



2132 Dundas Street West, City of Mississauga Transportation Impact Study Addendum

Paradigm Transportation Solutions Limited

May 2019

Project: 190085



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Project: 190085
14 May 2019

Maureen Zunti
Sifton Properties Limited
1295 Riverbend Road Suite 300
London ON N6K 0G2

Dear Ms. Zunti:

RE: TRANSPORTATION IMPACT STUDY ADDENDUM ERINVIEW INDEPENDENT SENIOR'S LIVING, 2132 DUNDAS STREET WEST, CITY OF MISSISSAUGA

Paradigm Transportation Solutions Limited (Paradigm) has been retained by Sifton Properties Limited to prepare this addendum letter to address the updated site plan for the Erinview Independent Senior's Living development located at 2132 Dundas Street West in the City of Mississauga. This letter is a supplement to the December 2016 Transportation Impact Study¹ and is intended to address the City of Mississauga's Development Planning and Traffic Review comments related to the positioning of the parking garage entrance.

This addendum letter summarizes:

- ▶ Updated site-generated traffic forecast to reflect the proposed development program and site layout;
- ▶ Updated five-year (year 2021) total traffic capacity analyses based on the updated site generated traffic forecast; and
- ▶ Summarizes the findings compared to the December 2016 Transportation Impact Study.

Site Concept Plan

The site plan application proposes to redevelop the site to include two buildings containing 138 units; 61 retirement dwelling units and 77 seniors independent living units. Vehicular access to the site is proposed by a driveway connection to Dundas Street West and a driveway connection to Fifth Line. The site's total parking supply is proposed to consist of 72 parking spaces. The site's parking garage contains 39 spaces and is accessed by the Fifth Line Driveway. 18 of the site's 33 at grade parking spaces are access by the Fifth Line Driveway.

¹ Retirement Facility - 2132 Dundas Street West Transportation Impact Study, Paradigm Transportation Solutions Limited. Project #162410

Figure 1 (attached) illustrates the site plan and details the location of the parking garage entrance.

Study Area

The study area defined in the December 2016 TIS and this addendum letter includes the following intersections:

- ▶ Erin Mills Parkway and Dundas Street West (signalized);
- ▶ Dundas Street West and Fifth Line West (signalized);
- ▶ Dundas Street West and Glen Erin Drive/Liruma Road (signalized);
- ▶ Dundas Street West and Site Driveway; and
- ▶ Fifth Line and Site Driveway.

Development Trip Generation and Assignment

Site Trip Generation

The Institute of Transportation Engineers (ITE) Trip Generation² rates corresponding to Land Use Code 252 (Senior Adult Housing - Attached) was used to estimate the site trip generation. The land use code is consistent with the December 2016 TIS.

Table 1 indicates that the subject site's total trip generation is estimated to be 28 AM peak hour trips and 36 PM peak hour trips. The December 2016 TIS assumed a 5% modal split reduction. To remain conservative in this addendum, no trip reduction to account for modal split has been assumed.

TABLE 1: ESTIMATED TRIP GENERATION

Land Use	Number of Units	AM Peak Hour				PM Peak Hour			
		Rate	In	Out	Total	Rate	In	Out	Total
252 - Senior Adult Housing - Attached (Units)	138	0.20	10	18	28	0.26	20	16	36
Total Generation			10	18	28		20	16	36

The site's trip generation has decreased when compared to the December 2016 TIS estimate. This is due to a reduction in the number of units in the development program and the use of the ITE Trip Generation Manual 10th Edition.

² Trip Generation Manual 10th Edition Institute of Transportation Engineers Washington DC 2017



Trip Distribution and Assignment

Consistent with the December 2016 TIS, site generated traffic is assumed to be distributed through the study area intersections using the observed local trip patterns documented in the existing conditions, as summarized in Table 2.

TABLE 2: ESTIMATED SITE TRIP DISTRIBUTION

O/D	Route	AM Peak Hour		PM Peak Hour	
		In	Out	In	Out
East	Dundas Street West	42%	23%	25%	19%
West	Dundas Street West	17%	13%	26%	29%
North	Erin Mills Parkway	9%	9%	8%	5%
	Fifth Line	13%	17%	5%	20%
	Glen Erin Drive	2%	5%	4%	4%
South	Erin Mills Parkway	9%	7%	7%	5%
	Fifth Line	7%	21%	20%	17%
	Liruma Road	1%	5%	5%	1%
Total		100%	100%	100%	100%

The site traffic assignment between site driveways has been estimated using the distribution of the on-site parking spaces. Approximately 75% of the site's parking supply (15 at grade spaces and 39 parking garage spaces) is accessible via the Fifth Line driveway. **Figure 2A-B** (attached) illustrates the estimated site-generated peak hour traffic volumes.

Future Five-Year (Year 2021) Traffic Volumes

The future five-year (year 2021) total traffic volumes anticipated to occur in this study includes the background traffic forecast, developed in the December 2016 TIS, and the site generated traffic volumes (**Figure 2A-B**). **Figure 3A-B** (attached) illustrates the forecast total traffic volumes.

Future Total Traffic Operations

The study area intersection operations analyses followed the same methodology used for background traffic conditions. **Table 3** and **Table 4** summarize the five-year (year 2021) total traffic level of service conditions for the AM and PM peak hours, respectively, and the critical movements are summarized below:

- ▶ The intersection of Erin Mills Parkway and Dundas Street West is forecast to continue to operate with high delays during both the AM and PM peak hours with several movements exceeding available capacity.
- ▶ The intersection of Dundas Street West and Fifth Line West is forecast to operate with acceptable levels of service during the AM and PM peak hours, with the exception of the westbound left-turn movement, which is estimated to experience delays during the



AM peak hour, and the eastbound left turn movement, which is estimated to experience delays during the PM peak hour.

- ▶ The intersection of Dundas Street West and Glen Erin Drive/Liruma Road is forecast to operate within acceptable levels of service during the AM and PM peak hours, with the exception of the eastbound left turn movement, which will experience delays during the PM peak hour.
- ▶ The Site Driveways on Dundas Street West and Fifth Line are forecast to operate within acceptable levels of service during both the AM and PM peak hours.

Attachment A contains the detailed Synchro 9 output.

TABLE 3: TOTAL TRAFFIC INTERSECTION OPERATIONS – AM PEAK HOUR

Analysis Period AM Peak Hour	Intersection	Control Type	MOE	Direction / Movement / Approach																	
				Eastbound				Westbound				Northbound				Southbound					
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach		
	Dundas St W & Erin Mills Pkwy	TCS	LOS Delay V/C Q Ex Avail.	F 298 1.54 180 90 -90	F 182 1.29 354 - -	C 22 0.32 40 70 30	F 187	F 105 1.02 153 120 -33	D 53 0.83 203 - -	A 9 0.24 22 100 78	E 59	F 80 0.91 112 190 78	F 120 1.14 293 - -	B 13 0.48 44 120 76	F 103	F 258 1.45 229 120 -109	F 92 1.06 31 - -	B 10 0.38 160 129	F 111	F 116	
	Dundas St W & Fifth Ln	TCS	LOS Delay V/C Q Ex Avail.	A 8 0.14 6 45 39	B 11 0.70 115		B 11	E 63 0.82 27 50 23	A 8 0.54 73 - 67	A 2 0.04 3 70 67	B 12	C 31 0.31 20 45 25	D 36 0.62 43 - -		C 35	D 35 0.45 25 60 35	C 27 0.47 33 - -		C 30	B 14	
	Dundas St W & Glen Erin Dr/Liruma Rd	TCS	LOS Delay V/C Q Ex Avail.	B 10 0.46 23 70 47	C 20 0.75 163		B 19	A 9 0.24 8 60 52	B 15 0.49 80 - 162	A 2 0.33 13 175 3	B 12	C 31 0.11 12 15 3	D 48 0.59 43 - -		D 45	D 35 0.48 42 70 28	C 34 0.34 41 - -	B 12 0.47 17 - -	C 27	B 19	
	Dundas St W & Site Driveway	TWSC	LOS Delay V/C Q Ex Avail.		A 0 0.00 0 - -			B 14 0.01 0 - -	A 0 0.00 0 - -		A 0	C 22 0.02 0 - -			C 22						
	Fifth Ln & Site Driveway	TWSC	LOS Delay V/C Q Ex Avail.		B 12 0.03 0 - -		B 12		B 12 0.04 0 - -		B 12	A 8 0.00 0 - -			A 0	B 12 0.00 0 - -					

TCS - Traffic Control Signal

TWSC - Two-Way Stop Control

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length

Ex. - Existing Available Storage

Avail. - Available Storage



TABLE 4: TOTAL TRAFFIC INTERSECTION OPERATIONS – PM PEAK HOUR

Analysis Period PM Peak Hour	Intersection	Control Type	MOE	Direction / Movement / Approach																Overall	
				Eastbound				Westbound				Northbound				Southbound					
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach		
Dundas St W & Erin Mills Pkwy	TCS	LOS Delay V/C Q Ex Avail.	F 315 1.57 0.94 205 90 -84	F 71 0.45 205 53 - 17	E 20 1.71 0.59 438 100 -	C 20 0.59 74 120 26 -188	F 365 1.33 308 438 120 -	F 192 23 308 74 100 26	C 23 0.59 66 264 - 124	B 12 0.35 26 26 - 95	F 63 0.79 190 124	F 99 1.08 - 120	B 12 0.35 120 95	F 89 1.52 240 120 -120	F 287 1.04 277 - -	B 18 0.48 61 160 99	F 107 1.20 160 99	F 135			
Dundas St W & Fifth Ln	TCS	LOS Delay V/C Q Ex Avail.	F 86 0.89 28 45 18	A 9 0.67 97	D 36 0.67 39 50 11	B 11 0.78 133 70 65	A 2 0.06 5 70 65	B 13 0.78 33 20 25	A 2 0.06 5 70 65	C C 0.53 33 - -	C 33 0.36 20 45 25	C 33 0.53 33 - -	D 31 0.27 15 60 45	D 35 0.52 33 - -	C 34 0.27 15 60 45	C 15					
Dundas St W & Glen Erin Dr/Liruma Rd	TCS	LOS Delay V/C Q Ex Avail.	F 229 1.40 121 70 -51	C 20 0.72 155	E 55 0.20 8 60 52	A 9 0.23 226 175 163	C 29 0.23 12 175 163	A 3 0.23 12 175 163	C 26 0.23 12 175 163	D 31 0.17 19 15 -4	D 51 0.65 52 - -	D D 0.65 52 - -	D 46 0.17 19 70 70 0	D 55 0.82 70 70 0	C 30 0.16 23 - -	B 19 0.67 35 - -	D 35 0.16 35 - -	D 39			
Dundas St W & Site Driveway	TWSC	LOS Delay V/C Q Ex Avail.		A 0 0.00		B 14 0.01	A 0 0.00		A 0 0.00	C 22 0.02 0 -			C 22 0.02 0 -								
Fifth Ln & Site Driveway	TWSC	LOS Delay V/C Q Ex Avail.		B 12 0.02		B 12 0.04	A 8 0.00		B 12 0.00	A 8 0.00			A 0 0.00	A 8 0.00							

TCS - Traffic Control Signal

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MOE - Measure of Effectiveness

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Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length

Ex. - Existing Available Storage

Avail. - Available Storage

Conclusions

Based on the analyses contained herein, it is concluded that:

- ▶ **Site Description:** The site plan application proposes to redevelop the site to include two buildings containing 138 units; 61 retirement dwelling units and 77 seniors independent living units. The site's total parking supply is proposed to consist of 72 parking spaces.
- ▶ **Site Layout:** Vehicular access to the site is proposed by a driveway connection to Dundas Street West and a driveway connection to Fifth Line. The site's parking garage is accessed via the Fifth Line driveway. The parking garage entrance is located in the north-east quadrant of the site.
- ▶ **Site Generated Traffic:** The subject site is forecast to generate approximately 28 vehicle trips during the weekday AM peak hour and approximately 36 trips during the



weekday PM peak hour. To remain conservative in this addendum, no trip reduction to account for modal split has been assumed.

- ▶ **Total Traffic Operations:** The study area intersections are anticipated to operate with levels of service similar to those documented in the December 2016 TIS. Consistent with the December 2016 TIS, no remedial measures are recommended to accommodate the site generated traffic.

From a transportation perspective, we find that there is no significant difference between the former and current plan. The forgoing analysis addresses the site's trip generation, provides an updated trip assignment based on the parking garage entrance and provides an assessment of the total traffic conditions with the finding similar to the December 2016 TIS findings.

We trust that this information is responsive to the comments raised from the City of Mississauga's Development Planning and Traffic. If you should have any questions or would like to discuss our responses in more detail, please feel free to contact us.

Yours very truly,

PARADIGM TRANSPORTATION SOLUTIONS LIMITED



Scott Catton, Dipl.T., C.E.T. MITE
Senior Project Manager



Stew Elkins, B.E.S., MITE
Vice President

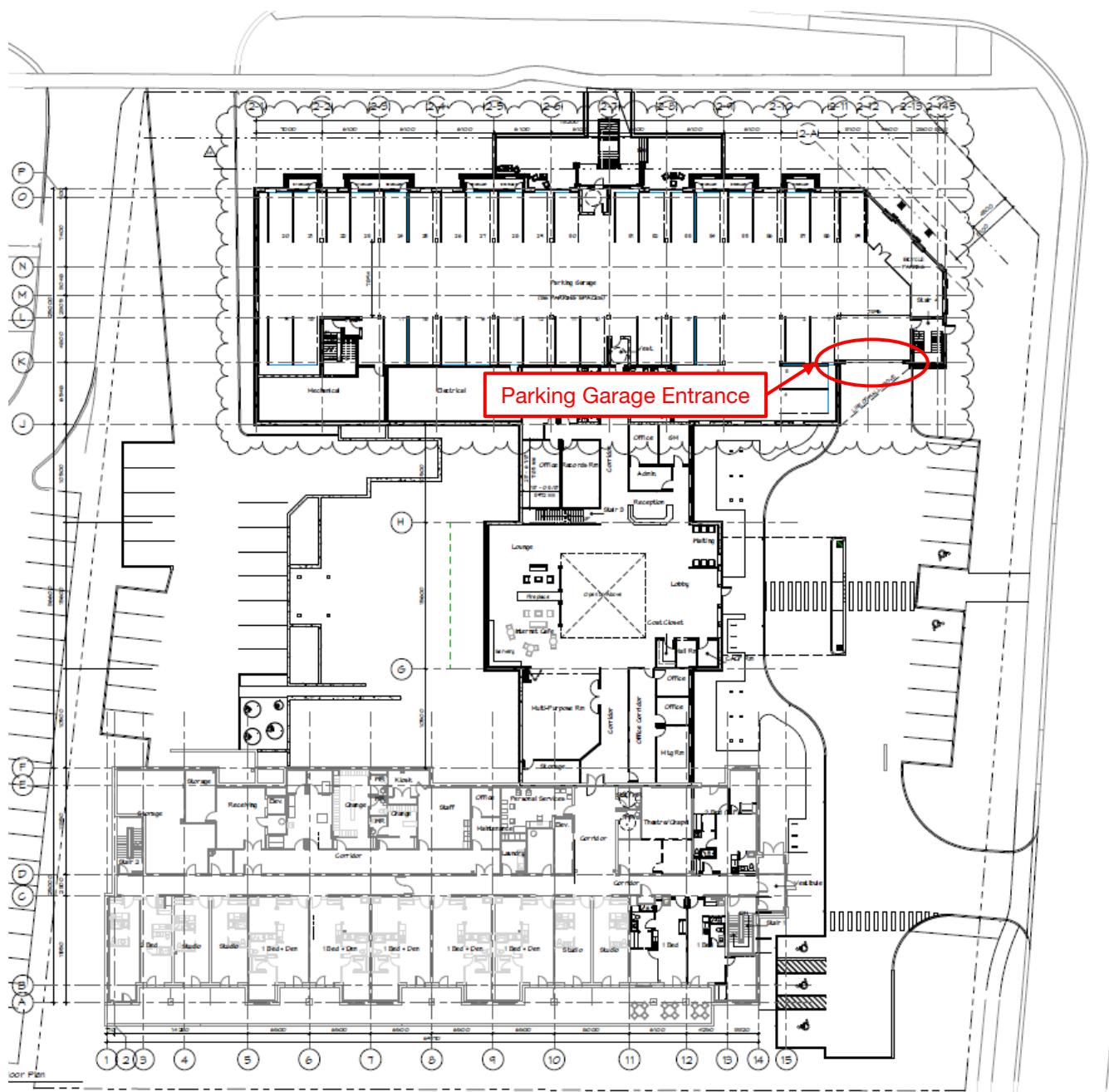


Attachments

Figures



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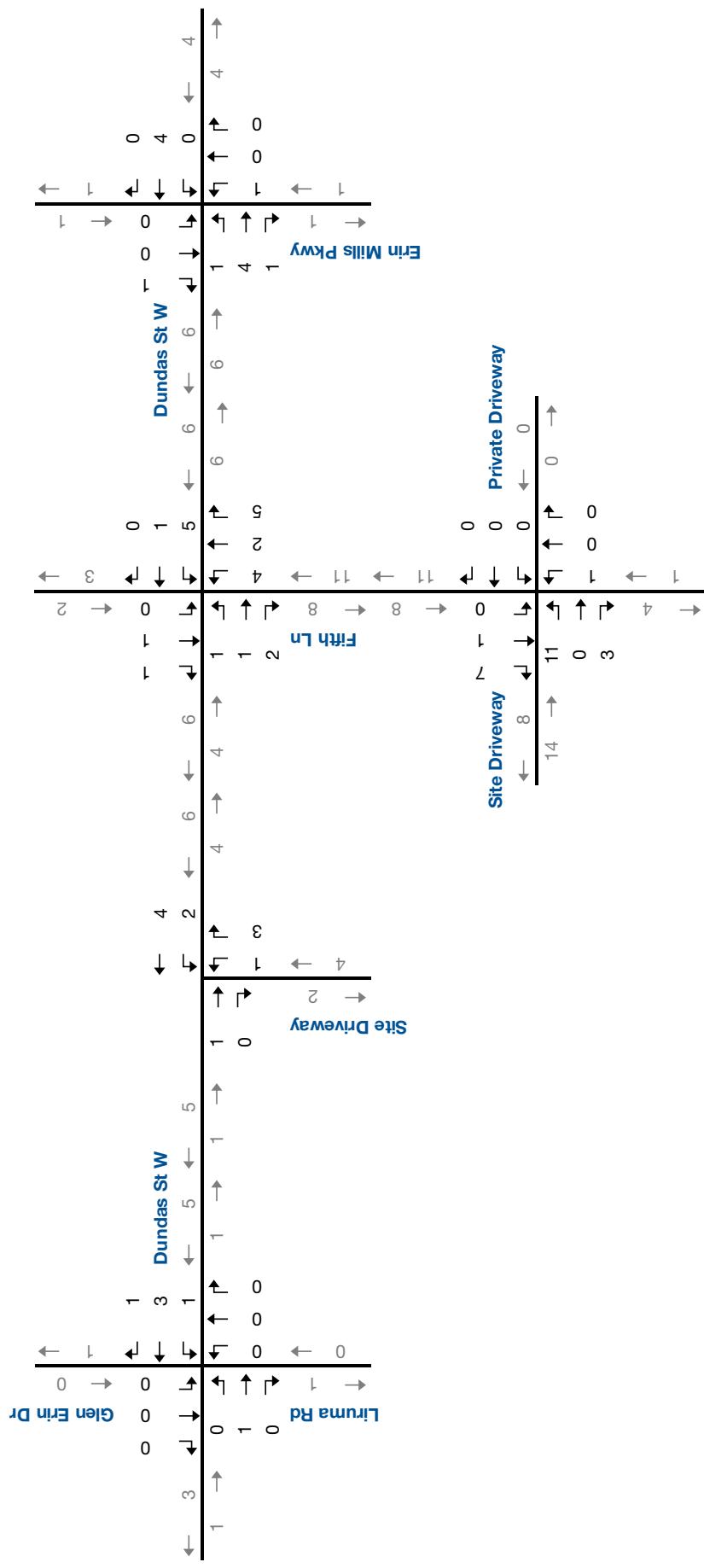
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Site Plan

Erinview Independent Senior's Living TIS Addendum
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Figure 1



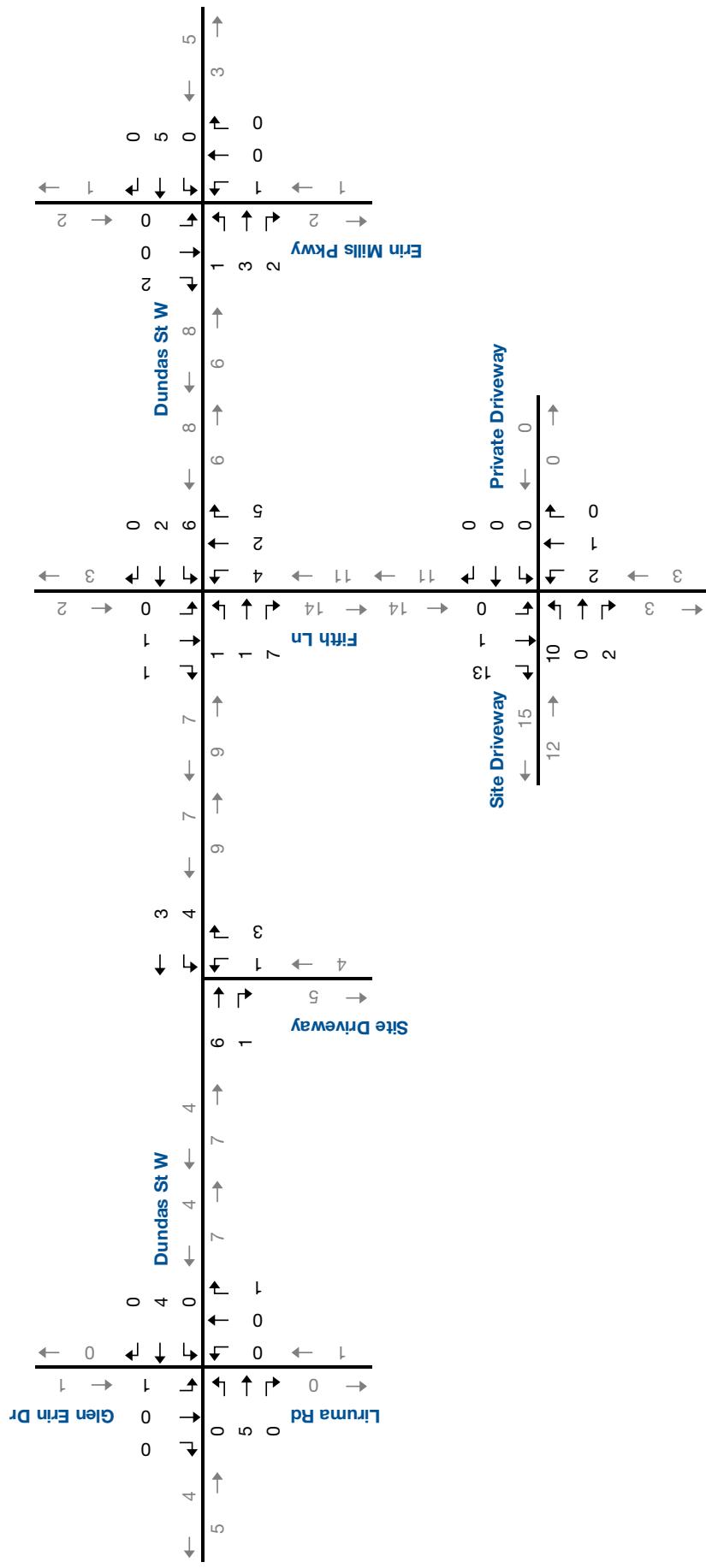
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Forecast Site Generated Traffic - AM Peak Hour

Figure 2A



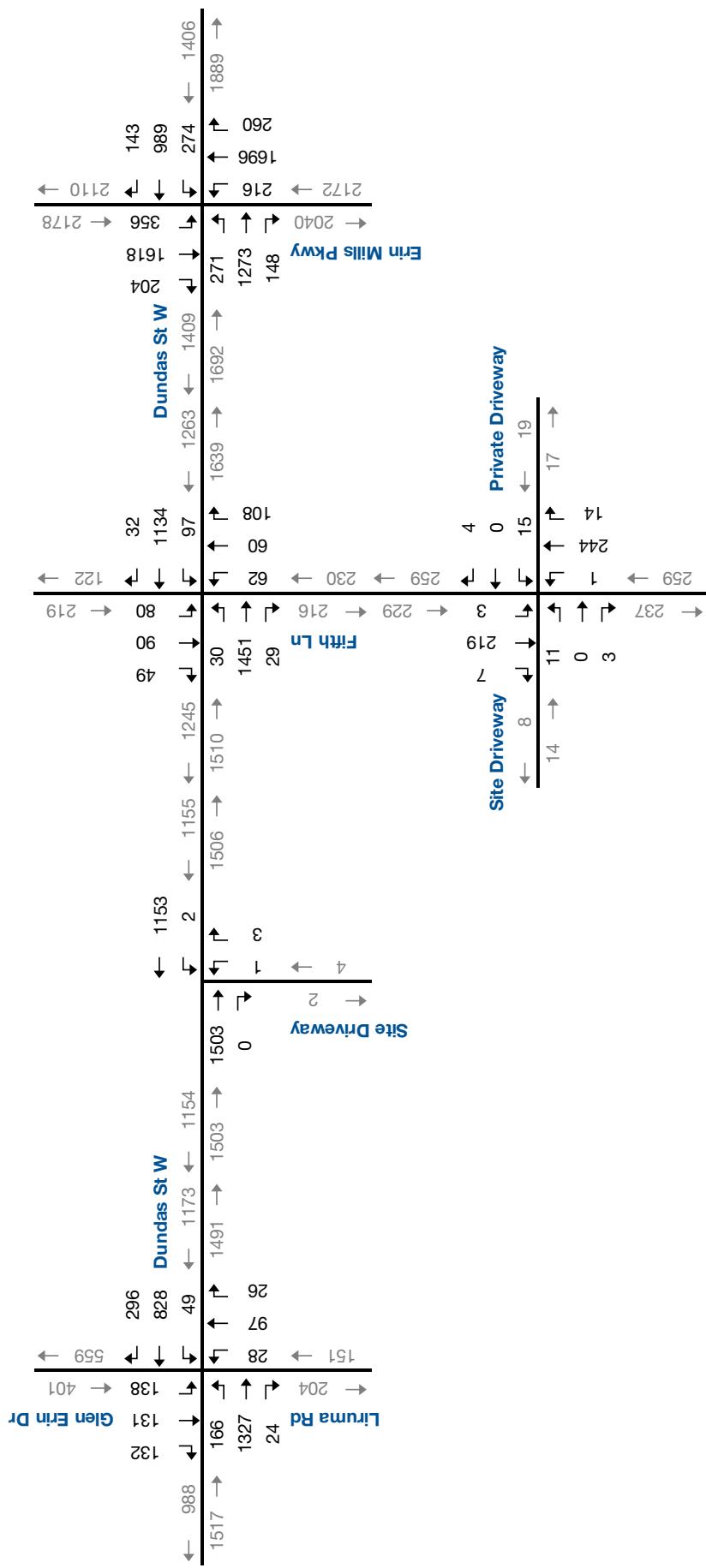
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Forecast Site Generated Traffic - PM Peak Hour

Figure 2B



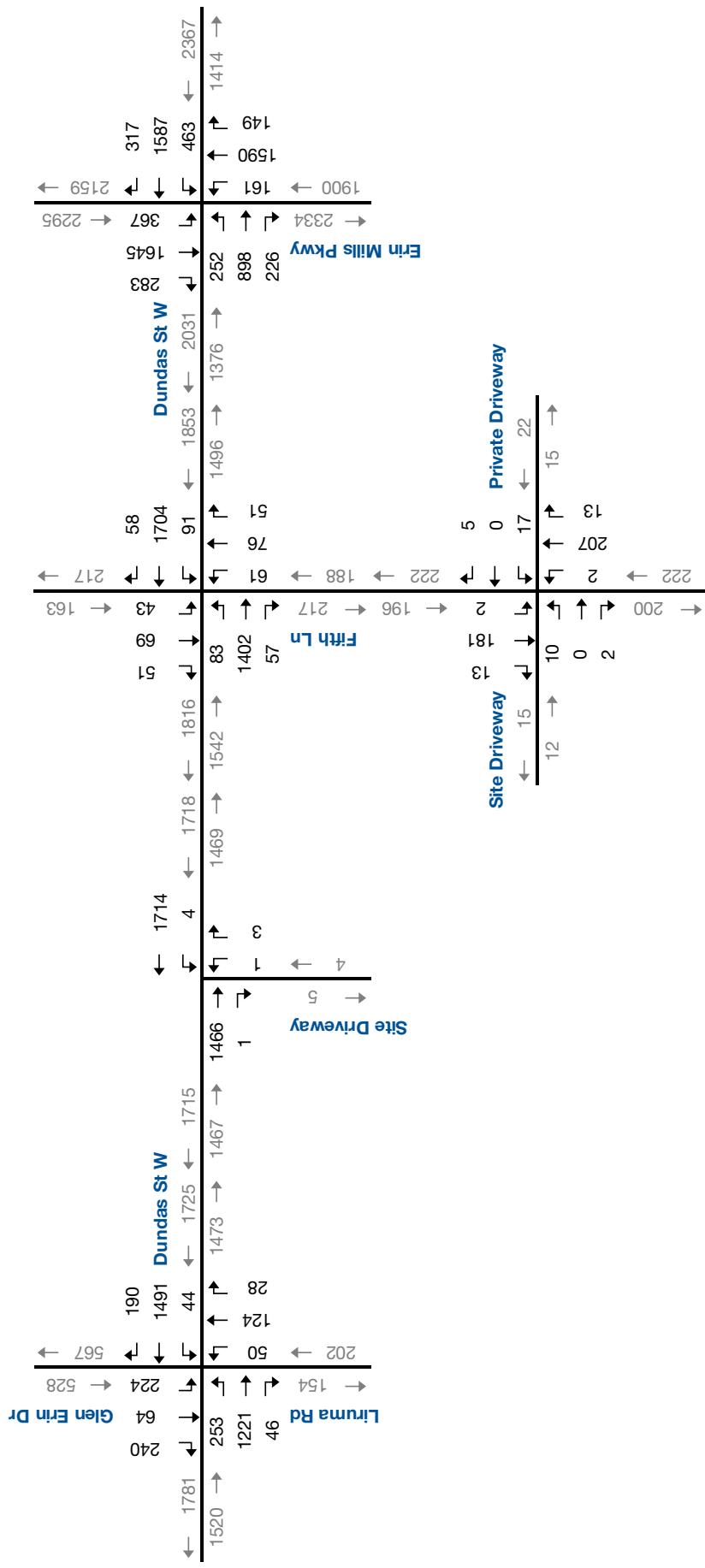
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Forecast Total Traffic – AM Peak Hour

Figure 3A



NTS



Forecast Total Traffic - PM Peak Hour

Figure 3B

Appendix A

Total Traffic Operational Conditions



Lanes, Volumes, Timings
1: Erin Mills Pkwy & Dundas St W

Total Traffic AM Peak Hour
190085 - TIS Addendum

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	→	↓	↑	→	↓	↑	→	↓	↑	→	↓
Traffic Volume (vph)	271	1273	148	274	989	143	216	1696	260	356	1618	204
Future Volume (vph)	271	1273	148	274	989	143	216	1696	260	356	1618	204
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0		70.0	120.0		100.0	190.0		120.0	120.0		160.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5		7.5			7.5		7.5				
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt												
Frt Protected	0.950											
Satd. Flow (prot)	1787	3610	1583	1719	3505	1583	1787	5085	1568	1787	5136	1538
Frt Permitted	0.107											
Satd. Flow (perm)	201	3610	1498	143	3505	1511	149	5085	1373	147	5136	1443
Right Turn on Red												
Satd. Flow (RTOR)												
Link Speed (kph)	60		60			70		70				
Link Distance (m)	181.7		185.3			378.9		227.6				
Travel Time (s)	10.9		11.1			19.5		11.7				
Conf. Peds. (#/hr)	13	16	16	13	19		43	43				19
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	2%	5%	3%	2%	1%	2%	3%	1%	1%	5%
Adj. Flow (vph)	295	1384	161	298	1075	155	235	1843	283	387	1759	222
Shared Lane Traffic (%)												
Lane Group Flow (vph)	295	1384	161	298	1075	155	235	1843	283	387	1759	222
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(m)	3.6		3.6			3.6		3.6				
Link Offset(m)	0.0		0.0			0.0		0.0				
Crosswalk Width(m)	4.8		4.8			4.8		4.8				
Two Way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right									
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex											
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4		9.4			9.4		9.4				
Detector 2 Size(m)	0.6		0.6			0.6		0.6				
Detector 2 Type	Cl+Ex		Cl+Ex			Cl+Ex		Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)	0.0		0.0			0.0		0.0				

Lanes, Volumes, Timings
1: Erin Mills Pkwy & Dundas St W

Total Traffic AM Peak Hour
190085 - TIS Addendum

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2			1	6		3	8		7	4
Permitted Phases		2		2	6		6	8	8	4	4	
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	5.0	12.0	12.0	5.0	12.0	12.0
Minimum Split (s)	8.0	36.8	36.8	8.0	36.8	36.8	8.0	31.6	31.6	8.0	31.6	31.6
Total Split (s)	14.4	54.4	54.4	25.6	65.6	65.6	22.4	57.6	57.6	22.4	57.6	57.6
Total Split (%)	9.0%	34.0%	34.0%	16.0%	41.0%	41.0%	14.0%	36.0%	36.0%	14.0%	36.0%	36.0%
Maximum Green (s)	11.4	47.6	47.6	22.6	58.8	58.8	19.4	50.8	50.8	19.4	50.8	50.8
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.8	2.8	0.0	2.8	2.8	0.0	2.8	2.8	0.0	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.8	6.8	3.0	6.8	6.8	3.0	6.8	6.8	3.0	6.8	6.8
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Efft Green (s)	62.8	47.6	47.6	77.0	58.8	58.8	73.2	50.8	50.8	74.6	51.6	51.6
Actuated g/c Ratio	0.39	0.30	0.30	0.48	0.37	0.37	0.46	0.32	0.47	0.32	0.47	0.32
v/c Ratio	1.54	1.29	0.32	1.02	0.83	0.24	0.91	1.14	0.48	1.45	1.06	0.38
Control Delay	298.0	181.7	21.5	105.2	53.1	8.6	80.3	120.1	13.1	258.3	91.7	10.4
Queue Delay	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	298.0	182.3	21.5	105.2	53.1	8.6	80.3	120.1	13.1	258.3	91.7	10.4
LOS	F	F	C	F	D	A	F	F	B	F	F	B
Approach Delay					58.8				103.4			111.3
Approach LOS					E							F
Queue Length 50th (m)	~116.0	~309.2	18.4	~88.4	172.6	5.0	60.1	~263.1	14.9	~159.1	~239.7	8.5
Queue Length 95th (m)	#179.9	#354.1	39.8	#153.0	202.6	21.6	#111.6	#292.8	43.8	#229.3	#269.7	31.2
Internal Link Dist (m)			157.7				161.3		354.9			203.6
Turn Bay Length (m)	90.0		70.0	120.0			100.0	190.0		120.0	120.0	160.0
Base Capacity (vph)	191	1073	506	291	1288	638	267	1614	586	267	1656	591
Starvation Cap Reductn	0	130	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.54	1.47	0.32	1.02	0.83	0.24	0.88	1.14	0.48	1.45	1.06	0.38
Intersection Summary												
Area Type:	Other											
Cycle Length:	160											
Actuated Cycle Length:	160											
Natural Cycle:	125											
Control Type:	Semi Act-Uncoord											
Maximum v/c Ratio:	1.54											
Intersection Signal Delay:	116.2											
Intersection LOS: F												
Intersection Capacity Utilization:	120.9%											
ICU Level of Service H												

Lanes, Volumes, Timings

1: Erin Mills Pkwy & Dundas St W

Analysis Period (min) 15

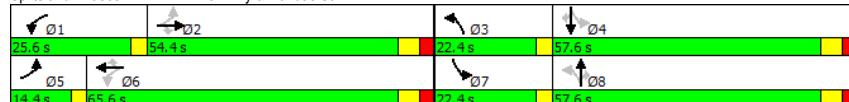
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Erin Mills Pkwy & Dundas St W



Total Traffic AM Peak Hour

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Lanes, Volumes, Timings

2: Fifth Ln & Dundas St W

Total Traffic AM Peak Hour

190085 - TIS Addendum

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑	↑	↑	↑	↑	↑	↑↑	↑
Traffic Volume (vph)	30	1451	29	97	1134	32	62	60	108	80	90	49
Future Volume (vph)	30	1451	29	97	1134	32	62	60	108	80	90	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	50.0		70.0	45.0		0.0	60.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			0.95	1.00	0.98		0.99	1.00		
Frt		0.997			0.850		0.904			0.947		
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3460	0	1787	3471	1509	1787	1641	0	1736	1696	0
Flt Permitted	0.189			0.103			0.661			0.618		
Satd. Flow (perm)	359	3460	0	194	3471	1434	1242	1641	0	1119	1696	0
Right Turn on Red		Yes			Yes		Yes		Yes		Yes	
Satd. Flow (RTOR)	3				38		13			32		
Link Speed (k/h)	60			60			50			50		
Link Distance (m)	99.8			181.7			100.0			130.4		
Travel Time (s)	6.0			10.9			7.2			9.4		
Conf. Peds. (#/hr)	11	2	2		11	1		7	7		1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	4%	3%	1%	4%	7%	1%	5%	2%	4%	7%	3%
Adj. Flow (vph)	33	1577	32	105	1233	35	67	65	117	87	98	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	1609	0	105	1233	35	67	182	0	87	151	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(m)	3.6			3.6			3.6			3.6		
Link Offset(m)	0.0			0.0			0.0			0.0		
Crosswalk Width(m)	4.8			4.8			4.8			4.8		
Two way Left Turn Lane	Yes											
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)	9.4			9.4			9.4			9.4		
Detector 2 Size(m)	0.6			0.6			0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		

Lanes, Volumes, Timings
2: Fifth Ln & Dundas St W

Total Traffic AM Peak Hour
190085 - TIS Addendum

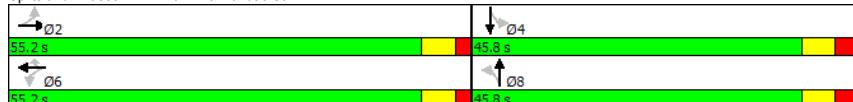
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	2			6	6	8		8		4		
Permitted Phases	2	2		6	6	6	8	8	4	4		
Switch Phase												
Minimum Initial (s)	45.0	45.0		45.0	45.0	45.0	8.0	8.0	8.0	8.0		
Minimum Split (s)	51.0	51.0		51.0	51.0	51.0	38.5	38.5	38.5	38.5		
Total Split (s)	55.2	55.2		55.2	55.2	55.2	45.8	45.8	45.8	45.8		
Total Split (%)	54.7%	54.7%		54.7%	54.7%	54.7%	45.3%	45.3%	45.3%	45.3%		
Maximum Green (s)	49.2	49.2		49.2	49.2	49.2	39.3	39.3	39.3	39.3		
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0		
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.5	2.5	2.5	2.5		
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.5	6.5	6.5	6.5		
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Recall Mode	Max	Max		Max	Max	Max	None	None	None	None		
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0	7.0		
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0	11.0		
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0	0	0		
Act Effct Green (s)	49.6	49.6		49.6	49.6	49.6	12.9	12.9	12.9	12.9		
Actuated g/C Ratio	0.66	0.66		0.66	0.66	0.66	0.17	0.17	0.17	0.17		
v/c Ratio	0.14	0.70		0.82	0.54	0.04	0.31	0.62	0.45	0.47		
Control Delay	7.6	10.8		62.8	8.3	2.1	30.6	36.1	35.3	26.6		
Queue Delay	0.0	0.0		0.0	0.1	0.0	0.0	0.0	0.0	0.0		
Total Delay	7.6	10.8		62.8	8.4	2.1	30.6	36.1	35.3	26.6		
LOS	A	B		E	A	A	C	D	D	C		
Approach Delay	10.8			12.4			34.6			29.8		
Approach LOS	B			B			C			C		
Queue Length 50th (m)	1.6	68.3		9.9	43.3	0.0	8.8	23.4	11.7	15.9		
Queue Length 95th (m)	6.2	114.9		#27.3	73.0	3.0	19.7	42.9	25.0	32.5		
Internal Link Dist (m)	75.8			157.7			76.0		106.4			
Tum Bay Length (m)	45.0			50.0			70.0	45.0		60.0		
Base Capacity (vph)	237	2287		128	2294	960	650	866	586	903		
Starvation Cap Reductn	0	0		0	275	0	0	0	0	0		
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0		
Storage Cap Reductn	0	0		0	0	0	0	0	0	0		
Reduced v/c Ratio	0.14	0.70		0.82	0.61	0.04	0.10	0.21	0.15	0.17		
Intersection Summary												
Area Type:	Other											
Cycle Length: 101												
Actuated Cycle Length: 75.1												
Natural Cycle: 120												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.82												
Intersection Signal Delay: 14.4	Intersection LOS: B											
Intersection Capacity Utilization 114.4%	ICU Level of Service H											

Lanes, Volumes, Timings
2: Fifth Ln & Dundas St W

Total Traffic AM Peak Hour
190085 - TIS Addendum

Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Fifth Ln & Dundas St W



Lanes, Volumes, Timings
3: Glen Erin Dr/Liruma Rd & Dundas St W

Total Traffic AM Peak Hour
190085 - TIS Addendum

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↓	↑	↑	↑↓	↑	↑	↑↓	↑	↑	↑↓	↑
Traffic Volume (vph)	166	1327	24	49	828	296	28	97	26	138	131	132
Future Volume (vph)	166	1327	24	49	828	296	28	97	26	138	131	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0	0.0	60.0	175.0	15.0		0.0	70.0	0.0			
Storage Lanes	1	0	1	1	1		0	1	1			
Taper Length (m)	7.5		7.5		7.5							
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00			0.98	0.99	1.00		1.00		0.98	
Frt		0.997			0.850		0.968				0.850	
Flt Protected	0.950			0.950		0.950			0.950			
Satd. Flow (prot)	1752	3456	0	1805	3406	1553	1805	1732	0	1736	1863	1482
Flt Permitted	0.250			0.098		0.664			0.649			
Satd. Flow (perm)	461	3456	0	186	3406	1525	1251	1732	0	1182	1863	1449
Right Turn on Red			Yes			Yes			Yes		Yes	
Satd. Flow (RTOR)	2				322		11				143	
Link Speed (k/h)	60			60			50			50		
Link Distance (m)	97.4			582.9			70.3			124.6		
Travel Time (s)	5.8			35.0			5.1			9.0		
Conf. Peds. (#/hr)	3	5	5	3	5		2	2			5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	4%	9%	0%	6%	4%	0%	5%	9%	4%	2%	9%
Adj. Flow (vph)	180	1442	26	53	900	322	30	105	28	150	142	143
Shared Lane Traffic (%)												
Lane Group Flow (vph)	180	1468	0	53	900	322	30	133	0	150	142	143
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(m)	3.6			3.6			3.6			3.6		
Link Offset(m)	0.0			0.0			0.0			0.0		
Crosswalk Width(m)	4.8			4.8			4.8			4.8		
Two Way Left Turn Lane			Yes									
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	0.6	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4			9.4			9.4		
Detector 2 Size(m)	0.6			0.6			0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		

Paradigm Transportation Solutions Limited

Synchro 9 Report

Lanes, Volumes, Timings
3: Glen Erin Dr/Liruma Rd & Dundas St W

Total Traffic AM Peak Hour
190085 - TIS Addendum

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	pm+pt	NA	Perm	D.Pm	NA	NA	D.P+P	NA	custom	
Protected Phases	5	2		1	6				4		3	8
Permitted Phases	2		6		6	8			4		4	4
Detector Phase	5	2		1	6	6	8	4	3	8	4	4
Switch Phase												
Minimum Initial (s)	5.0	50.0		5.0	50.0	50.0	8.0	8.0	5.0	8.0	8.0	8.0
Minimum Split (s)	8.0	56.0		8.0	56.0	56.0	38.5	38.5	8.0	38.5	38.5	8.0
Total Split (s)	10.0	59.5		10.0	59.5	59.5	50.5	40.5	10.0	50.5	40.5	10.0
Total Split (%)	8.3%	49.6%		8.3%	49.6%	49.6%	42.1%	33.8%	8.3%	42.1%	33.8%	8.3%
Maximum Green (s)	7.0	53.5		7.0	53.5	53.5	44.0	34.0	7.0	44.0	34.0	7.0
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	0.0	2.0		0.0	2.0	2.0	2.5	2.5	0.0	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0		3.0	6.0	6.0	6.5	6.5	3.0	6.5	6.5	6.5
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?									Yes		Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max	Max	None	None	None	None	None	None
Walk Time (s)	7.0			7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0	0	0		0	0	0
Act Efft Green (s)	64.5	56.0		62.9	53.6	53.6	22.3	12.3		22.8	22.3	12.3
Actuated g/c Ratio	0.66	0.57		0.64	0.54	0.54	0.23	0.12		0.23	0.23	0.12
v/c Ratio	0.46	0.75		0.24	0.49	0.33	0.11	0.59		0.48	0.34	0.47
Control Delay	10.2	20.2		8.7	15.4	2.4	30.6	48.0		35.2	34.0	12.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	10.2	20.2		8.7	15.4	2.4	30.6	48.0		35.2	34.0	12.0
LOS	B	C		A	B	A	C	D		D	C	B
Approach Delay	19.1				11.9				44.8			27.2
Approach LOS		B						D				C
Queue Length 50th (m)	11.5	113.6		3.1	55.4	0.0	4.8	23.3		24.3	23.9	0.0
Queue Length 95th (m)	22.7	162.8		8.2	80.1	13.2	12.4	42.6		41.6	41.3	17.1
Internal Link Dist (m)	73.4				558.9			46.3				100.6
Tun Bay Length (m)	70.0			60.0			175.0	15.0		70.0		
Base Capacity (vph)	394	1967		235	1853	976	559	606		313	834	594
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.46	0.75		0.23	0.49	0.33	0.05	0.22		0.48	0.17	0.24
Intersection Summary												
Area Type:	Other											
Cycle Length:	120											
Actuated Cycle Length:	98.4											
Natural Cycle:	115											
Control Type:	Actuated-Uncoordinated											
Maximum v/c Ratio:	0.75											
Intersection Signal Delay:	18.7								Intersection LOS: B			
Intersection Capacity Utilization	84.8%								ICU Level of Service E			

Paradigm Transportation Solutions Limited

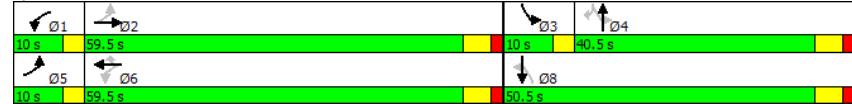
Synchro 9 Report

Lanes, Volumes, Timings
3: Glen Erin Dr/Liruma Rd & Dundas St W

Total Traffic AM Peak Hour
190085 - TIS Addendum

Analysis Period (min) 15

Splits and Phases: 3: Glen Erin Dr/Liruma Rd & Dundas St W



Lanes, Volumes, Timings
4: Site Driveway & Dundas St W

Total Traffic AM Peak Hour
190085 - TIS Addendum

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↑↑
Traffic Volume (vph)	1503	0	2	1153	1	3
Future Volume (vph)	1503	0	2	1153	1	3
Ideal Flow (vphpi)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt					0.899	
Flt Protected					0.988	
Satd. Flow (prot)	3471	0	0	3438	1688	0
Flt Permitted					0.988	
Satd. Flow (perm)	3471	0	0	3438	1688	0
Link Speed (k/h)	60			60	50	
Link Distance (m)	582.9			99.8	48.6	
Travel Time (s)	35.0			6.0	3.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	0%	0%	5%	0%	0%
Adj. Flow (vph)	1634	0	2	1253	1	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1634	0	0	1255	4	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 51.5%

ICU Level of Service A

Analysis Period (min) 15

HCM 2010 TWSC
4: Site Driveway & Dundas St W

Total Traffic AM Peak Hour
190085 - TIS Addendum

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑
Traffic Vol, veh/h	1503	0	2	1153	1	3
Future Vol, veh/h	1503	0	2	1153	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	0	0	5	0	0
Mvmt Flow	1634	0	2	1253	1	3
Major/Minor						
Major1		Major2		Minor1		
Conflicting Flow All	0	0	1634	0	2265	817
Stage 1	-	-	-	-	1634	-
Stage 2	-	-	-	-	631	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	402	-	35	324
Stage 1	-	-	-	-	148	-
Stage 2	-	-	-	-	498	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	402	-	34	324
Mov Cap-2 Maneuver	-	-	-	-	114	-
Stage 1	-	-	-	-	148	-
Stage 2	-	-	-	-	490	-
Approach						
EB		WB		NB		
HCM Control Delay, s	0	0.1	21.5			
HCM LOS			C			
Minor Lane/Major Mvmt						
NBLn1		EBT	EBR	WBL	WBT	
Capacity (veh/h)	222	-	-	402	-	
HCM Lane V/C Ratio	0.02	-	-	0.005	-	
HCM Control Delay (s)	21.5	-	-	14	0.1	
HCM Lane LOS	C	-	-	B	A	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	

Lanes, Volumes, Timings
5: Fifth Ln & Site Driveway

Total Traffic AM Peak Hour
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↖	↗	↖	↗	↖	↗	↖	↗	↖	↗
Traffic Volume (vph)	11	0	3	15	0	4	1	244	14	3	219	7
Future Volume (vph)	11	0	3	15	0	4	1	244	14	3	219	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.973			0.973			0.993			0.996		
Flt Protected	0.962			0.962			0.999					
Satd. Flow (prot)	0	1778	0	0	1778	0	0	1818	0	0	1838	0
Flt Permitted	0.962			0.962			0.999					
Satd. Flow (perm)	0	1778	0	0	1778	0	0	1818	0	0	1838	0
Link Speed (k/h)	50			50			50			50		
Link Distance (m)	46.6			37.4			103.7			100.0		
Travel Time (s)	3.4			2.7			7.5			7.2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	12	0	3	16	0	4	1	265	15	3	238	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	15	0	0	20	0	0	281	0	0	249	0
Enter Blocked Intersection	No	No	No	No	No	No	Yes	Yes	Yes	No	Yes	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	0.0			0.0			3.6			3.6		
Link Offset(m)	0.0			0.0			0.0			0.0		
Crosswalk Width(m)	4.8			4.8			4.8			4.8		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	24.3%											
ICU Level of Service	A											
Analysis Period (min)	15											

HCM 2010 TWSC

5: Fifth Ln & Site Driveway

Total Traffic AM Peak Hour

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Intersection

Int Delay, s/veh 0.8

Movement EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR

Lane Configurations	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	11	0	3	15	0	4	1	244	14	3	219	7
Future Vol, veh/h	11	0	3	15	0	4	1	244	14	3	219	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	0	-	0	-	0	-
Grade, %	-	0	-	-	0	-	0	-	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	4	0	0	3	0
Mvmt Flow	12	0	3	16	0	4	1	265	15	3	238	8

Major/Minor Minor2 Minor1 Major1 Major2

Conflicting Flow All	525	530	242	525	527	273	246	0	0	280	0	0
Stage 1	248	248	-	275	275	-	-	-	-	-	-	-
Stage 2	277	282	-	250	252	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	466	457	802	466	459	771	1332	-	-	1294	-	-
Stage 1	760	705	-	736	686	-	-	-	-	-	-	-
Stage 2	734	681	-	759	702	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	462	455	802	463	457	771	1332	-	-	1294	-	-
Mov Cap-2 Maneuver	462	455	-	463	457	-	-	-	-	-	-	-
Stage 1	759	703	-	735	685	-	-	-	-	-	-	-
Stage 2	729	680	-	754	700	-	-	-	-	-	-	-

Approach EB WB NB SB

HCM Control Delay, s 12.3 12.4 0 0.1

HCM LOS B B

Minor Lane/Major Mvmt NBL NBT NBR EBLn1WBLn1 SBL SBT SBR

Capacity (veh/h)	1332	-	-	508	506	1294	-	-
HCM Lane V/C Ratio	0.001	-	-	0.03	0.041	0.003	-	-
HCM Control Delay (s)	7.7	0	-	12.3	12.4	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

Lanes, Volumes, Timings
1: Erin Mills Pkwy & Dundas St W

Total Traffic PM Peak Hour
190085 - TIS Addendum

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	→	↓	↑	→	↓	↑	→	↓	↑	→	↓
Traffic Volume (vph)	252	898	226	463	1587	317	161	1590	149	367	1645	283
Future Volume (vph)	252	898	226	463	1587	317	161	1590	149	367	1645	283
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0		70.0	120.0		100.0	190.0		120.0	120.0		160.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5		7.5			7.5		7.5				
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt												
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3610	1583	1719	3505	1583	1787	5085	1568	1787	5136	1538
Flt Permitted	0.084			0.079			0.079			0.074		
Satd. Flow (perm)	158	3610	1498	143	3505	1511	149	5085	1373	139	5136	1443
Right Turn on Red				Yes			Yes			Yes		
Satd. Flow (RTOR)				149			182			135		198
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		181.7			185.3			378.9			227.6	
Travel Time (s)		10.9			11.1			19.5			11.7	
Conf. Peds. (#/hr)	13		16	16		13	19		43	43		19
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	2%	5%	3%	2%	1%	2%	3%	1%	1%	5%
Adj. Flow (vph)	274	976	246	503	1725	345	175	1728	162	399	1788	308
Shared Lane Traffic (%)												
Lane Group Flow (vph)	274	976	246	503	1725	345	175	1728	162	399	1788	308
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(m)	3.6		3.6			3.6			3.6			
Link Offset(m)	0.0		0.0			0.0			0.0			
Crosswalk Width(m)	4.8			4.8			4.8			4.8		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right									
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex											
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4		9.4			9.4			9.4			
Detector 2 Size(m)	0.6		0.6			0.6			0.6			
Detector 2 Type	Cl+Ex		Cl+Ex			Cl+Ex			Cl+Ex			
Detector 2 Channel												
Detector 2 Extend (s)	0.0		0.0			0.0			0.0			

Lanes, Volumes, Timings
1: Erin Mills Pkwy & Dundas St W

Total Traffic PM Peak Hour
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		2	6		6	8		8	4	4
Permitted Phases		2		2	1		6	6		8	7	4
Detector Phase	5	2		2	1		6	3		8	7	4
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	5.0	12.0	12.0	5.0	12.0	12.0
Minimum Split (s)	8.0	36.8	36.8	8.0	36.8	36.8	8.0	31.6	31.6	8.0	31.6	31.6
Total Split (s)	14.4	54.4	54.4	25.6	65.6	65.6	22.4	57.6	57.6	22.4	57.6	57.6
Total Split (%)	9.0%	34.0%	34.0%	16.0%	41.0%	41.0%	14.0%	36.0%	36.0%	14.0%	36.0%	36.0%
Maximum Green (s)	11.4	47.6	47.6	22.6	58.8	58.8	19.4	50.8	50.8	19.4	50.8	50.8
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.8	2.8	0.0	2.8	2.8	0.0	2.8	2.8	0.0	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.8	6.8	3.0	6.8	6.8	3.0	6.8	6.8	3.0	6.8	6.8
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Efft Green (s)	62.8	47.6	47.6	77.0	58.8	58.8	70.3	50.8	50.8	75.8	54.5	54.5
Actuated g/c Ratio	0.39	0.30	0.30	0.48	0.37	0.37	0.44	0.32	0.32	0.47	0.34	0.34
v/c Ratio	1.54	0.91	0.45	1.73	1.34	0.51	0.78	1.07	0.31	1.51	1.02	0.50
Control Delay	299.9	67.0	20.0	372.7	197.6	20.7	59.9	95.0	10.8	280.3	78.1	17.7
Queue Delay	0.0	31.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	299.9	98.6	20.0	372.7	197.6	20.7	59.9	95.0	10.8	280.3	78.1	17.7
LOS	F	F	C	F	F	C	E	F	B	F	E	B
Approach Delay												
Approach LOS												
Queue Length 50th (m)	~111.1	166.4	25.1	~232.4	~394.5	41.6	39.4	~233.9	6.3	~167.6	~234.4	27.8
Queue Length 95th (m)	#173.6	#204.7	52.7	#307.5	#438.0	74.0	65.9	#264.1	25.5	#240.4	#277.0	60.8
Internal Link Dist (m)			157.7				161.3			354.9		203.6
Tun Bay Length (m)			90.0			70.0	120.0		100.0	190.0		120.0
Base Capacity (vph)	178	1073	550	291	1288	670	267	1614	528	265	1750	622
Starvation Cap Reductn	0	155	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.54	1.06	0.45	1.73	1.34	0.51	0.66	1.07	0.31	1.51	1.02	0.50
Intersection Summary												
Area Type:	Other											
Cycle Length:	160											
Actuated Cycle Length:	160											
Natural Cycle:	145											
Control Type:	Semi Act-Uncoord											
Maximum v/c Ratio:	1.73											
Intersection Signal Delay:	133.5											
Intersection LOS: F												
Intersection Capacity Utilization:	126.9%											
ICU Level of Service H												

Lanes, Volumes, Timings

1: Erin Mills Pkwy & Dundas St W

Analysis Period (min) 15

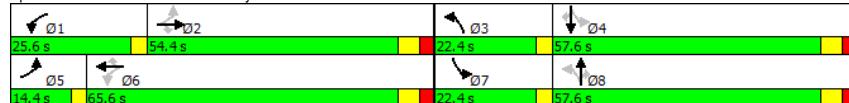
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Erin Mills Pkwy & Dundas St W



Total Traffic PM Peak Hour

190085 - TIS Addendum

Lanes, Volumes, Timings

2: Fifth Ln & Dundas St W

Total Traffic PM Peak Hour

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑	↑	↑	↑	↑	↑	↑↑	↑
Traffic Volume (vph)	83	1402	57	91	1704	58	61	76	51	43	69	51
Future Volume (vph)	83	1402	57	91	1704	58	61	76	51	43	69	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	50.0		70.0	45.0		0.0	60.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			0.95	1.00	0.99		0.99	0.99		
Frt		0.994			0.850		0.940			0.937		
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3448	0	1787	3471	1509	1787	1704	0	1736	1681	0
Flt Permitted	0.078			0.115			0.674			0.669		
Satd. Flow (perm)	148	3448	0	216	3471	1434	1266	1704	0	1210	1681	0
Right Turn on Red		Yes			Yes		Yes		Yes		Yes	
Satd. Flow (RTOR)	6			44			15			5		
Link Speed (k/h)	60			60			50			50		
Link Distance (m)	99.8			181.7			100.0			130.4		
Travel Time (s)	6.0			10.9			7.2			9.4		
Conf. Peds. (#/hr)	11	2	2	11	1	1	7	7	7	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	4%	3%	1%	4%	7%	1%	5%	2%	4%	7%	3%
Adj. Flow (vph)	90	1524	62	99	1852	63	66	83	55	47	75	55
Shared Lane Traffic (%)												
Lane Group Flow (vph)	90	1586	0	99	1852	63	66	138	0	47	130	0
Enter Blocked Intersection	No	No	No	No	No	No						
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	3.6			3.6			3.6			3.6		
Link Offset(m)	0.0			0.0			0.0			0.0		
Crosswalk Width(m)	4.8			4.8			4.8			4.8		
Two way Left Turn Lane	Yes											
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	2	1	1	2		1	2		
Detector Template	Left	Thru	Left	Thru	Right	Left	Thru		Left	Thru		
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0		
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		
Detector 1 Size(m)	2.0	0.6	2.0	0.6	2.0	2.0	0.6		2.0	0.6		
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex								
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		
Detector 2 Position(m)	9.4		9.4		9.4		9.4		9.4		9.4	
Detector 2 Size(m)	0.6		0.6		0.6		0.6		0.6		0.6	
Detector 2 Type	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0		0.0		0.0		0.0		0.0		0.0	

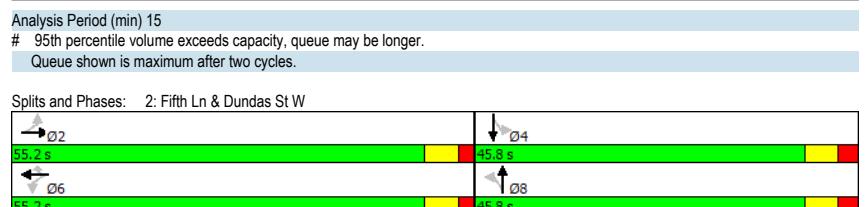
Lanes, Volumes, Timings
2: Fifth Ln & Dundas St W

Total Traffic PM Peak Hour
190085 - TIS Addendum

Lane Group											
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	NBR	SBL	SBT	SBR
Protected Phases		2			6	6	8		8		4
Permitted Phases	2		6	6	6	8	8		4	4	
Switch Phase											
Minimum Initial (s)	45.0	45.0	45.0	45.0	45.0	8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	51.0	51.0	51.0	51.0	51.0	38.5	38.5	38.5	38.5	38.5	
Total Split (s)	55.2	55.2	55.2	55.2	55.2	45.8	45.8	45.8	45.8	45.8	
Total Split (%)	54.7%	54.7%	54.7%	54.7%	54.7%	45.3%	45.3%	45.3%	45.3%	45.3%	
Maximum Green (s)	49.2	49.2	49.2	49.2	49.2	39.3	39.3	39.3	39.3	39.3	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.5	6.5	6.5	6.5	6.5	
Lead/Lag											
Lead-Lag Optimize?											
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	Max	Max	Max	Max	Max	None	None	None	None	None	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	
Act Effct Green (s)	51.5	51.5	51.5	51.5	51.5	11.0	11.0	11.0	11.0	11.0	
Actuated g/C Ratio	0.69	0.69	0.69	0.69	0.69	0.15	0.15	0.15	0.15	0.15	
v/c Ratio	0.89	0.67	0.67	0.78	0.06	0.36	0.53	0.27	0.52		
Control Delay	85.6	9.0	36.2	11.4	2.4	33.1	33.0	31.0	35.2		
Queue Delay	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	85.6	9.0	36.2	12.0	2.4	33.1	33.0	31.0	35.2		
LOS	F	A	D	B	A	C	C	C	D		
Approach Delay	13.1		12.9			33.1			34.1		
Approach LOS	B		B			C			C		
Queue Length 50th (m)	8.7	58.7	7.0	79.6	0.7	8.6	16.4	6.1	16.7		
Queue Length 95th (m)	#27.5	96.7	#38.8	132.5	4.8	19.8	32.8	15.3	32.7		
Internal Link Dist (m)	75.8		157.7			76.0			106.4		
Tum Bay Length (m)	45.0		50.0		70.0	45.0		60.0			
Base Capacity (vph)	101	2369	148	2383	998	664	901	635	885		
Starvation Cap Reductn	0	0	0	199	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.89	0.67	0.67	0.85	0.06	0.10	0.15	0.07	0.15		
Intersection Summary											
Area Type:	Other										
Cycle Length: 101											
Actuated Cycle Length: 75											
Natural Cycle: 150											
Control Type: Actuated-Uncoordinated											
Maximum v/c Ratio: 0.89											
Intersection Signal Delay: 14.9	Intersection LOS: B										
Intersection Capacity Utilization 107.1%	ICU Level of Service G										

Lanes, Volumes, Timings
2: Fifth Ln & Dundas St W

Total Traffic PM Peak Hour
190085 - TIS Addendum



Lanes, Volumes, Timings
3: Glen Erin Dr/Liruma Rd & Dundas St W

Total Traffic PM Peak Hour
190085 - TIS Addendum

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↓	↑	↑	↑↓	↑	↑	↑↓	↑	↑	↑↓	↑
Traffic Volume (vph)	253	1221	46	44	1491	190	50	124	28	224	64	240
Future Volume (vph)	253	1221	46	44	1491	190	50	124	28	224	64	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0	0.0	60.0	175.0	15.0		0.0	70.0	0.0			
Storage Lanes	1	0	1	1	1		0	1	1			
Taper Length (m)	7.5		7.5		7.5							
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00			0.98	0.99	1.00		1.00		0.98	
Frt		0.995			0.850		0.973				0.850	
Flt Protected	0.950			0.950		0.950		0.950				
Satd. Flow (prot)	1752	3443	0	1805	3406	1553	1805	1743	0	1736	1863	1482
Flt Permitted	0.071			0.115		0.711		0.550				
Satd. Flow (perm)	131	3443	0	218	3406	1525	1340	1743	0	1002	1863	1449
Right Turn on Red			Yes			Yes			Yes		Yes	
Satd. Flow (RTOR)		4				207		9			213	
Link Speed (k/h)	60			60			50			50		
Link Distance (m)	97.4			582.9			70.3			124.6		
Travel Time (s)	5.8			35.0			5.1			9.0		
Conf. Peds. (#/hr)	3	5	5	3	5		2	2			5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	4%	9%	0%	6%	4%	0%	5%	9%	4%	2%	9%
Adj. Flow (vph)	275	1327	50	48	1621	207	54	135	30	243	70	261
Shared Lane Traffic (%)												
Lane Group Flow (vph)	275	1377	0	48	1621	207	54	165	0	243	70	261
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(m)	3.6			3.6			3.6			3.6		
Link Offset(m)	0.0			0.0			0.0			0.0		
Crosswalk Width(m)	4.8			4.8			4.8			4.8		
Two Way Left Turn Lane				Yes								
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	0.6	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4			9.4			9.4		
Detector 2 Size(m)	0.6			0.6			0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		

Lanes, Volumes, Timings
3: Glen Erin Dr/Liruma Rd & Dundas St W

Total Traffic PM Peak Hour
190085 - TIS Addendum

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA	Perm	D.Pm	NA		D.P+P	NA	custom
Protected Phases	5	2			1	6			4		3	8
Permitted Phases		2			6		6	8	4		4	4
Detector Phase	5	2			1	6	6	8	4		3	8
Switch Phase												
Minimum Initial (s)	5.0	50.0		5.0	50.0	50.0	8.0	8.0		5.0	8.0	8.0
Minimum Split (s)	8.0	56.0		8.0	56.0	56.0	38.5	38.5		8.0	38.5	38.5
Total Split (s)	10.0	59.5		10.0	59.5	59.5	50.5	40.5		10.0	50.5	40.5
Total Split (%)	8.3%	49.6%		8.3%	49.6%	49.6%	42.1%	33.8%		8.3%	42.1%	33.8%
Maximum Green (s)	7.0	53.5		7.0	53.5	53.5	44.0	34.0		7.0	44.0	34.0
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	4.0	4.0		3.0	4.0	4.0
All-Red Time (s)	0.0	2.0		0.0	2.0	2.0	2.5	2.5		0.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0		3.0	6.0	6.0	6.5	6.5		3.0	6.5	6.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?										Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	Max		None	Max	Max	None	None		None	None	None
Walk Time (s)		7.0			7.0	7.0	7.0	7.0			7.0	7.0
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0			11.0	11.0
Pedestrian Calls (#/hr)		0			0	0	0	0			0	0
Act Efft Green (s)	64.6	56.1		62.9	53.6	53.6	24.3	14.2		24.8	24.3	14.2
Actuated g/c Ratio	0.64	0.56		0.63	0.53	0.53	0.24	0.14		0.25	0.24	0.14
v/c Ratio	1.40	0.72		0.20	0.89	0.23	0.17	0.65		0.82	0.16	0.67
Control Delay	229.0	20.3		8.8	29.3	2.6	30.9	50.5		54.8	30.4	18.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	229.0	20.3		8.8	29.3	2.6	30.9	50.5		54.8	30.4	18.6
LOS	F	C		A	C	A	C	D		D	C	B
Approach Delay	55.0				25.8			45.7			35.4	
Approach LOS		E				C		D				
Queue Length 50th (m)	~59.6	107.4		3.0	147.4	0.0	8.8	30.5		41.8	11.3	8.8
Queue Length 95th (m)	#120.8	155.1		8.2	#226.3	11.6	19.0	52.1		#69.8	22.6	34.7
Internal Link Dist (m)		73.4				558.9		46.3			100.6	
Tun Bay Length (m)		70.0			60.0		175.0	15.0			70.0	
Base Capacity (vph)	197	1924		249	1818	910	588	597		298	817	632
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	1.40	0.72		0.19	0.89	0.23	0.09	0.28		0.82	0.09	0.41
Intersection Summary												
Area Type:	Other											
Cycle Length:	120											
Actuated Cycle Length:	100.4											
Natural Cycle:	135											
Control Type:	Actuated-Uncoordinated											
Maximum v/c Ratio:	1.40											
Intersection Signal Delay:	39.2									Intersection LOS: D		
Intersection Capacity Utilization	93.9%									ICU Level of Service F		

Lanes, Volumes, Timings
3: Glen Erin Dr/Liruma Rd & Dundas St W

Total Traffic PM Peak Hour
190085 - TIS Addendum

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: Glen Erin Dr/Liruma Rd & Dundas St W



Lanes, Volumes, Timings
4: Site Driveway & Dundas St W

Total Traffic PM Peak Hour
190085 - TIS Addendum

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↓		1	4	1714	1
Traffic Volume (vph)	1466	1			1	3
Future Volume (vph)	1466	1	4	1714	1	3
Ideal Flow (vphpi)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt					0.899	
Flt Protected					0.988	
Satd. Flow (prot)	3471	0	0	3438	1688	0
Flt Permitted					0.988	
Satd. Flow (perm)	3471	0	0	3438	1688	0
Link Speed (k/h)	60			60	50	
Link Distance (m)	582.9			99.8	48.6	
Travel Time (s)	35.0			6.0	3.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	0%	0%	5%	0%	0%
Adj. Flow (vph)	1593	1	4	1863	1	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1594	0	0	1867	4	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 60.2%

ICU Level of Service B

Analysis Period (min) 15

HCM 2010 TWSC
4: Site Driveway & Dundas St W

Total Traffic PM Peak Hour
190085 - TIS Addendum

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↓↑	↑↑	↑↑		
Traffic Vol, veh/h	1466	1	4	1714	1	3
Future Vol, veh/h	1466	1	4	1714	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	0	0	5	0	0
Mvmt Flow	1593	1	4	1863	1	3
Major/Minor						
Major1		Major2		Minor1		
Conflicting Flow All	0	0	1594	0	2534	797
Stage 1	-	-	-	-	1594	-
Stage 2	-	-	-	-	940	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	417	-	23	334
Stage 1	-	-	-	-	155	-
Stage 2	-	-	-	-	345	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	417	-	23	334
Mov Cap-2 Maneuver	-	-	-	-	106	-
Stage 1	-	-	-	-	155	-
Stage 2	-	-	-	-	345	-
Approach						
EB		WB		NB		
HCM Control Delay, s	0	0	21.9			
HCM LOS			C			
Minor Lane/Major Mvmt						
NBLn1		EBT	EBR	WBL	WBT	
Capacity (veh/h)	217	-	-	417	-	
HCM Lane V/C Ratio	0.02	-	-	0.01	-	
HCM Control Delay (s)	21.9	-	-	13.7	0	
HCM Lane LOS	C	-	-	B	A	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	

Lanes, Volumes, Timings
5: Fifth Ln & Site Driveway

Total Traffic PM Peak Hour
190085 - TIS Addendum

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↙	↖	↗	↙	↖	↗	↙	↖	↗	↙
Traffic Volume (vph)	10	0	2	17	0	5	2	207	13	2	181	13
Future Volume (vph)	10	0	2	17	0	5	2	207	13	2	181	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.979			0.971				0.992		0.991	
Flt Protected		0.959			0.962							
Satd. Flow (prot)	0	1784	0	0	1775	0	0	1817	0	0	1832	0
Flt Permitted		0.959			0.962							
Satd. Flow (perm)	0	1784	0	0	1775	0	0	1817	0	0	1832	0
Link Speed (k/h)		50			50			50		50		
Link Distance (m)		46.6			37.4			103.7		100.0		
Travel Time (s)		3.4			2.7			7.5		7.2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	3%
Adj. Flow (vph)	11	0	2	18	0	5	2	225	14	2	197	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	13	0	0	23	0	0	241	0	0	213	0
Enter Blocked Intersection	No	No	No	No	No	No	Yes	Yes	Yes	No	Yes	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6		3.6		
Link Offset(m)		0.0			0.0			0.0		0.0		
Crosswalk Width(m)		4.8			4.8			4.8		4.8		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free		Free		
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	22.9%											
ICU Level of Service A												
Analysis Period (min)	15											

HCM 2010 TWSC

5: Fifth Ln & Site Driveway

Total Traffic PM Peak Hour

190085 - TIS Addendum

Intersection

Int Delay, s/veh

1

Movement

EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR

Lane Configurations

Traffic Vol, veh/h 10 0 2 17 0 5 2 207 13 2 181 13

Future Vol, veh/h 10 0 2 17 0 5 2 207 13 2 181 13

Conflicting Peds, #/hr 0 0 0 0 0 0 0 0 0 0 0 0

Sign Control

Stop Stop Stop Stop Stop Stop Free Free Free Free Free Free

RT Channelized - - None - - None - - None - - None

Storage Length - - - - - - - - - - - -

Veh in Median Storage, # - 0 - - 0 - - 0 - - 0 -

Grade, % - 0 - - 0 - - 0 - - 0 -

Peak Hour Factor 92 92 92 92 92 92 92 92 92 92 92 92

Heavy Vehicles, % 0 0 0 0 0 0 0 4 0 0 3 0

Mvmt Flow 11 0 2 18 0 5 2 225 14 2 197 14

Major/Minor Minor2 Minor1 Major1 Major2

Conflicting Flow All 447 451 204 445 451 232 211 0 0 239 0 0

Stage 1 208 208 - 236 236 - - - - - -

Stage 2 239 243 - 209 215 - - - - - -

Critical Hdwy 7.1 6.5 6.2 7.1 6.5 6.2 4.1 - - 4.1 - -

Critical Hdwy Stg 1 6.1 5.5 - 6.1 5.5 - - - - - -

Critical Hdwy Stg 2 6.1 5.5 - 6.1 5.5 - - - - - -

Follow-up Hdwy 3.5 4 3.3 3.5 4 3.3 2.2 - - 2.2 - -

Pot Cap-1 Maneuver 525 507 842 527 507 812 1372 - - 1340 - -

Stage 1 799 734 - 772 713 - - - - - -

Stage 2 769 708 - 798 729 - - - - - -

Platoon blocked, % - - - - - - - - - - - -

Mov Cap-1 Maneuver 520 505 842 524 505 812 1372 - - 1340 - -

Mov Cap-2 Maneuver 520 505 - 524 505 - - - - - -

Stage 1 797 733 - 770 712 - - - - - -

Stage 2 762 707 - 794 728 - - - - - -

Approach EB WB NB SB

HCM Control Delay, s 11.6 11.6 0.1 0.1

HCM LOS B B

Minor Lane/Major Mvmt NBL NBT NBR EBLn1WBLn1 SBL SBT SBR

Capacity (veh/h) 1372 - - 555 570 1340 - -

HCM Lane V/C Ratio 0.002 - - 0.024 0.042 0.002 - -

HCM Control Delay (s) 7.6 0 - 11.6 11.6 7.7 0 -

HCM Lane LOS A A - B B A A -

HCM 95th %tile Q(veh) 0 - - 0.1 0.1 0 - -