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NexTrans Incorporated

January 8, 2016

Mr. Ayaz Adatiya

Maple Valley Development Corporation
16 Rainy Dale Road
Brampton, ON L6V 4R7

Re: Traffic Impact Study
Proposed Residential Development
3111-3123 Cawthra Road, City of Mississauga
Our Project No. NT-15-074

NexTrans Engineering is pleased to present the enclosed Traffic Impact Study for the above noted site in support of a proposed Official Plan Amendment, Zoning By-law Amendment, and Draft Plan of Subdivision applications.

The subject site is located in the north-east quadrant of the Cawthra Road and Dundas Street East intersection and it is currently occupied by single detached dwellings. The development proposal consists of 38 townhouse units. Site entrance is proposed to align with the existing t-intersection at Cawthra Road and Silver Creek Boulevard to create a four-legged intersection. In addition, four (4) townhouse units are proposed at the east limit of the property with vehicle access via Ericson Road and two (2) parking spaces will be provided per unit.

The study concludes that the development proposal can adequately be accommodated by the existing transportation network with manageable traffic impact to the adjacent public roadways. Moreover, the proposed parking supply can sufficiently accommodate the expected parking demand generated from the proposed development. We trust the enclosed sufficiently addresses your needs. Should you have any questions, please do not hesitate to contact the undersigned.

Yours truly,

NEXTRANS ENGINEERING

Richard Pernicky, CET, MITE
Principal

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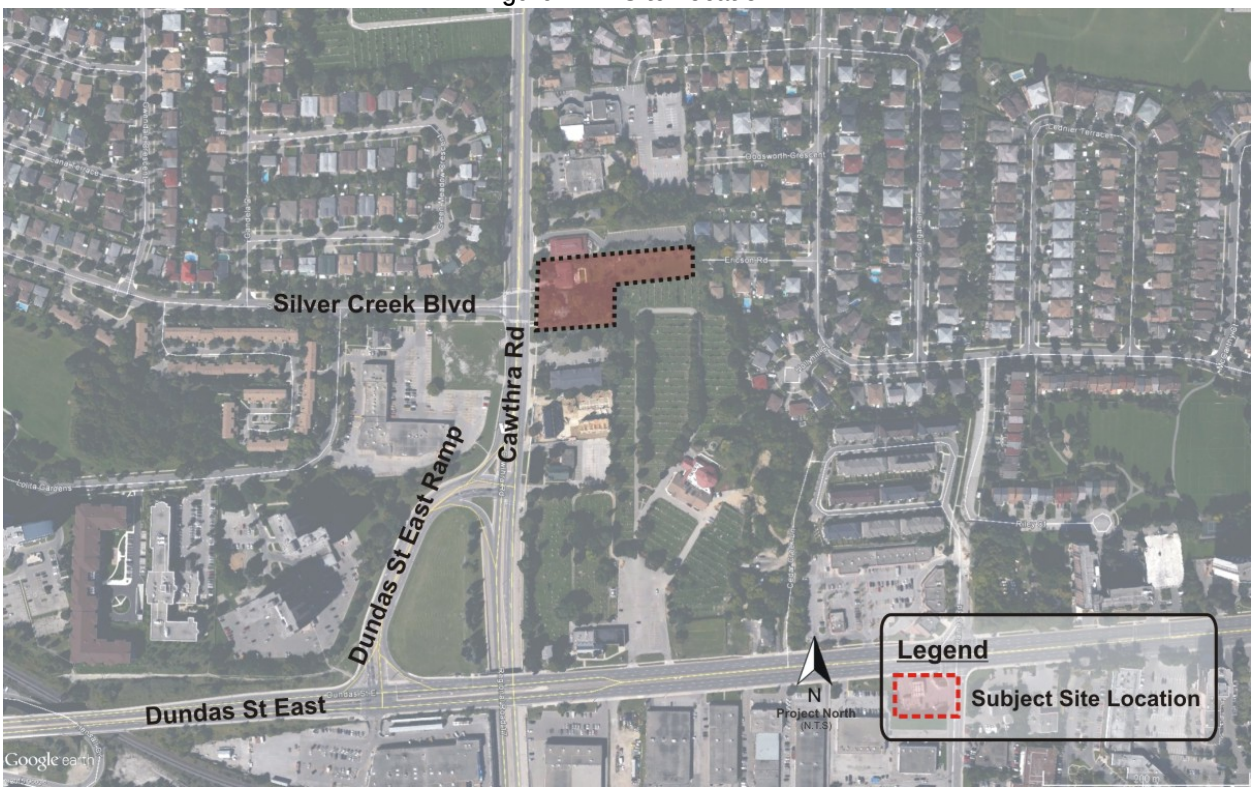
1.0 INTRODUCTION

NexTrans Engineering was retained by Maple Valley Development Corporation (the 'Owner') to undertake a Traffic Impact Study for an Official Plan Amendment, Zoning By-law Amendment, and Draft Plan of Subdivision applications in support of a residential development proposal. The subject site is located in the north-east quadrant of the Cawthra Road and Dundas Street East intersection, municipally known as 3111-3123 Cawthra Road, in the City of Mississauga.

The location of the proposed development is illustrated in Figure 1-1.

Figure 1-1 – Site Location

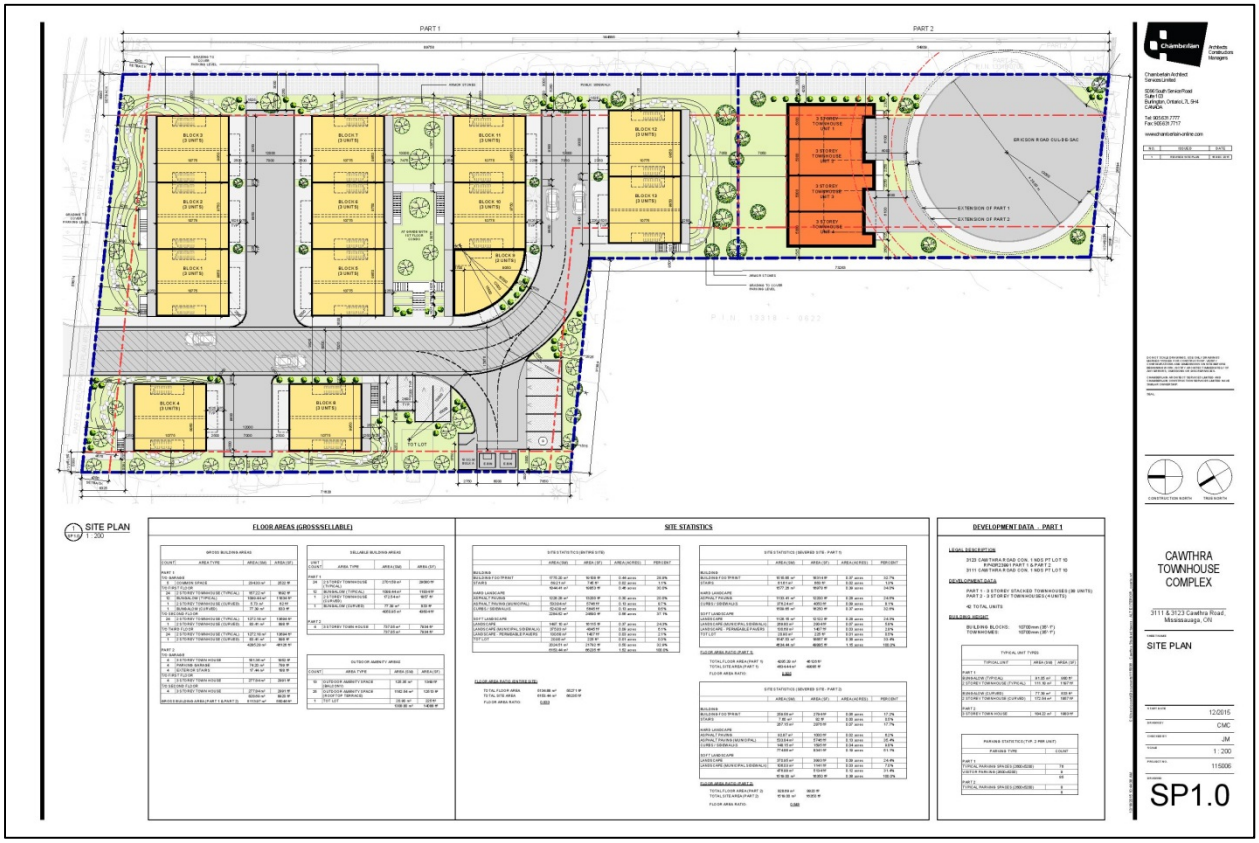


The subject property is currently occupied by single detached dwellings. The development proposal consists of 38 townhouse units. Site entrance is proposed to align with the existing t-intersection at Cawthra Road and Silver Creek Boulevard to create a four-legged intersection. Two (2) parking spaces will be provided for each townhouse unit, plus nine (9) visitor spaces.

In addition, four (4) townhouse units are proposed at the east limit of the property with vehicle access via Ericson Road and two (2) parking spaces will be provided per unit.

The proposed site plan is provided in Figure 1-2.

Figure 1-2 – Proposed Site Plan



Given the nature of the proposed development, the analysis will includes the weekday morning and afternoon peak periods. The study area will include the following key intersections:

- Cawthra Road and Silver Creek Boulevard; and,
- Cawthra Road and Dundas Street East Ramp / Existing Driveway.

2.0 EXISTING TRAFFIC CONDITIONS

2.1. Existing Road Network

The existing road network for the study intersections are described below:

- Cawthra Road: is a north-south regional arterial road under the jurisdiction control of Peel Region. It has four (4) general purpose lanes, and it maintains a posted speed limit of 50 km/h in the vicinity of the subject site.
- Silver Creek Boulevard: is an east-west minor collector road under the jurisdiction control of City of Mississauga. It has two (2) general purpose lanes, and it maintains a posted speed limit of 40 km/h in the vicinity of the subject site.

2.2. Existing Traffic Volumes

Existing traffic volumes were received from the City and it was counted in May 2015 during the morning (7:00 a.m. to 9:00 a.m.) and afternoon (4:00 p.m. to 6:00 p.m.) peak periods. Detailed existing traffic data is provided in Appendix A.

2.3. Existing Traffic Assessment

The existing volumes, lane configuration and traffic control are illustrated in Figure 2-1, and were analyzed using Synchro 8.0 software. The methodology of the software follows the procedures described and outlined in the Highway Capacity Manual, HCM 2000, published by the Transportation Research Board. The detailed results are provided in Appendix B and summarized in Table 2.1.

Figure 2-1 – Existing Traffic Volumes and Lane Configuration

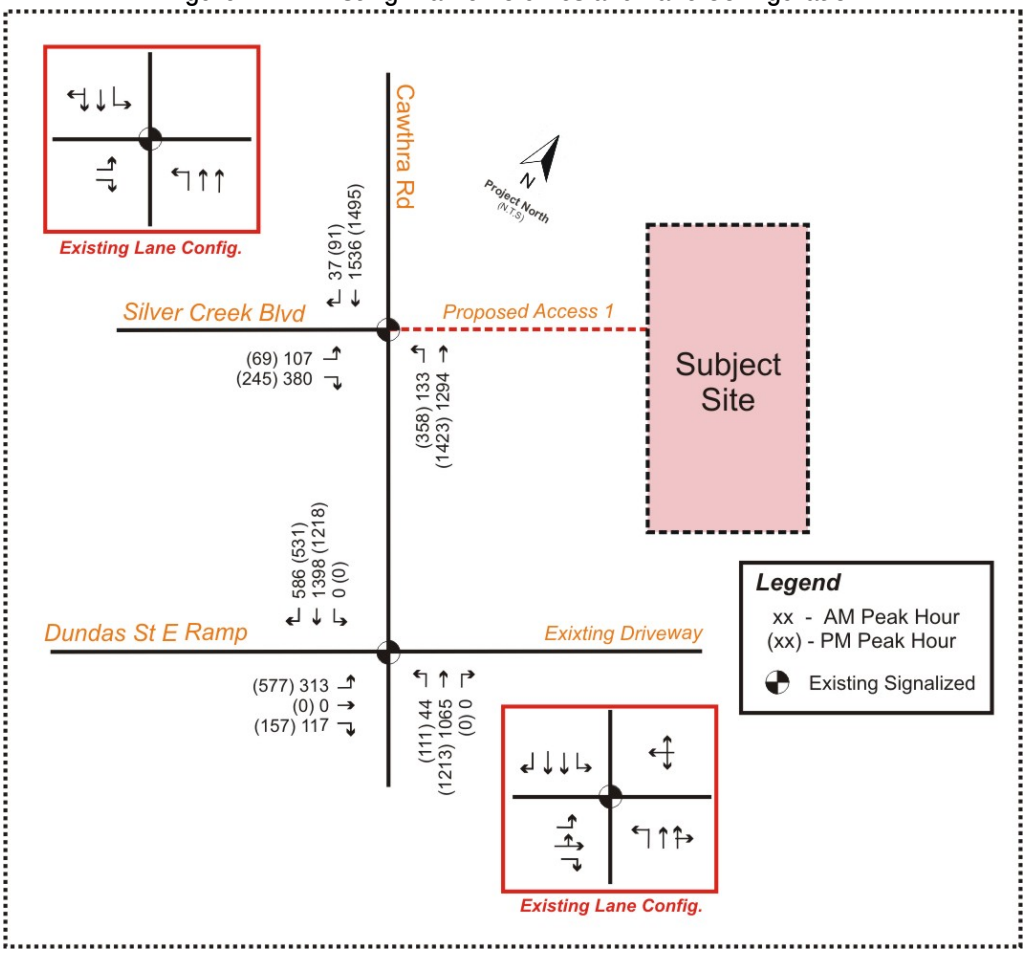


Table 2.1 – Level of Service – Existing Traffic Assessments

Intersection	Movement	Weekday AM Peak Hour		Weekday PM Peak Hour	
		LOS (v/c)	Delay (s)	LOS (v/c)	Delay (s)
Cawthra Road and Silver Creek Boulevard	EB-L	D (0.42)	52.2	E (0.55)	66.3
	EB-TR	F (0.91)	87.6	E (0.16)	59.4
	NB-L	C (0.59)	20.9	D (0.75)	37.9
	NB-TR	B (0.52)	14.7	A (0.49)	6.0
	SB-L	A (0.00)	0.0	A (0.00)	0.0
	SB-TR	B (0.70)	17.4	C (0.78)	26.0
Cawthra Road and Dundas Street East Ramp / Existing Driveway	EB-L	E (0.71)	68.6	E (0.80)	64.2
	EB-LT	E (0.72)	68.8	E (0.80)	64.4
	EB-R	D (0.08)	53.3	D (0.20)	45.5
	WB-LTR	A (0.00)	0.0	A (0.00)	0.0
	NB-L	A (0.17)	6.3	B (0.37)	11.2
	NB-TR	A (0.40)	5.5	B (0.50)	10.7
	SB-L	A (0.00)	0.0	A (0.00)	0.0
	SB-T	A (0.56)	7.1	B (0.56)	12.6
	SB-R	A (0.48)	6.2	B (0.50)	12.4

Under existing condition, the study intersections are expected to operate with sufficient capacity (below v/c ratio of 0.91). No critical movements were identified.

3.0 FUTURE BACKGROUND TRAFFIC CONDITIONS

A standard 5-year planning horizon (year 2020) was selected for the purpose of this study, which coincides with the expected full build out of the proposed development.

Based on the Region's AADT, Cawthra Road is experiencing a negative growth trend. However, for a conservative analysis, a general growth rate of 0.50% compounded annually was applied to the through movements along Cawthra Road to represents traffic growth from beyond the study area. The same growth rate was also applied to the movements related to the Dunas Street East ramp.

3.1. Future Background Traffic Assessment

Future background traffic volumes are illustrated in Figure 3-1, and were analyzed using Synchro 8.0 software. The detailed calculations are provided in Appendix C and summarized in Table 3.1.

Figure 3-1 – Future Background Traffic Volumes

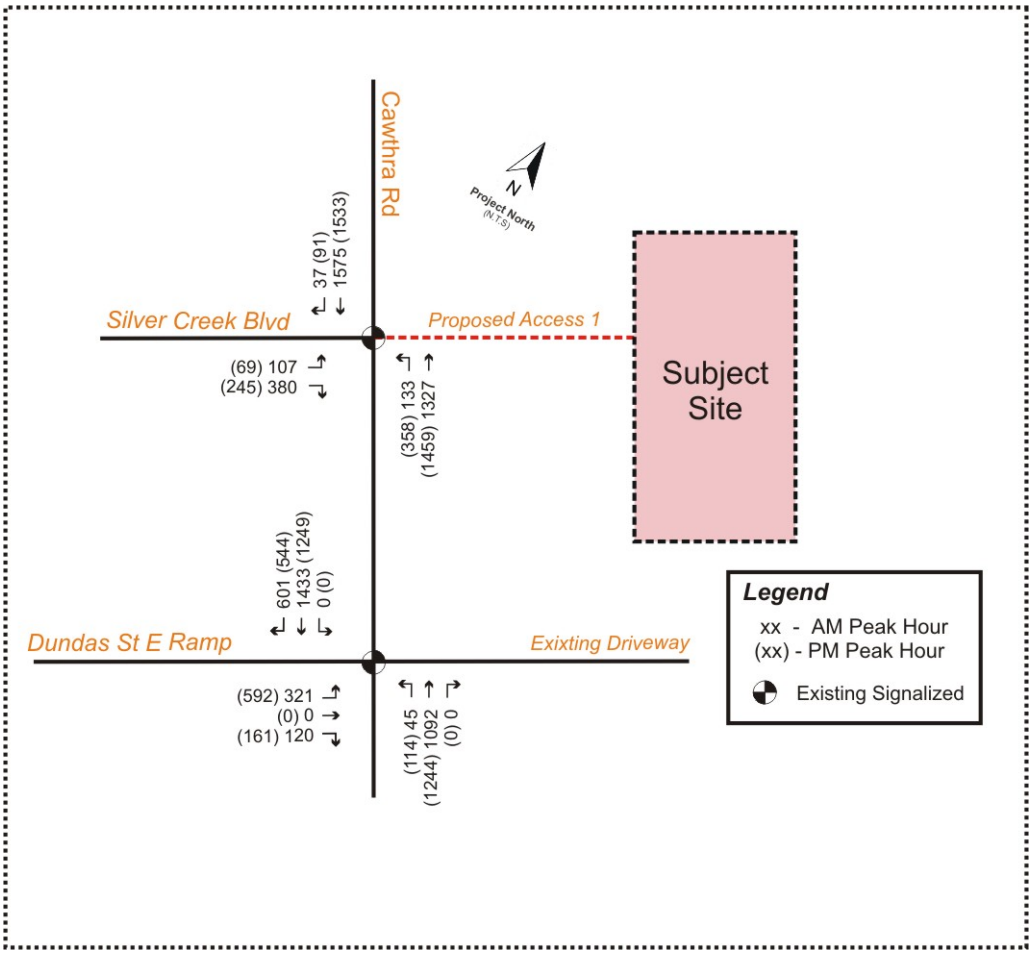


Table 3.1 – Level of Service – Future Background Traffic Assessments

Intersection	Movement	Weekday AM Peak Hour		Weekday PM Peak Hour	
		LOS (v/c)	Delay (s)	LOS (v/c)	Delay (s)
Cawthra Road and Silver Creek Boulevard	EB-L	D (0.42)	52.2	E (0.55)	66.3
	EB-TR	F (0.91)	88.3	E (0.16)	59.4
	NB-L	C (0.62)	23.8	D (0.76)	40.9
	NB-TR	B (0.53)	14.9	A (0.50)	6.0
	SB-L	A (0.00)	0.0	A (0.00)	0.0
	SB-TR	B (0.72)	18.2	C (0.80)	26.8
Cawthra Road and Dundas Street East Ramp / Existing Driveway	EB-L	E (0.71)	68.1	E (0.81)	64.9
	EB-LT	E (0.72)	68.4	E (0.81)	64.9
	EB-R	D (0.08)	52.9	D (0.21)	45.3
	WB-LTR	A (0.00)	0.0	A (0.00)	0.0
	NB-L	A (0.18)	6.7	B (0.39)	12.0
	NB-TR	A (0.41)	5.8	B (0.51)	11.1
	SB-L	A (0.00)	0.0	A (0.00)	0.0
	SB-T	A (0.58)	7.5	B (0.58)	13.3
	SB-R	A (0.50)	6.7	B (0.51)	13.1

Under future background condition, the study intersections are expected to continue operating sufficient capacity (below v/c ratio of 0.91). No critical movements were identified.

4.0 SITE TRAFFIC

The development proposal consists of 38 residential units. Trip generation forecasts were undertaken using the information contained in the *Trip Generation Manual, 9th Edition* published by the Institute of Transportation Engineers (ITE) for "Residential Condominium/Townhouse" (LUC 230). To remain a conservative approach, no reductions were applied.

The vehicle access for the proposed four (4) townhouse units will be provided via Ericson Road. Given the low density and different site accesses for the townhouse units, it is excluded from the analysis.

The summary of the vehicular trip generation is summarized in Table 4.1.

Table 4.1 – Site Traffic Trip Generation

Land Use (Size)	Parameter	Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
Residential Condominium (38 units)	Trip Rate (per unit)	4	20	24	18	9	27
	Total Trip	0.11	0.52	0.63	0.47	0.24	0.71

The development proposal is expected to generate 24 two-way trips (4 inbound and 20 outbound) during the weekday morning peak hour and 27 two-way trips (18 inbound and 9 outbound) during the afternoon peak hour.

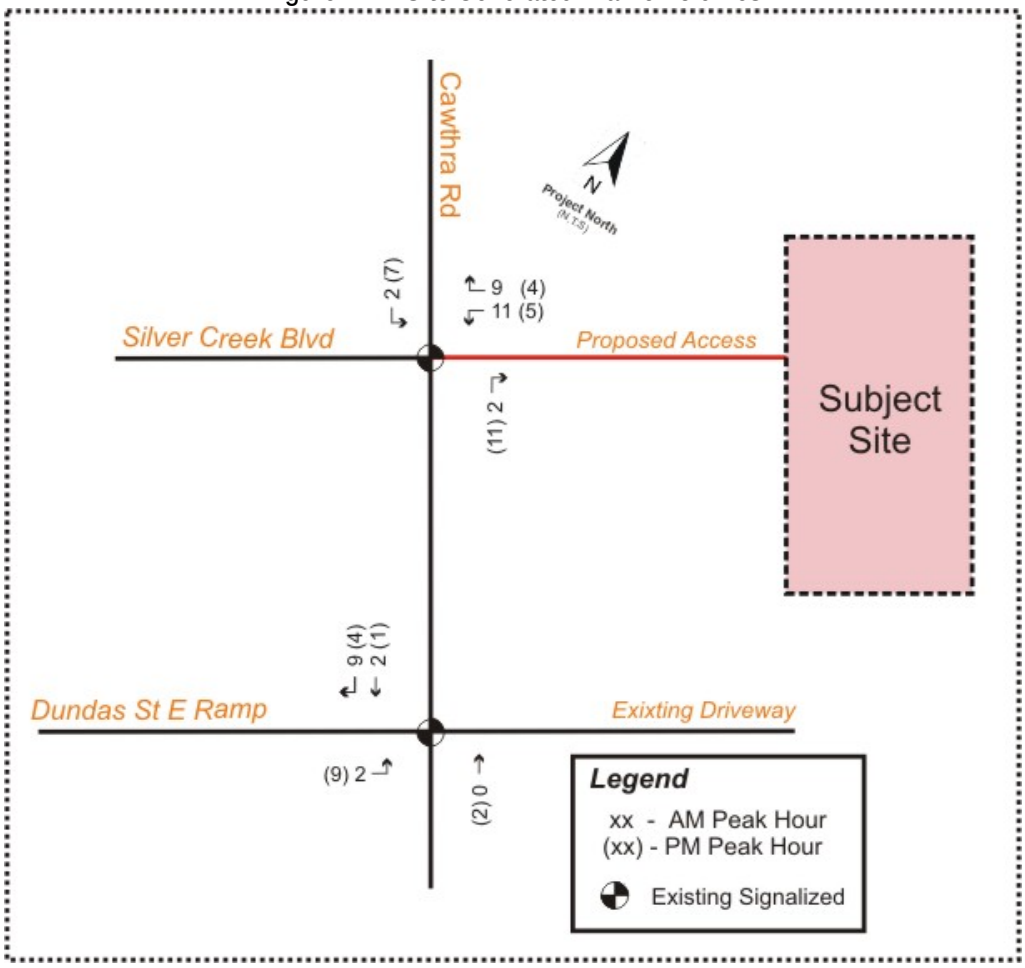
The applied trip distribution was based on the information contained in the 2011 Transportation Tomorrow Survey (TTS), and it is summarized in Table 4.2

Table 4.2 – Site Traffic Trip Distribution

Direction	Via	Percentage
North	Cawthra Road	45%
South	Cawthra Road	10%
East	Dundas Street East	25%
West	Dundas Street East	20%
Total		100%

The trip assignment is illustrated in Figure 4-1.

Figure 4-1 – Site Generated Traffic Volumes



5.0 FUTURE TOTAL TRAFFIC CONDITIONS

5.1. Future Total Traffic Assessment

The forecasted future total traffic volumes (future background traffic volumes plus site generated traffic volumes) are illustrated in Figure 5-1, and were analyzed using Synchro 8.0 software. The detailed calculations are provided in Appendix D and summarized in Table 5.1.

Figure 5-1 – Future Total Traffic Volumes

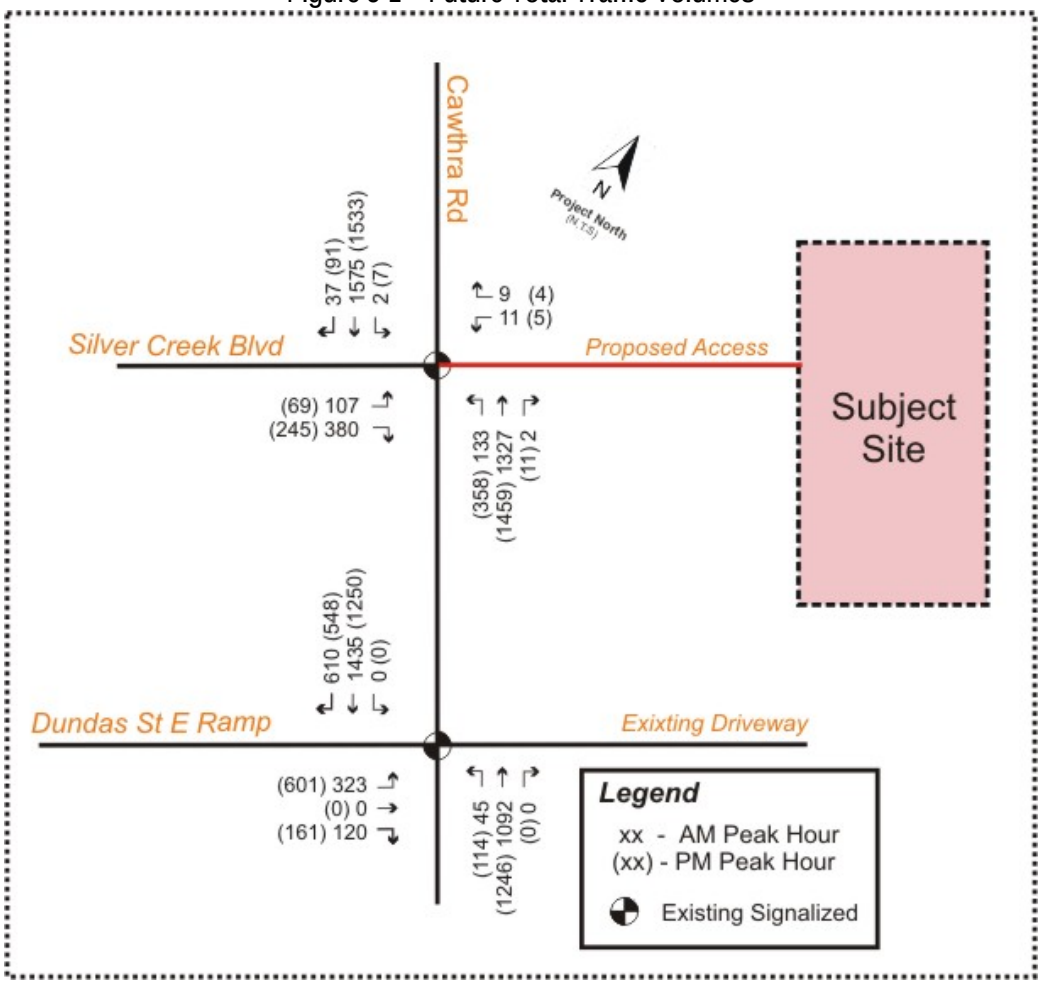


Table 5.1 – Level of Service – Future Total Traffic Assessments

Intersection	Movement	Weekday AM Peak Hour		Weekday PM Peak Hour	
		LOS (v/c)	Delay (s)	LOS (v/c)	Delay (s)
Cawthra Road and Silver Creek Boulevard	EB-L	D (0.43)	52.1	E (0.56)	66.4
	EB-TR	F (0.91)	88.3	E (0.16)	59.4
	WB-LTR	D (0.03)	47.3	E (0.02)	58.4
	NB-L	C (0.62)	23.7	D (0.76)	41.1
	NB-TR	B (0.53)	14.9	A (0.51)	6.0
	SB-L	A (0.01)	8.7	B (0.04)	13.1
	SB-TR	B (0.72)	18.2	C (0.80)	26.8
Cawthra Road and Dundas Street East Ramp / Existing Driveway	EB-L	E (0.71)	67.9	E (0.82)	64.9
	EB-LT	E (0.72)	68.1	E (0.82)	65.2
	EB-R	D (0.08)	52.9	D (0.22)	45.1
	WB-LTR	A (0.00)	0.0	A (0.00)	0.0
	NB-L	A (0.18)	6.8	B (0.39)	12.2
	NB-TR	A (0.41)	5.8	B (0.52)	11.3
	SB-L	A (0.00)	0.0	A (0.00)	0.0
	SB-T	A (0.58)	7.5	B (0.59)	13.4
	SB-R	A (0.51)	6.8	B (0.52)	13.3

Under future total condition, the study intersections are expected to continue operating with sufficient capacity (below v/c ratio of 0.91). No critical movements were identified.

6.0 PARKING ASSESSMENT

In reference to the City's Zoning By-law, the associated parking rates for condominium apartment are:

- Townhouse: 2.00 parking spaces per unit
- Visitor: 0.25 spaces per unit

Based on the aforementioned rates, the parking requirements for the proposed residential development of 38 dwelling units are summarized in Table 6.1.

Table 6.1 – City Zoning By-law Parking Requirements

Land Use	No. of Units	Parking Rate	Parking Requirement	Parking Supply
Townhouse	38 units	2.00 spaces per unit	76 spaces	75 spaces
Visitor	38 units	0.25 spaces per unit	9 spaces	9 spaces

The proposed parking supply satisfied the parking requirement outlined in the Zoning By-law.

7.0 CONCLUSIONS / FINDINGS

The findings and conclusions of our analysis are as follows:

- Based on the latest site plan, the development proposal consists of:
  - Residential Townhouse: consists of 38 dwelling units and it will be accommodated by a single site entrance via Cawthra Road.
  - Residential Townhouse: consists of four (4) dwelling units and it will be accommodated by a single site entrance via Ericson Road.
- The proposed 38 townhouse units are expected to generate 24 two-way trips (4 inbound and 20 outbound) during the weekday morning peak hour and 27 two-way trips (18 inbound and 9 outbound) during the afternoon peak hour.
- The intersection capacity analysis results (based on the methodology and procedures outlined in the Highway Capacity Manual, HCM 2000, published by the Transportation Research Board) indicate that the study intersection is expected to operate with sufficient capacity and therefore with no mitigation required.
- The proposed parking supply meet the requirement outlined in the Zoning By-law.

Appendix A

Existing Traffic Data

TMC - Intersection Count Summary

Company name: Trans-Plan Inc.
Company address: 24 Ryerson Avenue, Suite 211,Toronto, Ontario, Canada
Company phone: (647) 931-7383

Site: 1704219
Location: Cawthra Road at Silver Creek Boulevard, Mississauga
N/S Street: Cawthra Road
E/W Street: Silver Creek Boulevard
GPS Coordinates: 43.596764, -79.603340
Date: 13 May 2015
Day of week: Wednesday
Analyst(s): Kevin Lagdameo

VEHICLE TRAFFIC

Interval	SouthBound				WestBound				NorthBound				EastBound				Total
	Left	Thru	Right	B. Total	Left	Thru	Right	B. Total	Left	Thru	Right	B. Total	Left	Thru	Right	B. Total	
13/05/2015 07:00	0	276	10	286	0	0	0	0	13	207	0	220	23	0	62	85	591
13/05/2015 07:15	0	364	7	371	0	0	0	0	22	276	0	298	19	0	68	87	756
13/05/2015 07:30	0	369	5	374	0	0	0	0	29	319	0	348	31	0	96	127	849
13/05/2015 07:45	0	452	11	463	0	0	0	0	34	307	0	341	31	0	91	122	926
Hourly Total	0	1461	33	1494	0	0	0	0	98	1109	0	1207	104	0	317	421	3122
13/05/2015 08:00	0	348	14	362	0	0	0	0	29	322	0	351	24	0	97	121	834
13/05/2015 08:15	0	367	7	374	0	0	0	0	41	346	0	387	21	0	97	118	879
13/05/2015 08:30	0	306	9	315	0	0	0	0	43	334	0	377	30	0	100	130	822
13/05/2015 08:45	0	364	15	379	0	0	0	0	40	277	0	317	24	0	73	97	793
Hourly Total	0	1385	45	1430	0	0	0	0	153	1279	0	1432	99	0	367	466	3328
13/05/2015 09:00	0	51	0	51	0	0	0	0	0	37	0	37	0	0	3	3	91
13/05/2015 09:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	51	0	51	0	0	0	0	0	37	0	37	0	0	3	3	91
Grand Total	0	2897	78	2975	0	0	0	0	251	2425	0	2676	203	0	687	890	6541
Approach %	0	97	3	100	0	0	0	0	9	91	0	100	23	0	77	100	-
Total %	0	44	1	45	0	0	0	0	4	37	0	41	3	0	11	14	-

AM Peak Hour 7:30 AM - 8:30 AM

Vehicle Total	0	1536	37	1573	0	0	0	0	133	1294	0	1427	107	0	381	488	3488
Car	0	1481	34	1515	0	0	0	0	128	1217	0	1345	105	0	370	475	3335
Truck	0	55	3	58	0	0	0	0	5	77	0	82	2	0	10	12	152
Bicycle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1

Interval	SouthBound				WestBound				NorthBound				EastBound				Total
	Left	Thru	Right	B. Total	Left	Thru	Right	B. Total	Left	Thru	Right	B. Total	Left	Thru	Right	B. Total	
13/05/2015 11:00	0	225	8	233	0	0	0	0	51	211	0	262	13	0	53	66	561
13/05/2015 11:15	0	248	14	262	0	0	0	0	45	229	0	274	6	0	73	79	615
13/05/2015 11:30	0	238	14	252	0	0	0	0	57	217	0	274	14	0	51	65	591
13/05/2015 11:45	0	233	22	255	0	0	0	0	52	174	0	226	23	0	59	82	563
Hourly Total	0	944	58	1002	0	0	0	0	205	831	0	1036	56	0	236	292	2330
13/05/2015 12:00	0	213	10	223	0	0	0	0	58	256	0	314	7	0	44	51	588
13/05/2015 12:15	0	228	20	248	0	1	0	1	58	255	0	313	13	0	69	82	644
13/05/2015 12:30	0	264	19	283	0	0	0	0	37	231	0	268	21	0	57	78	629
13/05/2015 12:45	0	223	22	245	0	0	0	0	50	215	0	265	15	0	58	73	583
Hourly Total	0	928	71	999	0	1	0	1	203	957	0	1160	56	0	228	284	2444
13/05/2015 13:00	0	262	16	278	0	0	0	0	46	241	0	287	24	0	73	97	662
13/05/2015 13:15	0	209	21	230	0	0	0	0	52	265	0	317	19	0	59	78	625
13/05/2015 13:30	0	265	18	283	0	0	0	0	70	258	0	328	18	0	63	81	692
13/05/2015 13:45	0	231	16	247	0	0	0	0	61	262	0	323	29	1	63	93	663
Hourly Total	0	967	71	1038	0	0	0	0	229	1026	0	1255	90	1	258	349	2642
13/05/2015 14:00	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
13/05/2015 14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Grand Total	0	2841	200	3041	0	1	0	1	637	2814	0	3451	202	1	722	925	7418
Approach %	0	93	7	100	0	100	0	100	18	82	0	100	22	0	78	100	-
Total %	0	38	3	41	0	0	0	0	9	38	0	47	3	0	10	13	-

Midday Peak Hour 1:00 PM - 2:00 PM

Vehicle Total	0	967	71	1038	0	0	0	0	229	1026	0	1255	90	1	258	349	2642
Car	0	911	71	982	0	0	0	0	227	958	0	1185	86	0	256	342	2509
Truck	0	55	0	55	0	0	0	0	2	68	0	70	4	0	2	6	131
Bicycle	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	2

Interval	SouthBound				WestBound				NorthBound				EastBound				Total
	Left	Thru	Right	B. Total	Left	Thru	Right	B. Total	Left	Thru	Right	B. Total	Left	Thru	Right	B. Total	
13/05/2015 15:00	0	302	21	323	0	0	0	0	69	320	0	389	22	0	74	96	808
13/05/2015 15:15	0	271	22	293	0	0	0	0	72	309	0	381	18	0	69	87	761
13/05/2015 15:30	0	336	33	369	0	0	0	0	69	344	0	413	24	0	75	99	881
13/05/2015 15:45	0	361	35	396	0	0	0	0	87	351	0	438	18	0	60	78	912
Hourly Total	0	1270	111	1381	0	0	0	0	297	1324	0	1621	82	0	278	360	3362
13/05/2015 16:00	0	382	19	401	0	0	0	0	70	372	0	442	6	0	58	64	907
13/05/2015 16:15	0	356	17	373	0	0	0	0	93	341	0	434	21	0	54	75	882
13/05/2015 16:30	0	380	24	404	0	0	0	0	81	353	0	434	11	0	57	68	906
13/05/2015 16:45	0	356	21	377	0	0	0	0	96	337	0	433	24	0	55	79	889
Hourly Total	0	1474	81	1555	0	0	0	0	340	1403	0	1743	62	0	224	286	3584
13/05/2015 17:00	0	370	18	388	0	0	0	0	92	396	0	488	13	0	68	81	957
13/05/2015 17:15	0	391	28	419	0	0	0	0	89	338	0	427	21	0	65	86	932
13/05/2015 17:30	0	351	22	373	0	0	0	0	95	306	0	401	11	0	72	83	857
13/05/2015 17:45	0	374	25	399	0	0	0	0	98	319	0	417	18	0	66	84	900
Hourly Total	0	1486	93	1579	0	0	0	0	374	1359	0	1733	63	0	271	334	3646
13/05/2015 18:00	0	8	0	8	0	0	0	0	2	8	0	10	6	0	9	15	33
13/05/2015 18:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	8	0	8	0	0	0	0	2	8	0	10	6	0	9	15	33
Grand Total	0	4238	285	4523	0	0	0	0	1013	4094	0	5107	213	0	782	995	10625
Approach %	0	94	6	100	0	0	0	0	20	80	0	100	21	0	79	100	-
Total %	0	40	3	43	0	0	0	0	10	39	0	49	2	0	7	9	-

PM Peak Hour 4:30 PM - 5:30 PM

Vehicle Total	0	1497	91	1588	0	0	0	0	358	1424	0	1782	69	0	245	314	3684
Car	0	1472	90	1562	0	0	0	0	356	1384	0	1740	68	0	242	310	3612
Truck	0	23	1	24	0	0	0	0	2	39	0	41	1	0	3	4	69
Bicycle	0	2	0	2	0	0	0	0	0	1	0	1	0	0	0	0	3

PEDESTRIAN CROSSING

	North East			North West			South West			South East			Total
	Left	Right	Total	Left	Right	Total	Left	Right	Total	Left	Right	Total	
13/05/2015 07:00:00	0	0	0	0	0	0	1	1	2	1	0	1	3
13/05/2015 07:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0
13/05/2015 07:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0
13/05/2015 07:45:00	0	0	0	0	1	1	0	0	0	0	0	0	1
Hourly Total	0	0	0	0	1	1	1	1	2	1	0	1	4
13/05/2015 08:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0
13/05/2015 08:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0
13/05/2015 08:30:00	0	0	0	1	0	1	0	2	2	0	0	0	3
13/05/2015 08:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	1	0	1	0	2	2	0	0	0	3
13/05/2015 09:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0
13/05/2015 09:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	1	1	2	1	3	4	1	0	1	7

AM Peak Hour 7:00 AM - 8:00 AM

Pedestrians	0	0	0	0	1	1	1	1	2	1	0	1	4

13/05/2015 11:00:00	0	0	0	0	0	0	0	0	0	2	0	2	2
13/05/2015 11:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0
13/05/2015 11:30:00	0	2	2	2	0	2	0	1	1	0	0	0	5
13/05/2015 11:45:00	0	1	1	0	1	1	0	0	0	0	0	0	2
Hourly Total	0	3	3	2	1	3	0	1	1	2	0	2	9
13/05/2015 12:00:00	0	0	0	3	0	3	1	0	1	0	0	0	4
13/05/2015 12:15:00	0	1	1	1	1	2	0	0	0	1	0	1	4
13/05/2015 12:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0
13/05/2015 12:45:00	0	0	0	1	0	1	1	0	1	1	0	1	3
Hourly Total	0	1	1	5	1	6	2	0	2	2	0	2	11
13/05/2015 13:00:00	0	0	0	0	0	0	0	1	1	0	0	0	1
13/05/2015 13:15:00	0	2	2	2	0	2	1	0	1	0	0	0	5
13/05/2015 13:30:00	0	0	0	1	1	2	0	1	1	0	0	0	3
13/05/2015 13:45:00	0	1	1	0	0	0	0	0	0	0	0	0	1
Hourly Total	0	3	3	3	1	4	1	2	3	0	0	0	10
13/05/2015 14:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0
13/05/2015 14:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	7	7	10	3	13	3	3	6	4	0	4	30

Midday Peak Hour 11:30 AM - 12:30 PM

Pedestrians	0	4	4	6	2	8	1	1	2	1	0	1	15

	North East			North West			South West			South East			Total
	Left	Right	Total	Left	Right	Total	Left	Right	Total	Left	Right	Total	
13/05/2015 15:00:00	0	0	0	1	0	1	0	0	0	2	0	2	3
13/05/2015 15:15:00	0	1	1	2	0	2	1	0	1	0	0	0	4
13/05/2015 15:30:00	0	1	1	0	0	0	0	0	0	1	0	1	2
13/05/2015 15:45:00	0	1	1	0	1	1	0	0	0	1	0	1	3
Hourly Total	0	3	3	3	1	4	1	0	1	4	0	4	12
13/05/2015 16:00:00	0	0	0	0	1	1	0	0	0	3	0	3	4
13/05/2015 16:15:00	0	0	0	0	0	0	1	2	3	0	0	0	3
13/05/2015 16:30:00	0	1	1	1	1	2	0	1	1	0	0	0	4
13/05/2015 16:45:00	0	2	2	0	0	0	0	1	1	2	0	2	5
Hourly Total	0	3	3	1	2	3	1	4	5	5	0	5	16
13/05/2015 17:00:00	0	1	1	1	2	3	1	0	1	0	0	0	5

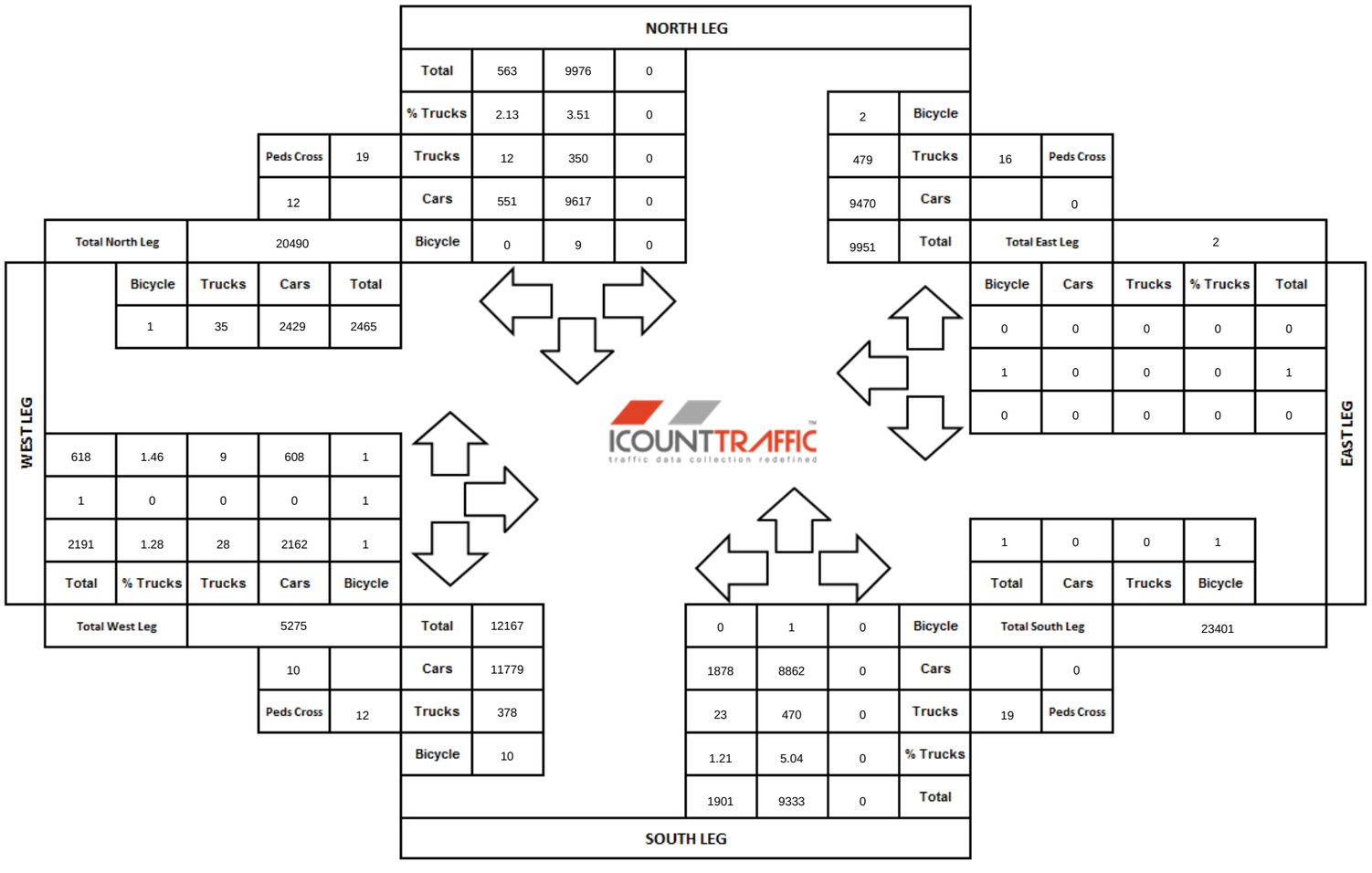
13/05/2015 17:15:00	0	0	0	2	2	4	2	1	3	4	0	4	11
13/05/2015 17:30:00	0	1	1	1	0	1	1	0	1	1	0	1	4
13/05/2015 17:45:00	0	1	1	0	1	1	0	0	0	0	0	0	2
Hourly Total	0	3	3	4	5	9	4	1	5	5	0	5	22
13/05/2015 18:00:00	0	0	0	0	0	0	0	1	1	0	0	0	1
13/05/2015 18:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	1	1	0	0	0	1
Grand Total	0	9	9	8	8	16	6	6	12	14	0	14	51

PM Peak Hour 4:30 PM - 5:30 PM

Pedestrians	0	4	4	4	5	9	3	3	6	6	0	6	25

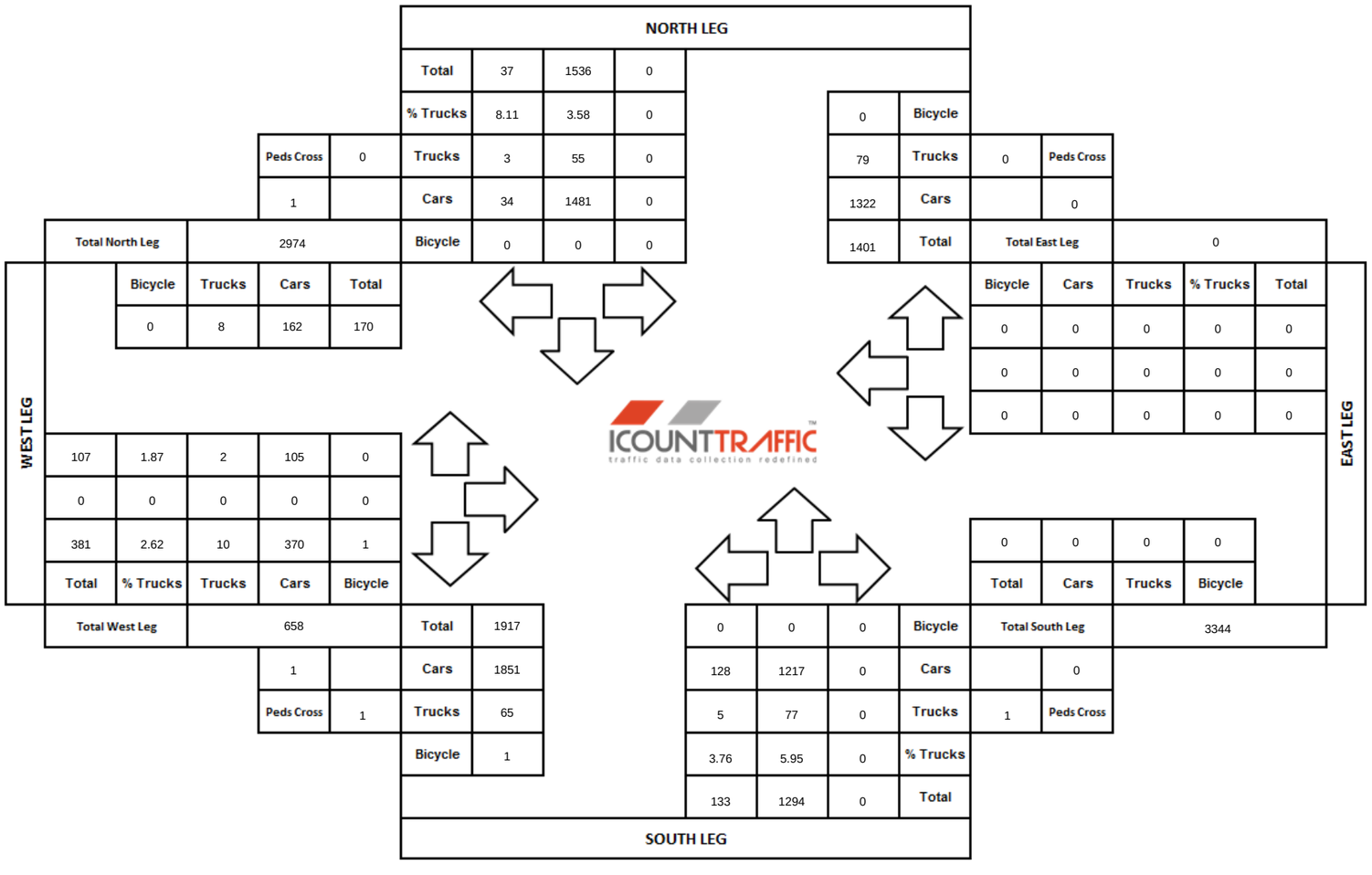
TOTAL TMC COUNT DIAGRAM

City:	**Mississauga**	**Weather:**	**Cloudy**
North/South Street:	**Cawthra Road**	**Count Date:**	**13/05/2015**
East/West Street:	**Silver Creek Boulevard**	**Count Period:**	**AM, Noon, PM**
GPS Coordinates:	**43.596764, -79.603340**	**Peak Period:**	**7:30 AM - 8:30 AM, 1:00 PM - 2:00 PM, 4:30 PM - 5:30 PM**
Site Number:	**1704219**	**Major Road:**	**Cawthra Road**
Control:	**Signalized**	**Surveyor:**	**Kevin Lagdameo**



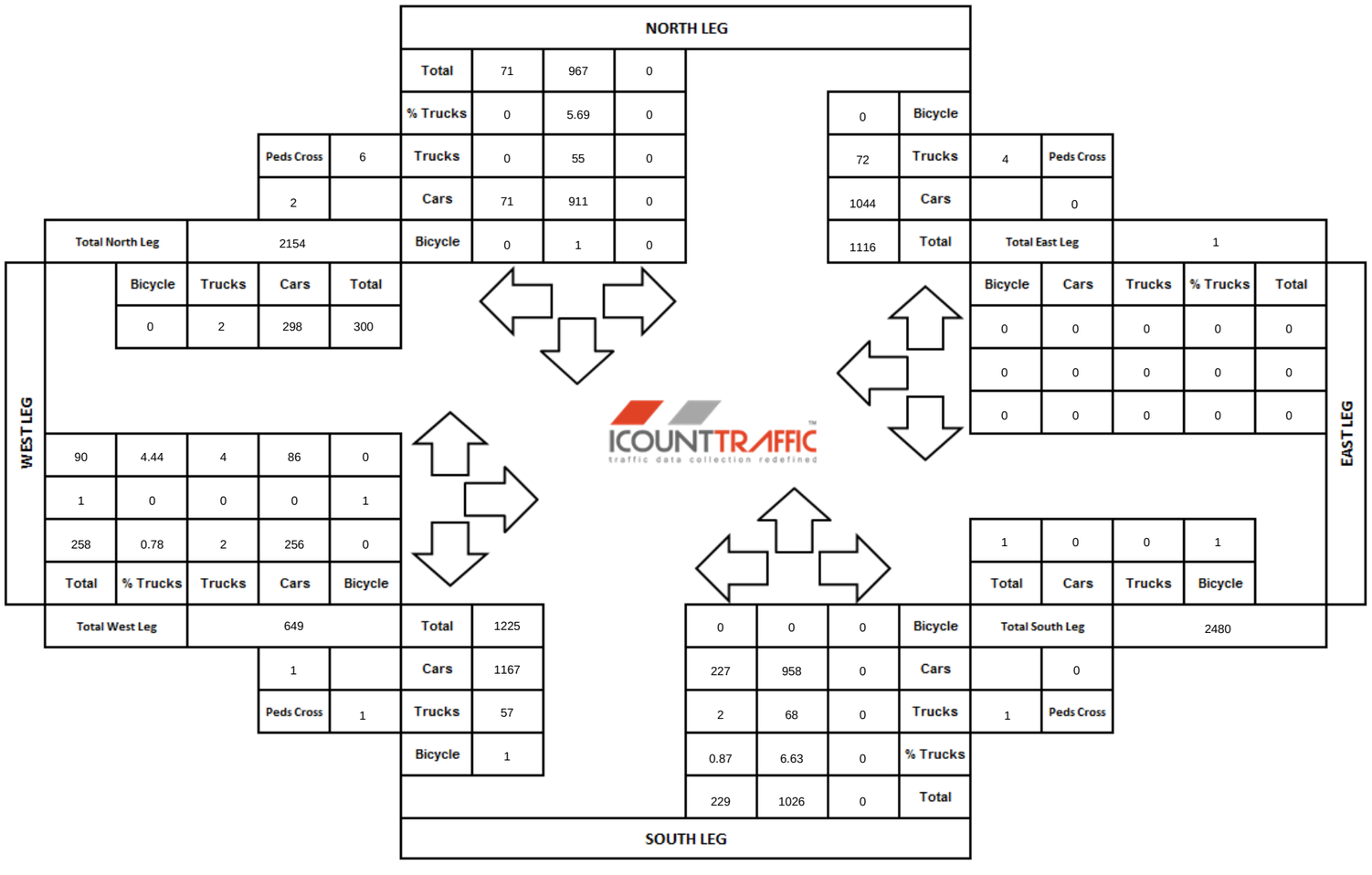
AM Peak Hour Count Diagram

City:	**Mississauga**	**Weather:**	**Cloudy**
North/South Street:	**Cawthra Road**	**Count Date:**	**13/05/2015**
East/West Street:	**Silver Creek Boulevard**	**Count Period:**	**AM**
GPS Coordinates:	**43.596764, -79.603340**	**Peak Period:**	**7:30 AM - 8:30 AM**
Site Number:	**1704219**	**Major Road:**	**Cawthra Road**
Control:	**Signalized**	**Surveyor:**	**Kevin Lagdameo**



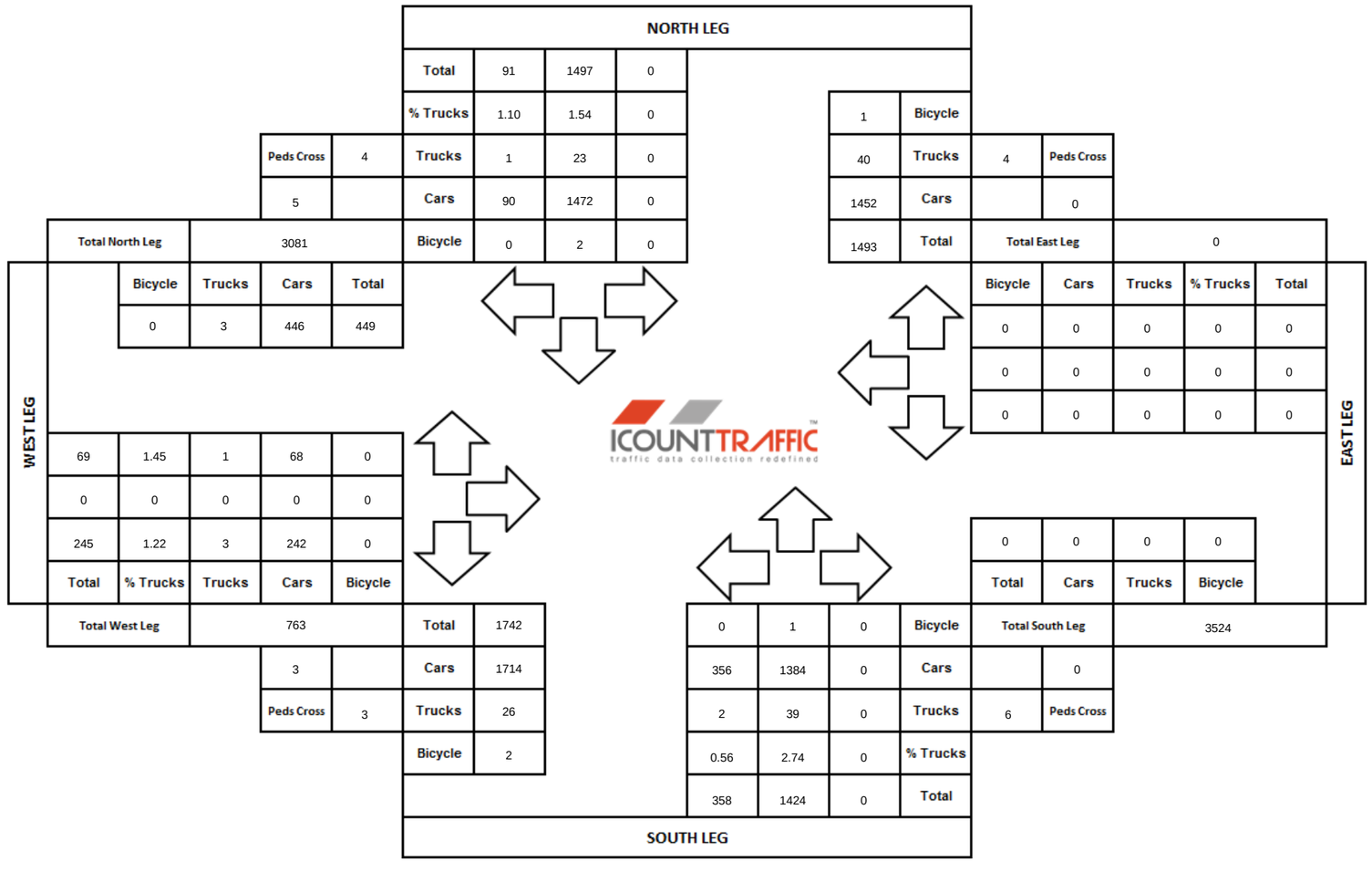
Noon Peak Hour Count Diagram

City:	**Mississauga**	**Weather:**	**Cloudy**
North/South Street:	**Cawthra Road**	**Count Date:**	**13/05/2015**
East/West Street:	**Silver Creek Boulevard**	**Count Period:**	**Noon**
GPS Coordinates:	**43.596764, -79.603340**	**Peak Period:**	**1:00 PM - 2:00 PM**
Site Number:	**1704219**	**Major Road:**	**Cawthra Road**
Control:	**Signalized**	**Surveyor:**	**Kevin Lagdameo**



PM Peak Hour Count Diagram

City:	**Mississauga**	**Weather:**	**Cloudy**
North/South Street:	**Cawthra Road**	**Count Date:**	**13/05/2015**
East/West Street:	**Silver Creek Boulevard**	**Count Period:**	**PM**
GPS Coordinates:	**43.596764, -79.603340**	**Peak Period:**	**4:30 PM - 5:30 PM**
Site Number:	**1704219**	**Major Road:**	**Cawthra Road**
Control:	**Signalized**	**Surveyor:**	**Kevin Lagdameo**



TMC - Intersection Count Summary

Company name: Trans-Plan Inc.
Company address: 24 Ryerson Avenue, Suite 211,Toronto, Ontario, Canada
Company phone: (647) 931-7383

Site: 1704062
Location: Cawthra Road at Ramp To Dundas East, Mississauga
N/S Street: Cawthra Road
E/W Street: Ramp To Dundas East
GPS Coordinates: 43.595977, -79.602263
Date: 14 May 2015
Day of week: Thursday
Analyst(s): Kevin Lagdameo

VEHICLE TRAFFIC

Interval	SouthBound				WestBound				NorthBound				EastBound				Total
	Left	Thru	Right	B. Total	Left	Thru	Right	B. Total	Left	Thru	Right	B. Total	Left	Thru	Right	B. Total	
14/05/2015 07:00	0	193	55	248	0	0	0	0	8	156	0	164	55	0	13	68	480
14/05/2015 07:15	0	323	127	450	0	0	0	0	6	252	0	258	49	0	20	69	777
14/05/2015 07:30	0	349	148	497	0	0	0	0	11	265	0	276	73	0	19	92	865
14/05/2015 07:45	0	360	148	508	0	0	0	0	6	264	0	270	56	0	39	95	873
Hourly Total	0	1225	478	1703	0	0	0	0	31	937	0	968	233	0	91	324	2995
14/05/2015 08:00	0	341	142	483	0	0	0	0	12	263	0	275	93	0	24	117	875
14/05/2015 08:15	0	350	148	498	0	0	0	0	15	273	0	288	91	0	35	126	912
14/05/2015 08:30	0	327	160	487	0	0	0	0	15	252	0	267	75	0	26	101	855
14/05/2015 08:45	0	292	173	465	0	0	0	0	15	252	0	267	80	0	33	113	845
Hourly Total	0	1310	623	1933	0	0	0	0	57	1040	0	1097	339	0	118	457	3487
14/05/2015 09:00	0	14	8	22	0	0	0	0	0	5	0	5	0	0	3	3	30
14/05/2015 09:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	14	8	22	0	0	0	0	0	5	0	5	0	0	3	3	30
Grand Total	0	2549	1109	3658	0	0	0	0	88	1982	0	2070	572	0	212	784	6512
Approach %	0	70	30	100	0	0	0	0	4	96	0	100	73	0	27	100	-
Total %	0	39	17	56	0	0	0	0	1	30	0	31	9	0	3	12	-

AM Peak Hour 7:30 AM - 8:30 AM

Vehicle Total	0	1400	586	1986	0	0	0	0	44	1065	0	1109	313	0	117	430	3525
Car	0	1341	574	1915	0	0	0	0	43	1019	0	1062	302	0	112	414	3391
Truck	0	57	12	69	0	0	0	0	1	46	0	47	11	0	5	16	132
Bicycle	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2

Interval	SouthBound				WestBound				NorthBound				EastBound				Total
	Left	Thru	Right	B. Total	Left	Thru	Right	B. Total	Left	Thru	Right	B. Total	Left	Thru	Right	B. Total	
14/05/2015 11:00	0	165	101	266	0	0	0	0	29	169	0	198	100	0	36	136	600
14/05/2015 11:15	0	172	115	287	0	0	0	0	28	181	0	209	107	0	49	156	652
14/05/2015 11:30	0	204	137	341	0	0	0	0	28	201	0	229	122	0	49	171	741
14/05/2015 11:45	0	213	130	343	0	0	0	0	39	194	0	233	92	0	41	133	709
Hourly Total	0	754	483	1237	0	0	0	0	124	745	0	869	421	0	175	596	2702
14/05/2015 12:00	0	199	114	313	0	0	0	0	45	215	0	260	106	0	36	142	715
14/05/2015 12:15	0	190	109	299	0	0	0	0	32	219	0	251	124	0	51	175	725
14/05/2015 12:30	0	229	132	361	0	0	0	0	36	197	0	233	101	0	38	139	733
14/05/2015 12:45	0	190	118	308	0	0	0	0	43	211	0	254	125	0	42	167	729
Hourly Total	0	808	473	1281	0	0	0	0	156	842	0	998	456	0	167	623	2902
14/05/2015 13:00	0	197	137	334	0	0	0	0	41	169	0	210	91	0	39	130	674
14/05/2015 13:15	0	203	116	319	0	0	0	0	37	198	0	235	128	0	41	169	723
14/05/2015 13:30	0	226	116	342	0	0	0	0	34	221	0	255	103	0	45	148	745
14/05/2015 13:45	0	219	110	329	0	0	0	0	44	217	0	261	125	0	47	172	762
Hourly Total	0	845	479	1324	0	0	0	0	156	805	0	961	447	0	172	619	2904
14/05/2015 14:00	0	8	10	18	0	0	0	0	4	14	0	18	0	0	1	1	37
14/05/2015 14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14/05/2015 14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14/05/2015 14:45	0	75	45	120	0	0	0	0	2	78	0	80	49	0	14	63	263
Hourly Total	0	83	55	138	0	0	0	0	6	92	0	98	49	0	15	64	300
14/05/2015 15:00	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
14/05/2015 15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
Grand Total	0	2490	1490	3980	0	0	0	0	442	2486	0	2928	1373	0	529	1902	8810
Approach %	0	63	37	100	0	0	0	0	15	85	0	100	72	0	28	100	-
Total %	0	28	17	45	0	0	0	0	5	28	0	33	16	0	6	22	-

Midday Peak Hour 1:00 PM - 2:00 PM

Vehicle Total	0	845	479	1324	0	0	0	0	156	805	0	961	447	0	172	619	2904
Car	0	809	460	1269	0	0	0	0	150	765	0	915	428	0	161	589	2773
Truck	0	36	19	55	0	0	0	0	6	40	0	46	19	0	11	30	131
Bicycle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Interval	SouthBound				WestBound				NorthBound				EastBound				Total
	Left	Thru	Right	B. Total	Left	Thru	Right	B. Total	Left	Thru	Right	B. Total	Left	Thru	Right	B. Total	
14/05/2015 15:00	0	231	118	349	0	0	0	0	41	267	0	308	133	0	30	163	820
14/05/2015 15:15	0	288	111	399	0	0	0	0	21	303	0	324	139	0	44	183	906
14/05/2015 15:30	0	291	142	433	0	0	0	0	22	296	0	318	144	0	51	195	946
14/05/2015 15:45	0	300	135	435	0	0	0	0	27	323	0	350	145	0	35	180	965
Hourly Total	0	1110	506	1616	0	0	0	0	111	1189	0	1300	561	0	160	721	3637
14/05/2015 16:00	0	296	129	425	0	0	0	0	32	283	0	315	162	0	39	201	941
14/05/2015 16:15	0	293	127	420	0	0	0	0	26	289	0	315	144	0	40	184	919
14/05/2015 16:30	0	329	140	469	0	0	0	0	26	321	0	347	126	0	43	169	985
14/05/2015 16:45	0	296	140	436	0	0	0	0	19	295	0	314	149	0	48	197	947
Hourly Total	0	1214	536	1750	0	0	0	0	103	1188	0	1291	581	0	170	751	3792
14/05/2015 17:00	0	288	120	408	0	0	0	0	32	274	0	306	185	0	45	230	944
14/05/2015 17:15	0	296	120	416	0	0	0	0	25	296	0	321	145	0	49	194	931
14/05/2015 17:30	0	359	122	481	0	0	0	0	21	275	0	296	164	0	43	207	984
14/05/2015 17:45	0	367	132	499	0	0	0	0	17	269	0	286	117	0	47	164	949
Hourly Total	0	1310	494	1804	0	0	0	0	95	1114	0	1209	611	0	184	795	3808
14/05/2015 18:00	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
14/05/2015 18:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Grand Total	0	3634	1536	5170	0	0	0	0	309	3491	0	3800	1754	0	514	2268	11238
Approach %	0	70	30	100	0	0	0	0	8	92	0	100	77	0	23	100	-
Total %	0	32	14	46	0	0	0	0	3	31	0	34	16	0	5	21	-

PM Peak Hour 3:45 PM - 4:45 PM

Vehicle Total	0	1218	531	1749	0	0	0	0	111	1216	0	1327	577	0	157	734	3810
Car	0	1199	512	1711	0	0	0	0	109	1175	0	1284	566	0	151	717	3712
Truck	0	19	19	38	0	0	0	0	2	38	0	40	11	0	6	17	95
Bicycle	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	3

PEDESTRIAN CROSSING

	North East			North West			South West			South East			Total
	Left	Right	Total	Left	Right	Total	Left	Right	Total	Left	Right	Total	
14/05/2015 07:00:00	0	0	0	0	2	2	0	0	0	0	0	0	2
14/05/2015 07:15:00	0	1	1	1	2	3	1	0	1	0	0	0	5
14/05/2015 07:30:00	0	0	0	0	2	2	0	0	0	0	0	0	2
14/05/2015 07:45:00	0	0	0	0	3	3	0	3	3	0	0	0	6
Hourly Total	0	1	1	1	9	10	1	3	4	0	0	0	15
14/05/2015 08:00:00	0	0	0	0	5	5	0	2	2	0	0	0	7
14/05/2015 08:15:00	0	0	0	0	1	1	0	0	0	0	0	0	1
14/05/2015 08:30:00	0	0	0	0	0	0	2	2	4	0	0	0	4
14/05/2015 08:45:00	0	0	0	0	5	5	1	1	2	0	0	0	7
Hourly Total	0	0	0	0	11	11	3	5	8	0	0	0	19
14/05/2015 09:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0
14/05/2015 09:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	1	1	1	20	21	4	8	12	0	0	0	34

AM Peak Hour 7:15 AM - 8:15 AM

Pedestrians	0	1	1	1	12	13	1	5	6	0	0	0	20

14/05/2015 11:00:00	0	0	0	0	0	0	2	0	2	4	0	4	6
14/05/2015 11:15:00	0	0	0	0	2	2	1	2	3	0	0	0	5
14/05/2015 11:30:00	0	0	0	0	1	1	1	1	2	0	0	0	3
14/05/2015 11:45:00	0	0	0	0	3	3	0	3	3	0	0	0	6
Hourly Total	0	0	0	0	6	6	4	6	10	4	0	4	20
14/05/2015 12:00:00	0	0	0	0	2	2	0	1	1	0	0	0	3
14/05/2015 12:15:00	0	0	0	0	1	1	0	0	0	0	0	0	1
14/05/2015 12:30:00	0	0	0	0	0	0	2	0	2	0	0	0	2
14/05/2015 12:45:00	0	0	0	1	1	2	0	2	2	0	0	0	4
Hourly Total	0	0	0	1	4	5	2	3	5	0	0	0	10
14/05/2015 13:00:00	0	0	0	0	2	2	0	2	2	0	0	0	4
14/05/2015 13:15:00	0	0	0	0	7	7	0	3	3	0	0	0	10
14/05/2015 13:30:00	0	2	2	0	3	3	3	3	6	3	0	3	14
14/05/2015 13:45:00	0	0	0	1	1	2	0	0	0	1	0	1	3
Hourly Total	0	2	2	1	13	14	3	8	11	4	0	4	31
14/05/2015 14:00:00	0	0	0	0	0	0	1	1	2	0	0	0	2
14/05/2015 14:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0
14/05/2015 14:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0
14/05/2015 14:45:00	0	0	0	0	0	0	1	0	1	1	0	1	2
Hourly Total	0	0	0	0	0	0	2	1	3	1	0	1	4
14/05/2015 15:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	2	2	2	23	25	11	18	29	9	0	9	65

Midday Peak Hour 12:45 PM - 1:45 PM

Pedestrians	0	2	2	1	13	14	3	10	13	3	0	3	32

	North East			North West			South West			South East			Total
	Left	Right	Total	Left	Right	Total	Left	Right	Total	Left	Right	Total	
14/05/2015 15:00:00	0	0	0	0	1	1	0	1	1	2	0	2	4
14/05/2015 15:15:00	0	0	0	0	1	1	4	2	6	1	0	1	8
14/05/2015 15:30:00	0	0	0	0	2	2	3	1	4	3	0	3	9
14/05/2015 15:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	4	4	7	4	11	6	0	6	21
14/05/2015 16:00:00	0	0	0	0	0	0	1	0	1	0	0	0	1
14/05/2015 16:15:00	0	0	0	0	1	1	1	0	1	0	0	0	2

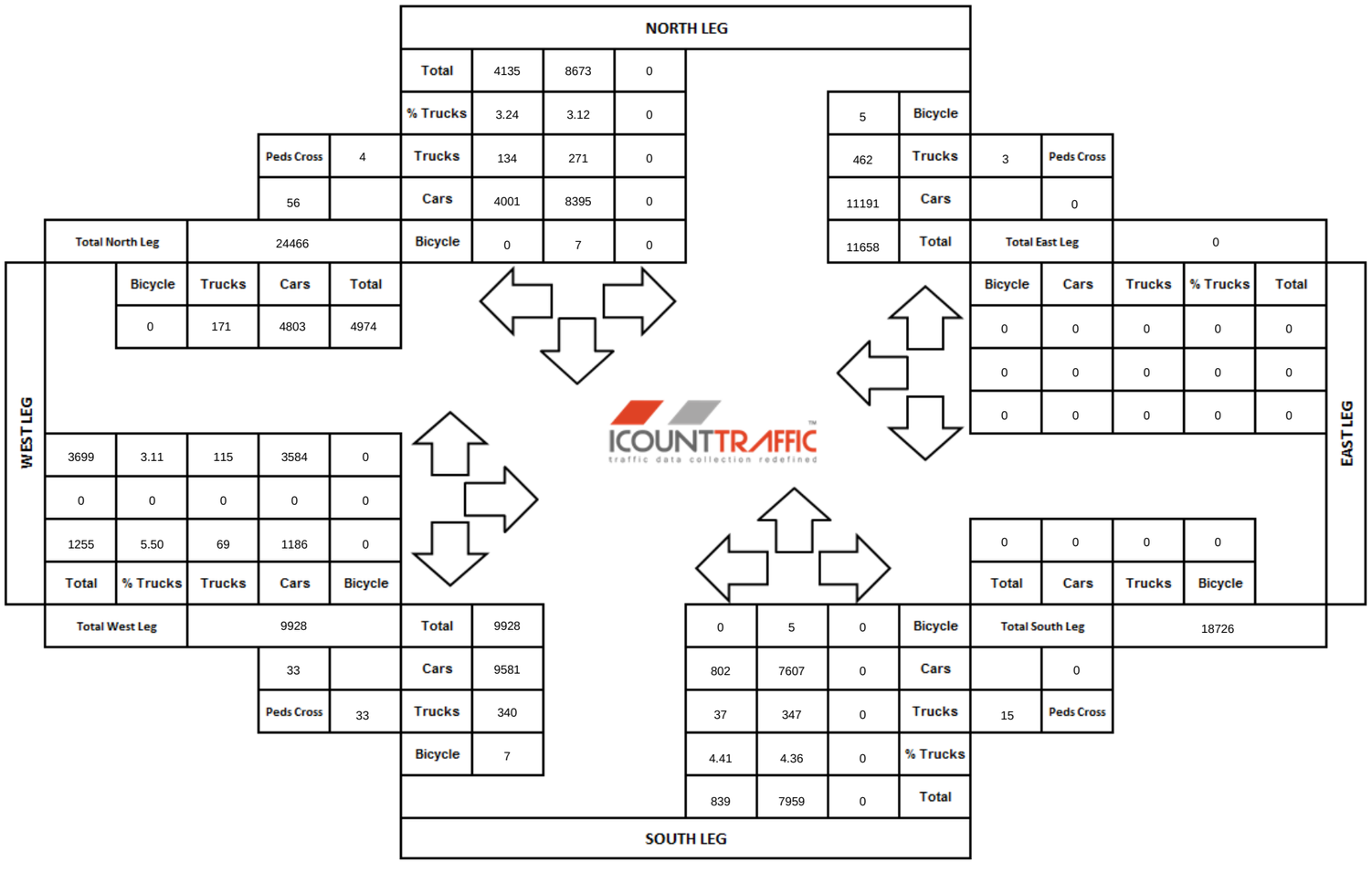
14/05/2015 16:30:00	0	0	0	0	1	1	2	1	3	0	0	0	4
14/05/2015 16:45:00	0	0	0	1	3	4	3	1	4	0	0	0	8
Hourly Total	0	0	0	1	5	6	7	2	9	0	0	0	15
14/05/2015 17:00:00	0	0	0	0	3	3	1	1	2	0	0	0	5
14/05/2015 17:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0
14/05/2015 17:30:00	0	0	0	0	0	0	2	0	2	0	0	0	2
14/05/2015 17:45:00	0	0	0	0	1	1	1	0	1	0	0	0	2
Hourly Total	0	0	0	0	4	4	4	1	5	0	0	0	9
14/05/2015 18:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	1	13	14	18	7	25	6	0	6	45

PM Peak Hour 3:00 PM - 4:00 PM

Pedestrians	0	0	0	0	4	4	7	4	11	6	0	6	21

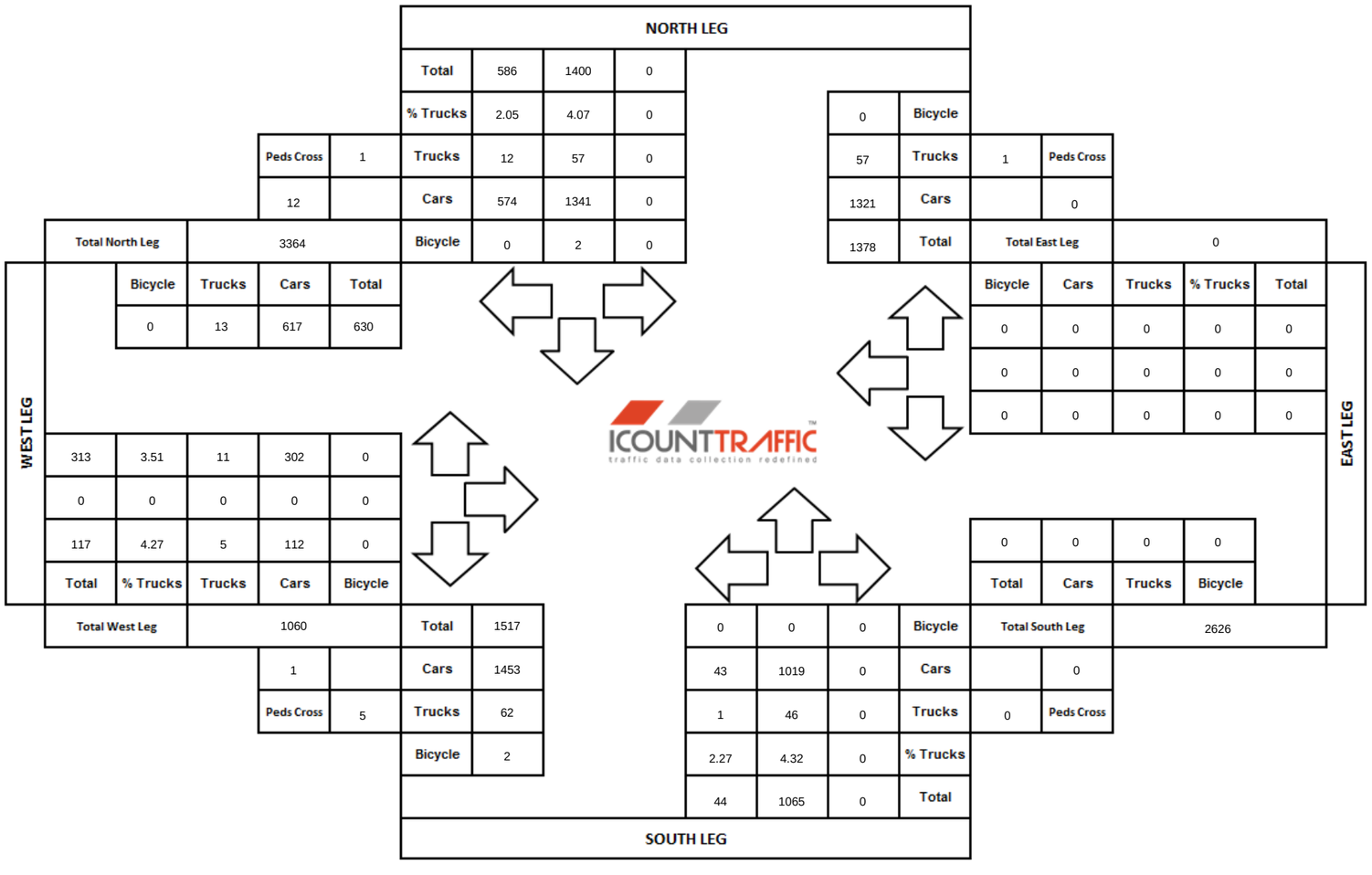
TOTAL TMC COUNT DIAGRAM

City:	**Mississauga**	**Weather:**	**Mostly Cloudy**
North/South Street:	**Cawthra Road**	**Count Date:**	**14/05/2015**
East/West Street:	**Ramp To Dundas East**	**Count Period:**	**AM, Noon, PM**
GPS Coordinates:	**43.595977, -79.602263**	**Peak Period:**	**7:30 AM - 8:30 AM, 1:00 PM - 2:00 PM, 3:45 PM - 4:45 PM**
Site Number:	**1704062**	**Major Road:**	**Cawthra Road**
Control:	**Signalized**	**Surveyor:**	**Kevin Lagdameo**



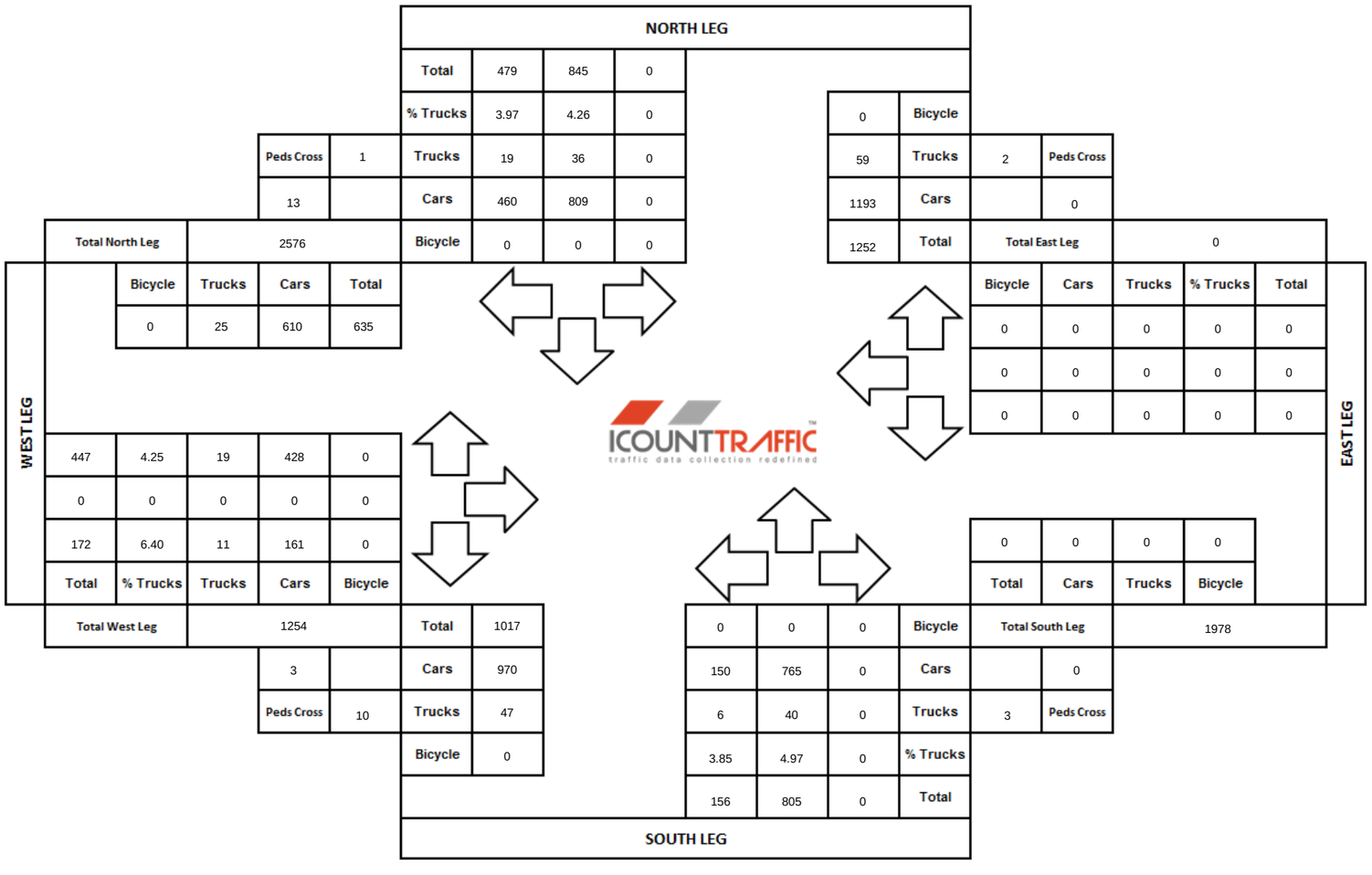
AM Peak Hour Count Diagram

City:	**Mississauga**	**Weather:**	**Mostly Cloudy**
North/South Street:	**Cawthra Road**	**Count Date:**	**14/05/2015**
East/West Street:	**Ramp To Dundas East**	**Count Period:**	**AM**
GPS Coordinates:	**43.595977, -79.602263**	**Peak Period:**	**7:30 AM - 8:30 AM**
Site Number:	**1704062**	**Major Road:**	**Cawthra Road**
Control:	**Signalized**	**Surveyor:**	**Kevin Lagdameo**



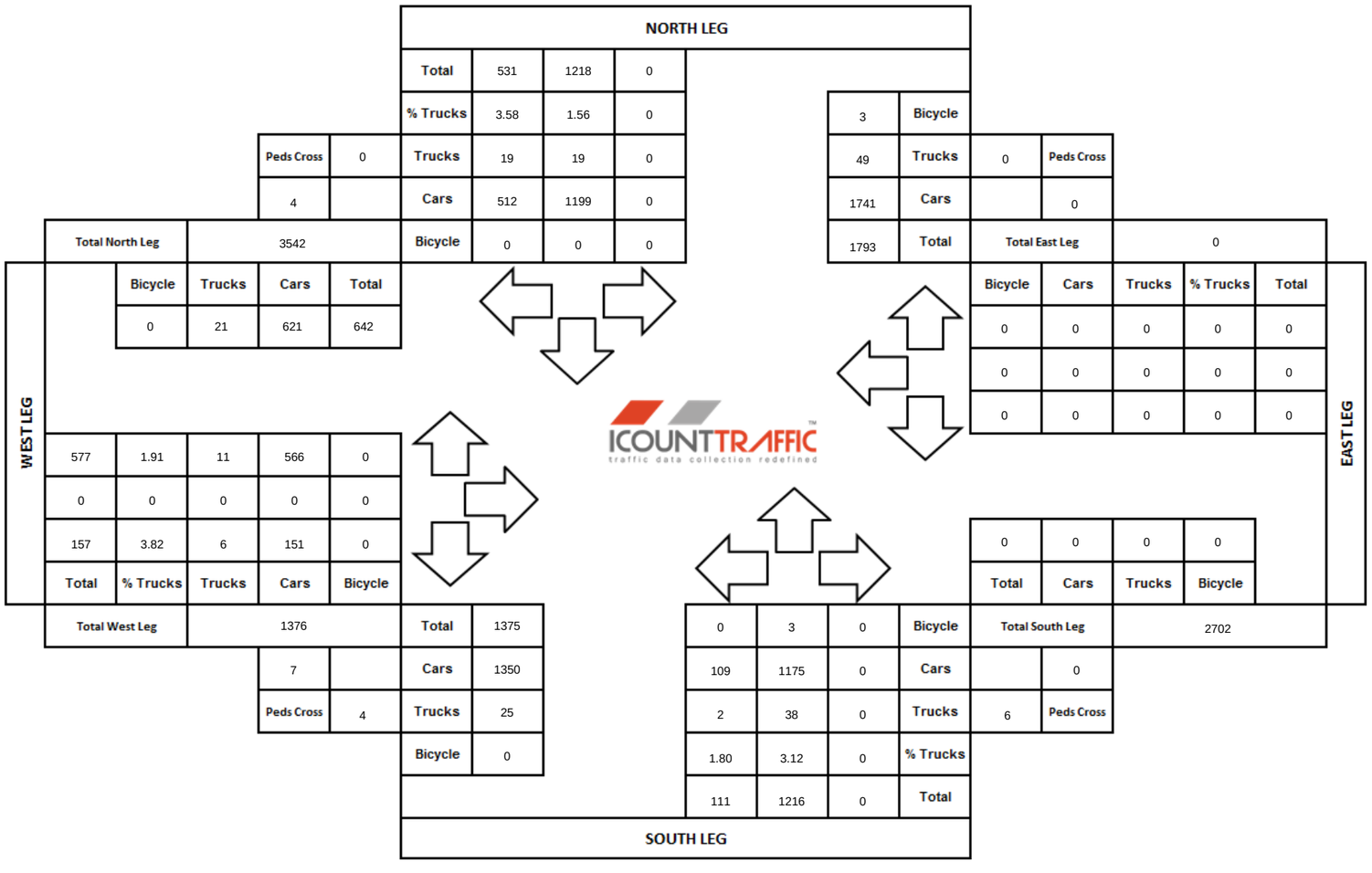
Noon Peak Hour Count Diagram

City:	**Mississauga**	**Weather:**	**Mostly Cloudy**
North/South Street:	**Cawthra Road**	**Count Date:**	**14/05/2015**
East/West Street:	**Ramp To Dundas East**	**Count Period:**	**Noon**
GPS Coordinates:	**43.595977, -79.602263**	**Peak Period:**	**1:00 PM - 2:00 PM**
Site Number:	**1704062**	**Major Road:**	**Cawthra Road**
Control:	**Signalized**	**Surveyor:**	**Kevin Lagdameo**



PM Peak Hour Count Diagram

City:	**Mississauga**	**Weather:**	**Mostly Cloudy**
North/South Street:	**Cawthra Road**	**Count Date:**	**14/05/2015**
East/West Street:	**Ramp To Dundas East**	**Count Period:**	**PM**
GPS Coordinates:	**43.595977, -79.602263**	**Peak Period:**	**3:45 PM - 4:45 PM**
Site Number:	**1704062**	**Major Road:**	**Cawthra Road**
Control:	**Signalized**	**Surveyor:**	**Kevin Lagdameo**



REGIONAL MUNICIPALITY OF PEEL

Traffic Signal Timing Parameters

Database Date	August 12, 2010		Prepared Date:	July 24, 2015
Database Rev	18		Completed By:	DB
Timing Card / Field rev	15		Checked By:	RC

Location:	Cawthra Rd @ Silver Creek Blvd						TIME PERIOD (sec.) (Green+Amber+All Red)		
Phase #	Direction	Vehicle Minimum (sec.)	Pedestrian Minimum (sec.)		Amber (sec.)	All Red (sec.)	AM MAX	OFF MAX	PM MAX
			WALK	FDWALK					
1	N/B P.P. LT - Cawthra Rd	5.0			3.0		14.0	9.6	26.6
2	N/S Green - Cawthra Rd	15.0	10.0	13.0	4.0	2.0	92.4	79.2	81.2
3	Not in Use								
4	E/B - Silver Creek Blvd	8.0	9.0	13.0	4.0	2.0	33.6	31.2	32.2

System Control	YES
Local Control	NO
Semi-Actuated Mode	YES

TIME (M-F)	PEAK	CYCLE LENGTH (sec.)	OFFSET (sec.)
06:00-09:30	AM	140	50.4
9:30 - 15:00 19:30 - 24:00	OFF	120	114
15:00 - 19:30	PM	140	28

REGIONAL MUNICIPALITY OF PEEL

Traffic Signal Timing Parameters

Database Date	February 20, 2015		Prepared Date:	July 24, 2015
Database Rev	15		Completed By:	DB
Timing Card / Field rev	9		Checked By:	RC

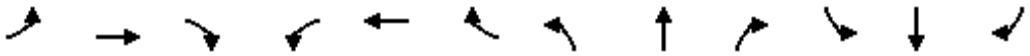
Location:	Cawthra Rd @ Dundas St (N. Terminal)						TIME PERIOD (sec.) (Green+Amber+All Red)		
Phase #	Direction	Vehicle Minimum (sec.)	Pedestrian Minimum (sec.)		Amber (sec.)	All Red (sec.)	AM MAX	OFF MAX	PM MAX
			WALK	FDWALK					
1	N/B P.P. LT - Cawthra Rd	5.0			3.0		11.2	13.2	9.8
2	S/B Green - Cawthra Rd	8.0	8.0	13.0	4.0	2.4	77.0	54.0	67.2
3	W/B Green - Dundas St Ramp	8.0			4.0	2.4	16.8	16.8	16.8
4	E/B Green - Private Entrance	8.0	9.0	14.0	4.0	2.4	35.0	36.0	46.2
5	Not in Use								
6	N/B Green - Cawthra Rd	8.0	8.0	13.0	4.0	2.4	88.2	67.2	77.0
7	Not in Use								
8	Computer Phase	8.0	9.0	14.0	4.0	2.4	51.8	52.8	63.0

System Control	YES
Local Control	NO
Semi-Actuated Mode	YES

TIME (M-F)	PEAK	CYCLE LENGTH (sec.)	OFFSET (sec.)
06:00-09:30	AM	140	58.8
9:30 - 15:00 19:30 - 24:00	OFF	120	8.4
15:00 - 19:30	PM	140	46.2

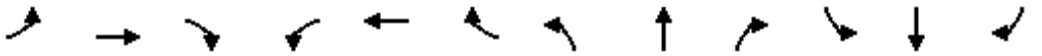
Appendix B

Existing Traffic Level of Service Calculations



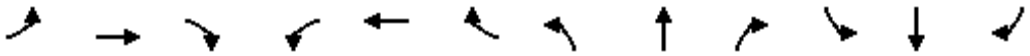
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	107	0	380	0	0	0	133	1294	0	0	1536	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0					3.0	6.0			6.0	
Lane Util. Factor	1.00	1.00					1.00	0.95			0.95	
Frpb, ped/bikes	1.00	0.98					1.00	1.00			1.00	
Flpb, ped/bikes	1.00	1.00					1.00	1.00			1.00	
Frt	1.00	0.85					1.00	1.00			1.00	
Flt Protected	0.95	1.00					0.95	1.00			1.00	
Satd. Flow (prot)	1770	1543					1736	3406			3454	
Flt Permitted	0.76	1.00					0.10	1.00			1.00	
Satd. Flow (perm)	1410	1543					174	3406			3454	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	107	0	380	0	0	0	133	1294	0	0	1536	37
RTOR Reduction (vph)	0	129	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	107	251	0	0	0	0	133	1294	0	0	1572	0
Confl. Peds. (#/hr)			2	2			2					2
Heavy Vehicles (%)	2%	0%	3%	0%	0%	0%	4%	6%	0%	0%	4%	8%
Turn Type	Perm	NA					pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	25.1	25.1					102.9	102.9			91.2	
Effective Green, g (s)	25.1	25.1					102.9	102.9			91.2	
Actuated g/C Ratio	0.18	0.18					0.74	0.74			0.65	
Clearance Time (s)	6.0	6.0					3.0	6.0			6.0	
Vehicle Extension (s)	3.0	3.0					3.0	3.0			3.0	
Lane Grp Cap (vph)	252	276					224	2503			2250	
v/s Ratio Prot		c0.16					c0.04	0.38			c0.46	
v/s Ratio Perm	0.08						0.40					
v/c Ratio	0.42	0.91					0.59	0.52			0.70	
Uniform Delay, d1	51.0	56.3					15.0	7.9			15.6	
Progression Factor	1.00	1.00					1.13	1.76			1.00	
Incremental Delay, d2	1.2	31.3					3.9	0.7			1.8	
Delay (s)	52.2	87.6					20.9	14.7			17.4	
Level of Service	D	F					C	B			B	
Approach Delay (s)		79.8			0.0			15.2			17.4	
Approach LOS		E			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	88.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



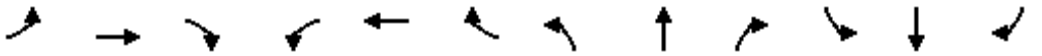
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	313	0	117	0	0	0	44	1065	0	0	1398	586
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	6.4	6.4				3.0	6.4			6.4	6.4
Lane Util. Factor	0.95	0.95	1.00				1.00	0.95			0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98				1.00	1.00			1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00				1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85				1.00	1.00			1.00	0.85
Flt Protected	0.95	0.95	1.00				0.95	1.00			1.00	1.00
Satd. Flow (prot)	1649	1649	1520				1752	3471			3471	1484
Flt Permitted	0.95	0.95	1.00				0.15	1.00			1.00	1.00
Satd. Flow (perm)	1649	1649	1520				272	3471			3471	1484
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	313	0	117	0	0	0	44	1065	0	0	1398	586
RTOR Reduction (vph)	0	0	101	0	0	0	0	0	0	0	0	70
Lane Group Flow (vph)	156	157	16	0	0	0	44	1065	0	0	1398	516
Confl. Peds. (#/hr)	2		5	5		2	13					13
Heavy Vehicles (%)	4%	0%	4%	0%	0%	0%	3%	4%	0%	0%	4%	2%
Turn Type	Split	NA	Perm				pm+pt	NA		Perm	NA	Perm
Protected Phases	4	4			8		5	2			6	
Permitted Phases			4	8			2			6		6
Actuated Green, G (s)	18.6	18.6	18.6				108.6	108.6			100.4	100.4
Effective Green, g (s)	18.6	18.6	18.6				108.6	108.6			100.4	100.4
Actuated g/C Ratio	0.13	0.13	0.13				0.78	0.78			0.72	0.72
Clearance Time (s)	6.4	6.4	6.4				3.0	6.4			6.4	6.4
Vehicle Extension (s)	3.0	3.0	3.0				3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	219	219	201				265	2692			2489	1064
v/s Ratio Prot	0.09	c0.10					0.01	c0.31			c0.40	
v/s Ratio Perm			0.01				0.12					0.35
v/c Ratio	0.71	0.72	0.08				0.17	0.40			0.56	0.48
Uniform Delay, d1	58.1	58.2	53.2				6.0	5.1			9.4	8.6
Progression Factor	1.00	1.00	1.00				1.00	1.00			0.69	0.59
Incremental Delay, d2	10.4	10.6	0.2				0.3	0.4			0.6	1.1
Delay (s)	68.6	68.8	53.3				6.3	5.5			7.1	6.2
Level of Service	E	E	D				A	A			A	A
Approach Delay (s)		64.5			0.0			5.5			6.8	
Approach LOS		E			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.2
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	69	0	245	0	0	0	358	1423	0	0	1495	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0					3.0	6.0			6.0	
Lane Util. Factor	1.00	1.00					1.00	0.95			0.95	
Frpb, ped/bikes	1.00	0.97					1.00	1.00			1.00	
Flpb, ped/bikes	0.98	1.00					1.00	1.00			1.00	
Frt	1.00	0.85					1.00	1.00			0.99	
Flt Protected	0.95	1.00					0.95	1.00			1.00	
Satd. Flow (prot)	1760	1553					1787	3505			3502	
Flt Permitted	0.76	1.00					0.07	1.00			1.00	
Satd. Flow (perm)	1403	1553					127	3505			3502	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	69	0	245	0	0	0	358	1423	0	0	1495	91
RTOR Reduction (vph)	0	223	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	69	22	0	0	0	0	358	1423	0	0	1583	0
Confl. Peds. (#/hr)	8		9	9		8	8					8
Heavy Vehicles (%)	1%	0%	1%	0%	0%	0%	1%	3%	0%	0%	2%	1%
Turn Type	Perm	NA					pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	12.5	12.5					115.5	115.5			80.8	
Effective Green, g (s)	12.5	12.5					115.5	115.5			80.8	
Actuated g/C Ratio	0.09	0.09					0.82	0.82			0.58	
Clearance Time (s)	6.0	6.0					3.0	6.0			6.0	
Vehicle Extension (s)	3.0	3.0					3.0	3.0			3.0	
Lane Grp Cap (vph)	125	138					480	2891			2021	
v/s Ratio Prot		0.01					c0.17	0.41			c0.45	
v/s Ratio Perm	c0.05						0.45					
v/c Ratio	0.55	0.16					0.75	0.49			0.78	
Uniform Delay, d1	61.1	58.9					38.4	3.6			22.8	
Progression Factor	1.00	1.00					0.85	1.51			1.00	
Incremental Delay, d2	5.2	0.5					5.4	0.5			3.1	
Delay (s)	66.3	59.4					37.9	6.0			26.0	
Level of Service	E	E					D	A			C	
Approach Delay (s)		60.9			0.0			12.4			26.0	
Approach LOS		E			A			B			C	

Intersection Summary			
HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	94.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

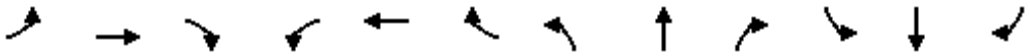


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	577	0	157	0	0	0	111	1213	0	0	1218	531
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	6.4	6.4				3.0	6.4			6.4	6.4
Lane Util. Factor	0.95	0.95	1.00				1.00	0.95			0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97				1.00	1.00			1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00				1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85				1.00	1.00			1.00	0.85
Flt Protected	0.95	0.95	1.00				0.95	1.00			1.00	1.00
Satd. Flow (prot)	1681	1681	1506				1770	3505			3539	1466
Flt Permitted	0.95	0.95	1.00				0.16	1.00			1.00	1.00
Satd. Flow (perm)	1681	1681	1506				299	3505			3539	1466
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	577	0	157	0	0	0	111	1213	0	0	1218	531
RTOR Reduction (vph)	0	0	92	0	0	0	0	0	0	0	0	88
Lane Group Flow (vph)	288	289	65	0	0	0	111	1213	0	0	1218	443
Confl. Peds. (#/hr)			10	10			11					11
Heavy Vehicles (%)	2%	0%	4%	0%	0%	0%	2%	3%	0%	0%	2%	4%
Turn Type	Split	NA	Perm				pm+pt	NA		Perm	NA	Perm
Protected Phases	4	4			8		5	2			6	
Permitted Phases			4	8			2			6		6
Actuated Green, G (s)	30.0	30.0	30.0				97.2	97.2			85.4	85.4
Effective Green, g (s)	30.0	30.0	30.0				97.2	97.2			85.4	85.4
Actuated g/C Ratio	0.21	0.21	0.21				0.69	0.69			0.61	0.61
Clearance Time (s)	6.4	6.4	6.4				3.0	6.4			6.4	6.4
Vehicle Extension (s)	3.0	3.0	3.0				3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	360	360	322				300	2433			2158	894
v/s Ratio Prot	0.17	c0.17					0.02	c0.35			c0.34	
v/s Ratio Perm			0.04				0.23					0.30
v/c Ratio	0.80	0.80	0.20				0.37	0.50			0.56	0.50
Uniform Delay, d1	52.2	52.2	45.2				10.4	10.0			16.2	15.3
Progression Factor	1.00	1.00	1.00				1.00	1.00			0.73	0.73
Incremental Delay, d2	12.0	12.2	0.3				0.8	0.7			0.7	1.3
Delay (s)	64.2	64.4	45.5				11.2	10.7			12.6	12.4
Level of Service	E	E	D				B	B			B	B
Approach Delay (s)		60.2			0.0			10.8			12.5	
Approach LOS		E			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	21.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.2
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

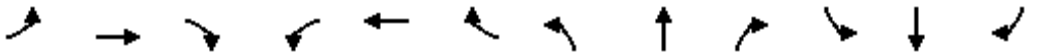
Appendix C

Future Background Level of Service Calculations



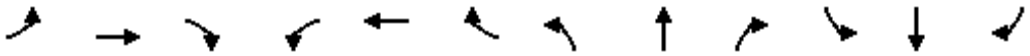
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	107	0	380	0	0	0	133	1327	0	0	1575	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0					3.0	6.0			6.0	
Lane Util. Factor	1.00	1.00					1.00	0.95			0.95	
Frpb, ped/bikes	1.00	0.98					1.00	1.00			1.00	
Flpb, ped/bikes	1.00	1.00					1.00	1.00			1.00	
Frt	1.00	0.85					1.00	1.00			1.00	
Flt Protected	0.95	1.00					0.95	1.00			1.00	
Satd. Flow (prot)	1770	1543					1736	3406			3454	
Flt Permitted	0.76	1.00					0.09	1.00			1.00	
Satd. Flow (perm)	1410	1543					160	3406			3454	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	107	0	380	0	0	0	133	1327	0	0	1575	37
RTOR Reduction (vph)	0	126	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	107	254	0	0	0	0	133	1327	0	0	1611	0
Confl. Peds. (#/hr)			2	2			2					2
Heavy Vehicles (%)	2%	0%	3%	0%	0%	0%	4%	6%	0%	0%	4%	8%
Turn Type	Perm	NA					pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	25.3	25.3					102.7	102.7			90.9	
Effective Green, g (s)	25.3	25.3					102.7	102.7			90.9	
Actuated g/C Ratio	0.18	0.18					0.73	0.73			0.65	
Clearance Time (s)	6.0	6.0					3.0	6.0			6.0	
Vehicle Extension (s)	3.0	3.0					3.0	3.0			3.0	
Lane Grp Cap (vph)	254	278					216	2498			2242	
v/s Ratio Prot		c0.16					c0.04	0.39			c0.47	
v/s Ratio Perm	0.08						0.41					
v/c Ratio	0.42	0.91					0.62	0.53			0.72	
Uniform Delay, d1	50.9	56.3					16.6	8.1			16.1	
Progression Factor	1.00	1.00					1.14	1.74			1.00	
Incremental Delay, d2	1.1	32.0					4.8	0.8			2.0	
Delay (s)	52.0	88.3					23.8	14.9			18.2	
Level of Service	D	F					C	B			B	
Approach Delay (s)		80.3			0.0			15.7			18.2	
Approach LOS		F			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	25.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	89.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



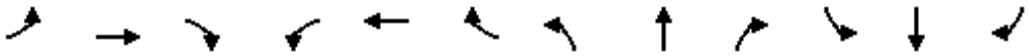
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	321	0	120	0	0	0	45	1092	0	0	1433	601
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	6.4	6.4				3.0	6.4			6.4	6.4
Lane Util. Factor	0.95	0.95	1.00				1.00	0.95			0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98				1.00	1.00			1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00				1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85				1.00	1.00			1.00	0.85
Flt Protected	0.95	0.95	1.00				0.95	1.00			1.00	1.00
Satd. Flow (prot)	1649	1649	1520				1752	3471			3471	1484
Flt Permitted	0.95	0.95	1.00				0.14	1.00			1.00	1.00
Satd. Flow (perm)	1649	1649	1520				257	3471			3471	1484
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	321	0	120	0	0	0	45	1092	0	0	1433	601
RTOR Reduction (vph)	0	0	104	0	0	0	0	0	0	0	0	71
Lane Group Flow (vph)	160	161	16	0	0	0	45	1092	0	0	1433	530
Confl. Peds. (#/hr)	2		5	5		2	13					13
Heavy Vehicles (%)	4%	0%	4%	0%	0%	0%	3%	4%	0%	0%	4%	2%
Turn Type	Split	NA	Perm				pm+pt	NA		Perm	NA	Perm
Protected Phases	4	4			8		5	2			6	
Permitted Phases			4	8			2			6		6
Actuated Green, G (s)	19.1	19.1	19.1				108.1	108.1			99.9	99.9
Effective Green, g (s)	19.1	19.1	19.1				108.1	108.1			99.9	99.9
Actuated g/C Ratio	0.14	0.14	0.14				0.77	0.77			0.71	0.71
Clearance Time (s)	6.4	6.4	6.4				3.0	6.4			6.4	6.4
Vehicle Extension (s)	3.0	3.0	3.0				3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	224	224	207				253	2680			2476	1058
v/s Ratio Prot	0.10	c0.10					0.01	c0.31			c0.41	
v/s Ratio Perm			0.01				0.13					0.36
v/c Ratio	0.71	0.72	0.08				0.18	0.41			0.58	0.50
Uniform Delay, d1	57.8	57.9	52.8				6.4	5.3			9.8	8.9
Progression Factor	1.00	1.00	1.00				1.00	1.00			0.69	0.62
Incremental Delay, d2	10.3	10.5	0.2				0.3	0.5			0.7	1.1
Delay (s)	68.1	68.4	52.9				6.7	5.8			7.5	6.7
Level of Service	E	E	D				A	A			A	A
Approach Delay (s)		64.1			0.0			5.8			7.2	
Approach LOS		E			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.2
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	69	0	245	0	0	0	358	1459	0	0	1533	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0					3.0	6.0			6.0	
Lane Util. Factor	1.00	1.00					1.00	0.95			0.95	
Frpb, ped/bikes	1.00	0.97					1.00	1.00			1.00	
Flpb, ped/bikes	0.98	1.00					1.00	1.00			1.00	
Frt	1.00	0.85					1.00	1.00			0.99	
Flt Protected	0.95	1.00					0.95	1.00			1.00	
Satd. Flow (prot)	1760	1553					1787	3505			3503	
Flt Permitted	0.76	1.00					0.06	1.00			1.00	
Satd. Flow (perm)	1403	1553					114	3505			3503	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	69	0	245	0	0	0	358	1459	0	0	1533	91
RTOR Reduction (vph)	0	223	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	69	22	0	0	0	0	358	1459	0	0	1621	0
Confl. Peds. (#/hr)	8		9	9		8	8					8
Heavy Vehicles (%)	1%	0%	1%	0%	0%	0%	1%	3%	0%	0%	2%	1%
Turn Type	Perm	NA					pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	12.5	12.5					115.5	115.5			80.8	
Effective Green, g (s)	12.5	12.5					115.5	115.5			80.8	
Actuated g/C Ratio	0.09	0.09					0.82	0.82			0.58	
Clearance Time (s)	6.0	6.0					3.0	6.0			6.0	
Vehicle Extension (s)	3.0	3.0					3.0	3.0			3.0	
Lane Grp Cap (vph)	125	138					472	2891			2021	
v/s Ratio Prot		0.01					c0.17	0.42			c0.46	
v/s Ratio Perm	c0.05						0.45					
v/c Ratio	0.55	0.16					0.76	0.50			0.80	
Uniform Delay, d1	61.1	58.9					40.0	3.7			23.3	
Progression Factor	1.00	1.00					0.88	1.48			1.00	
Incremental Delay, d2	5.2	0.5					5.9	0.5			3.5	
Delay (s)	66.3	59.4					40.9	6.0			26.8	
Level of Service	E	E					D	A			C	
Approach Delay (s)		60.9			0.0			12.9			26.8	
Approach LOS		E			A			B			C	

Intersection Summary			
HCM 2000 Control Delay	22.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

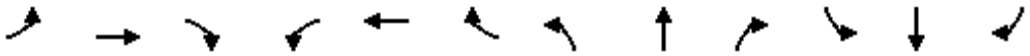


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	592	0	161	0	0	0	114	1244	0	0	1249	544
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	6.4	6.4				3.0	6.4			6.4	6.4
Lane Util. Factor	0.95	0.95	1.00				1.00	0.95			0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97				1.00	1.00			1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00				1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85				1.00	1.00			1.00	0.85
Flt Protected	0.95	0.95	1.00				0.95	1.00			1.00	1.00
Satd. Flow (prot)	1681	1681	1506				1770	3505			3539	1466
Flt Permitted	0.95	0.95	1.00				0.15	1.00			1.00	1.00
Satd. Flow (perm)	1681	1681	1506				281	3505			3539	1466
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	592	0	161	0	0	0	114	1244	0	0	1249	544
RTOR Reduction (vph)	0	0	92	0	0	0	0	0	0	0	0	90
Lane Group Flow (vph)	296	296	69	0	0	0	114	1244	0	0	1249	454
Confl. Peds. (#/hr)			10	10			11					11
Heavy Vehicles (%)	2%	0%	4%	0%	0%	0%	2%	3%	0%	0%	2%	4%
Turn Type	Split	NA	Perm				pm+pt	NA		Perm	NA	Perm
Protected Phases	4	4			8		5	2			6	
Permitted Phases			4	8			2			6		6
Actuated Green, G (s)	30.4	30.4	30.4				96.8	96.8			84.5	84.5
Effective Green, g (s)	30.4	30.4	30.4				96.8	96.8			84.5	84.5
Actuated g/C Ratio	0.22	0.22	0.22				0.69	0.69			0.60	0.60
Clearance Time (s)	6.4	6.4	6.4				3.0	6.4			6.4	6.4
Vehicle Extension (s)	3.0	3.0	3.0				3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	365	365	327				293	2423			2136	884
v/s Ratio Prot	c0.18	0.18					0.03	c0.35			c0.35	
v/s Ratio Perm			0.05				0.24					0.31
v/c Ratio	0.81	0.81	0.21				0.39	0.51			0.58	0.51
Uniform Delay, d1	52.1	52.1	45.0				11.1	10.3			17.0	15.9
Progression Factor	1.00	1.00	1.00				1.00	1.00			0.74	0.74
Incremental Delay, d2	12.8	12.8	0.3				0.9	0.8			0.8	1.4
Delay (s)	64.9	64.9	45.3				12.0	11.1			13.3	13.1
Level of Service	E	E	D				B	B			B	B
Approach Delay (s)		60.7			0.0			11.2			13.2	
Approach LOS		E			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.2
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

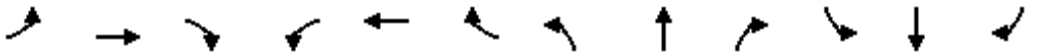
Appendix D

Future Total Level of Service Calculations



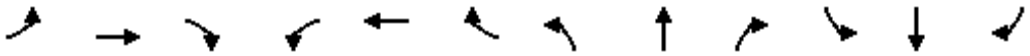
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	107	0	380	11	0	9	133	1327	2	2	1575	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0		3.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.85			0.94		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1543			1737		1736	3405		1805	3454	
Flt Permitted	0.74	1.00			0.38		0.09	1.00		0.19	1.00	
Satd. Flow (perm)	1386	1543			682		160	3405		366	3454	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	107	0	380	11	0	9	133	1327	2	2	1575	37
RTOR Reduction (vph)	0	126	0	0	16	0	0	0	0	0	1	0
Lane Group Flow (vph)	107	254	0	0	4	0	133	1329	0	2	1611	0
Confl. Peds. (#/hr)			2	2			2					2
Heavy Vehicles (%)	2%	0%	3%	0%	0%	0%	4%	6%	0%	0%	4%	8%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	25.3	25.3			25.3		102.7	102.7		90.9	90.9	
Effective Green, g (s)	25.3	25.3			25.3		102.7	102.7		90.9	90.9	
Actuated g/C Ratio	0.18	0.18			0.18		0.73	0.73		0.65	0.65	
Clearance Time (s)	6.0	6.0			6.0		3.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	250	278			123		216	2497		237	2242	
v/s Ratio Prot		c0.16					c0.04	0.39			c0.47	
v/s Ratio Perm	0.08				0.01		0.41			0.01		
v/c Ratio	0.43	0.91			0.03		0.62	0.53		0.01	0.72	
Uniform Delay, d1	50.9	56.3			47.2		16.6	8.2		8.7	16.1	
Progression Factor	1.00	1.00			1.00		1.14	1.74		1.00	1.00	
Incremental Delay, d2	1.2	32.0			0.1		4.8	0.8		0.1	2.0	
Delay (s)	52.1	88.3			47.3		23.7	14.9		8.7	18.2	
Level of Service	D	F			D		C	B		A	B	
Approach Delay (s)		80.3			47.3			15.7			18.1	
Approach LOS		F			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	25.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	89.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



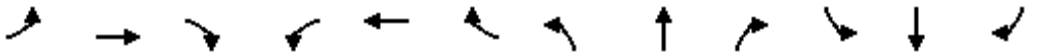
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	323	0	120	0	0	0	45	1092	0	0	1435	610
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	6.4	6.4				3.0	6.4			6.4	6.4
Lane Util. Factor	0.95	0.95	1.00				1.00	0.95			0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98				1.00	1.00			1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00				1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85				1.00	1.00			1.00	0.85
Flt Protected	0.95	0.95	1.00				0.95	1.00			1.00	1.00
Satd. Flow (prot)	1649	1649	1520				1752	3471			3471	1484
Flt Permitted	0.95	0.95	1.00				0.14	1.00			1.00	1.00
Satd. Flow (perm)	1649	1649	1520				256	3471			3471	1484
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	323	0	120	0	0	0	45	1092	0	0	1435	610
RTOR Reduction (vph)	0	0	104	0	0	0	0	0	0	0	0	72
Lane Group Flow (vph)	161	162	16	0	0	0	45	1092	0	0	1435	538
Confl. Peds. (#/hr)	2		5	5		2	13					13
Heavy Vehicles (%)	4%	0%	4%	0%	0%	0%	3%	4%	0%	0%	4%	2%
Turn Type	Split	NA	Perm				pm+pt	NA		Perm	NA	Perm
Protected Phases	4	4			8		5	2			6	
Permitted Phases			4	8			2			6		6
Actuated Green, G (s)	19.2	19.2	19.2				108.0	108.0			99.8	99.8
Effective Green, g (s)	19.2	19.2	19.2				108.0	108.0			99.8	99.8
Actuated g/C Ratio	0.14	0.14	0.14				0.77	0.77			0.71	0.71
Clearance Time (s)	6.4	6.4	6.4				3.0	6.4			6.4	6.4
Vehicle Extension (s)	3.0	3.0	3.0				3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	226	226	208				253	2677			2474	1057
v/s Ratio Prot	0.10	c0.10					0.01	c0.31			c0.41	
v/s Ratio Perm			0.01				0.13					0.36
v/c Ratio	0.71	0.72	0.08				0.18	0.41			0.58	0.51
Uniform Delay, d1	57.8	57.8	52.7				6.5	5.3			9.8	9.1
Progression Factor	1.00	1.00	1.00				1.00	1.00			0.69	0.62
Incremental Delay, d2	10.1	10.3	0.2				0.3	0.5			0.7	1.2
Delay (s)	67.9	68.1	52.9				6.8	5.8			7.5	6.8
Level of Service	E	E	D				A	A			A	A
Approach Delay (s)		63.9			0.0			5.8			7.3	
Approach LOS		E			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.2
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	69	0	245	5	0	4	358	1459	11	7	1533	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0		3.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.97			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.98	1.00			1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.85			0.94		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1760	1553			1709		1787	3502		1805	3503	
Flt Permitted	0.75	1.00			0.26		0.06	1.00		0.18	1.00	
Satd. Flow (perm)	1393	1553			449		114	3502		340	3503	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	69	0	245	5	0	4	358	1459	11	7	1533	91
RTOR Reduction (vph)	0	223	0	0	8	0	0	0	0	0	3	0
Lane Group Flow (vph)	69	22	0	0	1	0	358	1470	0	7	1621	0
Confl. Peds. (#/hr)	8		9	9		8	8					8
Heavy Vehicles (%)	1%	0%	1%	0%	0%	0%	1%	3%	0%	0%	2%	1%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	12.5	12.5			12.5		115.5	115.5		80.8	80.8	
Effective Green, g (s)	12.5	12.5			12.5		115.5	115.5		80.8	80.8	
Actuated g/C Ratio	0.09	0.09			0.09		0.82	0.82		0.58	0.58	
Clearance Time (s)	6.0	6.0			6.0		3.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	124	138			40		472	2889		196	2021	
v/s Ratio Prot		0.01					c0.17	0.42			c0.46	
v/s Ratio Perm	c0.05				0.00		0.45			0.02		
v/c Ratio	0.56	0.16			0.02		0.76	0.51		0.04	0.80	
Uniform Delay, d1	61.1	58.9			58.2		40.0	3.7		12.8	23.3	
Progression Factor	1.00	1.00			1.00		0.88	1.48		1.00	1.00	
Incremental Delay, d2	5.3	0.5			0.2		5.8	0.5		0.3	3.5	
Delay (s)	66.4	59.4			58.4		41.1	6.0		13.1	26.8	
Level of Service	E	E			E		D	A		B	C	
Approach Delay (s)		61.0			58.4			12.9			26.7	
Approach LOS		E			E			B			C	

Intersection Summary			
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	601	0	161	0	0	0	114	1246	0	0	1250	548
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	6.4	6.4				3.0	6.4			6.4	6.4
Lane Util. Factor	0.95	0.95	1.00				1.00	0.95			0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97				1.00	1.00			1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00				1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85				1.00	1.00			1.00	0.85
Flt Protected	0.95	0.95	1.00				0.95	1.00			1.00	1.00
Satd. Flow (prot)	1681	1681	1506				1770	3505			3539	1466
Flt Permitted	0.95	0.95	1.00				0.15	1.00			1.00	1.00
Satd. Flow (perm)	1681	1681	1506				278	3505			3539	1466
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	601	0	161	0	0	0	114	1246	0	0	1250	548
RTOR Reduction (vph)	0	0	90	0	0	0	0	0	0	0	0	91
Lane Group Flow (vph)	300	301	71	0	0	0	114	1246	0	0	1250	457
Confl. Peds. (#/hr)			10	10			11					11
Heavy Vehicles (%)	2%	0%	4%	0%	0%	0%	2%	3%	0%	0%	2%	4%
Turn Type	Split	NA	Perm				pm+pt	NA		Perm	NA	Perm
Protected Phases	4	4			8		5	2			6	
Permitted Phases			4	8			2			6		6
Actuated Green, G (s)	30.7	30.7	30.7				96.5	96.5			84.1	84.1
Effective Green, g (s)	30.7	30.7	30.7				96.5	96.5			84.1	84.1
Actuated g/C Ratio	0.22	0.22	0.22				0.69	0.69			0.60	0.60
Clearance Time (s)	6.4	6.4	6.4				3.0	6.4			6.4	6.4
Vehicle Extension (s)	3.0	3.0	3.0				3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	368	368	330				291	2415			2125	880
v/s Ratio Prot	0.18	c0.18					0.03	c0.36			c0.35	
v/s Ratio Perm			0.05				0.24					0.31
v/c Ratio	0.82	0.82	0.22				0.39	0.52			0.59	0.52
Uniform Delay, d1	52.0	52.0	44.8				11.3	10.5			17.3	16.2
Progression Factor	1.00	1.00	1.00				1.00	1.00			0.73	0.73
Incremental Delay, d2	13.0	13.2	0.3				0.9	0.8			0.8	1.4
Delay (s)	64.9	65.2	45.1				12.2	11.3			13.4	13.3
Level of Service	E	E	D				B	B			B	B
Approach Delay (s)		60.8			0.0			11.4			13.4	
Approach LOS		E			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.2
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			