

TOWN OF CALEDON PLANNING RECEIVED

May 29,2020



Traffic Impact Study

Chickadee Grove Community

Town of Caledon

GHD | 6705 Millcreek Drive Mississauga Ontario L5N 5M4 Canada 800 | Report No 2 | March 21, 2019



Executive Summary

GHD was retained to prepare a Traffic Impact Study (TIS) for the proposed residential development located on the east and west side of Chickadee Lane in the community of Bolton, in the Town of Caledon. This report determines the site related traffic and the subsequent traffic-related impacts on the adjacent road network during the weekday a.m. and p.m. peak hours from the proposed development. These impacts are based on projected future background traffic and road network conditions derived for a 2031 planning horizon.

Proposed Site Characteristics

The proposed site plan prepared by Humphries Planning Group Inc., dated March 2nd, 2019, consists of 140 residential townhouse units, and 1 single family detached residential unit.

New Site Traffic

The total subject development is estimated to generate a total of 78 two-way trips during the a.m. peak hour consisting of 14 inbound and 64 outbound trips and a total of 81 two-way trips during the p.m. peak hour consisting of 54 inbound and 27 outbound trips.

Future Intersection Operating Characteristics

Based on the results of the capacity analysis, the subject development is expected to have a negligible impact on intersection operations at Chickadee Lane and the Connecting road. Emil Kolb Parkway will experience some issues with the westbound left-turn lane, but these issues are expected to be mitigated with the signalization of the intersection.

We trust that this satisfies your requirements, but do not hesitate to contact the undersigned if you have any questions.

Sincerely,

GHD

March 21, 2019 W.C. MARIA OVINCE OF ONT

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Adam Milderberger, B.A., C.E.T. Transportation Planner 905 814 4404



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1. Introduction

1.1 Retainer and Objective

GHD was retained to prepare a Traffic Impact Study (TIS) for the proposed residential development located on the east and west side of Chickadee Lane in the community of Bolton, in the Town of Caledon, to determine the following:

- Establish baseline traffic conditions for the study area and update the existing traffic conditions to derive the future background operating conditions for the study intersections at a future 2031 planning horizon; and
- Determine the traffic volumes anticipated to be generated by the proposed development during the weekday a.m. and p.m. peak hours; to assess the impact of this traffic on the study intersections and if needed, to recommend improvements to accommodate the forecasted traffic volumes.



Figure 1 Site Location



1.2 Study Team

The GHD team involved in the preparation of the study are

- William Maria, P.Eng., Senior Project Manager
- Adam Mildenberger, B.A., C.E.T., Transportation Planner
- Elizabeth Di Tella, B.A., Junior Transportation Planner

2. Site Characteristics

2.1 Study Area

The study area includes the following intersections:

- Emil Kolb Parkway at Connecting road; and
- Chickadee Lane at Connecting Road

2.2 Site Plan

The proposed site plan prepared by Humphries Planning Group Inc., dated March 2nd, 2019, consists of 140 residential townhouse units, and 1 single family detached residential unit.

The proposed site plan is shown in Figure 2.





Figure 2 Site Plan

3. Existing Conditions

3.1 Existing Road Network

Emil Kolb Parkway is an arterial road with a posted speed limit of 60 km/h and a 4 lane cross-section through the study area. The road is oriented north-south. It has a southbound auxiliary left-turn lane and a northbound auxiliary right-turn lane at the connecting road to Chickadee Lane.

Chickadee Lane is a minor collector road with a posted speed limit of 40km/h. The road is oriented north-south and has a connecting road to Emil Kolb Parkway.

3.2 Existing Traffic Data

GHD collected a.m. and p.m. peak hour turning movement counts at the study area intersections, which are included in **Appendix A**.





Figure 4 summarizes the adopted existing traffic volumes during the weekday a.m. and p.m. peak hours.

Figure 3 2017 Existing Traffic Volumes

4. Future Background Conditions

4.1 Background Growth

For the unsignalized intersection of Emil Kolb Parkway and the connecting road, future background growth was derived from the Bolton Residential Expansion Study completed by Paradigm Transportation Solutions Ltd. The p.m. northbound and southbound through movements of the 2031 future total volumes along Emil Kolb Parkway were used for the p.m. future background volumes. The future background volumes for the a.m. peak hour were then derived by using the growth percentage of the p.m. 2017 traffic counts to the 2031 future background volumes in the Bolton Residential Expansion Study. The growth percentage of the p.m. southbound Emil Kolb Parkway through movement was 9%, and the northbound movement was 7%. These percentages were applied to opposite directions in the a.m. peak hour to reflect existing traffic patterns.

For the unsignalized intersection of Chickadee Lane and the connecting road, the 2031 future background volumes remained the same as the 2017 existing traffic volumes. The volumes at this intersection could only have a origin/destination of background developments, and currently the surrounding background developments are fully built-out, therefore no growth in future background traffic is expected.



4.2 Background Traffic

The 2031 background traffic volumes are presented in Figure 4.



Figure 4 2031 Future Background Traffic Volumes

5. Site Generated Traffic

5.1 Site Trip Generation

Trip generation during the weekday peak hours for the proposed residential development was estimated using the Institute of Transportation Engineer's (ITE) 9th Edition Land Use Code (LUC) #230 for residential condominium/townhouses, as presented in **Table 1**. A comparison of the fitted curve equations and average rates resulted in greater trip generation for the fitted curve equation; therefore the fitted curve equation was applied as a conservative measure.

			Peak Hour Trip Generation											
Code	Units	Parameters	We	ekday /	۹M	Weekday PM								
			In	Out	Total	In	Out	Total						
Desidential		Trip Rate	0.08	0.40	0.48	0.38	0.19	0.57						
Townhouse	140	Trip Ratio	17%	83%	-	67%	33%	-						
(LOC 230)		New Trips	11	56	67	53	26	79						

Table 1 Site Trip Generation



Single Family	1	Trip Rate	3.00	8.00	11.00	1.00	1.00	2.00
Detached		Trip Ratio	25%	75%	-	63%	37%	-
(LOC 210)		New Trips	3	8	11	1	1	2
	New Trip	os	14	64	78	54	27	81

The total subject development is estimated to generate a total of 78 two-way trips during the a.m. peak hour consisting of 14 inbound and 64 outbound trips and a total of 81 two-way trips during the p.m. peak hour consisting of 54 inbound and 27 outbound trips.

5.2 Site Trip Distribution and Assignment

Trips generated by the proposed development were distributed to the roadway system based on the existing traffic patterns and the available road network. The directional trip distributions are summarized in Table 2.

Table 2 Site Trip Distribution

Trip Orientation	A.M. Pe	ak	P.M. Peak			
	In	Out	In	Out		
North on Emil Kolb Parkway	50%	30%	30%	60%		
South on Emil Kolb Parkway	50%	70%	70%	40%		
Total	100%	100%	100%	100%		

The estimated site trips generated by the proposed development, as assigned to the nearby road network for the weekday a.m. and p.m. peak hours, is shown in **Figure 5**.





Figure 5 Site Generated Trips

6. Future Total Traffic

The future total traffic conditions for the peak study hours was derived by combining the projected future background traffic with the corresponding estimate of the total site generated traffic.

Figure 6 summarizes the future total traffic volumes at the 2031 planning horizon during the weekday a.m. and p.m. peak hours.





Figure 6 2031 Future Total Traffic Volumes

7. Intersection Capacity Analysis

The capacity analysis identifies how well the intersections and driveways are operating. The analysis contained within this report utilized the Highway Capacity Manual (HCM) 2000 procedure within the Synchro Version 9 Software package. The reported intersection volume-to-capacity ratios (v/c) are a measure of the saturation volume for each turning movement, while the levels-of-service (LOS) are a measure of the average delay for each turning movement. Queuing characteristics are reported as the predicted 95th percentile queue for each turning movement.

In accordance with the City of Hamilton's Traffic Impact Study Guidelines, the analysis includes identification of conditions at signalized intersections where:

- Volume/capacity (v/c) ratios for through movements or shared through/turning movements increased to 0.85 or above;
- V/c ratios for exclusive movements increased to 0.90 or above; or
- 95th percentile queues for an individual movement are projected to exceed available turning lane storage.

The analysis includes identification of conditions at unsignalized intersections where:

- Level of service if LOS "D" or greater; or
- 95th percentile queues for an individual movement are projected to exceed available turning lane storage.



The following tables summarize the HCM capacity results for the study intersections during the weekday a.m. and p.m. hours under existing 2017, future background 2024, future total 2024 traffic conditions. The detailed calculation sheets are provided in **Appendix B**.

7.1 Emil Kolb Parkway at Connecting Road

Unsignalized and proposed signalized capacity analyses during the weekday a.m. and p.m. peak hours are summarized in **Table 2** from detailed Synchro reports attached in the **Appendix**.

Traffic Condition	Movement v/c (LOS) 95	th Percentile Queue
	AM Peak Hour	PM Peak Hour
Existing 2017	WBL: 0.13 (B) <1 veh WBR: 0.03 (A) <1 veh SBL: 0.38 (A) <1 veh	WBL: 0.08 (C) <1 veh WBR: 0.04 (B) <1 veh SBL: 0.03 (A) <1 veh
Future Background 2031	WBL: 0.59 (F) 20 m WBR: 0.05 (B) <1 veh SBL: 0.01 (A) <1 veh	WBL: 0.97 (F) 18 m WBR: 0.10 (C) <1 veh SBL: 0.10 (C) <1 veh
Future Total 2031	WBL: 1.12 (F) 52 m WBR: 0.08 (B) <1 veh SBL: 0.02 (A) <1 veh	WBL: 1.88 (F) 31 m WBR: 0.17 (C) <1 veh SBL: 0.17 (C) <1 veh
Future Total 2031 (Signalized)	Overall: v/c 0.56 (A) WBL: 0.26 (C) 28 m WBR: 0.03 (C) 9 m NBT: 0.33 (A) 35 m NBR: 0.01 (A) <1 veh SBL: 0.04 (A) <1 veh SBT: 0.66 (A) 93 m	Overall: v/c 0.64 (B) WBL: 0.07 (C) 10 m WBR: 0.07 (C) 11 m NBT: 0.83 (B) 151 m NBR: 0.07 (A) <1 veh SBL: 0.52 (C) 21 m SBT: 0.49 (A) 58 m

Table 3 Capacity Analyses for Emil Kolb Parkway at Connecting Road

Under the future background traffic conditions in 2031, this intersection is expected to have acceptable operational characteristics, with ample reserve capacity, acceptable levels of delay and no queueing issues during the weekday a.m. peak hour. During the p.m. peak hour, the westbound left-turn movement is expected to be over capacity. All other movements are expected to operate satisfactorily during the p.m. peak hour.

Under 2031 future total conditions with the added site traffic, the intersection continues to operate very similarly to the future background conditions, with any increase in v/c ratios, level of service, and queueing noticeable. The westbound left-turn lane is expected to continue to operate over capacity in both the a.m. and p.m. peak hours. However, these issues are expected to be mitigated with the signalization of the intersection.

There are no geometric improvements recommended at this intersection in response to the site traffic generated from the subject development.



7.2 Chickadee Lane at Connecting Road

Table 4 Capacity Analyses for Chickadee Lane at Connecting Road

Traffic Condition	Movement v/c (LOS) 95th Percentile Queue									
	AM Peak Hour	PM Peak Hour								
Existing 2017	EBL: 0.00 (A) <1 veh NBLT: 0.10 (A) <1 veh SBTR: 0.01 (A) <1 veh	EBL: 0.01 (A) <1 veh NBLT: 0.05 (A) <1 veh SBTR: 0.00 (A) <1 veh								
Future Background 2031	EBL: 0.00 (A) <1 veh NBLT: 0.10 (A) <1 veh SBTR: 0.01 (A) <1 veh	EBL: 0.01 (A) <1 veh NBLT: 0.05 (A) <1 veh SBTR: 0.00 (A) <1 veh								
Future Total 2031	EBL: 0.01 (A) <1 veh NBLT: 0.13 (B) <1 veh SBTR: 0.09 (A) <1 veh	EBL: 0.05 (A) <1 veh NBLT: 0.06 (B) <1 veh SBTR: 0.03 (A) <1 veh								

Under 2031 future background conditions there was no corridor growth at the unsignalized intersection, therefore there was no change to the operation of the intersection.

Under 2031 future total conditions with the added site traffic, the intersection continues to operate very similarly to the future background conditions, with any increase in v/c ratios, level of service, and queueing considered negligible. Any impacts from the proposed site traffic are not expected to be identifiable from the driver's perspective.

There are no geometric improvements recommended at this intersection in response to the site traffic generated from the subject development.

8. Functional Design Study

GHD has undertaken a functional design study to ensure the proposed road network meets the Town's design standards. As per the Town's *Development Standards, Policies and Guidelines* (2009), "Roadway geometric design will be in accordance with the Town of Caledon Geometric Design Standards and Road Sections as outlined in Town Standard Drawings."¹

The Town's Geometric Design Standards are provided in Figure 7 below for reference throughout this section.

¹ Development Standards, Policies and Guidelines, 2009, p.58



	TABLE 3.3 TOWN OF CALEDON GEOMETRIC ROAD DESIGN STANDARDS														
	ADT	Posted	Hor.	Vert. Curve (Min. k)		Road Grade		Grade at Intersections		R.O.W	Pav't	Inter-	Cul-de-sac		
	ADI	Speed (km/h)	Rad. (m)	Sag	Crest	Max. (%)	Min. (%)	Stop	Through	Width (m)	Width (m)	section Angle	Radius Pav (m)	Max Grade	
Local Residential	<1000	50	90	12	8	6.0%	0.75%	2.0%	3.0%	18	7.9	85->95	15	3.0%	
Local Industrial	<1000	50	115	18	15	4.0%	0.75%	2.0%	3.0%	22.5	10.4	85->95	20	3.0%	
Residential Collector	1000 to 3000	60	130	18	15	6.0%	0.75%	2.0%	3.0%	20	8.9	85->95	N/A	N/A	
Industrial Collector	1000 to 3000	70	190	25	25	6.0%	0.75%	2.0%	3.0%	26	13.9	85->95	N/A	N/A	
Arterial	> 6000	80	250	30	35	6.0%	0.75%	2.0%	3.0%	30	7.0- 15.0	85->95	N/A	N/A	

Figure 7: Town's Geometric Design Standards

8.1 Right-of-way (ROW) Width

The Town's right-of-way width for local residential roads (<1000 ADT) is 18 metres. The site's proposed roads (Streets A, B, C and D) are to have 18.0 metre ROWs, except for a portion of Street 'C' which is proposed to have a 16 metre ROW due to property limitations associated with the adjacent curved Emil Kolb Parkway ROW.

This section of Street 'C' will provide direct access to only 8 residential townhouse units for a short portion of its east side, with its primary function being a secondary road connection between Streets 'A', 'D' and 'C' on the west side of Chickadee Lane. The proposed subdivision layout results in a very nominal level of ADT (average daily traffic) expected to use Street 'C' with really only traffic generated from the aforementioned 8 units expected to use this section.

This Section of Street 'C' is to be referred to as a "Local Window Street' as per the Town's Road Section of the same name (Standard No. 201), which permits a 16.0 metre ROW. The cross-section elements proposed to be included (i.e. sidewalks, boulevard, travel lanes, etc.) are expected to be consistent with the Town's cross-section drawing.

Chickadee Lane is currently a collector road with a ROW of approximately 20 metres, which is consistent with the Town's standards.

8.2 Posted Speed

Although the Town's standard for posted speed limit on local residential roads is 50 km/h, Chickadee Lane is currently posted at 40 km/h. Therefore it is recommended this posted speed limit be maintained and also be applied to the proposed local residential streets internal to the site.

8.3 Horizontal Curves

Noticeable horizontal curves are proposed on Street 'C' and Street 'A', however the curved portions of the roadway will be designed in accordance with Standard Drawing No. 214 for "Local Residential Road Elbow Design" which includes a centerline radius of approximately 14 metres.



8.4 Vertical Curves

The vertical grades of the proposed local residential roads are designed to not fall outsides of the Town's standard range (0.75% to 6.0%).

8.5 Road Grades

The intersection approach grades of the proposed intersections are designed to not exceed the Town's standards of 2.0% for stop-controlled approaches and 3.0% for free flow approaches.

8.6 Intersection Angles

The intersection angles of the proposed intersections are generally designed to not fall outside of the Town's standard ranges (85 to 95 degrees). However the centerline intersection angle of Street 'B' at Street 'A' is measured at approximately 66 degrees. This is not considered a significant issue for the following reasons:

- The peak hour volumes turning at this intersection are expected to be negligible. Motorists residing on Street 'A' are expected to travel directly to either Chickadee Lane or Glasgow Road, and not utilize Street 'B', and furthermore motorists residing on Street 'B' are expected to travel directly to Chickadee Lane.
- With an intersecting centerline angle of 66 degrees, this intersection is classified as an "oblique intersection" as per the TAC Geometric Design Guide (<70 degrees), and is considered an acceptable intersection type.
- As per the TAC Geometric Design Guide, intersection with approach angles between 70 and 110 degrees are considered "right-angled intersections." It is expected the 4 degree deviation of the proposed centerline angle from TAC "right-angled intersection" threshold will not be noticeable from a driver's perspective, and is considered a negligible deviation.
- If the Town is concerned with this proposed intersection alignment, the Town may recommended all-way stop control for this intersection. Such a control will mitigate any visibility and/or safety concerns potentially attributable to the oblique intersection configuration.

8.7 Cross-Sections

The proposed cross-section for the 16.0 metre ROW will be consistent with the Town's Standard No. 201, which includes an 8.5 metre roadway, 7.9 metre pavement, one travel lane per direction, and sidewalk on one side of the roadway. The sidewalk will be constructed on the east side of Street 'C' fronting the proposed units, with no sidewalk on the west side required for pedestrian connectivity.

The proposed cross-section for the 18.0 metre ROW will be consistent with the Town's Standard No. 202, which includes an 8.5 metre roadway, 7.9 metre pavement, one travel lane per direction, and sidewalks on both sides of the roadway.



The proposed cross-section for the 20.0 metre ROW on Chickadee Lane will be consistent with the Town's Standard No. 203, which includes a 9.3 metre roadway, 8.7 metre pavement, one travel lane per direction, and sidewalks on both sides of the roadway.

The noted cross-sections are appended.

8.8 Traffic Calming

Traffic calming measures are not warranted for the following reasons:

- Based on the existing and proposed road network, significant traffic infiltration through the proposed subdivision is not expected;
- The proposed road network does not include any long lineal tangent road lengths that could potentially result in aggressive driving behavior;
- As per the Town's standards, "Traffic calming designs should not be required on roads that carry local traffic only with less than 500 ADT";
- As per the Town's standards, "Traffic calming will not be supported on roadways that do not have more than 200 metres of uncontrolled length;" and
- The proposed combination of short tangent lengths and multiple horizontal curves together act as a suitable form of traffic calming.

8.9 Intersection Control

The following intersections are proposed:

- Street 'C' / Glasgow Road at Chickadee Lane;
- Street 'D' / Street 'B' at Chickadee Lane;
- Street 'A' at Street 'B';
- Street 'C' / Street 'A' at Chickadee Lane; and
- Street 'A' at Glasgow Road.

8.9.1 All-way Stop Control

As per the Ontario Ministry of Transportation's (MTO) Ontario Traffic Manual (OTM) Book 5 Regulatory Signs, an all-way stop is warranted when:

- Total vehicle volume on all intersection approaches exceeds 350 for the highest hour recorded; and
- Volume split does not exceed 75/25 for three-way control or 65/35 for four-way control. Volume is defined at vehicles only.

As per the forecasted 2031 future total volumes on Chickadee Road presented in this report, the a.m. and p.m. peak hour volumes are expected to very low (76 vehicles southbound and 20 vehicles northbound during the a.m. peak hour; 29 vehicles southbound and 73 vehicles



northbound during the p.m. peak hour) compared to the aforementioned 350 vehicle threshold as per OTM.

Of these peak hour volumes on Chickadee Lane, the majority of volumes are expected to be vehicles generated from the subject site, thus being inbound and outbound volumes from the proposed intersecting roads on Chickadee Lane, with the small remainder expected to be background volumes (through movements) on Chickadee Lane travelling through the site. This is evident in reviewing the trip figures presented in this report (i.e. Future Background Volumes, Site Trips, and Future Total Volumes).

It is therefore strongly expected that peak hour volumes at the site intersections on Chickadee Lane and on Glasgow Road will not exceed the required 350 vehicle threshold as required for an all-way stop to be warranted.

8.9.2 Traffic Signals

Furthermore, the volume thresholds are much higher for traffic signals as per OTM Book 12 Traffic Signals, and consequently traffic signals are not expected to be warranted at the site intersections on Chickadee Lane and on Glasgow Road.

8.9.3 Roundabouts

As per the Town's standards, "intersections meeting warrants for signalization or all-way stop control MUST first be analyzed for the intersection of a roundabout prior to proceeding with intersection control." As a result of all-way stops or signals not being warranted, roundabouts are not recommended.

9. Conclusions and Recommendations

The proposed site plan prepared by Humphries Planning Group Inc., dated March 2nd, 2019, consists of 140 residential townhouse units, and 1 single family detached residential unit.

The total subject development is estimated to generate a total of 78 two-way trips during the a.m. peak hour consisting of 14 inbound and 64 outbound trips and a total of 81 two-way trips during the p.m. peak hour consisting of 54 inbound and 27 outbound trips.

Based on the results of the capacity analysis, the subject development is expected to have a negligible impact on intersection operations at Chickadee Lane and the Connecting road. Emil Kolb Parkway will experience some issues with the westbound left-turn lane, but these issues are expected to be mitigated with the signalization of the intersection.



Appendix A Traffic Data







Traffic Count Summary														
Intersection: (Chickade	ee Lane	& Emil	Kolb Pk		^{ate:} 31-Oct-17	/ Muni	^{cipality:} Ca	ledon					
	North	n Appro	ach Tot	als			South Approach Totals							
Hour	Include	es Cars, T	rucks, & H	eavys Grand	Total	North/South Total	Hour	Include	es Cars, T	rucks, & H	eavys Grand	Total		
Ending 7:00:00	Left 0	I hru 0	Right 0	l otal 0	Peds 0	Approaches 0	Ending 7:00:00	Left 0	I hru 0	Right 0	l otal 0	Peds 0		
8:00:00	0	0	5	5	0	72	8:00:00	67	Ő	0	67	0		
9:00:00	0	1	11	12	0	89	9:00:00 16:00:00	76 0	1	0	//	0		
17:00:00	Ő	1	5	6	Ő	44	17:00:00	37	1	Ő	38	Ő		
18:00:00	0	0	6	6	0	37	18:00:00	30	1	0	31	0		
Totals:	0	2	27	29	0	242		210	3	0	213	0		
	East	Approa	ach Tota					West Approach Totals Includes Cars, Trucks, & Heavys						
Hour		Thru	Right	Grand	Total	East/West Total	Hour	Loft	Thru	Right	Grand	Total		
7:00:00	0	0	0	0	0	0	7:00:00	0	0	0	0	0		
8:00:00	0	0	0	0	0	16 31	8:00:00	5	0	11 26	16 31	0		
16:00:00	0	0	0	0	0	0	16:00:00	0	0	0	0	0		
17:00:00	0	0	0	0	0	79 85	17:00:00 18:00:00	15 19	0	64 66	79 85	0		
	Ū				0							Ū		
Totals	0	0	0	0	0	011		44	0	167	211	0		
Totals:	U	U	U Calc	ulated V	o alues f	or Traffic Cr	ossina M	44 aior Stre	et	107	211	0		
Hours En Crossing	ding: Values:	0:00 0	0:00	7:00 0	8:00 5		9:00 5	16:00 0	17:00 15	18:00 19				

Γ

Count Date: 31-Oct-17 Site #: 1732600001																																																
		Passeng	ger Cars -	North A	pproach			Tru	cks - Nor	th Appro	ach		Heavys - North Approach						Pedestrians																													
Interval	Le	eft	Th	ru	Rig	lht	Le	ft	Th	ru	Riç	ght	Le	əft	Th	ru	Riç	ght	North	Cross																												
Time	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr																												
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0		0 C		0 0																												
7:15:00	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0																												
7:30:00	0	0	0	0	4	2	0	0	0	0	0	0	0	0	0	0	0	0	C	0																												
7:45:00	0	0	0	0	5	1	0	0	0	0	0	0	0	0	0	0	0	0	C	0																												
8:00:00	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	C	0																												
8:15:00	0	0	0	0	8	3	0	0	0	0	0	0	0	0	0	0	0	0	C	0																												
8:30:00	0	0	0	0	12	4	0	0	0	0	0	0	0	0	0	0	0	0	C	0																												
8:45:00	0	0	1	1	15	3	0	0	0	0	0	0	0	0	0	0	0	0	C	0																												
9:00:00	0	0 1 0		16	1	0	0	0	0	0	0	0	0 0		0 0		0 0		0 0		0	0	0	C	0																							
9:01:06	0	0 0 1 0		0	16	0	0	0	0	0	0	0	0 0		0 0		0 0		0 0		0	0	0	0	C	0																						
16:00:00	0	0	0 1 0		16	0	0	0	0	0	0	0	0 0		0 0		0 0		0 0		0 0		0 0		0 0		0 0		0 0		0 0		0 0		0 0		0 0		0 0		0 0		0	0	0	0	C	0
16:15:00	0	0	1	0	20	4	0	0	0	0	0	0	0	0	0	0	0	0	C	0																												
16:30:00	0	0	1	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	C	0																												
16:45:00	0	0	2	1	21	1	0	0	0	0	0	0	0	0	0	0	0	0	C	0																												
17:00:00	0	0	2	0	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0																												
17:15:00	0	0	2	0	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0																												
17:30:00	0	0	2	0	22	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0																												
17:45:00	0	0	2	0	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0																												
18:00:00	0	0	2	0	27	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0																												
18:15:00	0	0	2	0	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																												
18:15:18	0	0	2	0	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																												

Count Date: 31-Oct-17 Site #: 1732600001

Count Date: 31-Oct-17 Site #: 1/32600001																					
		Passen	ger Cars	- East Ap	proach			Tru	icks - Eas	st Approa	ach			Не	avys - Ea	st Appro	ach		Pedestrians		
Interval	Le	eft	Th	ru	Rig	lht	Le	ft	Th	ru	Rig	ght	Le	eft	Th	ru	Rig	ght	East	Cross	
Time	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	0	0	0	0	0	
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	0	0	0	0	0	
7:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0) 0	0	0	0	0	0	
7:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0) 0	0	0	0	0	0	
8:00:00	0	0	0	0	0	0	0 0		0	0	0	0	0	0) 0	0	0	0	0	0	
8:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0) 0	0	0	0	0	0	
8:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	0	0	0	0	0	
8:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	0	0	0	0	0	
9:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	0	0	0	0	0	
9:01:06	0 0 0		0	0	0	0	0	0	0	0	0	0	0	0 0	0	0	0	0	0		
16:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	0	0	0	0	0	
16:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	0	0	0	0	0	
16:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	0	0	0	0	0	
16:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	0	0	0	0	0	
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	0	0	0	0	0	
17:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	0	0	0	0	0	
17:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	0	0	0	0	0	
17:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	0	0	0	0	0	
18:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	0	0	0	0	0	
18:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	0	0	0	0	0	
18:15:18	0	0	0	0	0	0	0	0	0	0	0	0	0	0) 0	0	0	0	0	0	

24 0 -+ 47 Site #1 1722600001 1.0-1-

Count	Date:	31-Oct-	17	Site #:	173260	0001														
		Passeng	jer Cars -	South A	pproach			Tru	cks - Sou	th Appro	ach			Неа	avys - Sou	th Appro	oach		Pedes	strians
Interval	Le	ft	Th	ru	Rig	lht	Le	ft	Th	ru	Rig	ght	Le	eft	Th	ru	Riç	ght	South	Cross
Time	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	19	19	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	28	9	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	50	22	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	64	14	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	76	12	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0
8:30:00	99	23	1	1	0	0	5	1	0	0	0	0	0	0	0	0	0	0	0	0
8:45:00	115	16	1	0	0	0	6	1	0	0	0	0	0	0	0	0	0	0	0	0
9:00:00	133	18	1	0	0	0	10	4	0	0	0	0	0	0	0	0	0	0	0	0
9:01:06	133	0	1	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00:00	133	0	1	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15:00	144	11	1	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30:00	147	3	1	0	0	0	11	1	0	0	0	0	0	0	0	0	0	0	0	0
16:45:00	154	7	2	1	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00:00	169	15	2	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	179	10	2	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30:00	186	7	2	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45:00	193	7	3	1	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00:00	199	6	3	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15:00	200	1	3	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15:18	201	1	3	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0

Count Date: 31-Oct-17 Site #: 1732600001

Count	Date:	31-Oct-	17 3	Site #:	1/3260	0001														
		Passeng	ger Cars ·	- West Ap	oproach			Tru	cks - Wes	st Approa	ach			Hea	avys - We	st Appro	ach		Pedes	strians
Interval	Le	ft	Th	ru	Rig	jht	Le	ft	Th	ru	Rig	jht	Le	eft	Th	ru	Rig	Jht	West	Cross
Time	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	0	0	8	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0
8:00:00	4	4	0	0	9	1	1	1	0	0	2	0	0	0	0	0	0	0	0	0
8:15:00	5	1	0	0	12	3	1	0	0	0	3	1	0	0	0	0	0	0	0	0
8:30:00	6	1	0	0	18	6	1	0	0	0	5	2	0	0	0	0	0	0	0	0
8:45:00	7	1	0	0	23	5	1	0	0	0	6	1	0	0	0	0	0	0	0	0
9:00:00	9	2	0	0	28	5	1	0	0	0	9	3	0	0	0	0	0	0	0	0
9:01:06	9	0	0	0	28	0	1	0	0	0	9	0	0	0	0	0	0	0	0	0
16:00:00	9	0	0	0	28	0	1	0	0	0	9	0	0	0	0	0	0	0	0	0
16:15:00	12	3	0	0	37	9	1	0	0	0	9	0	0	0	0	0	0	0	0	0
16:30:00	16	4	0	0	56	19	1	0	0	0	10	1	0	0	0	0	0	0	0	0
16:45:00	22	6	0	0	79	23	1	0	0	0	10	0	0	0	0	0	0	0	0	0
17:00:00	24	2	0	0	91	12	1	0	0	0	10	0	0	0	0	0	0	0	0	0
17:15:00	30	6	0	0	110	19	1	0	0	0	10	0	0	0	0	0	0	0	0	0
17:30:00	34	4	0	0	125	15	1	0	0	0	10	0	0	0	0	0	0	0	0	0
17:45:00	38	4	0	0	142	17	1	0	0	0	12	2	0	0	0	0	0	0	0	0
18:00:00	43	5	0	0	155	13	1	0	0	0	12	0	0	0	0	0	0	0	0	0
18:15:00	43	0	0	0	155	0	1	0	0	0	12	0	0	0	0	0	0	0	0	0
18:15:18	43	0	0	0	155	0	1	0	0	0	12	0	0	0	0	0	0	0	0	0

Count Date: 31-Oct-17 Site #: 1732600001







				Traf	fic C	ount S	umm	arv				
Intersection:	Emil Kol	b Pkwy	& Chick	adee La		^{Date:} 31-Oct-17	7 Munie	^{cipality:} Ca	ledon			
	North	n Appro	ach Tot	als				Sout	h Appro	ach To	als	
Hour		Thru	Pight	eavys Grand	Total	North/South Total	Hour	Include	Thru	Pight	eavys Grand	Total
Ending 7:00:00 8:00:00 9:00:00 16:00:00 17:00:00 18:00:00	Left 0 7 13 0 21 28	Thru 0 520 585 1 357 283	Right 0 0 0 0 0 0	Total 0 527 598 1 378 311	Peds 0 0 0 0 0	Approaches 0 807 848 1 1198 995	Ending 7:00:00 8:00:00 9:00:00 16:00:00 17:00:00 18:00:00	Left 0 0 0 0 0 0	Thru 0 272 232 0 762 627	Right 0 8 18 0 58 57	Total 0 280 250 0 820 684	Peds 0 0 0 0 0 0
Totals:	69 East Include	1746 Approa es Cars, T	0 ach Tot a rucks, & H	1815 als eavys Grand	0 Total	3849 East/West Total	Hour	0 West Include	1893 t Appro es Cars, T	141 ach Tot rucks, & H	2034 als eavys Grand	0 Total
Ending	Left	Thru 0	Right	Total 0	Peds 0	Approaches	Ending	Left	Thru 0	Right	Total 0	Peds 0
8:00:00 9:00:00 16:00:00 17:00:00 18:00:00	42 63 0 22 24		30 24 0 20 12	72 87 0 42 36	1 0 3 0	0 73 87 0 42 36	8:00:00 9:00:00 16:00:00 17:00:00 18:00:00	000000000000000000000000000000000000000	1 0 0 0		1 0 0 0	
Totolo	151	0	96	727		000		0	1	0	4	0
	101	U	Calc	ے۔ ulated V	4 alues f	∠38 or Traffic Cr	ossina M	ajor Stre	et	0	1	0
Hours En Crossing	ding: Values:	0:00 0	0:00 0	7:00 0	8:00 43		9:00 63	16:00 0	17:00 22	18:00 24		

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Count	Date:	31-Oct-	17	Site #:	173260	0002														
		Passeng	ger Cars -	North A	pproach			Tru	cks - Nor	th Appro	ach			Hea	avys - Nor	th Appro	bach		Pedes	strians
Interval	Le	ft	Th	ru	Rig	jht	Le	ft	Th	ru	Riç	ght	Le	eft	Th	ru	Riç	ght	North	Cross
Time	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	2	2	109	109	0	0	0	0	8	8	0	0	0	0	0	0	0	0	0	0
7:30:00	5	3	200	91	0	0	0	0	17	9	0	0	0	0	0	0	0	0	0	0
7:45:00	5	0	325	125	0	0	1	1	34	17	0	0	0	0	0	0	0	0	0	0
8:00:00	6	1	472	147	0	0	1	0	48	14	0	0	0	0	0	0	0	0	0	0
8:15:00	9	3	618	146	0	0	1	0	64	16	0	0	0	0	0	0	0	0	0	0
8:30:00	13	4	774	156	0	0	3	2	78	14	0	0	0	0	0	0	0	0	0	0
8:45:00	13	0	903	129	0	0	3	0	89	11	0	0	0	0	0	0	0	0	0	0
9:00:00	17	4	998	95	0	0	3	0	107	18	0	0	0	0	0	0	0	0	0	0
9:01:06	17	0	999	1	0	0	3	0	107	0	0	0	0	0	0	0	0	0	0	0
16:00:00	17	0	999	0	0	0	3	0	107	0	0	0	0	0	0	0	0	0	0	0
16:15:00	18	1	1064	65	0	0	3	0	121	14	0	0	0	0	0	0	0	0	0	0
16:30:00	24	6	1148	84	0	0	3	0	136	15	0	0	0	0	0	0	0	0	0	0
16:45:00	32	8	1212	64	0	0	3	0	149	13	0	0	0	0	0	0	0	0	0	0
17:00:00	38	6	1303	91	0	0	3	0	160	11	0	0	0	0	0	0	0	0	0	0
17:15:00	43	5	1376	73	0	0	3	0	170	10	0	0	0	0	0	0	0	0	0	0
17:30:00	49	6	1445	69	0	0	3	0	174	4	0	0	0	0	0	0	0	0	0	0
17:45:00	59	10	1517	72	0	0	4	1	180	6	0	0	0	0	0	0	0	0	0	0
18:00:00	65	6	1560	43	0	0	4	0	186	6	0	0	0	0	0	0	0	0	0	0
18:15:00	65	0	1561	1	0	0	4	0	187	1	0	0	0	0	0	0	0	0	0	0
18:15:13	65	0	1562	1	0	0	4	0	188	1	0	0	0	0	0	0	0	0	0	0
I									1				1		1		1			

Count Date: 31-Oct-17 Site #: 1732600002

Count	unt Date: 31-Oct-17 Site #: 1732600002																			
		Passen	ger Cars	- East Ap	proach			Tru	icks - Eas	at Approa	ach			Не	avys - Eas	st Appro	ach		Pede	strians
Interval	Le	eft	Th	ru	Rig	ht	Le	ft	Th	ru	Rig	lht	Le	əft	Th	ru	Rig	jht	East	Cross
Time	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0) 0
7:15:00	11	11	0	0	10	10	1	1	0	0	0	0	0	0	0	0	0	0	C) 0
7:30:00	17	6	0	0	15	5	2	1	0	0	0	0	0	0	0	0	0	0	0) 0
7:45:00	30	13	0	0	25	10	3	1	0	0	0	0	0	0	0	0	0	0	1	1
8:00:00	39	9	0	0	30	5	3	0	0	0	0	0	0	0	0	0	0	0	1	0
8:15:00	49	10	0	0	35	5	4	1	0	0	0	0	0	0	0	0	0	0	1	0
8:30:00	68	19	0	0	43	8	5	1	0	0	0	0	0	0	0	0	0	0	1	0
8:45:00	80	12	0	0	50	7	6	1	0	0	0	0	0	0	0	0	0	0	1	0
9:00:00	97	17	0	0	52	2	8	2	0	0	2	2	0	0	0	0	0	0	1	0
9:01:06	97	0	0	0	52	0	8	0	0	0	2	0	0	0	0	0	0	0	1	0
16:00:00	97	0	0	0	52	0	8	0	0	0	2	0	0	0	0	0	0	0	1	0
16:15:00	109	12	0	0	55	3	8	0	0	0	2	0	0	0	0	0	0	0	1	0
16:30:00	110	1	0	0	57	2	9	1	0	0	2	0	0	0	0	0	0	0	2	2 1
16:45:00	117	7	0	0	58	1	9	0	0	0	2	0	0	0	0	0	0	0	2	2 0
17:00:00	118	1	0	0	72	14	9	0	0	0	2	0	0	0	0	0	0	0	4	2
17:15:00	123	5	0	0	77	5	9	0	0	0	2	0	0	0	0	0	0	0	4	0
17:30:00	130	7	0	0	78	1	9	0	0	0	2	0	0	0	0	0	0	0	4	0
17:45:00	136	6	0	0	79	1	9	0	0	0	2	0	0	0	0	0	0	0	4	0
18:00:00	142	6	0	0	84	5	9	0	0	0	2	0	0	0	0	0	0	0	4	0
18:15:00	142	0	0	0	84	0	9	0	0	0	2	0	0	0	0	0	0	0	4	0
18:15:13	142	0	0	0	84	0	9	0	0	0	2	0	0	0	0	0	0	0	4	0

24 0 -+ 47 Site #1 1722600002 1.0-1-

Count	Date:	31-Oct-	17 3	Site #:	173260	0002														
		Passeng	jer Cars -	South A	pproach			Tru	cks - Sou	th Appro	ach			Неа	avys - Sou	th Appro	oach		Pedes	strians
Interval	Le	ft	Th	ru	Rig	jht	Le	ft	Th	ru	Riç	ght	Le	eft	Th	ru	Riç	ght	South	Cross
Time	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	65	65	1	1	0	0	13	13	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	105	40	1	0	0	0	26	13	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	164	59	3	2	0	0	35	9	1	1	0	0	0	0	0	0	0	0
8:00:00	0	0	221	57	7	4	0	0	51	16	1	0	0	0	0	0	0	0	0	0
8:15:00	0	0	282	61	8	1	0	0	54	3	2	1	0	0	0	0	0	0	0	0
8:30:00	0	0	310	28	11	3	0	0	71	17	2	0	0	0	0	0	0	0	0	0
8:45:00	0	0	357	47	17	6	0	0	91	20	3	1	0	0	0	0	0	0	0	0
9:00:00	0	0	394	37	20	3	0	0	110	19	6	3	0	0	0	0	0	0	0	0
9:01:06	0	0	394	0	20	0	0	0	110	0	6	0	0	0	0	0	0	0	0	0
16:00:00	0	0	394	0	20	0	0	0	110	0	6	0	0	0	0	0	0	0	0	0
16:15:00	0	0	570	176	31	11	0	0	129	19	6	0	0	0	0	0	0	0	0	0
16:30:00	0	0	728	158	48	17	0	0	139	10	7	1	0	0	0	0	0	0	0	0
16:45:00	0	0	940	212	69	21	0	0	147	8	7	0	0	0	0	0	0	0	0	0
17:00:00	0	0	1111	171	77	8	0	0	155	8	7	0	0	0	0	0	0	0	0	0
17:15:00	0	0	1310	199	97	20	0	0	168	13	7	0	0	0	0	0	0	0	0	0
17:30:00	0	0	1491	181	110	13	0	0	175	7	7	0	0	0	0	0	0	0	0	0
17:45:00	0	0	1611	120	121	11	0	0	185	10	8	1	0	0	0	0	0	0	0	0
18:00:00	0	0	1698	87	133	12	0	0	195	10	8	0	0	0	0	0	0	0	0	0
18:15:00	0	0	1699	1	133	0	0	0	195	0	8	0	0	0	0	0	0	0	0	0
18:15:13	0	0	1700	1	133	0	0	0	195	0	8	0	0	0	0	0	0	0	0	0
1													1		1		1			

Count Date: 31-Oct-17 Site #: 1732600002

Count	Date:	31-Oct-	1/	Site #:	1/3260	0002														
		Passen	ger Cars ·	West Ap	oproach			Tru	cks - We	st Approa	ach			He	avys - We	st Appro	ach		Pedes	strians
Interval	Le	eft	Th	ru	Rig	jht	Le	ft	Th	ru	Rig	ght	Le	eft	Th	ru	Rig	ght	West	Cross
Time	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	0	0	0	0	0
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	0	0	0	0	0
7:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0) 0	0	0	0	0	0
7:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0) 0	0	0	0	0	0
8:00:00	0	0	0	0	0	0	0	0	1	1	0	0	0	0) 0	0	0	0	0	0
8:15:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0) 0	0	0	0	0	0
8:30:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0 0	0	0	0	0	0
8:45:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0 0	0	0	0	0	0
9:00:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0 0	0	0	0	0	0
9:01:06	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0 0	0	0	0	0	0
16:00:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0 0	0	0	0	0	0
16:15:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0 0	0	0	0	0	0
16:30:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0 0	0	0	0	0	0
16:45:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0 0	0	0	0	0	0
17:00:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0 0	0	0	0	0	0
17:15:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0 0	0	0	0	0	0
17:30:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0 0	0	0	0	0	0
17:45:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0 0	0	0	0	0	0
18:00:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0 0	0	0	0	0	0
18:15:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0 0	0	0	0	0	0
18:15:13	0	0	0	0	0	0	0	0	1	0	0	0	0	0) 0	0	0	0	0	0

24 0 -+ 47 Site #1 1722600002 1.0-1-

Appendix B Synchro Reports

	-	•	1	1	1	ŧ				
Movement	WBL	WBR	NBT	NBR	SBL	SBT				
Lane Configurations	5	1	^	1	5	^				
Traffic Volume (veh/h)	54	28	250	12	11	635				
Future Volume (Veh/h)	54	28	250	12	11	635				
Sign Control	Stop		Free			Free				
Grade	0%		0%			0%				
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				
Hourly flow rate (vph)	55	29	255	12	11	648				
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	601	128			267					
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol	601	128			267					
tC, single (s)	6.8	6.9			4.1					
tC, 2 stage (s)										
tF (s)	3.5	3.3			2.2					
p0 queue free %	87	97			99					
cM capacity (veh/h)	428	899			1294					
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3		
Volume Total	55	29	128	128	12	11	324	324		
Volume Left	55	0	0	0	0	11	0	0		
Volume Right	0	29	0	0	12	0	0	0		
cSH	428	899	1700	1700	1700	1294	1700	1700		
Volume to Capacity	0.13	0.03	0.07	0.07	0.01	0.01	0.19	0.19		
Queue Length 95th (m)	3.3	0.8	0.0	0.0	0.0	0.2	0.0	0.0		
Control Delay (s)	14.6	9.1	0.0	0.0	0.0	7.8	0.0	0.0		
Lane LOS	В	А				А				
Approach Delay (s)	12.7		0.0			0.1				
Approach LOS	В									
Intersection Summary										
Average Delay			1.1							
Intersection Capacity Utiliza	ation		27.6%	IC	U Level	of Service	;		А	
Analysis Period (min)			15							

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Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	۲	1		र्स	ef 👘	
Traffic Volume (veh/h)	5	26	76	1	1	11
Future Volume (Veh/h)	5	26	76	1	1	11
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	6	33	96	1	1	14
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0		26	12	45	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		26	12	45	0
tC, single (s)	4.1		7.1	6.5	6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2		3.5	4.0	4.0	3.3
p0 queue free %	100		90	100	100	99
cM capacity (veh/h)	1623		967	879	844	1085
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	6	33	97	15		
Volume Left	6	0	96	0		
Volume Right	0	33	0	14		
cSH	1623	1700	966	1065		
Volume to Capacity	0.00	0.02	0.10	0.01		
Queue Length 95th (m)	0.1	0.0	2.5	0.3		
Control Delay (s)	7.2	0.0	9.1	8.4		
Lane LOS	А		А	А		
Approach Delay (s)	1.1		9.1	8.4		
Approach LOS			А	А		
Intersection Summary						
Avorago Dolay			7.0			
Intersection Canacity Litilia	ration		7.0	10		of Sonvice
Analysis Dariad (min)	allUII		20.9% 1E	IC	U Level (I Selvice
Analysis Period (min)			15			

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Movement	WBL	WBR	NBT	NBR	SBL	SBT				
Lane Configurations	5	1	**	1	5	**				
Traffic Volume (veh/h)	15	22	779	67	25	361				
Future Volume (Veh/h)	15	22	779	67	25	361				
Sian Control	Stop		Free			Free				
Grade	0%		0%			0%				
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				
Hourly flow rate (vph)	16	23	820	71	26	380				
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	1062	410			891					
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol	1062	410			891					
tC, single (s)	6.8	6.9			4.1					
tC, 2 stage (s)										
tF (s)	3.5	3.3			2.2					
p0 queue free %	92	96			97					
cM capacity (veh/h)	211	591			757					
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3		
Volume Total	16	23	410	410	71	26	190	190		
Volume Left	16	0	0	0	0	26	0	0		
Volume Right	0	23	0	0	71	0	0	0		
cSH	211	591	1700	1700	1700	757	1700	1700		
Volume to Capacity	0.08	0.04	0.24	0.24	0.04	0.03	0.11	0.11		
Queue Length 95th (m)	1.9	0.9	0.0	0.0	0.0	0.8	0.0	0.0		
Control Delay (s)	23.5	11.3	0.0	0.0	0.0	9.9	0.0	0.0		
Lane LOS	С	В				А				
Approach Delay (s)	16.3		0.0			0.6				
Approach LOS	С									
Intersection Summary										
Average Delay			0.7							
Intersection Capacity Utiliz	ation		31.5%	IC	CU Level	of Service	9		А	
Analysis Period (min)			15							

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Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	٦	1		र्स	4Î		
Traffic Volume (veh/h)	18	74	36	1	1	1	
Future Volume (Veh/h)	18	74	36	1	1	1	
Sign Control	Free			Stop	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	
Hourly flow rate (vph)	21	88	43	1	1	1	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type	None						
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume	0		44	42	130	0	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	0		44	42	130	0	
tC, single (s)	4.1		7.1	6.5	6.5	6.2	
tC, 2 stage (s)							
tF (s)	2.2		3.5	4.0	4.0	3.3	
p0 queue free %	99		95	100	100	100	
cM capacity (veh/h)	1623		948	839	751	1085	
Direction, Lane #	<u>EB 1</u>	EB 2	NB 1	SB 1			
Volume Total	21	88	44	2			
Volume Left	21	0	43	0			
Volume Right	0	88	0	1			
cSH	1623	1700	945	887			
Volume to Capacity	0.01	0.05	0.05	0.00			
Queue Length 95th (m)	0.3	0.0	1.1	0.1			
Control Delay (s)	7.2	0.0	9.0	9.1			
Lane LOS	А		А	А			
Approach Delay (s)	1.4		9.0	9.1			
Approach LOS			А	А			
Intersection Summary							
Average Delay			3.7				
Intersection Capacity Utiliza	ation		18.7%	IC	U Level o	of Service	
Analysis Period (min)			15				

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Movement	WBL	WBR	NBT	NBR	SBL	SBT				
Lane Configurations	ሻ	1	^	1	ሻ	^				
Traffic Volume (veh/h)	54	28	784	12	11	1559				
Future Volume (Veh/h)	54	28	784	12	11	1559				
Sign Control	Stop		Free			Free				
Grade	0%		0%			0%				
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				
Hourly flow rate (vph)	55	29	800	12	11	1591				
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	1618	400			812					
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol	1618	400			812					
tC, single (s)	6.8	6.9			4.1					
tC, 2 stage (s)										
tF (s)	3.5	3.3			2.2					
p0 queue free %	41	95			99					
cM capacity (veh/h)	93	600			810					
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3		
Volume Total	55	29	400	400	12	11	796	796		
Volume Left	55	0	0	0	0	11	0	0		
Volume Right	0	29	0	0	12	0	0	0		
cSH	93	600	1700	1700	1700	810	1700	1700		
Volume to Capacity	0.59	0.05	0.24	0.24	0.01	0.01	0.47	0.47		
Queue Length 95th (m)	20.9	1.2	0.0	0.0	0.0	0.3	0.0	0.0		
Control Delay (s)	88.8	11.3	0.0	0.0	0.0	9.5	0.0	0.0		
Lane LOS	F	В				А				
Approach Delay (s)	62.1		0.0			0.1				
Approach LOS	F									
Intersection Summary										
Average Delay			2.1							
Intersection Capacity Utiliz	ation		53.1%	IC	CU Level	of Service)		А	
Analysis Period (min)			15							

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Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	۲	1		र्स	ef 👘	
Traffic Volume (veh/h)	5	26	76	1	1	11
Future Volume (Veh/h)	5	26	76	1	1	11
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	6	33	96	1	1	14
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0		26	12	45	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		26	12	45	0
tC, single (s)	4.1		7.1	6.5	6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2		3.5	4.0	4.0	3.3
p0 queue free %	100		90	100	100	99
cM capacity (veh/h)	1623		967	879	844	1085
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	6	33	97	15		
Volume Left	6	0	96	0		
Volume Right	0	33	0	14		
cSH	1623	1700	966	1065		
Volume to Capacity	0.00	0.02	0.10	0.01		
Queue Length 95th (m)	0.1	0.0	2.5	0.3		
Control Delay (s)	7.2	0.0	9.1	8.4		
Lane LOS	А		А	А		
Approach Delay (s)	1.1		9.1	8.4		
Approach LOS			А	А		
Intersection Summary						
Avorago Dolay			7.0			
Intersection Canacity Litilia	ration		7.0	10		of Sonvice
Analysis Dariad (min)	allUII		20.9% 1E	IC	U Level (I Selvice
Analysis Period (min)			15			

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Movement	WBL	WBR	NBT	NBR	SBL	SBT				
Lane Configurations	5	1	**	1	5	* *				
Traffic Volume (veh/h)	15	22	1913	67	25	1132				
Future Volume (Veh/h)	15	22	1913	67	25	1132				
Sign Control	Stop		Free			Free				
Grade	0%		0%			0%				
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				
Hourly flow rate (vph)	16	23	2014	71	26	1192				
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	2662	1007			2085					
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol	2662	1007			2085					
tC, single (s)	6.8	6.9			4.1					
tC, 2 stage (s)										
tF (s)	3.5	3.3			2.2					
p0 queue free %	3	90			90					
cM capacity (veh/h)	16	239			262					
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3		
Volume Total	16	23	1007	1007	71	26	596	596		
Volume Left	16	0	0	0	0	26	0	0		
Volume Right	0	23	0	0	71	0	0	0		
cSH	16	239	1700	1700	1700	262	1700	1700		
Volume to Capacity	0.97	0.10	0.59	0.59	0.04	0.10	0.35	0.35		
Queue Length 95th (m)	18.4	2.4	0.0	0.0	0.0	2.5	0.0	0.0		
Control Delay (s)	526.4	21.7	0.0	0.0	0.0	20.2	0.0	0.0		
Lane LOS	F	С				С				
Approach Delay (s)	228.7		0.0			0.4				
Approach LOS	F									
Intersection Summary										
Average Delay			2.8							
Intersection Capacity Utiliz	zation		62.9%	IC	CU Level	of Service	9		В	
Analysis Period (min)			15							

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Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	ሻ	1		र्स	4Î	
Traffic Volume (veh/h)	18	74	36	1	1	1
Future Volume (Veh/h)	18	74	36	1	1	1
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	21	88	43	1	1	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0		44	42	130	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		44	42	130	0
tC, single (s)	4.1		7.1	6.5	6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2		3.5	4.0	4.0	3.3
p0 queue free %	99		95	100	100	100
cM capacity (veh/h)	1623		948	839	751	1085
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	21	88	44	2		
Volume Left	21	0	43	0		
Volume Right	0	88	0	1		
cSH	1623	1700	945	887		
Volume to Capacity	0.01	0.05	0.05	0.00		
Queue Length 95th (m)	0.3	0.0	1.1	0.1		
Control Delay (s)	7.2	0.0	9.0	9.1		
Lane LOS	А		А	А		
Approach Delay (s)	1.4		9.0	9.1		
Approach LOS			А	А		
Intersection Summary						
Average Delay			3.7			
Intersection Capacity Utiliza	ation		18.7%	IC	U Level	of Service
Analysis Period (min)			15			

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Movement	WBL	WBR	NBT	NBR	SBL	SBT				
Lane Configurations	5	1	44	1	5	* *				
Traffic Volume (veh/h)	99	47	784	19	18	1559				
Future Volume (Veh/h)	99	47	784	19	18	1559				
Sign Control	Stop		Free			Free				
Grade	0%		0%			0%				
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				
Hourly flow rate (vph)	101	48	800	19	18	1591				
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	1632	400			819					
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol	1632	400			819					
tC, single (s)	6.8	6.9			4.1					
tC, 2 stage (s)										
tF (s)	3.5	3.3			2.2					
p0 queue free %	0	92			98					
cM capacity (veh/h)	90	600			805					
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3		
Volume Total	101	48	400	400	19	18	796	796		
Volume Left	101	0	0	0	0	18	0	0		
Volume Right	0	48	0	0	19	0	0	0		
cSH	90	600	1700	1700	1700	805	1700	1700		
Volume to Capacity	1.12	0.08	0.24	0.24	0.01	0.02	0.47	0.47		
Queue Length 95th (m)	52.2	2.0	0.0	0.0	0.0	0.5	0.0	0.0		
Control Delay (s)	216.4	11.5	0.0	0.0	0.0	9.6	0.0	0.0		
Lane LOS	F	В				A				
Approach Delay (s)	150.4		0.0			0.1				
Approach LOS	F									
Intersection Summary										
Average Delay			8.8							
Intersection Capacity Utiliza	tion		55.2%	IC	U Level	of Service	9		В	
Analysis Period (min)			15							

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Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	۲	1		र्स	¢Î,		
Traffic Volume (veh/h)	19	26	76	1	1	75	
Future Volume (Veh/h)	19	26	76	1	1	75	
Sign Control	Free			Stop	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	
Hourly flow rate (vph)	24	33	96	1	1	95	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type	None						
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume	0		144	48	81	0	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	0		144	48	81	0	
tC, single (s)	4.1		7.1	6.5	6.5	6.2	
tC, 2 stage (s)							
tF (s)	2.2		3.5	4.0	4.0	3.3	
p0 queue free %	99		87	100	100	91	
cM capacity (veh/h)	1623		744	831	797	1085	
Direction, Lane #	EB 1	EB 2	NB 1	SB 1			
Volume Total	24	33	97	96			
Volume Left	24	0	96	0			
Volume Right	0	33	0	95			
cSH	1623	1700	745	1081			
Volume to Capacity	0.01	0.02	0.13	0.09			
Queue Length 95th (m)	0.3	0.0	3.4	2.2			
Control Delay (s)	7.3	0.0	10.6	8.7			
Lane LOS	А		В	А			
Approach Delay (s)	3.1		10.6	8.7			
Approach LOS			В	А			
Intersection Summary							
Average Delay			8.1				
Intersection Capacity Utilizat	tion		20.9%	IC	U Level o	of Service	
Analysis Period (min)			15				

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Movement	WBL	WBR	NBT	NBR	SBL	SBT				
Lane Configurations	5	1	^	1	٦	44				
Traffic Volume (veh/h)	26	38	1913	105	41	1132				
Future Volume (Veh/h)	26	38	1913	105	41	1132				
Sian Control	Stop		Free			Free				
Grade	0%		0%			0%				
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				
Hourly flow rate (vph)	27	40	2014	111	43	1192				
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	2696	1007			2125					
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol	2696	1007			2125					
tC, single (s)	6.8	6.9			4.1					
tC, 2 stage (s)										
tF (s)	3.5	3.3			2.2					
p0 queue free %	0	83			83					
cM capacity (veh/h)	14	239			253					
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3		
Volume Total	27	40	1007	1007	111	43	596	596		
Volume Left	27	0	0	0	0	43	0	0		
Volume Right	0	40	0	0	111	0	0	0		
cSH	14	239	1700	1700	1700	253	1700	1700		
Volume to Capacity	1.88	0.17	0.59	0.59	0.07	0.17	0.35	0.35		
Queue Length 95th (m)	30.9	4.5	0.0	0.0	0.0	4.6	0.0	0.0		
Control Delay (s)	954.5	23.1	0.0	0.0	0.0	22.1	0.0	0.0		
Lane LOS	F	С				С				
Approach Delay (s)	398.4		0.0			0.8				
Approach LOS	F									
Intersection Summary										
Average Delay			8.1							
Intersection Capacity Utiliza	ation		62.9%	IC	CU Level	of Service	<u>;</u>		В	
Analysis Period (min)			15							

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Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	۲.	1		ર્સ	eî 🗍	
Traffic Volume (veh/h)	72	74	36	1	1	28
Future Volume (Veh/h)	72	74	36	1	1	28
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	86	88	43	1	1	33
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0		206	172	260	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		206	172	260	0
tC, single (s)	4.1		7.1	6.5	6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2		3.5	4.0	4.0	3.3
p0 queue free %	95		94	100	100	97
cM capacity (veh/h)	1623		699	683	610	1085
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	86	88	44	34		
Volume Left	86	0	43	0		
Volume Right	0	88	0	33		
cSH	1623	1700	699	1061		
Volume to Capacity	0.05	0.05	0.06	0.03		
Queue Length 95th (m)	1.3	0.0	1.5	0.8		
Control Delay (s)	7.3	0.0	10.5	8.5		
Lane LOS	А		В	А		
Approach Delay (s)	3.6		10.5	8.5		
Approach LOS			В	А		
Intersection Summary						
Average Delav			5.5			
Intersection Capacity Utiliza	ation		19.4%	IC	U Level (of Service
Analysis Period (min)			15	.0	5.01	

Queues 1: Emil Kolb Pkwy & Connection

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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	101	48	800	19	18	1591
v/c Ratio	0.26	0.12	0.33	0.02	0.04	0.66
Control Delay	31.0	9.6	6.4	2.1	5.2	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.0	9.6	6.4	2.1	5.2	10.0
Queue Length 50th (m)	14.5	0.0	26.2	0.0	0.9	73.1
Queue Length 95th (m)	27.9	8.5	34.6	2.0	3.0	92.9
Internal Link Dist (m)	11.5		66.0			56.6
Turn Bay Length (m)				50.0	70.0	
Base Capacity (vph)	395	391	2429	1093	415	2429
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.12	0.33	0.02	0.04	0.66
Intersection Summary						

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Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations	5	1	**	1	5	#†			
Traffic Volume (vph)	99	47	784	19	18	1559			
Future Volume (vph)	99	47	784	19	18	1559			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900			
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5			
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95			
Frt	1.00	0.85	1.00	0.85	1.00	1.00			
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00			
Satd. Flow (prot)	1789	1601	3579	1601	1789	3579			
Flt Permitted	0.95	1.00	1.00	1.00	0.32	1.00			
Satd. Flow (perm)	1789	1601	3579	1601	611	3579			
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98			
Adj. Flow (vph)	101	48	800	19	18	1591			
RTOR Reduction (vph)	0	37	0	6	0	0			
Lane Group Flow (vph)	101	11	800	13	18	1591			
Turn Type	Prot	Perm	NA	Perm	Perm	NA			
Protected Phases	8		2			6			
Permitted Phases		8		2	6				
Actuated Green, G (s)	19.9	19.9	61.1	61.1	61.1	61.1			
Effective Green, g (s)	19.9	19.9	61.1	61.1	61.1	61.1			
Actuated g/C Ratio	0.22	0.22	0.68	0.68	0.68	0.68			
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5			
Lane Grp Cap (vph)	395	353	2429	1086	414	2429			
v/s Ratio Prot	c0.06		0.22			c0.44			
v/s Ratio Perm		0.01		0.01	0.03				
v/c Ratio	0.26	0.03	0.33	0.01	0.04	0.66			
Uniform Delay, d1	28.9	27.5	6.0	4.7	4.8	8.4			
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	1.6	0.2	0.4	0.0	0.2	1.4			
Delay (s)	30.5	27.6	6.3	4.7	5.0	9.7			
Level of Service	С	С	А	А	А	А			
Approach Delay (s)	29.6		6.3			9.7			
Approach LOS	С		А			А			
Intersection Summary									
HCM 2000 Control Delay			9.8	Н	CM 2000	Level of Servi	се	А	
HCM 2000 Volume to Cap	acity ratio		0.56						
Actuated Cycle Length (s)			90.0	S	um of los	t time (s)		9.0	
Intersection Capacity Utiliz	zation		56.1%	IC	CU Level	of Service		В	
Analysis Period (min)			15						
c Critical Lane Group									

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Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	ሻ	1		र्स	4Î	
Traffic Volume (veh/h)	19	26	76	1	1	75
Future Volume (Veh/h)	19	26	76	1	1	75
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	24	33	96	1	1	95
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (m)	79					
pX, platoon unblocked						
vC, conflicting volume	0		144	48	81	0
vC1, stage 1 conf vol	-				• •	-
vC2, stage 2 conf vol						
vCu, unblocked vol	0		144	48	81	0
tC, single (s)	4.1		7.1	6.5	6.5	6.2
tC, 2 stage (s)					2.9	
tF (s)	2.2		3.5	4.0	4.0	3.3
p0 queue free %	99		87	100	100	91
cM capacity (veh/h)	1623		744	831	797	1085
Direction Long #				CD 1		
Direction, Lane #	ER I	EB 2	NR 1	2R I		
volume lotal	24	33	9/	96		
Volume Left	24	0	96	0		
Volume Right	0	33	0	95		
cSH	1623	1/00	/45	1081		
Volume to Capacity	0.01	0.02	0.13	0.09		
Queue Length 95th (m)	0.3	0.0	3.4	2.2		
Control Delay (s)	7.3	0.0	10.6	8.7		
Lane LOS	A		В	А		
Approach Delay (s)	3.1		10.6	8.7		
Approach LOS			В	А		
Intersection Summary						
Average Delay			8.1			
Intersection Capacity Utiliz	zation		20.9%	IC	U Level	of Service
Analysis Period (min)			15			

Queues 1: Emil Kolb Pkwy & Connection

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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	27	40	2014	111	43	1192
v/c Ratio	0.07	0.11	0.83	0.10	0.52	0.49
Control Delay	28.4	18.7	14.5	1.6	35.6	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.4	18.7	14.5	1.6	35.6	7.8
Queue Length 50th (m)	3.7	2.9	117.3	0.6	3.2	45.5
Queue Length 95th (m)	10.3	10.8	151.4	5.2	#21.3	58.2
Internal Link Dist (m)	11.5		66.0			56.6
Turn Bay Length (m)				50.0	70.0	
Base Capacity (vph)	395	368	2429	1118	82	2429
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	0.07	0.11	0.83	0.10	0.52	0.49

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations	5	1	**	1	5	**		
Traffic Volume (vph)	26	38	1913	105	41	1132		
Future Volume (vph)	26	38	1913	105	41	1132		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5		
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95		
Frt	1.00	0.85	1.00	0.85	1.00	1.00		
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00		
Satd. Flow (prot)	1789	1601	3579	1601	1789	3579		
Flt Permitted	0.95	1.00	1.00	1.00	0.07	1.00		
Satd. Flow (perm)	1789	1601	3579	1601	123	3579		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95		
Adj. Flow (vph)	27	40	2014	111	43	1192		
RTOR Reduction (vph)	0	15	0	32	0	0		
Lane Group Flow (vph)	27	25	2014	79	43	1192		
Turn Type	Prot	Perm	NA	Perm	Perm	NA		
Protected Phases	8		2			6		
Permitted Phases		8		2	6			
Actuated Green, G (s)	19.9	19.9	61.1	61.1	61.1	61.1		
Effective Green, g (s)	19.9	19.9	61.1	61.1	61.1	61.1		
Actuated g/C Ratio	0.22	0.22	0.68	0.68	0.68	0.68		
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5		
Lane Grp Cap (vph)	395	353	2429	1086	83	2429		
v/s Ratio Prot	0.02		c0.56			0.33		
v/s Ratio Perm		c0.02		0.05	0.35			
v/c Ratio	0.07	0.07	0.83	0.07	0.52	0.49		
Uniform Delay, d1	27.7	27.7	10.6	4.9	7.2	7.0		
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2	0.3	0.4	3.4	0.1	21.2	0.7		
Delay (s)	28.1	28.1	14.1	5.0	28.4	7.7		
Level of Service	С	С	В	А	С	А		
Approach Delay (s)	28.1		13.6			8.4		
Approach LOS	С		В			А		
Intersection Summary								
HCM 2000 Control Delay			12.0	H	CM 2000	Level of Serv	ice	В
HCM 2000 Volume to Capa	city ratio		0.64					
Actuated Cycle Length (s)			90.0	S	um of los	t time (s)		9.0
Intersection Capacity Utiliza	ation		64.5%	IC	CU Level	of Service		С
Analysis Period (min)			15					
c Critical Lane Group								

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Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	5	1		र्स	4	
Traffic Volume (veh/h)	72	74	36	1	1	28
Future Volume (Veh/h)	72	74	36	1	1	28
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	86	88	43	1	1	33
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)	None					
Linstream signal (m)	79					
nX platoon unblocked	, ,					
vC conflicting volume	0		206	172	260	0
vC1_stage 1 conf vol	U		200	172	200	U
vC2_stage 2 conf vol						
	0		206	172	260	0
tC single (s)	/ 1		7 1	65	65	62
tC_{2} stand (s)	т. I		7.1	0.5	0.5	0.2
tC, Z stage (s)	2.2		25	10	10	2.2
$n_{\rm cuouo}$ froo %	2.2		0.0	100	100	07
cM capacity (yob/b)	7J 1602		54 600	602	610	77 1005
	1023		099	003	010	1005
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	86	88	44	34		
Volume Left	86	0	43	0		
Volume Right	0	88	0	33		
cSH	1623	1700	699	1061		
Volume to Capacity	0.05	0.05	0.06	0.03		
Queue Length 95th (m)	1.3	0.0	1.5	0.8		
Control Delay (s)	7.3	0.0	10.5	8.5		
Lane LOS	А		В	А		
Approach Delay (s)	3.6		10.5	8.5		
Approach LOS			В	А		
Intersection Summary						
			55			
Intersection Canacity Litilia	ration		0.0 10 /0/	10		of Sonvice
Analysis Period (min)	auon		17.470	IC	U Level	