	53
Lane Group Flow (vph)	146	76	0	10	19	0	168	536	0	7	261	57
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	11.0	11.0		11.0	11.0		20.9	20.9		20.9	20.9	20.9
Effective Green, g (s)	12.5	12.5		12.5	12.5		22.4	22.4		22.4	22.4	22.4
Actuated g/C Ratio	0.29	0.29		0.29	0.29		0.52	0.52		0.52	0.52	0.52
Clearance Time (s)	5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	367	429		298	454		535	893		328	896	761
v/s Ratio Prot		0.05			0.01			c0.31			0.15	
v/s Ratio Perm	c0.12			0.01			0.16			0.01		0.04
v/c Ratio	0.40	0.18		0.03	0.04		0.31	0.60		0.02	0.29	0.08
Uniform Delay, d1	12.2	11.4		10.9	10.9		5.9	7.1		5.0	5.8	5.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.7	0.2		0.0	0.0		0.3	1.1		0.0	0.2	0.0
Delay (s)	12.9	11.6		10.9	10.9		6.2	8.3		5.0	6.0	5.1
Level of Service	B	B		B	B		A	A		A	A	A
Approach Delay (s)		12.1			10.9			7.8			5.7	
Approach LOS		B			B			A			A	

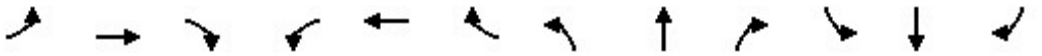
Intersection Summary			
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	42.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	226	370	9	38	385	486	18	710	262
v/c Ratio	0.89	0.65	0.11	0.11	0.88	0.41	0.04	0.85	0.33
Control Delay	72.2	11.9	37.2	31.8	38.5	5.9	9.7	28.3	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.2	11.9	37.2	31.8	38.5	5.9	9.7	28.3	5.0
Queue Length 50th (m)	35.6	3.8	1.2	4.7	34.1	26.8	1.5	94.3	7.3
Queue Length 95th (m)	#103.8	36.7	6.6	16.2	#102.7	39.8	4.4	138.2	18.5
Internal Link Dist (m)		332.0		207.4		173.2		94.9	
Turn Bay Length (m)	60.0		15.0		110.0		15.0		35.0
Base Capacity (vph)	253	570	84	345	445	1646	712	1465	1270
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.65	0.11	0.11	0.87	0.30	0.03	0.48	0.21

Intersection Summary

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



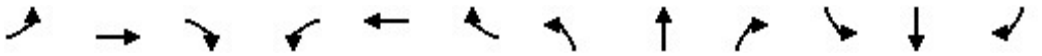
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	208	27	314	8	33	2	354	432	15	17	653	241
Future Volume (vph)	208	27	314	8	33	2	354	432	15	17	653	241
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0		2.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.86		1.00	0.99		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1630	1479		1630	1702		1630	1707		1630	1716	1458
Flt Permitted	0.73	1.00		0.24	1.00		0.15	1.00		0.49	1.00	1.00
Satd. Flow (perm)	1256	1479		418	1702		255	1707		835	1716	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	226	29	341	9	36	2	385	470	16	18	710	262
RTOR Reduction (vph)	0	272	0	0	2	0	0	2	0	0	0	89
Lane Group Flow (vph)	226	98	0	9	36	0	385	484	0	18	710	173
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	14.9	14.9		14.9	14.9		55.2	55.2		38.1	38.1	38.1
Effective Green, g (s)	16.4	16.4		16.4	16.4		55.2	56.7		39.6	39.6	39.6
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.68	0.70		0.49	0.49	0.49
Clearance Time (s)	5.5	5.5		5.5	5.5		2.0	5.5		5.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	253	299		84	344		429	1193		407	837	711
v/s Ratio Prot		0.07			0.02		c0.17	0.28			c0.41	
v/s Ratio Perm	c0.18			0.02			0.44			0.02		0.12
v/c Ratio	0.89	0.33		0.11	0.11		0.90	0.41		0.04	0.85	0.24
Uniform Delay, d1	31.5	27.6		26.4	26.4		18.9	5.1		10.9	18.1	12.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	30.1	0.6		0.6	0.1		20.8	0.2		0.0	8.0	0.2
Delay (s)	61.6	28.3		26.9	26.5		39.7	5.4		10.9	26.1	12.2
Level of Service	E	C		C	C		D	A		B	C	B
Approach Delay (s)		40.9			26.6			20.5			22.2	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	81.1	Sum of lost time (s)	10.0
Intersection Capacity Utilization	91.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	147	228	10	36	167	275	7	154	111
v/c Ratio	0.35	0.36	0.03	0.07	0.35	0.38	0.02	0.21	0.16
Control Delay	11.6	4.1	8.4	5.8	9.5	8.7	6.3	7.4	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.6	4.1	8.4	5.8	9.5	8.7	6.3	7.4	2.6
Queue Length 50th (m)	5.2	0.5	0.3	0.5	5.5	9.1	0.2	4.7	0.0
Queue Length 95th (m)	18.5	10.7	2.6	4.6	17.4	24.5	1.7	14.2	5.5
Internal Link Dist (m)		332.0		207.4		173.2		94.9	
Turn Bay Length (m)	60.0		15.0		110.0		15.0		35.0
Base Capacity (vph)	1090	1305	915	1352	1131	1709	1012	1716	1458
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.17	0.01	0.03	0.15	0.16	0.01	0.09	0.08

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	13	197	9	13	20	154	247	6	6	142	102
Future Volume (vph)	135	13	197	9	13	20	154	247	6	6	142	102
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.86		1.00	0.91		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1630	1474		1630	1558		1630	1709		1630	1716	1458
Flt Permitted	0.73	1.00		0.62	1.00		0.66	1.00		0.59	1.00	1.00
Satd. Flow (perm)	1259	1474		1057	1558		1131	1709		1013	1716	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	147	14	214	10	14	22	167	268	7	7	154	111
RTOR Reduction (vph)	0	143	0	0	15	0	0	2	0	0	0	64
Lane Group Flow (vph)	147	85	0	10	21	0	167	273	0	7	154	47
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	9.4	9.4		9.4	9.4		12.4	12.4		12.4	12.4	12.4
Effective Green, g (s)	10.9	10.9		10.9	10.9		13.9	13.9		13.9	13.9	13.9
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.42	0.42		0.42	0.42	0.42
Clearance Time (s)	5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	418	489		351	517		479	724		429	727	617
v/s Ratio Prot		0.06			0.01			c0.16			0.09	
v/s Ratio Perm	c0.12			0.01			0.15			0.01		0.03
v/c Ratio	0.35	0.17		0.03	0.04		0.35	0.38		0.02	0.21	0.08
Uniform Delay, d1	8.3	7.8		7.4	7.4		6.4	6.5		5.5	6.0	5.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.5	0.2		0.0	0.0		0.4	0.3		0.0	0.1	0.1
Delay (s)	8.8	7.9		7.4	7.4		6.8	6.8		5.5	6.1	5.7
Level of Service	A	A		A	A		A	A		A	A	A
Approach Delay (s)		8.3			7.4			6.8			5.9	
Approach LOS		A			A			A			A	

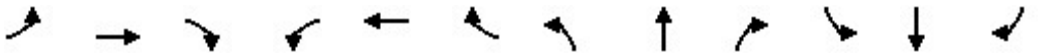
Intersection Summary			
HCM 2000 Control Delay	7.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	32.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	227	369	5	40	385	232	20	368	264
v/c Ratio	0.68	0.55	0.03	0.08	0.84	0.24	0.03	0.38	0.28
Control Delay	36.5	7.7	22.6	20.8	30.0	7.4	6.5	8.8	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.5	7.7	22.6	20.8	30.0	7.4	6.5	8.8	1.8
Queue Length 50th (m)	24.6	2.6	0.5	3.3	34.5	11.9	0.9	21.5	0.0
Queue Length 95th (m)	#69.7	27.9	3.4	12.9	#90.1	26.0	3.8	43.7	8.3
Internal Link Dist (m)		332.0		207.4		173.2		94.9	
Turn Bay Length (m)	60.0		15.0		110.0		15.0		35.0
Base Capacity (vph)	518	840	247	749	711	1437	889	1449	1272
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.44	0.02	0.05	0.54	0.16	0.02	0.25	0.21

Intersection Summary

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



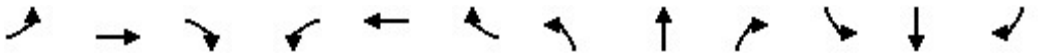
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	209	28	312	5	35	2	354	201	13	18	339	243
Future Volume (vph)	209	28	312	5	35	2	354	201	13	18	339	243
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.5	4.0		4.0	4.0		5.5	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.86		1.00	0.99		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1630	1479		1630	1703		1630	1700		1630	1716	1458
Flt Permitted	0.73	1.00		0.33	1.00		0.50	1.00		0.61	1.00	1.00
Satd. Flow (perm)	1254	1479		562	1703		854	1700		1053	1716	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	227	30	339	5	38	2	385	218	14	20	368	264
RTOR Reduction (vph)	0	238	0	0	1	0	0	3	0	0	0	112
Lane Group Flow (vph)	227	131	0	5	39	0	385	229	0	20	368	152
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	17.1	17.1		17.1	17.1		34.5	34.5		34.5	34.5	34.5
Effective Green, g (s)	17.1	18.6		18.6	18.6		34.5	36.0		36.0	36.0	36.0
Actuated g/C Ratio	0.27	0.30		0.30	0.30		0.55	0.58		0.58	0.58	0.58
Clearance Time (s)	5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	342	439		166	506		470	977		605	986	838
v/s Ratio Prot		0.09			0.02			0.13			0.21	
v/s Ratio Perm	c0.18			0.01			c0.45			0.02		0.10
v/c Ratio	0.66	0.30		0.03	0.08		0.82	0.23		0.03	0.37	0.18
Uniform Delay, d1	20.2	17.0		15.6	15.8		11.5	6.5		5.8	7.2	6.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.8	0.4		0.1	0.1		10.7	0.1		0.0	0.2	0.1
Delay (s)	25.0	17.3		15.7	15.9		22.2	6.7		5.8	7.4	6.4
Level of Service	C	B		B	B		C	A		A	A	A
Approach Delay (s)		20.3			15.9			16.3			7.0	
Approach LOS		C			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	62.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	147	229	11	36	171	560	7	270	111
v/c Ratio	0.41	0.40	0.04	0.08	0.32	0.62	0.02	0.30	0.14
Control Delay	18.4	5.7	14.3	9.4	8.5	11.5	6.0	7.4	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.4	5.7	14.3	9.4	8.5	11.5	6.0	7.4	2.0
Queue Length 50th (m)	8.6	0.8	0.6	0.8	6.4	26.0	0.2	10.1	0.0
Queue Length 95th (m)	28.8	15.1	4.2	6.9	20.4	66.6	1.9	27.2	5.5
Internal Link Dist (m)		332.0		207.4		173.2		94.9	
Turn Bay Length (m)	60.0		15.0		110.0		15.0		35.0
Base Capacity (vph)	833	1048	667	1038	986	1658	581	1663	1417
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.22	0.02	0.03	0.17	0.34	0.01	0.16	0.08

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	13	198	10	13	20	157	506	9	6	248	102
Future Volume (vph)	135	13	198	10	13	20	157	506	9	6	248	102
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.86		1.00	0.91		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1630	1474		1630	1558		1630	1711		1630	1716	1458
Flt Permitted	0.73	1.00		0.59	1.00		0.59	1.00		0.35	1.00	1.00
Satd. Flow (perm)	1259	1474		1010	1558		1018	1711		600	1716	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	147	14	215	11	14	22	171	550	10	7	270	111
RTOR Reduction (vph)	0	153	0	0	16	0	0	1	0	0	0	52
Lane Group Flow (vph)	147	76	0	11	20	0	171	559	0	7	270	59
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	11.2	11.2		11.2	11.2		21.8	21.8		21.8	21.8	21.8
Effective Green, g (s)	12.7	12.7		12.7	12.7		23.3	23.3		23.3	23.3	23.3
Actuated g/C Ratio	0.29	0.29		0.29	0.29		0.53	0.53		0.53	0.53	0.53
Clearance Time (s)	5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	363	425		291	449		539	906		317	908	772
v/s Ratio Prot		0.05			0.01			c0.33			0.16	
v/s Ratio Perm	c0.12			0.01			0.17			0.01		0.04
v/c Ratio	0.40	0.18		0.04	0.05		0.32	0.62		0.02	0.30	0.08
Uniform Delay, d1	12.6	11.7		11.3	11.3		5.9	7.2		4.9	5.8	5.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.7	0.2		0.1	0.0		0.3	1.3		0.0	0.2	0.0
Delay (s)	13.3	11.9		11.3	11.3		6.2	8.5		5.0	6.0	5.1
Level of Service	B	B		B	B		A	A		A	A	A
Approach Delay (s)		12.5			11.3			8.0			5.7	
Approach LOS		B			B			A			A	

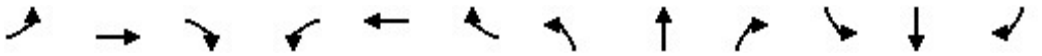
Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	44.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	227	373	10	40	388	500	20	741	264
v/c Ratio	0.89	0.66	0.13	0.12	0.89	0.41	0.05	0.88	0.33
Control Delay	75.1	12.9	42.6	35.2	44.7	6.2	11.1	33.4	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Total Delay	75.1	12.9	42.6	35.2	44.7	6.3	11.1	33.4	6.5
Queue Length 50th (m)	40.1	5.3	1.5	5.6	44.1	31.0	1.8	116.0	11.0
Queue Length 95th (m)	#113.2	41.4	7.8	18.2	#121.8	44.5	5.3	165.8	24.0
Internal Link Dist (m)		332.0		207.4		173.2		94.9	
Turn Bay Length (m)	60.0		15.0		110.0		15.0		35.0
Base Capacity (vph)	254	568	75	346	444	1705	788	1642	1401
Starvation Cap Reductn	0	0	0	0	0	304	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.66	0.13	0.12	0.87	0.36	0.03	0.45	0.19

Intersection Summary

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

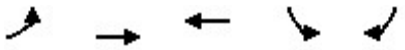


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	209	28	316	9	35	2	357	444	16	18	682	243
Future Volume (vph)	209	28	316	9	35	2	357	444	16	18	682	243
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0		2.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.86		1.00	0.99		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1630	1479		1630	1703		1630	1707		1630	1716	1458
Flt Permitted	0.73	1.00		0.22	1.00		0.13	1.00		0.48	1.00	1.00
Satd. Flow (perm)	1254	1479		373	1703		216	1707		824	1716	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	227	30	343	10	38	2	388	483	17	20	741	264
RTOR Reduction (vph)	0	269	0	0	2	0	0	1	0	0	0	76
Lane Group Flow (vph)	227	104	0	10	38	0	388	499	0	20	741	188
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	16.9	16.9		16.9	16.9		62.9	62.9		43.1	43.1	43.1
Effective Green, g (s)	18.4	18.4		18.4	18.4		62.9	64.4		44.6	44.6	44.6
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.69	0.71		0.49	0.49	0.49
Clearance Time (s)	5.5	5.5		5.5	5.5		2.0	5.5		5.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	254	299		75	345		426	1210		404	842	716
v/s Ratio Prot		0.07			0.02		c0.18	0.29			c0.43	
v/s Ratio Perm	c0.18			0.03			0.45			0.02		0.13
v/c Ratio	0.89	0.35		0.13	0.11		0.91	0.41		0.05	0.88	0.26
Uniform Delay, d1	35.2	31.1		29.7	29.5		23.5	5.4		12.0	20.7	13.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	30.1	0.7		0.8	0.1		23.3	0.2		0.1	10.6	0.2
Delay (s)	65.4	31.8		30.5	29.7		46.9	5.7		12.1	31.3	13.7
Level of Service	E	C		C	C		D	A		B	C	B
Approach Delay (s)		44.5			29.8			23.7			26.4	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	90.8	Sum of lost time (s)	10.0
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		

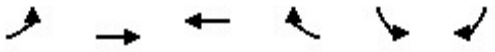
c Critical Lane Group

LYONS CREEK ROAD AT STANLEY AVENUE



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	350	140	266	42	321
v/c Ratio	0.63	0.15	0.29	0.11	0.54
Control Delay	12.1	4.8	5.0	15.2	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.1	4.8	5.0	15.2	6.6
Queue Length 50th (m)	11.7	3.4	6.0	1.9	0.0
Queue Length 95th (m)	40.9	11.5	19.0	10.6	17.3
Internal Link Dist (m)		347.1	94.8	467.7	
Turn Bay Length (m)	100.0			30.0	
Base Capacity (vph)	1021	1716	1666	938	975
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.34	0.08	0.16	0.04	0.33

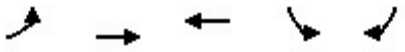
Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	322	129	192	52	39	295
Future Volume (vph)	322	129	192	52	39	295
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.97		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1630	1716	1666		1630	1458
Flt Permitted	0.60	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1021	1716	1666		1630	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	350	140	209	57	42	321
RTOR Reduction (vph)	0	0	15	0	0	245
Lane Group Flow (vph)	350	140	251	0	42	76
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		4	8			
Permitted Phases	4				6	6
Actuated Green, G (s)	19.6	19.6	19.6		7.6	7.6
Effective Green, g (s)	21.1	21.1	21.1		9.1	9.1
Actuated g/C Ratio	0.55	0.55	0.55		0.24	0.24
Clearance Time (s)	5.5	5.5	5.5		5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	563	947	920		388	347
v/s Ratio Prot		0.08	0.15			
v/s Ratio Perm	c0.34				0.03	c0.05
v/c Ratio	0.62	0.15	0.27		0.11	0.22
Uniform Delay, d1	5.8	4.2	4.5		11.4	11.7
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.1	0.1	0.2		0.1	0.3
Delay (s)	8.0	4.2	4.7		11.5	12.0
Level of Service	A	A	A		B	B
Approach Delay (s)		6.9	4.7		12.0	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	38.2	Sum of lost time (s)	9.5
Intersection Capacity Utilization	47.9%	ICU Level of Service	A
Analysis Period (min)	15		

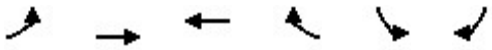
c Critical Lane Group



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	514	237	309	120	548
v/c Ratio	0.65	0.20	0.72	0.38	0.78
Control Delay	11.5	5.2	34.2	29.0	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	11.5	5.2	34.2	29.0	11.5
Queue Length 50th (m)	20.7	8.2	35.8	15.0	0.0
Queue Length 95th (m)	82.0	27.6	#84.3	30.0	27.4
Internal Link Dist (m)		347.1	94.8	467.7	
Turn Bay Length (m)	100.0			30.0	
Base Capacity (vph)	864	1365	550	732	935
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.59	0.17	0.56	0.16	0.59

Intersection Summary

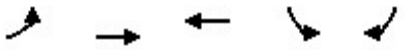
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	473	218	212	73	110	504
Future Volume (vph)	473	218	212	73	110	504
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	4.0	4.0		4.0	5.5
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.97		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1630	1716	1656		1630	1458
Flt Permitted	0.31	1.00	1.00		0.95	1.00
Satd. Flow (perm)	530	1716	1656		1630	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	514	237	230	79	120	548
RTOR Reduction (vph)	0	0	13	0	0	455
Lane Group Flow (vph)	514	237	296	0	120	93
Turn Type	pm+pt	NA	NA		Perm	Perm
Protected Phases	7	4	8			
Permitted Phases	4				6	6
Actuated Green, G (s)	44.5	44.5	15.7		11.4	11.4
Effective Green, g (s)	46.0	46.0	17.2		12.9	11.4
Actuated g/C Ratio	0.69	0.69	0.26		0.19	0.17
Clearance Time (s)	4.5	5.5	5.5		5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	788	1179	425		314	248
v/s Ratio Prot	c0.25	0.14	0.18			
v/s Ratio Perm	c0.20				c0.07	0.06
v/c Ratio	0.65	0.20	0.70		0.38	0.38
Uniform Delay, d1	6.1	3.8	22.5		23.5	24.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.9	0.1	4.9		0.8	1.0
Delay (s)	8.1	3.9	27.4		24.3	25.6
Level of Service	A	A	C		C	C
Approach Delay (s)		6.7	27.4		25.3	
Approach LOS		A	C		C	

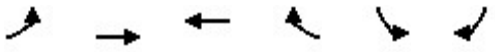
Intersection Summary			
HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	66.9	Sum of lost time (s)	12.5
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	350	143	268	45	321
v/c Ratio	0.78	0.18	0.34	0.07	0.42
Control Delay	25.0	8.4	8.7	14.7	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	25.0	8.4	8.7	14.7	4.4
Queue Length 50th (m)	28.0	8.0	13.9	2.8	0.0
Queue Length 95th (m)	55.7	15.4	25.4	11.5	17.0
Internal Link Dist (m)		347.1	94.8	467.7	
Turn Bay Length (m)	100.0			30.0	
Base Capacity (vph)	948	1671	1624	635	764
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.37	0.09	0.17	0.07	0.42

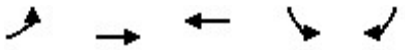
Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	322	132	193	53	41	295
Future Volume (vph)	322	132	193	53	41	295
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.97		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1630	1716	1666		1630	1458
Flt Permitted	0.57	1.00	1.00		0.95	1.00
Satd. Flow (perm)	973	1716	1666		1630	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	350	143	210	58	45	321
RTOR Reduction (vph)	0	0	18	0	0	196
Lane Group Flow (vph)	350	143	250	0	45	125
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		4	8			
Permitted Phases	4				6	6
Actuated Green, G (s)	24.0	24.0	24.0		20.0	20.0
Effective Green, g (s)	25.5	25.5	25.5		21.5	21.5
Actuated g/C Ratio	0.46	0.46	0.46		0.39	0.39
Clearance Time (s)	5.5	5.5	5.5		5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	451	795	772		637	569
v/s Ratio Prot		0.08	0.15			
v/s Ratio Perm	c0.36				0.03	c0.09
v/c Ratio	0.78	0.18	0.32		0.07	0.22
Uniform Delay, d1	12.4	8.6	9.3		10.5	11.2
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	8.2	0.1	0.2		0.2	0.9
Delay (s)	20.5	8.7	9.6		10.7	12.1
Level of Service	C	A	A		B	B
Approach Delay (s)		17.1	9.6		11.9	
Approach LOS		B	A		B	

Intersection Summary			
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		

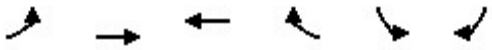
c Critical Lane Group



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	514	238	316	121	548
v/c Ratio	0.65	0.20	0.72	0.39	0.78
Control Delay	11.8	5.2	34.7	29.2	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	11.8	5.2	34.7	29.2	11.4
Queue Length 50th (m)	21.0	8.3	37.0	15.2	0.0
Queue Length 95th (m)	83.5	27.7	#87.5	30.2	27.6
Internal Link Dist (m)		347.1	94.8	467.7	
Turn Bay Length (m)	100.0			30.0	
Base Capacity (vph)	857	1361	551	720	929
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.60	0.17	0.57	0.17	0.59

Intersection Summary

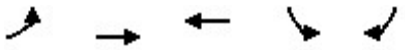
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	473	219	215	75	111	504
Future Volume (vph)	473	219	215	75	111	504
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	4.0	4.0		4.0	5.5
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.96		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1630	1716	1656		1630	1458
Flt Permitted	0.30	1.00	1.00		0.95	1.00
Satd. Flow (perm)	518	1716	1656		1630	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	514	238	234	82	121	548
RTOR Reduction (vph)	0	0	13	0	0	454
Lane Group Flow (vph)	514	238	303	0	121	94
Turn Type	pm+pt	NA	NA		Perm	Perm
Protected Phases	7	4	8			
Permitted Phases	4				6	6
Actuated Green, G (s)	44.9	44.9	16.0		11.5	11.5
Effective Green, g (s)	46.4	46.4	17.5		13.0	11.5
Actuated g/C Ratio	0.69	0.69	0.26		0.19	0.17
Clearance Time (s)	4.5	5.5	5.5		5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	783	1181	429		314	248
v/s Ratio Prot	c0.25	0.14	0.18			
v/s Ratio Perm	c0.20				c0.07	0.06
v/c Ratio	0.66	0.20	0.71		0.39	0.38
Uniform Delay, d1	6.2	3.8	22.6		23.7	24.8
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.0	0.1	5.2		0.8	1.0
Delay (s)	8.2	3.9	27.8		24.5	25.7
Level of Service	A	A	C		C	C
Approach Delay (s)		6.9	27.8		25.5	
Approach LOS		A	C		C	

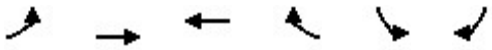
Intersection Summary			
HCM 2000 Control Delay	17.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	67.4	Sum of lost time (s)	12.5
Intersection Capacity Utilization	62.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	358	147	276	42	324
v/c Ratio	0.64	0.16	0.30	0.11	0.55
Control Delay	12.4	4.8	5.0	15.8	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.4	4.8	5.0	15.8	6.8
Queue Length 50th (m)	12.2	3.6	6.3	2.0	0.0
Queue Length 95th (m)	43.2	12.1	20.1	11.0	17.8
Internal Link Dist (m)		347.1	94.8	467.7	
Turn Bay Length (m)	100.0			30.0	
Base Capacity (vph)	1007	1707	1658	921	965
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.36	0.09	0.17	0.05	0.34

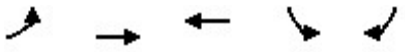
Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	329	135	200	54	39	298
Future Volume (vph)	329	135	200	54	39	298
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.97		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1630	1716	1666		1630	1458
Flt Permitted	0.59	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1012	1716	1666		1630	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	358	147	217	59	42	324
RTOR Reduction (vph)	0	0	15	0	0	248
Lane Group Flow (vph)	358	147	261	0	42	76
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		4	8			
Permitted Phases	4				6	6
Actuated Green, G (s)	20.4	20.4	20.4		7.7	7.7
Effective Green, g (s)	21.9	21.9	21.9		9.2	9.2
Actuated g/C Ratio	0.56	0.56	0.56		0.24	0.24
Clearance Time (s)	5.5	5.5	5.5		5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	566	961	933		383	343
v/s Ratio Prot		0.09	0.16			
v/s Ratio Perm	c0.35				0.03	c0.05
v/c Ratio	0.63	0.15	0.28		0.11	0.22
Uniform Delay, d1	5.9	4.1	4.5		11.7	12.1
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.3	0.1	0.2		0.1	0.3
Delay (s)	8.2	4.2	4.7		11.9	12.4
Level of Service	A	A	A		B	B
Approach Delay (s)		7.0	4.7		12.3	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	8.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	39.1	Sum of lost time (s)	9.5
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		

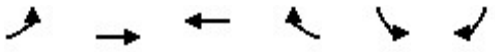
c Critical Lane Group



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	518	246	322	123	557
v/c Ratio	0.66	0.21	0.73	0.39	0.78
Control Delay	12.5	5.3	34.8	29.5	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.5	5.3	34.8	29.5	11.5
Queue Length 50th (m)	22.1	8.7	38.0	15.6	0.0
Queue Length 95th (m)	86.8	29.1	#89.0	31.0	28.0
Internal Link Dist (m)		347.1	94.8	467.7	
Turn Bay Length (m)	100.0			30.0	
Base Capacity (vph)	852	1368	568	696	921
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.61	0.18	0.57	0.18	0.60

Intersection Summary

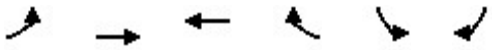
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	477	226	221	75	113	512
Future Volume (vph)	477	226	221	75	113	512
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	4.0	4.0		4.0	5.5
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.97		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1630	1716	1657		1630	1458
Flt Permitted	0.30	1.00	1.00		0.95	1.00
Satd. Flow (perm)	508	1716	1657		1630	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	518	246	240	82	123	557
RTOR Reduction (vph)	0	0	13	0	0	462
Lane Group Flow (vph)	518	246	309	0	123	95
Turn Type	pm+pt	NA	NA		Perm	Perm
Protected Phases	7	4	8			
Permitted Phases	4				6	6
Actuated Green, G (s)	45.3	45.3	16.3		11.6	11.6
Effective Green, g (s)	46.8	46.8	17.8		13.1	11.6
Actuated g/C Ratio	0.69	0.69	0.26		0.19	0.17
Clearance Time (s)	4.5	5.5	5.5		5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	779	1182	434		314	249
v/s Ratio Prot	c0.25	0.14	0.19			
v/s Ratio Perm	c0.20				c0.08	0.07
v/c Ratio	0.66	0.21	0.71		0.39	0.38
Uniform Delay, d1	6.5	3.8	22.7		23.9	25.0
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.2	0.1	5.4		0.8	1.0
Delay (s)	8.7	3.9	28.2		24.7	26.0
Level of Service	A	A	C		C	C
Approach Delay (s)		7.2	28.2		25.7	
Approach LOS		A	C		C	

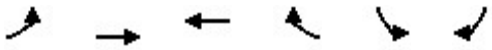
Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	67.9	Sum of lost time (s)	12.5
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	387	232	399	101	60	393
v/c Ratio	0.69	0.23	0.78	0.20	0.11	0.53
Control Delay	17.8	8.7	38.8	5.5	24.7	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.8	8.7	38.8	5.5	24.7	6.0
Queue Length 50th (m)	30.5	17.3	63.5	0.0	7.3	0.0
Queue Length 95th (m)	62.7	27.9	95.5	10.2	19.7	23.7
Internal Link Dist (m)		347.1	94.8		467.7	
Turn Bay Length (m)	100.0			50.0	30.0	
Base Capacity (vph)	597	1334	800	733	526	736
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.17	0.50	0.14	0.11	0.53

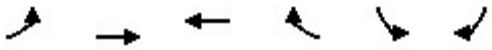
Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	356	213	367	93	55	362
Future Volume (vph)	356	213	367	93	55	362
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	2.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1630	1716	1716	1458	1630	1458
Flt Permitted	0.24	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	407	1716	1716	1458	1630	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	387	232	399	101	60	393
RTOR Reduction (vph)	0	0	0	71	0	266
Lane Group Flow (vph)	387	232	399	30	60	127
Turn Type	pm+pt	NA	NA	Perm	Perm	Perm
Protected Phases	7	4	8			
Permitted Phases	4			8	6	6
Actuated Green, G (s)	47.8	47.8	23.7	23.7	25.9	25.9
Effective Green, g (s)	49.3	49.3	25.2	25.2	27.4	27.4
Actuated g/C Ratio	0.58	0.58	0.30	0.30	0.32	0.32
Clearance Time (s)	3.5	5.5	5.5	5.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	556	998	510	433	527	471
v/s Ratio Prot	c0.18	0.14	c0.23			
v/s Ratio Perm	0.22			0.02	0.04	c0.09
v/c Ratio	0.70	0.23	0.78	0.07	0.11	0.27
Uniform Delay, d1	12.0	8.6	27.2	21.3	20.1	21.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.8	0.1	7.7	0.1	0.4	1.4
Delay (s)	15.8	8.7	34.9	21.4	20.6	22.6
Level of Service	B	A	C	C	C	C
Approach Delay (s)		13.1	32.2		22.4	
Approach LOS		B	C		C	

Intersection Summary			
HCM 2000 Control Delay	21.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	84.7	Sum of lost time (s)	11.5
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		

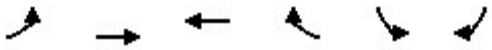
c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	627	532	461	116	173	628
v/c Ratio	0.78	0.40	0.84	0.21	0.86	0.76
Control Delay	19.8	3.7	38.9	5.0	75.3	14.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.8	3.7	38.9	5.0	75.3	14.4
Queue Length 50th (m)	52.1	18.9	70.0	0.0	28.2	26.9
Queue Length 95th (m)	110.6	28.7	106.9	10.5	#75.5	85.0
Internal Link Dist (m)		347.1	94.8		467.7	
Turn Bay Length (m)	100.0			50.0	30.0	
Base Capacity (vph)	922	1556	803	744	202	931
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.34	0.57	0.16	0.86	0.67

Intersection Summary

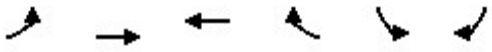
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	577	489	424	107	159	578
Future Volume (vph)	577	489	424	107	159	578
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	2.0	4.0	4.0	4.0	4.0	2.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1630	1716	1716	1458	1630	1458
Flt Permitted	0.19	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	322	1716	1716	1458	1630	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	627	532	461	116	173	628
RTOR Reduction (vph)	0	0	0	78	0	223
Lane Group Flow (vph)	627	532	461	38	173	405
Turn Type	pm+pt	NA	NA	Perm	Perm	Over
Protected Phases	7	4	8			7
Permitted Phases	4			8	6	
Actuated Green, G (s)	56.5	56.5	22.9	22.9	7.8	31.6
Effective Green, g (s)	56.5	58.0	24.4	24.4	9.3	31.6
Actuated g/C Ratio	0.75	0.77	0.32	0.32	0.12	0.42
Clearance Time (s)	2.0	5.5	5.5	5.5	5.5	2.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	790	1321	556	472	201	611
v/s Ratio Prot	c0.33	0.31	c0.27			0.28
v/s Ratio Perm	0.26			0.03	c0.11	
v/c Ratio	0.79	0.40	0.83	0.08	0.86	0.66
Uniform Delay, d1	12.7	2.9	23.5	17.7	32.4	17.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.5	0.2	9.9	0.1	29.3	2.7
Delay (s)	18.2	3.1	33.4	17.7	61.6	20.3
Level of Service	B	A	C	B	E	C
Approach Delay (s)		11.2	30.3		29.2	
Approach LOS		B	C		C	

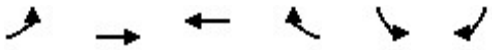
Intersection Summary			
HCM 2000 Control Delay	21.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	75.3	Sum of lost time (s)	11.5
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	379	162	240	63	45	333
v/c Ratio	0.59	0.18	0.64	0.17	0.08	0.45
Control Delay	13.4	9.2	35.2	7.9	19.1	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.4	9.2	35.2	7.9	19.1	4.8
Queue Length 50th (m)	29.6	11.5	34.1	0.0	4.6	0.0
Queue Length 95th (m)	47.1	20.5	56.7	9.0	12.9	18.3
Internal Link Dist (m)		347.1	94.8		467.7	
Turn Bay Length (m)	100.0			50.0	30.0	
Base Capacity (vph)	677	1486	896	791	589	739
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.11	0.27	0.08	0.08	0.45

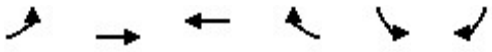
Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	349	149	221	58	41	306
Future Volume (vph)	349	149	221	58	41	306
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	2.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1630	1716	1716	1458	1630	1458
Flt Permitted	0.38	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	650	1716	1716	1458	1630	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	379	162	240	63	45	333
RTOR Reduction (vph)	0	0	0	49	0	212
Lane Group Flow (vph)	379	162	240	14	45	121
Turn Type	pm+pt	NA	NA	Perm	Perm	Perm
Protected Phases	7	4	8			
Permitted Phases	4			8	6	6
Actuated Green, G (s)	38.6	38.6	15.1	15.1	25.8	25.8
Effective Green, g (s)	40.1	40.1	16.6	16.6	27.3	27.3
Actuated g/C Ratio	0.53	0.53	0.22	0.22	0.36	0.36
Clearance Time (s)	3.5	5.5	5.5	5.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	625	912	377	320	590	527
v/s Ratio Prot	c0.17	0.09	c0.14			
v/s Ratio Perm	0.15			0.01	0.03	c0.08
v/c Ratio	0.61	0.18	0.64	0.04	0.08	0.23
Uniform Delay, d1	11.3	9.1	26.7	23.1	15.8	16.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.7	0.1	3.5	0.1	0.3	1.0
Delay (s)	13.0	9.2	30.2	23.2	16.0	17.7
Level of Service	B	A	C	C	B	B
Approach Delay (s)		11.8	28.7		17.5	
Approach LOS		B	C		B	

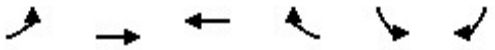
Intersection Summary			
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	75.4	Sum of lost time (s)	11.5
Intersection Capacity Utilization	47.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	532	272	265	86	133	580
v/c Ratio	0.61	0.21	0.59	0.19	0.41	0.62
Control Delay	8.9	4.3	29.4	6.8	31.3	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.9	4.3	29.4	6.8	31.3	5.2
Queue Length 50th (m)	22.9	9.7	32.0	0.0	16.0	0.0
Queue Length 95th (m)	65.8	24.2	62.2	10.3	37.2	24.0
Internal Link Dist (m)		347.1	94.8		467.7	
Turn Bay Length (m)	100.0			50.0	30.0	
Base Capacity (vph)	1015	1517	823	744	608	1056
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.18	0.32	0.12	0.22	0.55

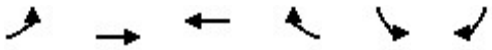
Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	489	250	244	79	122	534
Future Volume (vph)	489	250	244	79	122	534
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.5	4.0	4.0	4.0	4.0	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1630	1716	1716	1458	1630	1458
Flt Permitted	0.36	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	610	1716	1716	1458	1630	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	532	272	265	86	133	580
RTOR Reduction (vph)	0	0	0	63	0	346
Lane Group Flow (vph)	532	272	265	23	133	234
Turn Type	pm+pt	NA	NA	Perm	Perm	Over
Protected Phases	7	4	8			7
Permitted Phases	4			8	6	
Actuated Green, G (s)	44.9	44.9	15.5	15.5	8.4	25.9
Effective Green, g (s)	44.9	46.4	17.0	17.0	9.9	25.9
Actuated g/C Ratio	0.70	0.72	0.26	0.26	0.15	0.40
Clearance Time (s)	3.5	5.5	5.5	5.5	5.5	3.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	836	1238	453	385	250	587
v/s Ratio Prot	c0.26	0.16	0.15			0.16
v/s Ratio Perm	c0.19			0.02	c0.08	
v/c Ratio	0.64	0.22	0.58	0.06	0.53	0.40
Uniform Delay, d1	5.3	3.0	20.6	17.7	25.1	13.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.6	0.1	1.9	0.1	2.2	0.4
Delay (s)	6.9	3.1	22.5	17.7	27.2	14.1
Level of Service	A	A	C	B	C	B
Approach Delay (s)		5.6	21.3		16.6	
Approach LOS		A	C		B	

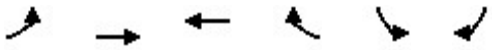
Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	64.3	Sum of lost time (s)	13.0
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	409	247	422	105	62	402
v/c Ratio	0.76	0.25	0.81	0.20	0.12	0.54
Control Delay	30.3	8.3	39.9	5.6	25.6	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.3	8.3	39.9	5.6	25.6	6.3
Queue Length 50th (m)	32.8	17.3	62.7	0.0	7.0	0.0
Queue Length 95th (m)	60.0	27.6	104.3	10.5	20.9	25.2
Internal Link Dist (m)		347.1	94.8		467.7	
Turn Bay Length (m)	100.0			50.0	30.0	
Base Capacity (vph)	686	1435	830	759	518	738
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.17	0.51	0.14	0.12	0.54

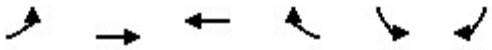
Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	376	227	388	97	57	370
Future Volume (vph)	376	227	388	97	57	370
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1630	1716	1716	1458	1630	1458
Flt Permitted	0.28	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	474	1716	1716	1458	1630	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	409	247	422	105	62	402
RTOR Reduction (vph)	0	0	0	73	0	274
Lane Group Flow (vph)	409	247	422	32	62	128
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases	4			8		6
Actuated Green, G (s)	48.8	45.3	22.9	22.9	24.2	24.2
Effective Green, g (s)	46.8	46.8	24.4	24.4	25.7	25.7
Actuated g/C Ratio	0.58	0.58	0.30	0.30	0.32	0.32
Clearance Time (s)	2.0	5.5	5.5	5.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	539	997	520	441	520	465
v/s Ratio Prot	c0.17	0.14	c0.25		0.04	
v/s Ratio Perm	0.27			0.02		c0.09
v/c Ratio	0.76	0.25	0.81	0.07	0.12	0.28
Uniform Delay, d1	19.9	8.2	25.9	20.0	19.4	20.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.1	0.1	9.3	0.1	0.5	1.5
Delay (s)	26.0	8.4	35.3	20.1	19.9	21.9
Level of Service	C	A	D	C	B	C
Approach Delay (s)		19.4	32.2		21.6	
Approach LOS		B	C		C	

Intersection Summary			
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	80.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

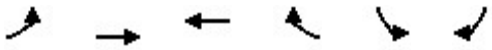
c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	627	532	461	116	173	652
v/c Ratio	0.78	0.40	0.83	0.21	0.86	0.79
Control Delay	19.6	3.7	38.1	5.0	76.0	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.6	3.7	38.1	5.0	76.0	16.3
Queue Length 50th (m)	52.1	18.9	70.0	0.0	28.5	32.1
Queue Length 95th (m)	109.5	28.7	106.9	10.5	#75.5	#95.2
Internal Link Dist (m)		347.1	94.8		467.7	
Turn Bay Length (m)	100.0			50.0	30.0	
Base Capacity (vph)	921	1551	800	741	201	929
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.34	0.58	0.16	0.86	0.70

Intersection Summary

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

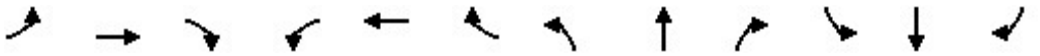


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	577	489	424	107	159	600
Future Volume (vph)	577	489	424	107	159	600
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	2.0	4.0	4.0	4.0	4.0	2.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1630	1716	1716	1458	1630	1458
Flt Permitted	0.19	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	328	1716	1716	1458	1630	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	627	532	461	116	173	652
RTOR Reduction (vph)	0	0	0	78	0	223
Lane Group Flow (vph)	627	532	461	38	173	429
Turn Type	pm+pt	NA	NA	Perm	Perm	Over
Protected Phases	7	4	8			7
Permitted Phases	4			8	6	
Actuated Green, G (s)	56.8	56.8	23.2	23.2	7.8	31.6
Effective Green, g (s)	56.8	58.3	24.7	24.7	9.3	31.6
Actuated g/C Ratio	0.75	0.77	0.33	0.33	0.12	0.42
Clearance Time (s)	2.0	5.5	5.5	5.5	5.5	2.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	790	1323	560	476	200	609
v/s Ratio Prot	c0.33	0.31	c0.27			0.29
v/s Ratio Perm	0.26			0.03	c0.11	
v/c Ratio	0.79	0.40	0.82	0.08	0.86	0.70
Uniform Delay, d1	12.6	2.9	23.4	17.6	32.5	18.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.5	0.2	9.5	0.1	30.0	3.7
Delay (s)	18.1	3.1	33.0	17.7	62.5	21.8
Level of Service	B	A	C	B	E	C
Approach Delay (s)		11.2	29.9		30.4	
Approach LOS		B	C		C	

Intersection Summary			
HCM 2000 Control Delay	21.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	75.6	Sum of lost time (s)	11.5
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

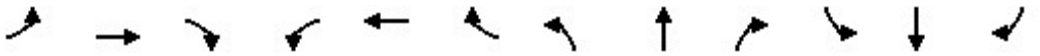
ROAD 1/ROAD 2 AT STANLEY AVENUE



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	0	2	0	0	0	1	380	0	0	335	23
Future Volume (Veh/h)	71	0	2	0	0	0	1	380	0	0	335	23
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	77	0	2	0	0	0	1	413	0	0	364	25
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)											197	
pX, platoon unblocked												
vC, conflicting volume	792	792	376	794	804	413	389			413		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	792	792	376	794	804	413	389			413		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	75	100	100	100	100	100	100			100		
cM capacity (veh/h)	307	321	670	305	316	639	1170			1146		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	79	0	414	389
Volume Left	77	0	1	0
Volume Right	2	0	0	25
cSH	311	1700	1170	1146
Volume to Capacity	0.25	0.00	0.00	0.00
Queue Length 95th (m)	7.9	0.0	0.0	0.0
Control Delay (s)	20.5	0.0	0.0	0.0
Lane LOS	C	A	A	
Approach Delay (s)	20.5	0.0	0.0	0.0
Approach LOS	C	A		

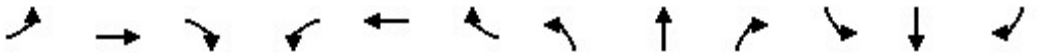
Intersection Summary				
Average Delay	1.8			
Intersection Capacity Utilization	31.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	0	1	0	0	0	2	550	0	0	619	79
Future Volume (Veh/h)	47	0	1	0	0	0	2	550	0	0	619	79
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	51	0	1	0	0	0	2	598	0	0	673	86
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)											197	
pX, platoon unblocked	0.89	0.89	0.89	0.89	0.89		0.89					
vC, conflicting volume	1318	1318	716	1319	1361	598	759			598		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1296	1296	622	1297	1344	598	670			598		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	59	100	100	100	100	100	100			100		
cM capacity (veh/h)	124	144	435	123	135	502	822			979		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	52	0	600	759
Volume Left	51	0	2	0
Volume Right	1	0	0	86
cSH	126	1700	822	979
Volume to Capacity	0.41	0.00	0.00	0.00
Queue Length 95th (m)	14.2	0.0	0.1	0.0
Control Delay (s)	52.6	0.0	0.1	0.0
Lane LOS	F	A	A	
Approach Delay (s)	52.6	0.0	0.1	0.0
Approach LOS	F	A		

Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	50.6%	ICU Level of Service	A	
Analysis Period (min)	15			



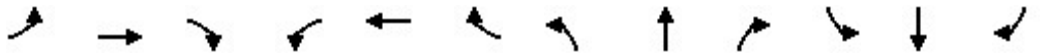
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	0	2	36	0	124	1	453	13	41	381	23
Future Volume (Veh/h)	71	0	2	36	0	124	1	453	13	41	381	23
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	77	0	2	39	0	135	1	492	14	45	414	25
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)											197	
pX, platoon unblocked												
vC, conflicting volume	1152	1024	426	1020	1030	499	439			506		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1152	1024	426	1020	1030	499	439			506		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	40	100	100	81	100	76	100			96		
cM capacity (veh/h)	129	225	628	207	223	572	1121			1059		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	79	174	507	484
Volume Left	77	39	1	45
Volume Right	2	135	14	25
cSH	132	410	1121	1059
Volume to Capacity	0.60	0.42	0.00	0.04
Queue Length 95th (m)	24.6	16.5	0.0	1.1
Control Delay (s)	66.9	20.1	0.0	1.2
Lane LOS	F	C	A	A
Approach Delay (s)	66.9	20.1	0.0	1.2
Approach LOS	F	C		

Intersection Summary				
Average Delay	7.6			
Intersection Capacity Utilization	72.0%	ICU Level of Service	C	
Analysis Period (min)	15			

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	79	174	507	45	439
v/c Ratio	0.23	0.37	0.51	0.09	0.45
Control Delay	9.6	6.8	8.1	5.3	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	9.6	6.8	8.1	5.3	7.2
Queue Length 50th (m)	2.0	1.5	16.1	1.1	13.1
Queue Length 95th (m)	10.5	13.2	39.6	4.7	32.8
Internal Link Dist (m)	131.2	154.6	467.7		173.2
Turn Bay Length (m)				30.0	
Base Capacity (vph)	975	1133	1853	915	1846
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.08	0.15	0.27	0.05	0.24

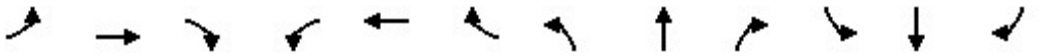
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	0	2	36	0	124	1	453	13	41	381	23
Future Volume (vph)	71	0	2	36	0	124	1	453	13	41	381	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frt		1.00			0.90			1.00		1.00	0.99	
Flt Protected		0.95			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		1770			1649			1856		1770	1847	
Flt Permitted		0.72			0.91			1.00		0.49	1.00	
Satd. Flow (perm)		1332			1512			1854		915	1847	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	77	0	2	39	0	135	1	492	14	45	414	25
RTOR Reduction (vph)	0	23	0	0	102	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	56	0	0	72	0	0	506	0	45	436	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.4			7.4			17.9		17.9	17.9	
Effective Green, g (s)		8.9			8.9			19.4		19.4	19.4	
Actuated g/C Ratio		0.25			0.25			0.53		0.53	0.53	
Clearance Time (s)		5.5			5.5			5.5		5.5	5.5	
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		326			370			990		489	987	
v/s Ratio Prot											0.24	
v/s Ratio Perm		0.04			c0.05			c0.27		0.05		
v/c Ratio		0.17			0.19			0.51		0.09	0.44	
Uniform Delay, d1		10.8			10.9			5.4		4.1	5.2	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.3			0.3			0.4		0.1	0.3	
Delay (s)		11.1			11.1			5.9		4.2	5.5	
Level of Service		B			B			A		A	A	
Approach Delay (s)		11.1			11.1			5.9			5.4	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	36.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



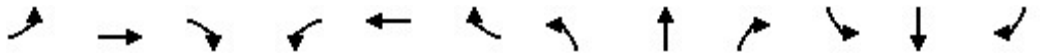
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	0	1	24	0	80	2	674	42	136	761	79
Future Volume (Veh/h)	47	0	1	24	0	80	2	674	42	136	761	79
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	51	0	1	26	0	87	2	733	46	148	827	86
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)											197	
pX, platoon unblocked	0.62	0.62	0.62	0.62	0.62		0.62					
vC, conflicting volume	2013	1949	870	1927	1969	756	913			779		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2333	2229	477	2194	2262	756	546			779		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	100	100	0	100	79	100			82		
cM capacity (veh/h)	11	22	362	17	21	408	630			838		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	52	113	781	1061
Volume Left	51	26	2	148
Volume Right	1	87	46	86
cSH	11	65	630	838
Volume to Capacity	4.75	1.73	0.00	0.18
Queue Length 95th (m)	Err	81.0	0.1	5.1
Control Delay (s)	Err	487.4	0.1	4.8
Lane LOS	F	F	A	A
Approach Delay (s)	Err	487.4	0.1	4.8
Approach LOS	F	F		

Intersection Summary				
Average Delay	289.1			
Intersection Capacity Utilization	117.8%	ICU Level of Service	H	
Analysis Period (min)	15			

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	52	113	781	148	913
v/c Ratio	0.24	0.38	0.59	0.29	0.69
Control Delay	18.5	14.6	6.3	4.9	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	18.5	14.6	6.3	4.9	8.3
Queue Length 50th (m)	2.0	2.3	32.1	4.4	43.4
Queue Length 95th (m)	13.3	18.4	68.0	12.4	97.0
Internal Link Dist (m)	131.2	154.6	467.7		173.2
Turn Bay Length (m)				30.0	
Base Capacity (vph)	287	375	1659	638	1651
Starvation Cap Reductn	0	0	0	0	34
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.18	0.30	0.47	0.23	0.56

Intersection Summary



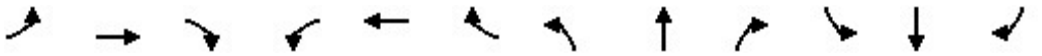
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	0	1	24	0	80	2	674	42	136	761	79
Future Volume (vph)	47	0	1	24	0	80	2	674	42	136	761	79
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0			4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frt		1.00			0.90			0.99		1.00	0.99	
Flt Protected		0.95			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		1631			1520			1702		1630	1691	
Flt Permitted		0.70			0.91			1.00		0.38	1.00	
Satd. Flow (perm)		1195			1392			1700		654	1691	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	0	1	26	0	87	2	733	46	148	827	86
RTOR Reduction (vph)	0	26	0	0	76	0	0	3	0	0	5	0
Lane Group Flow (vph)	0	26	0	0	37	0	0	778	0	148	908	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		5.5			5.5			40.5		40.5	40.5	
Effective Green, g (s)		7.0			7.0			42.0		42.0	42.0	
Actuated g/C Ratio		0.12			0.12			0.74		0.74	0.74	
Clearance Time (s)		5.5			5.5			5.5		5.5	5.5	
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		146			170			1252		481	1246	
v/s Ratio Prot											c0.54	
v/s Ratio Perm		0.02			c0.03			0.46		0.23		
v/c Ratio		0.18			0.22			0.62		0.31	0.73	
Uniform Delay, d1		22.4			22.5			3.6		2.6	4.3	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.6			0.6			1.0		0.4	2.2	
Delay (s)		23.0			23.2			4.6		2.9	6.4	
Level of Service		C			C			A		A	A	
Approach Delay (s)		23.0			23.2			4.6			5.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	57.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	109.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	79	174	533	45	450
v/c Ratio	0.23	0.37	0.53	0.09	0.45
Control Delay	10.1	7.1	8.2	5.2	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	10.1	7.1	8.2	5.2	7.2
Queue Length 50th (m)	2.0	1.6	17.4	1.1	13.7
Queue Length 95th (m)	10.9	13.6	42.4	4.8	33.7
Internal Link Dist (m)	131.2	154.6	467.7		173.2
Turn Bay Length (m)				30.0	
Base Capacity (vph)	909	1074	1853	885	1848
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.09	0.16	0.29	0.05	0.24

Intersection Summary



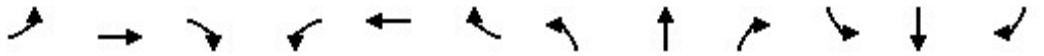
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	0	2	36	0	124	1	477	13	41	391	23
Future Volume (vph)	71	0	2	36	0	124	1	477	13	41	391	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frt		1.00			0.90			1.00		1.00	0.99	
Flt Protected		0.95			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		1770			1649			1856		1770	1847	
Flt Permitted		0.71			0.91			1.00		0.47	1.00	
Satd. Flow (perm)		1318			1512			1855		885	1847	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	77	0	2	39	0	135	1	518	14	45	425	25
RTOR Reduction (vph)	0	23	0	0	102	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	56	0	0	72	0	0	532	0	45	447	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.5			7.5			18.7		18.7	18.7	
Effective Green, g (s)		9.0			9.0			20.2		20.2	20.2	
Actuated g/C Ratio		0.24			0.24			0.54		0.54	0.54	
Clearance Time (s)		5.5			5.5			5.5		5.5	5.5	
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		318			365			1007		480	1002	
v/s Ratio Prot											0.24	
v/s Ratio Perm		0.04			c0.05			c0.29		0.05		
v/c Ratio		0.18			0.20			0.53		0.09	0.45	
Uniform Delay, d1		11.2			11.2			5.4		4.1	5.1	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.3			0.3			0.5		0.1	0.3	
Delay (s)		11.4			11.5			5.9		4.2	5.4	
Level of Service		B			B			A		A	A	
Approach Delay (s)		11.4			11.5			5.9			5.3	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	37.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	52	113	799	148	947
v/c Ratio	0.25	0.39	0.60	0.29	0.71
Control Delay	19.9	15.5	6.1	4.8	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	19.9	15.5	6.1	4.8	8.5
Queue Length 50th (m)	2.1	2.4	33.8	4.4	47.8
Queue Length 95th (m)	14.0	19.3	67.7	11.9	101.5
Internal Link Dist (m)	131.2	154.6	467.7		173.2
Turn Bay Length (m)				30.0	
Base Capacity (vph)	263	356	1645	622	1638
Starvation Cap Reductn	0	0	0	0	40
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.20	0.32	0.49	0.24	0.59

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	0	1	24	0	80	2	691	42	136	792	79
Future Volume (vph)	47	0	1	24	0	80	2	691	42	136	792	79
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0			4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frt		1.00			0.90			0.99		1.00	0.99	
Flt Protected		0.95			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		1631			1520			1702		1630	1692	
Flt Permitted		0.68			0.91			1.00		0.37	1.00	
Satd. Flow (perm)		1163			1392			1700		643	1692	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	0	1	26	0	87	2	751	46	148	861	86
RTOR Reduction (vph)	0	26	0	0	77	0	0	3	0	0	5	0
Lane Group Flow (vph)	0	26	0	0	36	0	0	796	0	148	942	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		5.5			5.5			42.9		42.9	42.9	
Effective Green, g (s)		7.0			7.0			44.4		44.4	44.4	
Actuated g/C Ratio		0.12			0.12			0.75		0.75	0.75	
Clearance Time (s)		5.5			5.5			5.5		5.5	5.5	
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		137			164			1270		480	1264	
v/s Ratio Prot											c0.56	
v/s Ratio Perm		0.02			c0.03			0.47		0.23		
v/c Ratio		0.19			0.22			0.63		0.31	0.75	
Uniform Delay, d1		23.6			23.7			3.6		2.5	4.3	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.7			0.7			1.0		0.4	2.4	
Delay (s)		24.3			24.4			4.5		2.8	6.7	
Level of Service		C			C			A		A	A	
Approach Delay (s)		24.3			24.4			4.5			6.2	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	59.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	112.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group