

15 July 2025
Project: (250363)

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**RE: COMMERCIAL DEVELOPMENT, 1055 TALBOT STREET, ST. THOMAS –
TRANSPORTATION IMPACT ASSESSMENT**

Paradigm Transportation Solutions Limited (Paradigm) has been retained to provide a Transportation Impact Assessment (TIA) for the proposed Commercial Development located in the middle part of the former Timken lands at 1055 Talbot Street, St. Thomas.

In light of the previous transportation studies undertaken by Paradigm for the redevelopment of the Timken lands, and given the current status of its redevelopment, it is appropriate to provide the impact assessment for the proposed commercial development through a Transportation Impact Brief (TIB) report instead of a full Transportation Impact Assessment (TIA) report.

This Letter-Memo provides the TIB as appropriate for the subject development, and includes:

- ▶ Development Background
- ▶ Subject Development Plan and Access Arrangements
- ▶ Base Year Traffic Conditions
- ▶ Proposed Development Traffic
- ▶ Assessment of Total Traffic
- ▶ Assessment Summary

Development Background

The former Timken lands are located in the northeast corner of Talbot Street and First Avenue, and are bounded by First Avenue to the west, the extension of Redan Street to the north, N-S Access Road to the east, and Talbot Street to the south. The lands are being developed in three separate parts, comprising a northerly part, southerly part and a middle part.

The northerly part is already developed and includes commercial land uses totalling 80,000 sq. ft. GFA. Access is provided through an all-moves driveway on the extension of Redan Street

east of First Avenue, a RIRO access on First Avenue, and an access on North-South Road connecting to Talbot Street to the south.

The southerly part is also developed comprising a mix of commercial uses with access connections to a new east-west road extending from First Avenue to North South Road.

The middle part of Timken Lands is being developed for two different land uses. The southerly portion of it is being developed to accommodate two apartment buildings with a total of 200 units and one access point on the new east-west road.

The northerly portion of middle part is the subject site with the proposed commercial development which will also complete the redevelopment of the former Timken lands.

Figure 1 illustrates the location of the subject site and the Timken lands.

It is noted that the southerly commercial development and the residential development are provided access through the new east-west road and are separated from the commercial developments to the north.

The now-completed commercial development to the north and the proposed new commercial development share access to the extension of Redan Street and the RIRO access on First Avenue.

Proposed Commercial Development

The proposed commercial development will include four separate buildings of varying GFAs for retail-commercial uses with internal road system and surface parking. The two larger buildings are shown to potentially include multiple retail-commercial units. The total GFA is 6,207 m² (66,807 sq. ft).

The vehicular access arrangement for the site includes two driveway connections to the northerly development road system, a direct RIRO access to First Avenue, and a truck access to the N-S Access Road.

Figure 2 illustrates the Concept Site Plan.

Base Year Traffic Conditions

As noted, the internal road system of the Timken lands provides access to First Avenue and to Talbot Street via the North South Road, while separating the northerly commercial developments from the residential and commercial developments to the south.

The proposed commercial development will use the already established access points for the northerly development and will impact the following access points and intersections:

- The Canadian Tire access intersection on Redan Street;



- ▶ First Avenue and Redan Street;
- ▶ RIRO access on First Avenue; and
- ▶ Access intersection on North-South Road.

As the northerly site is fully developed and its development traffic is now embedded in road traffic volumes, the base year traffic volumes at the above intersections are obtained from the future total traffic volumes projected for the 2025 Horizon Year, in the April 2019 TIS¹ for Timken Lands.

Figure 3a, **Figure 3b** and **Figure 3c** respectively illustrate the weekday AM/PM and Saturday peak hour base year traffic volumes used in this assessment.

Table 1 summarizes the operational results for the study area intersections from the April 2019 TIS.

The operational analysis of the above intersections in the April 2019 TIS indicate that with signal timing optimization the intersections are operating at acceptable levels of service.

Appendix A contains the detailed Synchro 12 reports.

¹ Prepared by Paradigm Transportation Solutions Limited, 1500 Talbot Street, St. Thomas Transportation Impact Assessment, April 2019.



TABLE 1: BASE YEAR TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	First Avenue & Redan Street	TCS	LOS	B	C	>	C	B	C	>	C	B	B	>	B	B	B	>	B	B
			Delay	20	24	>	22	20	23	>	22	12	15	>	15	11	12	>	12	15
			V/C	0.21	0.52	>		0.20	0.39	>		0.07	0.43	>		0.35	0.33	>		
			Q	2	5	>		2	4	>		0	1	>		1	1	>		
AM Peak Hour	Northerly Site Access/Canadian Tire & Redan Street	TWSC	LOS	<	A	>	A	<	A	>	A	<	C	A	A	<	B	>	B	A
			Delay	<	8	>	1	<	8	>	1	<	16	10	<	<	10	>		2
			V/C	<	0.04	>		<	0.03	>		<	0.00	0.07	<	<	0.08	>		
			Q	<	1	>		<	1	>		<	0	2	<	<	2	>		
PM Peak Hour	First Avenue & Redan Street	TCS	LOS	C	C	>	C	C	D	>	C	B	C	>	C	B	B	>	B	C
			Delay	26	31	>	30	24	36	>	32	20	28	>	27	19	18	>	19	25
			V/C	0.34	0.50	>		0.41	0.79	>		0.16	0.61	>		0.71	0.40	>		
			Q	9	24	>		14	46	>		4	32	>		15	17	>		
PM Peak Hour	Northerly Site Access/Canadian Tire & Redan Street	TWSC	LOS	<	A	>	A	<	A	>	A	<	D	B	B	<	B	>	B	A
			Delay	<	8	>	2	<	9	>	1	<	28	11	<	<	14	>	14	3
			V/C	<	0.09	>		<	0.03	>		<	0.02	0.13	<	<	0.20	>		
			Q	<	2	>		<	1	>		<	1	3	<	<	5	>		
Saturday Peak Hour	First Avenue & Redan Street	TCS	LOS	C	C	>	C	C	D	>	D	C	C	>	C	C	B	>	C	C
			Delay	31	34	>	33	34	51	>	45	23	34	>	33	32	17	>	25	32
			V/C	0.52	0.50	>		0.59	0.87	>		0.13	0.70	>		0.88	0.29	>		
			Q	16	34	>		28	75	>		5	56	>		47	16	>		
Saturday Peak Hour	Northerly Site Access/Canadian Tire & Redan Street	TWSC	LOS	<	A	>	A	<	A	>	A	<	F	B	B	<	C	>	C	A
			Delay	<	9	>	2	<	9	>	1	<	50	12	<	<	21	>	21	4
			V/C	<	0.12	>		<	0.06	>		<	0.05	0.18	<	<	0.35	>		
			Q	<	3	>		<	2	>		<	2	5	<	<	11	>		

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 (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TCS - Traffic Control Signal

TWSC - Two-Way Stop Control

< / > - Shared with through movement

New Development Trip Generation

The ITE Trip Generation Manual (11th Edition) rates were used to estimate the peak hour traffic volumes generated by the subject development based on the ITE Land Use Code 821, Shopping Centre (40-150k).

Table 1 summarizes the forecast number of net new trips generated by the middle portion of the proposed development.



TABLE 2: TRIP GENERATION

Land Use Code	Gross Floor Area	AM Peak Hour				PM Peak Hour				Saturday Peak Hour			
		Rate	In	Out	Total	Rate	In	Out	Total	Rate	In	Out	Total
821: Shopping Center (40-150k)	61,309 sq. ft.	1.73	66	40	106	5.19	156	162	318	6.22	198	183	381
<i>LUC 821 Pass-by</i>		-	0	0	0	40%	-64	-64	-128	31%	-59	-59	-118
Total Trip Generation			66	40	106		92	98	190		139	124	263

LUC 821 | PM: $T = 7.67(X) + 118.86$

As shown in **Table 2**, the proposed commercial GFA will generate 106 vehicle trips during the AM peak hour, 318 trips during the PM peak hour, and 381 trips during the Saturday peak hour.

The site trips were distributed based on the distribution used in the April 2019 TIS.

Table 3 summarizes the trip distribution used for the subject development.

TABLE 3: SITE TRIP DISTRIBUTION

Direction	Route	Inbound
North	First Avenue	25%
South	First Avenue	35%
	E/W Road	35%
West	Redan Street	5%
<i>Total</i>		<i>100%</i>

Figure 4a, **Figure 4b**, and **Figure 4c** respectively illustrate the weekday AM/PM and Saturday peak hour traffic volumes generated by the proposed commercial development.

The additional new traffic volumes at the different intersections range between 20 and 84 for inbound traffic and 2 and 74 for outbound traffic.

Impact Assessment

The impact assessment for the proposed commercial development is based on the total traffic volumes at the study area intersections, comprising the total traffic volumes projected in the 2019 TIS and the additional traffic volumes generated by the proposed development and illustrated in **Figure 5a**, **Figure 5b**, and **Figure 5c**, respectively, for the weekday AM/PM and Saturday peak hours.

Figure 6a, **Figure 6b**, and **Figure 6c** respectively illustrate the weekday AM/PM and Saturday peak hour total traffic volumes aggregated as described above.

Traffic Operations

The level of service conditions at the study area intersections have been assessed through intersection operational analysis using Synchro 12. The signal timings have been optimized.



The results indicate that the study area intersections are forecast to operate at acceptable levels of service and within capacity. However, the following critical movements are noted to be near capacity and operate with high delays:

- ▶ First Avenue and Redan Street
 - The westbound shared through/right-turn movement is forecast to operate at LOS E with a v/c ratio of 0.92 during the Saturday peak hour;
 - The southbound left-turn movement is forecast to operate at LOS D with a v/c ratio of 0.94 during the Saturday peak hour; and
- ▶ Redan Street and Canadian Tire/Northerly Site Access
 - The northbound shared through/left-turn movement is forecast to operate at LOS F with a v/c ratio of 0.95 during the Saturday peak hour.

It is noted that the above critical movements are limited to the Saturday peak hour, and that the outbound movement (northbound) at the Northerly Site Access on Redan Street has alternative routes and access points, which drivers can use to exit the site to avoid significant delays at the main access during the Saturday peak hour.

Appendix B contains the detailed Synchro 12 reports.



TABLE 4: FUTURE TOTAL TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	First Avenue & Redan Street	TCS	LOS	B	C	>	C	B	C	>	C	B	B	>	B	B	B	>	B	B
			Delay	20	25	>	23	20	24	>	22	12	16	>	16	11	12	>	12	16
			V/C	0.21	0.53	>		0.26	0.39	>		0.08	0.44	>		0.39	0.32	>		
			Q	2	7	>		2	4	>		0	2	>		1	1	>		
AM Peak Hour	Northerly Site Access/Canadian Tire & Redan Street	TWSC	LOS	<	A	>	A	<	A	>	A	<	C	A	B	<	B	>	B	A
			Delay	<	8	>	1	<	8	>	1	<	18	10	12	<	10	>	11	3
			V/C	<	0.04	>		<	0.03	>		<	0.09	0.07		<	0.08	>		
			Q	<	1	>		<	1	>		<	2	2		<	2	>		
PM Peak Hour	First Avenue & Redan Street	TCS	LOS	C	C	>	C	C	D	>	D	C	C	>	C	C	B	>	C	C
			Delay	28	32	>	31	27	42	>	36	22	30	>	30	24	19	>	21	28
			V/C	0.37	0.49	>		0.55	0.83	>		0.17	0.63	>		0.79	0.37	>		
			Q	10	28	>		24	62	>		6	40	>		29	19	>		
PM Peak Hour	Northerly Site Access/Canadian Tire & Redan Street	TWSC	LOS	<	A	>	A	<	A	>	A	<	F	B	D	<	B	>	B	A
			Delay	<	8	>	2	<	9	>	1	<	59	11	34	<	14	>	14	6
			V/C	<	0.09	>		<	0.04	>		<	0.59	0.13		<	0.20	>		
			Q	<	2	>		<	1	>		<	23	4		<	5	>		
Saturday Peak Hour	First Avenue & Redan Street	TCS	LOS	D	D	>	D	D	E	>	E	C	D	>	D	D	B	>	C	D
			Delay	37	36	>	36	53	67	>	61	25	37	>	36	48	17	>	34	41
			V/C	0.60	0.51	>		0.80	0.93	>		0.14	0.72	>		0.95	0.26	>		
			Q	20	40	>		65	98	>		8	66	>		83	16	>		
Saturday Peak Hour	Northerly Site Access/Canadian Tire & Redan Street	TWSC	LOS	<	A	>	A	<	A	>	A	<	F	B	F	<	C	>	C	B
			Delay	<	9	>	2	<	10	>	1	<	190	12	82	<	21	>	21	12
			V/C	<	0.12	>		<	0.06	>		<	0.98	0.20		<	0.35	>		
			Q	<	3	>		<	2	>		<	39	5		<	12	>		
Saturday Peak Hour	First Avenue & Redan Street	TCS	LOS	<	A	>	A	<	A	>	A	<	F	B	F	<	C	>	C	B
			Delay	<	9	>	2	<	10	>	1	<	190	12	82	<	21	>	21	12
			V/C	<	0.12	>		<	0.06	>		<	0.98	0.20		<	0.35	>		
			Q	<	3	>		<	2	>		<	39	5		<	12	>		

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 (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TCS - Traffic Control Signal

TWSC - Two-Way Stop Control

< / > - Shared with through movement

A comparison of the intersection operational levels of service projected in the 2019 TIS (see **Table 1** above) for the intersections analysed herein, and those summarized in **Table 4** corresponding to total traffic conditions including the subject commercial development, indicates almost identical levels of service for all intersections and specific movements. This would indicate that the traffic impacts due to the subject commercial development are within the scope of assessment in the 2019 TIS and can be accommodated by the roadway and access intersections serving the redevelopment of the former Timken lands.



We trust that this Letter addresses the requirements for transportation impact assessment for the proposed commercial development on the Timken lands. Please do not hesitate to contact us if you need additional information.

Yours very truly,

PARADIGM TRANSPORTATION SOLUTIONS LIMITED

A handwritten signature in black ink, appearing to read 'Rajan Philips', with a stylized flourish at the end.

Rajan Philips

M.Sc. (PI), P.Eng.

Senior Transportation Consultant



Attachments



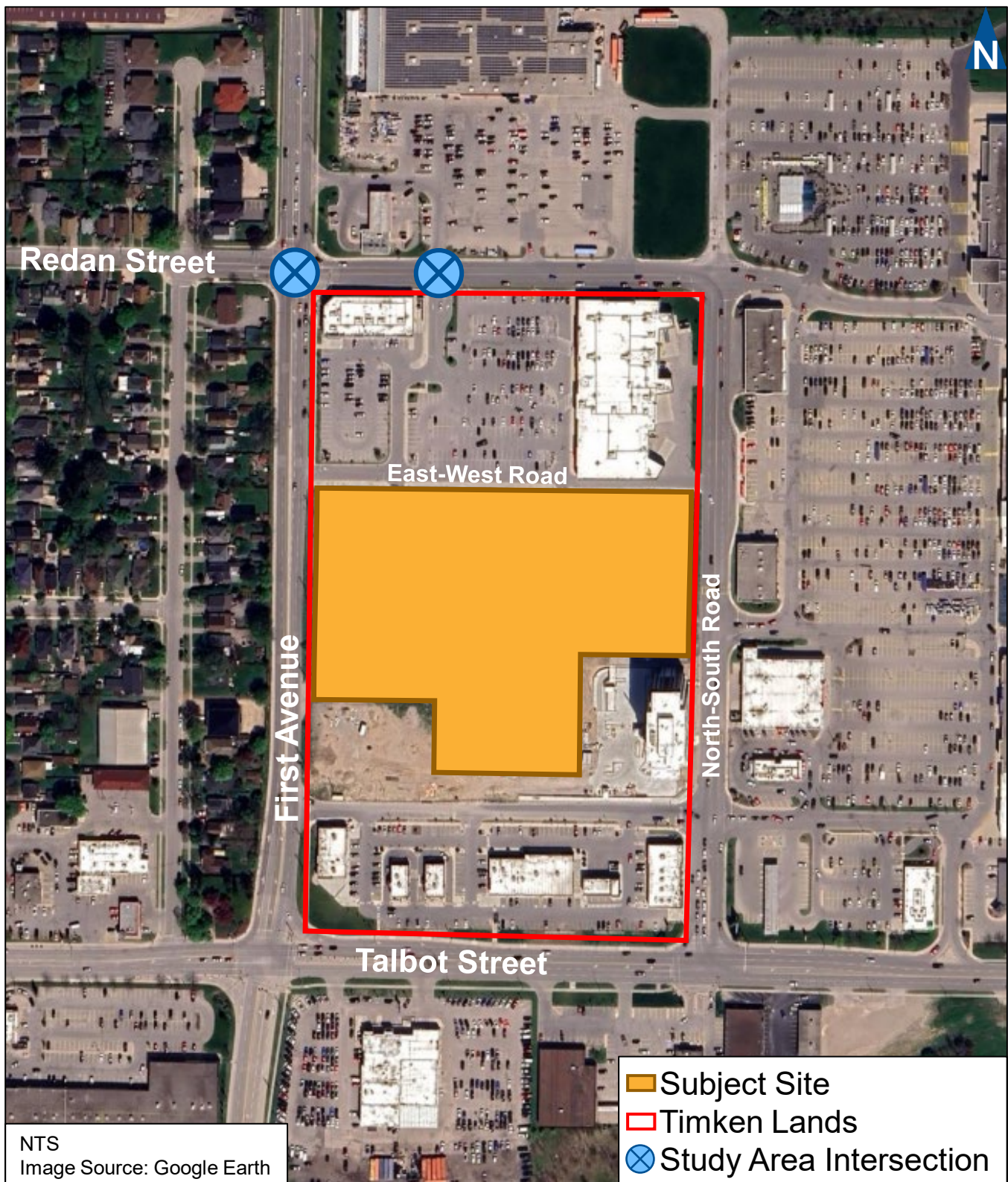




Figure 2



1055 Talbot Street, St. Thomas TIA
250363

Figure 3a



Figure 3b

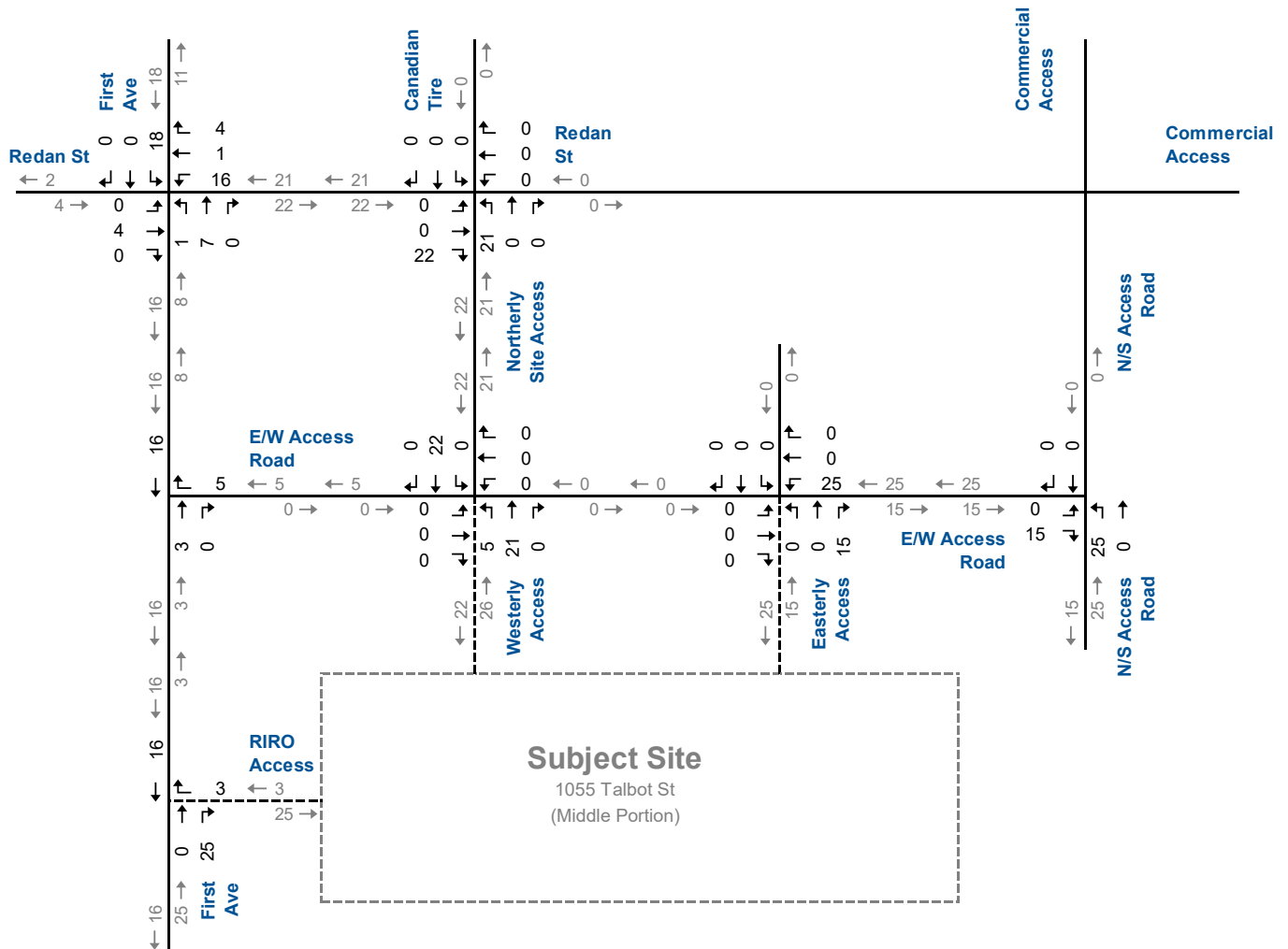


1055 Talbot Street, St. Thomas TIA
250363

Figure 3c

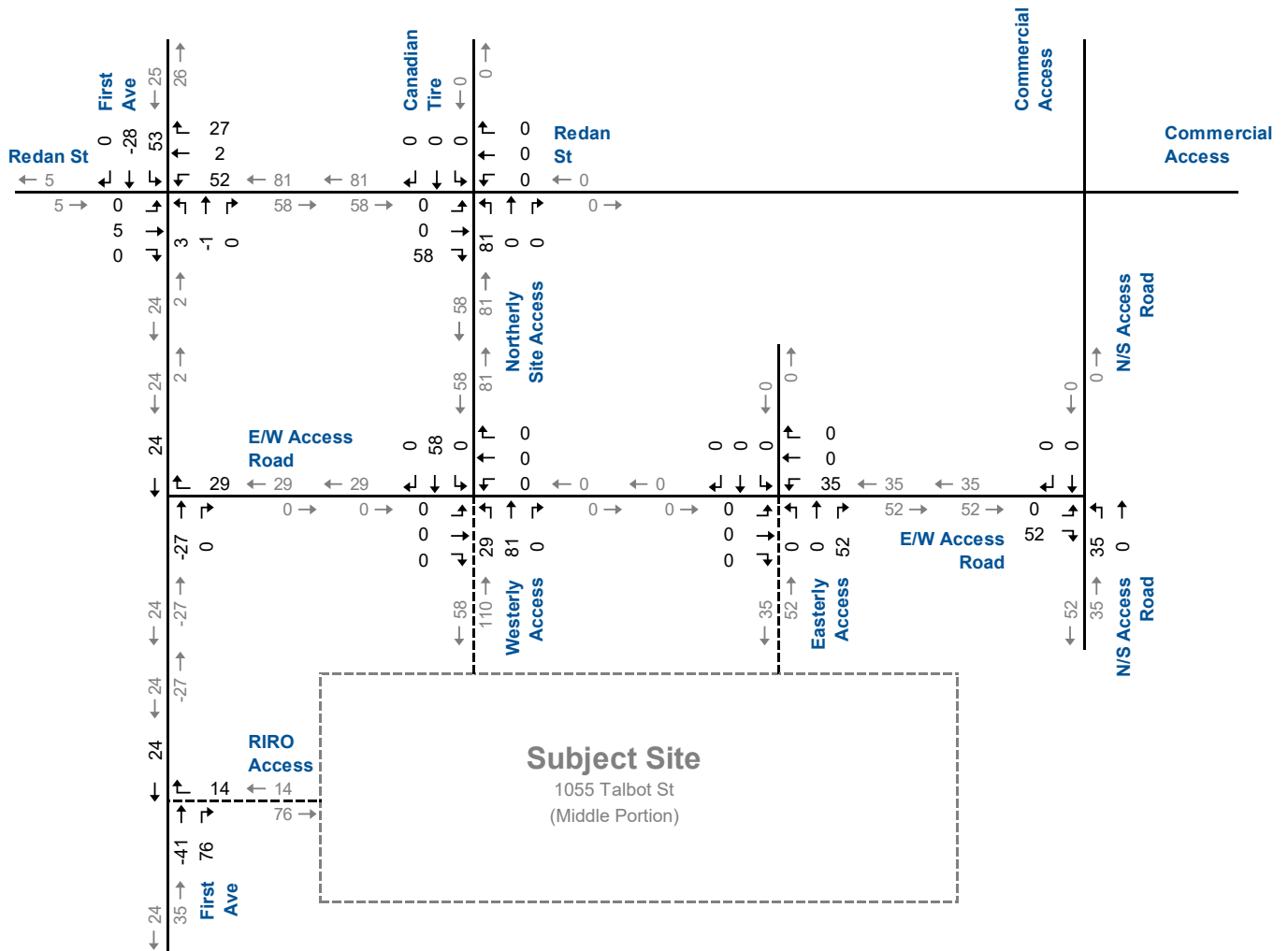


AM Peak Hour



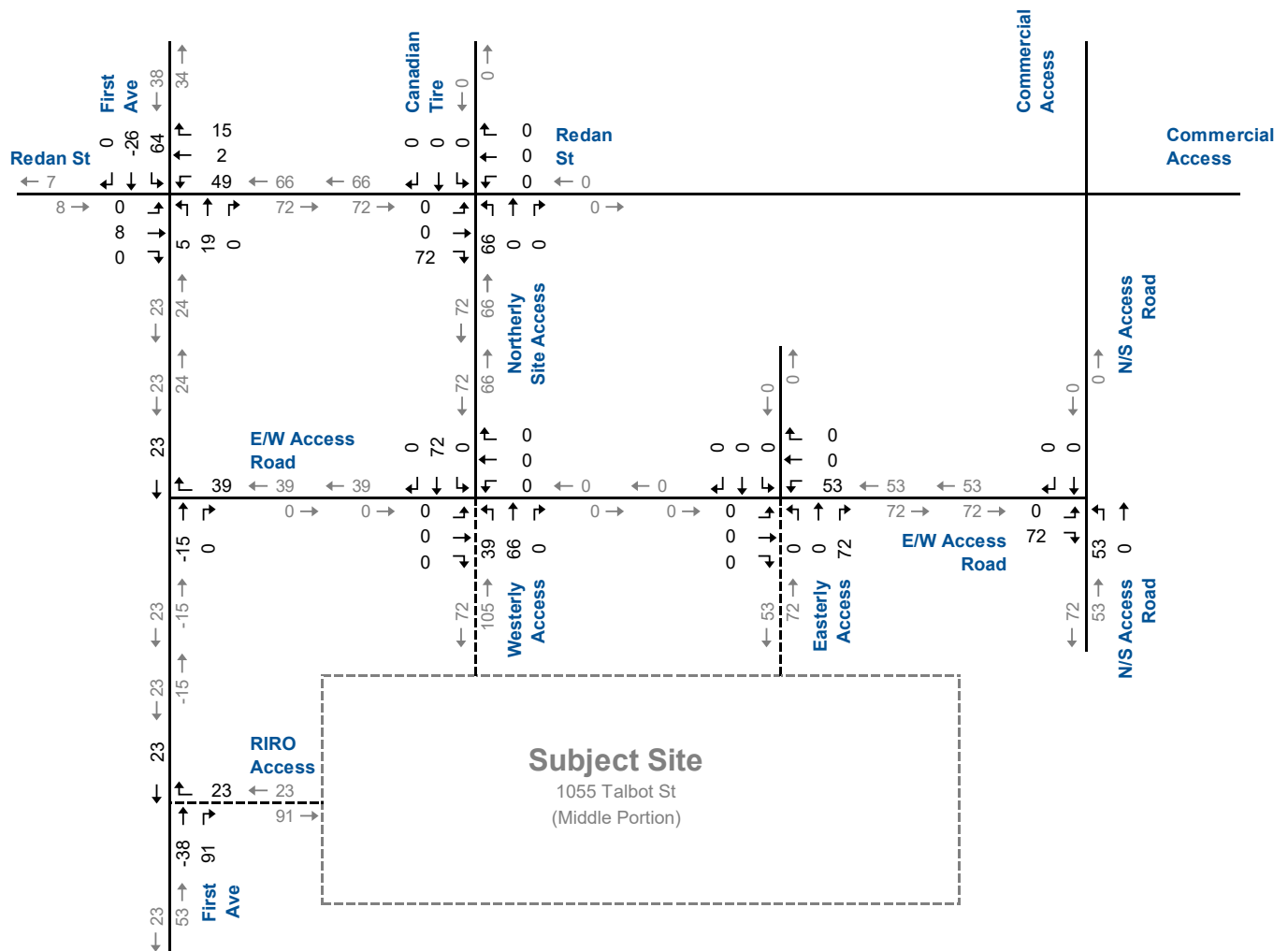


PM Peak Hour

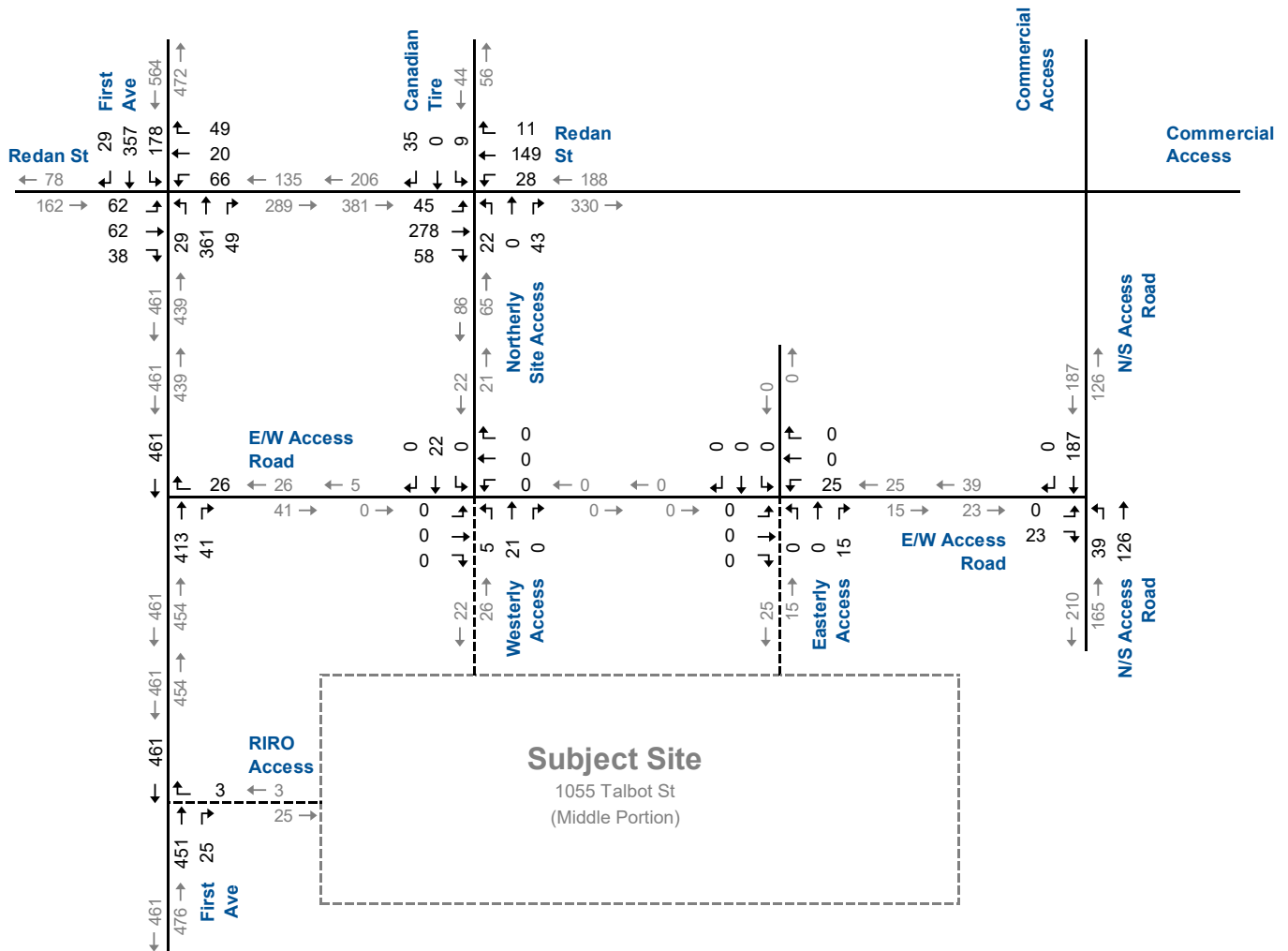


Site Generated Traffic Volumes PM Peak Hour

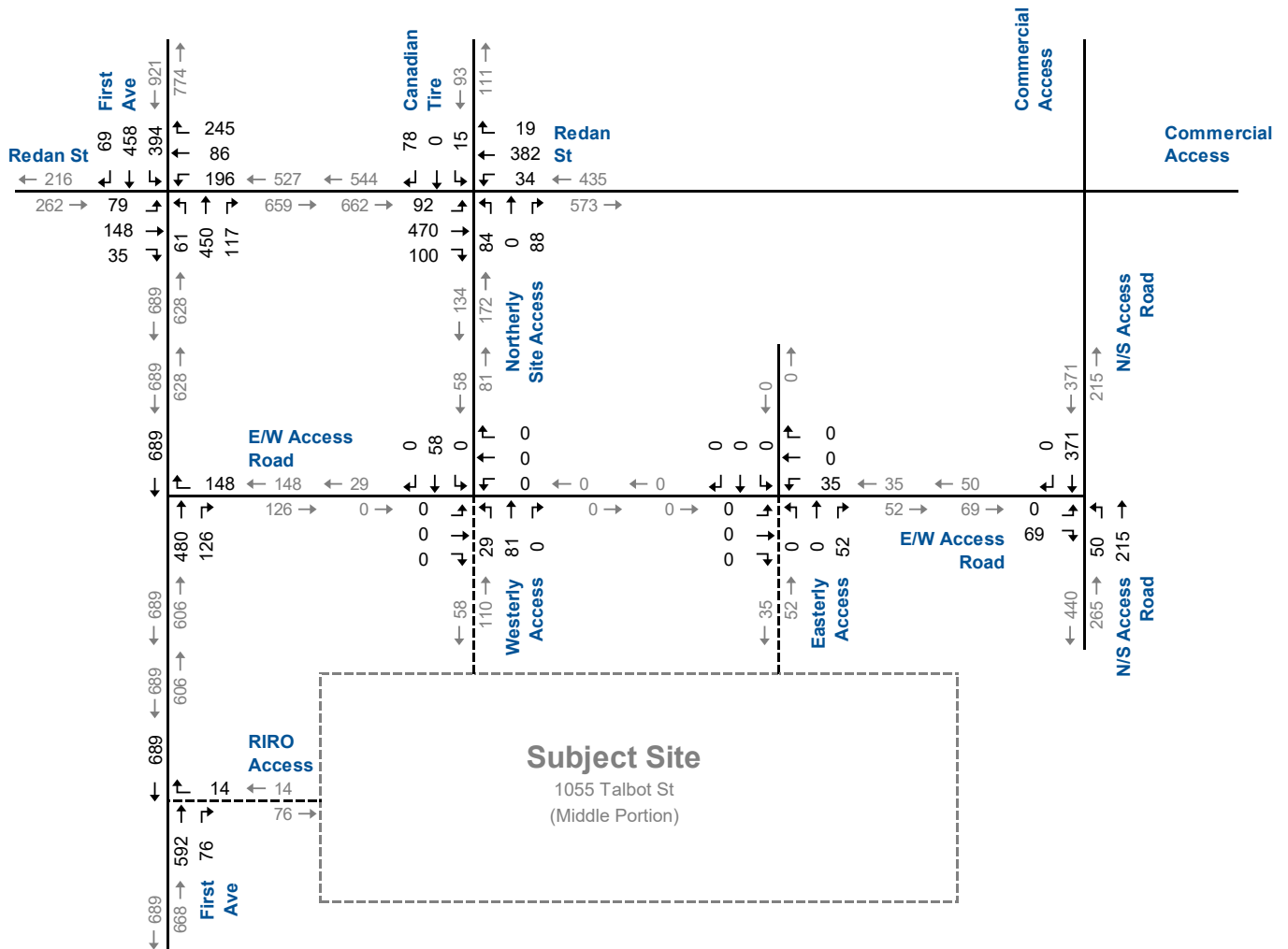
Saturday Peak Hour



AM Peak Hour

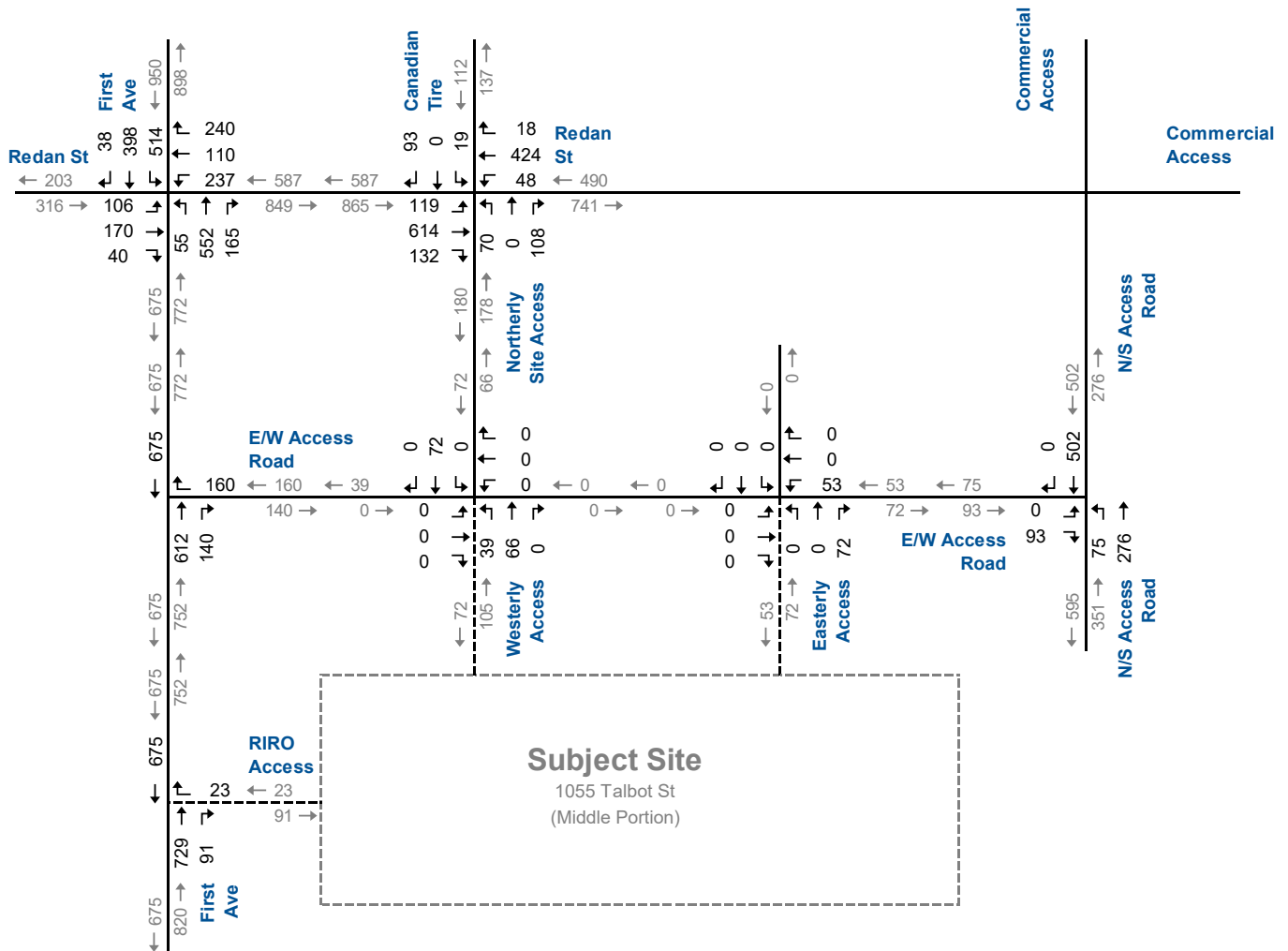


PM Peak Hour





Saturday Peak Hour



Appendix A

Existing Traffic Operations Reports



Lanes, Volumes, Timings
1: First Avenue & Redan Street

Existing AM Peak Hour
(250363) 1055 Talbot Street, St. Thomas TIA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	58	38	50	19	45	28	354	49	160	357	29
Future Volume (vph)	62	58	38	50	19	45	28	354	49	160	357	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	20.0		0.0	25.0		0.0	40.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	30.0			0.0			100.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor							1.00				1.00	
Frt		0.941			0.895			0.982			0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	1766	0	1534	1607	0	1573	3389	0	1789	3476	0
Flt Permitted	0.700			0.687			0.497			0.422		
Satd. Flow (perm)	1318	1766	0	1109	1607	0	822	3389	0	795	3476	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		28			51			16			10	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		166.8			86.9			112.3			167.4	
Travel Time (s)		12.0			6.3			8.1			12.1	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	2%	0%	6%	19%	0%	10%	16%	6%	4%	2%	4%	0%
Adj. Flow (vph)	70	66	43	57	22	51	32	402	56	182	406	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	70	109	0	57	73	0	32	458	0	182	439	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	30.0		10.0	30.0		10.0	40.0		10.0	40.0	
Total Split (s)	12.0	32.0		12.0	32.0		10.0	49.0		17.0	56.0	
Total Split (%)	10.9%	29.1%		10.9%	29.1%		9.1%	44.5%		15.5%	50.9%	
Maximum Green (s)	7.0	26.0		7.0	26.0		5.0	43.0		12.0	50.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Ped		None	Ped	
Walk Time (s)		12.0			12.0			22.0			22.0	
Flash Don't Walk (s)		12.0			12.0			12.0			12.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effect Green (s)	15.2	9.2		15.0	9.1		41.6	35.3		50.6	46.0	
Actuated g/C Ratio	0.20	0.12		0.20	0.12		0.54	0.46		0.66	0.60	
v/c Ratio	0.23	0.46		0.22	0.31		0.06	0.29		0.28	0.21	

Lanes, Volumes, Timings
1: First Avenue & Redan Street

Existing AM Peak Hour
(250363) 1055 Talbot Street, St. Thomas TIA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay (s/veh)	24.9	33.4		25.2	18.7		8.2	15.9		8.6	11.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	24.9	33.4		25.2	18.7		8.2	15.9		8.6	11.6	
LOS	C	C		C	B		A	B		A	B	
Approach Delay (s/veh)		30.1			21.5			15.4			10.7	
Approach LOS		C			C			B			B	
Queue Length 50th (m)	8.2	11.9		6.6	3.1		1.8	23.4		11.2	20.2	
Queue Length 95th (m)	17.8	26.6		15.4	14.2		5.4	37.9		21.6	31.2	
Internal Link Dist (m)		142.8			62.9			88.3			143.4	
Turn Bay Length (m)	20.0			20.0			25.0			40.0		
Base Capacity (vph)	311	640		264	599		496	1980		687	2357	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.23	0.17		0.22	0.12		0.06	0.23		0.26	0.19	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 76.7

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.46

Intersection Signal Delay (s/veh): 15.8

Intersection LOS: B

Intersection Capacity Utilization 56.8%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: First Avenue & Redan Street

 Ø1	 Ø2	 Ø3	 Ø4
17 s	49 s	12 s	32 s
 Ø5	 Ø6	 Ø7	 Ø8
10 s	56 s	12 s	32 s

HCM 7th Signalized Intersection Summary

1: First Avenue & Redan Street

Existing AM Peak Hour

(250363) 1055 Talbot Street, St. Thomas TIA

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	58	38	50	19	45	28	354	49	160	357	29
Future Volume (veh/h)	62	58	38	50	19	45	28	354	49	160	357	29
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1900	1811	1618	1900	1752	1663	1811	1841	1870	1841	1900
Adj Flow Rate, veh/h	70	66	43	57	22	51	32	402	56	182	406	33
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	0	6	19	0	10	16	6	4	2	4	0
Cap, veh/h	336	126	82	284	56	130	439	952	132	513	1250	101
Arrive On Green	0.06	0.12	0.12	0.05	0.11	0.11	0.04	0.31	0.31	0.10	0.38	0.38
Sat Flow, veh/h	1781	1074	700	1541	509	1179	1584	3035	420	1781	3276	265
Grp Volume(v), veh/h	70	0	109	57	0	73	32	227	231	182	216	223
Grp Sat Flow(s),veh/h/ln	1781	0	1774	1541	0	1688	1584	1721	1735	1781	1749	1793
Q Serve(g_s), s	1.8	0.0	3.1	1.7	0.0	2.1	0.7	5.6	5.6	3.5	4.7	4.7
Cycle Q Clear(g_c), s	1.8	0.0	3.1	1.7	0.0	2.1	0.7	5.6	5.6	3.5	4.7	4.7
Prop In Lane	1.00		0.39	1.00		0.70	1.00		0.24	1.00		0.15
Lane Grp Cap(c), veh/h	336	0	209	284	0	186	439	540	544	513	667	684
V/C Ratio(X)	0.21	0.00	0.52	0.20	0.00	0.39	0.07	0.42	0.43	0.35	0.32	0.33
Avail Cap(c_a), veh/h	462	0	864	403	0	822	531	1385	1397	729	1637	1678
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.1	0.0	22.2	19.5	0.0	22.1	11.6	14.5	14.5	10.2	11.6	11.7
Incr Delay (d2), s/veh	0.3	0.0	2.0	0.3	0.0	1.3	0.1	0.5	0.5	0.4	0.3	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	0.0	0.7	0.2	0.0	0.5	0.0	0.1	0.1	0.1	0.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	19.5	0.0	24.2	19.8	0.0	23.4	11.6	15.0	15.0	10.6	11.9	11.9
LnGrp LOS	B		C	B		C	B	B	B	B	B	B
Approach Vol, veh/h	179			130			490			621		
Approach Delay, s/veh	22.3			21.8			14.8			11.5		
Approach LOS	C			C			B			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.5	22.7	7.9	12.3	6.9	26.4	8.2	11.9				
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0				
Max Green Setting (Gmax), s	12.0	43.0	7.0	26.0	5.0	50.0	7.0	26.0				
Max Q Clear Time (g_c+I1), s	5.5	7.6	3.7	5.1	2.7	6.7	3.8	4.1				
Green Ext Time (p_c), s	0.5	8.8	0.0	1.3	0.0	8.9	0.1	0.8				
Intersection Summary												
HCM 7th Control Delay, s/veh	15.0											
HCM 7th LOS	B											

Lanes, Volumes, Timings

Existing AM Peak Hour

2: Northerly Site Access/Canadian Tire & Redan S (250363) 1055 Talbot Street, St. Thomas TIA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	278	36	28	149	11	1	0	43	9	0	35
Future Volume (vph)	45	278	36	28	149	11	1	0	43	9	0	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		15.0	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.985			0.991				0.850		0.892	
Flt Protected		0.994			0.993			0.950			0.990	
Satd. Flow (prot)	0	3493	0	0	3403	0	0	1825	1633	0	1696	0
Flt Permitted		0.994			0.993			0.950			0.990	
Satd. Flow (perm)	0	3493	0	0	3403	0	0	1825	1633	0	1696	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		86.9			115.7			87.5			121.4	
Travel Time (s)		6.3			8.3			6.3			8.7	
Confl. Peds. (#/hr)	3					3						
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	0%	3%	0%	0%	7%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	56	348	45	35	186	14	1	0	54	11	0	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	449	0	0	235	0	0	1	54	0	55	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 35.5% ICU Level of Service A

Analysis Period (min) 15

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔			↔	↔		↔↔	
Traffic Vol, veh/h	45	278	36	28	149	11	1	0	43	9	0	35
Future Vol, veh/h	45	278	36	28	149	11	1	0	43	9	0	35
Conflicting Peds, #/hr	3	0	0	0	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	15	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	3	0	0	7	0	0	0	0	0	0	0
Mvmt Flow	56	348	45	35	186	14	1	0	54	11	0	44
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	203	0	0	393	0	0	646	756	196	552	771	103
Stage 1	-	-	-	-	-	-	483	483	-	266	266	-
Stage 2	-	-	-	-	-	-	163	273	-	286	505	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1381	-	-	1177	-	-	361	340	818	421	333	938
Stage 1	-	-	-	-	-	-	539	556	-	722	692	-
Stage 2	-	-	-	-	-	-	829	688	-	703	544	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1377	-	-	1177	-	-	318	313	818	362	307	936
Mov Cap-2 Maneuver	-	-	-	-	-	-	318	313	-	362	307	-
Stage 1	-	-	-	-	-	-	514	531	-	697	669	-
Stage 2	-	-	-	-	-	-	765	664	-	626	519	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.18			1.36			9.86			10.52		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1		NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1		
Capacity (veh/h)	318		818	389	-	-	489	-	-	-	707	
HCM Lane V/C Ratio	0.004		0.066	0.041	-	-	0.03	-	-	-	0.078	
HCM Ctrl Dly (s/v)	16.4		9.7	7.7	0.3	-	8.2	0.2	-	-	10.5	
HCM Lane LOS	C		A	A	A	-	A	A	-	-	B	
HCM 95th %tile Q(veh)	0		0.2	0.1	-	-	0.1	-	-	-	0.3	

Lanes, Volumes, Timings
1: First Avenue & Redan Street

Existing PM Peak Hour
(250363) 1055 Talbot Street, St. Thomas TIA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	143	35	144	84	218	58	451	117	341	486	69
Future Volume (vph)	79	143	35	144	84	218	58	451	117	341	486	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	20.0		0.0	25.0		0.0	40.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	30.0			0.0			100.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00	1.00		1.00	0.99		1.00				1.00	
Frt		0.971			0.892			0.969			0.981	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1755	1860	0	1738	1685	0	1674	3455	0	1825	3484	0
Flt Permitted	0.356			0.411			0.434			0.303		
Satd. Flow (perm)	657	1860	0	751	1685	0	764	3455	0	582	3484	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			112			31			19	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		166.8			86.9			112.3			167.4	
Travel Time (s)		12.0			6.3			8.1			12.1	
Confl. Peds. (#/hr)	1		2	2		1	1					1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	0%	0%	5%	0%	1%	9%	3%	0%	0%	2%	6%
Adj. Flow (vph)	82	149	36	150	88	227	60	470	122	355	506	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	185	0	150	315	0	60	592	0	355	578	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	30.0		10.0	30.0		10.0	40.0		10.0	40.0	
Total Split (s)	10.0	30.0		13.0	33.0		10.0	41.0		26.0	57.0	
Total Split (%)	9.1%	27.3%		11.8%	30.0%		9.1%	37.3%		23.6%	51.8%	
Maximum Green (s)	5.0	24.0		8.0	27.0		5.0	35.0		21.0	51.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Ped		None	Ped	
Walk Time (s)		12.0			12.0			22.0			22.0	
Flash Don't Walk (s)		12.0			12.0			12.0			12.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effect Green (s)	21.2	15.1		27.6	20.4		40.4	34.3		55.4	46.6	
Actuated g/C Ratio	0.22	0.16		0.29	0.22		0.43	0.36		0.59	0.49	
v/c Ratio	0.40	0.61		0.50	0.70		0.16	0.47		0.66	0.34	

Lanes, Volumes, Timings
1: First Avenue & Redan Street

Existing PM Peak Hour
(250363) 1055 Talbot Street, St. Thomas TIA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay (s/veh)	31.2	44.0		31.5	31.9		12.5	24.9		17.3	16.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	31.2	44.0		31.5	31.9		12.5	24.9		17.3	16.0	
LOS	C	D		C	C		B	C		B	B	
Approach Delay (s/veh)		40.0			31.8			23.7			16.5	
Approach LOS		D			C			C			B	
Queue Length 50th (m)	10.7	29.8		20.4	35.1		4.3	39.8		30.2	32.2	
Queue Length 95th (m)	22.7	53.6		38.1	67.9		11.5	68.8		57.8	52.2	
Internal Link Dist (m)		142.8			62.9			88.3			143.4	
Turn Bay Length (m)	20.0			20.0			25.0			40.0		
Base Capacity (vph)	205	483		303	564		374	1308		619	1902	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.40	0.38		0.50	0.56		0.16	0.45		0.57	0.30	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 94.7

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay (s/veh): 24.3

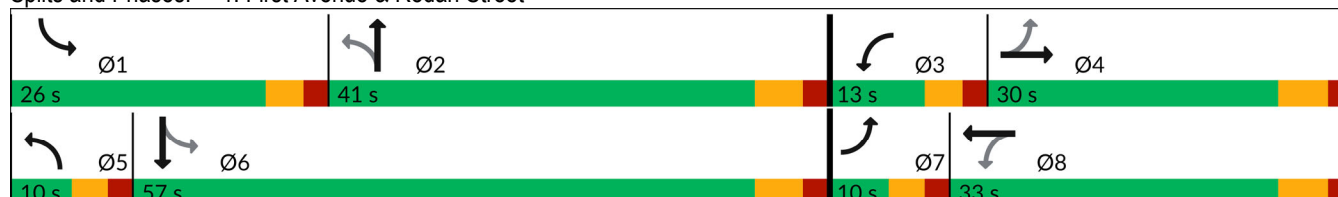
Intersection LOS: C

Intersection Capacity Utilization 75.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: First Avenue & Redan Street



HCM 7th Signalized Intersection Summary

1: First Avenue & Redan Street

Existing PM Peak Hour
(250363) 1055 Talbot Street, St. Thomas TIA

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	79	143	35	144	84	218	58	451	117	341	486	69
Future Volume (veh/h)	79	143	35	144	84	218	58	451	117	341	486	69
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1841	1900	1900	1826	1900	1885	1767	1856	1900	1900	1870	1811
Adj Flow Rate, veh/h	82	149	36	150	88	227	60	470	122	355	506	72
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	4	0	0	5	0	1	9	3	0	0	2	6
Cap, veh/h	241	298	72	370	112	289	382	780	201	500	1262	179
Arrive On Green	0.05	0.20	0.20	0.09	0.24	0.24	0.04	0.28	0.28	0.17	0.40	0.40
Sat Flow, veh/h	1753	1478	357	1739	469	1210	1682	2774	715	1810	3124	443
Grp Volume(v), veh/h	82	0	185	150	0	315	60	298	294	355	287	291
Grp Sat Flow(s),veh/h/ln	1753	0	1834	1739	0	1679	1682	1763	1726	1810	1777	1790
Q Serve(g_s), s	3.1	0.0	7.5	5.6	0.0	14.8	2.1	12.3	12.5	10.9	9.7	9.8
Cycle Q Clear(g_c), s	3.1	0.0	7.5	5.6	0.0	14.8	2.1	12.3	12.5	10.9	9.7	9.8
Prop In Lane	1.00		0.19	1.00		0.72	1.00		0.41	1.00		0.25
Lane Grp Cap(c), veh/h	241	0	371	370	0	401	382	496	485	500	718	723
V/C Ratio(X)	0.34	0.00	0.50	0.41	0.00	0.79	0.16	0.60	0.61	0.71	0.40	0.40
Avail Cap(c_a), veh/h	255	0	522	382	0	538	407	732	717	648	1075	1083
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.5	0.0	29.8	23.6	0.0	30.1	19.9	26.2	26.3	16.7	17.9	17.9
Incr Delay (d2), s/veh	0.8	0.0	1.0	0.7	0.0	5.5	0.2	1.2	1.2	2.5	0.4	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.2	0.0	3.2	1.9	0.0	6.2	0.6	4.3	4.3	2.0	2.2	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	26.3	0.0	30.9	24.3	0.0	35.5	20.0	27.4	27.5	19.3	18.2	18.2
LnGrp LOS	C		C	C		D	C	C	C	B	B	B
Approach Vol, veh/h	267			465			652			933		
Approach Delay, s/veh	29.5			31.9			26.7			18.6		
Approach LOS	C			C			C			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.1	29.7	12.4	23.0	8.8	40.0	9.3	26.1				
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0				
Max Green Setting (Gmax), s	21.0	35.0	8.0	24.0	5.0	51.0	5.0	27.0				
Max Q Clear Time (g_c+l1), s	12.9	14.5	7.6	9.5	4.1	11.8	5.1	16.8				
Green Ext Time (p_c), s	1.3	9.0	0.0	2.1	0.0	12.0	0.0	3.1				
Intersection Summary												
HCM 7th Control Delay, s/veh	24.8											
HCM 7th LOS	C											

Lanes, Volumes, Timings

Existing PM Peak Hour

2: Northerly Site Access/Canadian Tire & Redan S (250363) 1055 Talbot Street, St. Thomas TIA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	470	42	34	382	19	3	0	88	15	0	78
Future Volume (vph)	92	470	42	34	382	19	3	0	88	15	0	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		7.5	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.990			0.993				0.850		0.887	
Flt Protected		0.992			0.996			0.950			0.992	
Satd. Flow (prot)	0	3585	0	0	3517	0	0	1825	1633	0	1688	0
Flt Permitted		0.992			0.996			0.950			0.992	
Satd. Flow (perm)	0	3585	0	0	3517	0	0	1825	1633	0	1688	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		86.9			115.7			87.5			121.4	
Travel Time (s)		6.3			8.3			6.3			8.7	
Confl. Peds. (#/hr)	9					9	1					1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	3%	0%	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	97	495	44	36	402	20	3	0	93	16	0	82
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	636	0	0	458	0	0	3	93	0	98	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 51.9% ICU Level of Service A

Analysis Period (min) 15

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔			↔	↔		↔↔	
Traffic Vol, veh/h	92	470	42	34	382	19	3	0	88	15	0	78
Future Vol, veh/h	92	470	42	34	382	19	3	0	88	15	0	78
Conflicting Peds, #/hr	9	0	0	0	0	9	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	7.5	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	3	0	0	0	0	1	0	0
Mvmt Flow	97	495	44	36	402	20	3	0	93	16	0	82
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	431	0	0	539	0	0	984	1213	269	934	1225	221
Stage 1	-	-	-	-	-	-	711	711	-	493	493	-
Stage 2	-	-	-	-	-	-	274	503	-	441	733	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.52	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.52	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.52	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.51	4	3.3
Pot Cap-1 Maneuver	1139	-	-	1040	-	-	206	183	735	222	180	789
Stage 1	-	-	-	-	-	-	395	440	-	529	551	-
Stage 2	-	-	-	-	-	-	715	545	-	568	430	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1129	-	-	1040	-	-	159	157	735	166	154	781
Mov Cap-2 Maneuver	-	-	-	-	-	-	159	157	-	166	154	-
Stage 1	-	-	-	-	-	-	355	395	-	504	524	-
Stage 2	-	-	-	-	-	-	614	519	-	446	386	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.77			0.92			11.18			14.19		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1		NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1		
Capacity (veh/h)	159		735	492	-	-	264	-	-	489		
HCM Lane V/C Ratio	0.02		0.126	0.086	-	-	0.034	-	-	0.2		
HCM Ctrl Dly (s/v)	28.1		10.6	8.5	0.6	-	8.6	0.3	-	14.2		
HCM Lane LOS	D		B	A	A	-	A	A	-	B		
HCM 95th %tile Q(veh)	0.1		0.4	0.3	-	-	0.1	-	-	0.7		

Lanes, Volumes, Timings
1: First Avenue & Redan Street

Existing Saturday Peak Hour
(250363) 1055 Talbot Street, St. Thomas TIA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	162	40	188	108	225	50	533	165	450	424	38
Future Volume (vph)	106	162	40	188	108	225	50	533	165	450	424	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	20.0		0.0	25.0		0.0	40.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	30.0			0.0			100.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00	1.00		1.00	0.99							
Frt		0.970			0.899			0.965			0.988	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1825	1858	0	1772	1694	0	1674	3522	0	1825	3574	0
Flt Permitted	0.209			0.442			0.482			0.222		
Satd. Flow (perm)	400	1858	0	823	1694	0	850	3522	0	426	3574	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			89			38			12	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		166.8			86.9			112.3			167.4	
Travel Time (s)		12.0			6.3			8.1			12.1	
Confl. Peds. (#/hr)	5		2	2		5						
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	3%	0%	1%	9%	0%	0%	0%	1%	0%
Adj. Flow (vph)	108	165	41	192	110	230	51	544	168	459	433	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	108	206	0	192	340	0	51	712	0	459	472	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	30.0		10.0	30.0		10.0	40.0		10.0	40.0	
Total Split (s)	10.0	30.0		11.0	31.0		10.0	40.0		29.0	59.0	
Total Split (%)	9.1%	27.3%		10.0%	28.2%		9.1%	36.4%		26.4%	53.6%	
Maximum Green (s)	5.0	24.0		6.0	25.0		5.0	34.0		24.0	53.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Ped		None	Ped	
Walk Time (s)		12.0			12.0			22.0			22.0	
Flash Don't Walk (s)		12.0			12.0			12.0			12.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effect Green (s)	25.1	19.0		27.1	20.1		40.3	34.3		61.0	52.2	
Actuated g/C Ratio	0.25	0.19		0.27	0.20		0.39	0.34		0.60	0.51	
v/c Ratio	0.64	0.58		0.70	0.84		0.14	0.59		0.85	0.26	

Lanes, Volumes, Timings
1: First Avenue & Redan Street

Existing Saturday Peak Hour
(250363) 1055 Talbot Street, St. Thomas TIA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay (s/veh)	47.1	43.3		45.3	48.5		13.2	30.3		32.5	15.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	47.1	43.3		45.3	48.5		13.2	30.3		32.5	15.3	
LOS	D	D		D	D		B	C		C	B	
Approach Delay (s/veh)		44.6			47.3			29.1			23.8	
Approach LOS		D			D			C			C	
Queue Length 50th (m)	16.5	37.1		30.9	51.0		4.1	62.6		51.8	28.2	
Queue Length 95th (m)	#32.2	59.9		49.8	#89.8		9.6	85.2		#107.0	40.6	
Internal Link Dist (m)		142.8			62.9			88.3			143.4	
Turn Bay Length (m)	20.0			20.0			25.0			40.0		
Base Capacity (vph)	168	447		274	484		375	1206		585	1874	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.64	0.46		0.70	0.70		0.14	0.59		0.78	0.25	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 102.2

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay (s/veh): 32.9

Intersection LOS: C

Intersection Capacity Utilization 89.0%

ICU Level of Service E

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: First Avenue & Redan Street



HCM 7th Signalized Intersection Summary

1: First Avenue & Redan Street

Existing Saturday Peak Hour
(250363) 1055 Talbot Street, St. Thomas TIA

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	162	40	188	108	225	50	533	165	450	424	38
Future Volume (veh/h)	106	162	40	188	108	225	50	533	165	450	424	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1900	1900	1900	1856	1900	1885	1767	1900	1900	1900	1885	1900
Adj Flow Rate, veh/h	108	165	41	192	110	230	51	544	168	459	433	39
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	3	0	1	9	0	0	0	1	0
Cap, veh/h	209	327	81	328	127	266	389	780	240	520	1496	134
Arrive On Green	0.05	0.22	0.22	0.06	0.23	0.23	0.04	0.29	0.29	0.20	0.45	0.45
Sat Flow, veh/h	1810	1467	365	1767	545	1141	1682	2718	836	1810	3324	298
Grp Volume(v), veh/h	108	0	206	192	0	340	51	361	351	459	232	240
Grp Sat Flow(s),veh/h/ln	1810	0	1831	1767	0	1686	1682	1805	1749	1810	1791	1832
Q Serve(g_s), s	4.5	0.0	9.6	6.0	0.0	18.8	2.0	17.3	17.4	16.2	8.0	8.0
Cycle Q Clear(g_c), s	4.5	0.0	9.6	6.0	0.0	18.8	2.0	17.3	17.4	16.2	8.0	8.0
Prop In Lane	1.00		0.20	1.00		0.68	1.00		0.48	1.00		0.16
Lane Grp Cap(c), veh/h	209	0	408	328	0	393	389	518	502	520	806	824
V/C Ratio(X)	0.52	0.00	0.50	0.59	0.00	0.87	0.13	0.70	0.70	0.88	0.29	0.29
Avail Cap(c_a), veh/h	209	0	453	328	0	434	411	633	613	602	978	1000
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.0	0.0	33.0	31.0	0.0	35.7	22.8	30.8	30.9	19.3	16.9	16.9
Incr Delay (d2), s/veh	2.2	0.0	1.0	2.7	0.0	15.4	0.2	2.5	2.7	13.1	0.2	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.1	0.0	4.5	3.8	0.0	10.0	0.7	7.6	7.5	6.3	2.1	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	31.2	0.0	34.0	33.6	0.0	51.2	22.9	33.4	33.6	32.4	17.1	17.1
LnGrp LOS	C		C	C		D	C	C	C	C	B	B
Approach Vol, veh/h	314				532		763				931	
Approach Delay, s/veh	33.0				44.8		32.8				24.6	
Approach LOS	C				D		C				C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	24.6	33.8	11.0	27.6	8.7	49.7	10.0	28.6				
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0				
Max Green Setting (Gmax), s	24.0	34.0	6.0	24.0	5.0	53.0	5.0	25.0				
Max Q Clear Time (g_c+l1), s	18.2	19.4	8.0	11.6	4.0	10.0	6.5	20.8				
Green Ext Time (p_c), s	1.4	8.4	0.0	2.1	0.0	9.6	0.0	1.6				
Intersection Summary												
HCM 7th Control Delay, s/veh			32.4									
HCM 7th LOS			C									

Lanes, Volumes, Timings

Existing Saturday Peak Hour

2: Northerly Site Access/Canadian Tire & Redan S (250363) 1055 Talbot Street, St. Thomas TIA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	614	60	48	424	18	4	0	108	19	0	93
Future Volume (vph)	119	614	60	48	424	18	4	0	108	19	0	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		7.5	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.989			0.994				0.850		0.888	
Flt Protected		0.993			0.995			0.950			0.991	
Satd. Flow (prot)	0	3585	0	0	3549	0	0	1825	1633	0	1688	0
Flt Permitted		0.993			0.995			0.950			0.991	
Satd. Flow (perm)	0	3585	0	0	3549	0	0	1825	1633	0	1688	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		86.9			115.7			87.5			121.4	
Travel Time (s)		6.3			8.3			6.3			8.7	
Confl. Peds. (#/hr)	3					3						
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%	2%	0%	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	129	667	65	52	461	20	4	0	117	21	0	101
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	861	0	0	533	0	0	4	117	0	122	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 59.5% ICU Level of Service B

Analysis Period (min) 15

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔			↔	↔		↔↔	
Traffic Vol, veh/h	119	614	60	48	424	18	4	0	108	19	0	93
Future Vol, veh/h	119	614	60	48	424	18	4	0	108	19	0	93
Conflicting Peds, #/hr	3	0	0	0	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	7.5	-	-	-
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	2	0	0	0	0	1	0	0
Mvmt Flow	129	667	65	52	461	20	4	0	117	21	0	101
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	483	0	0	733	0	0	1293	1546	366	1170	1569	243
Stage 1	-	-	-	-	-	-	959	959	-	578	578	-
Stage 2	-	-	-	-	-	-	335	588	-	592	991	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.52	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.52	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.52	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.51	4	3.3
Pot Cap-1 Maneuver	1090	-	-	881	-	-	122	115	636	149	112	764
Stage 1	-	-	-	-	-	-	280	338	-	471	504	-
Stage 2	-	-	-	-	-	-	658	499	-	462	327	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1087	-	-	881	-	-	84	91	636	96	88	761
Mov Cap-2 Maneuver	-	-	-	-	-	-	84	91	-	96	88	-
Stage 1	-	-	-	-	-	-	238	287	-	437	469	-
Stage 2	-	-	-	-	-	-	532	464	-	320	278	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	2.05			1.37			13.3			20.67		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1		NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1		
Capacity (veh/h)	84		636	480	-	-	334	-	-	350		
HCM Lane V/C Ratio	0.052		0.184	0.119	-	-	0.059	-	-	0.348		
HCM Ctrl Dly (s/v)	50.3		11.9	8.8	0.9	-	9.3	0.5	-	20.7		
HCM Lane LOS	F		B	A	A	-	A	A	-	C		
HCM 95th %tile Q(veh)	0.2		0.7	0.4	-	-	0.2	-	-	1.5		

Appendix B

Future Total Traffic Operations Reports



Lanes, Volumes, Timings
1: First Avenue & Redan Street

Total AM Peak Hour
(250363) 1055 Talbot Street, St. Thomas TIA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	62	38	66	20	49	29	361	49	178	357	29
Future Volume (vph)	62	62	38	66	20	49	29	361	49	178	357	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	20.0		0.0	25.0		0.0	40.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	30.0			0.0			100.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor							1.00				1.00	
Frt		0.943			0.894			0.982			0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	1771	0	1534	1604	0	1573	3389	0	1789	3476	0
Flt Permitted	0.706			0.635			0.497			0.415		
Satd. Flow (perm)	1330	1771	0	1025	1604	0	822	3389	0	782	3476	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26			56			15			10	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		166.8			86.9			112.3			167.4	
Travel Time (s)		12.0			6.3			8.1			12.1	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	2%	0%	6%	19%	0%	10%	16%	6%	4%	2%	4%	0%
Adj. Flow (vph)	70	70	43	75	23	56	33	410	56	202	406	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	70	113	0	75	79	0	33	466	0	202	439	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	30.0		10.0	30.0		10.0	40.0		10.0	40.0	
Total Split (s)	12.0	32.0		13.0	33.0		10.0	47.0		18.0	55.0	
Total Split (%)	10.9%	29.1%		11.8%	30.0%		9.1%	42.7%		16.4%	50.0%	
Maximum Green (s)	7.0	26.0		8.0	27.0		5.0	41.0		13.0	49.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Ped		None	Ped	
Walk Time (s)		12.0			12.0			22.0			22.0	
Flash Don't Walk (s)		12.0			12.0			12.0			12.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effect Green (s)	15.5	9.6		16.7	10.1		41.7	35.5		51.4	46.8	
Actuated g/C Ratio	0.20	0.12		0.21	0.13		0.53	0.45		0.66	0.60	
v/c Ratio	0.23	0.47		0.28	0.31		0.07	0.30		0.32	0.21	

Lanes, Volumes, Timings
1: First Avenue & Redan Street

Total AM Peak Hour
(250363) 1055 Talbot Street, St. Thomas TIA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay (s/veh)	25.0	35.0		26.0	17.9		8.7	17.0		9.2	12.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	25.0	35.0		26.0	17.9		8.7	17.0		9.2	12.0	
LOS	C	C		C	B		A	B		A	B	
Approach Delay (s/veh)		31.2			21.8			16.4			11.1	
Approach LOS		C			C			B			B	
Queue Length 50th (m)	8.3	13.1		9.0	3.3		2.0	25.1		13.3	21.0	
Queue Length 95th (m)	18.0	28.3		19.3	14.8		5.8	40.5		24.9	32.2	
Internal Link Dist (m)		142.8			62.9			88.3			143.4	
Turn Bay Length (m)	20.0			20.0			25.0			40.0		
Base Capacity (vph)	311	630		282	612		487	1856		687	2271	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.23	0.18		0.27	0.13		0.07	0.25		0.29	0.19	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 78.4

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.47

Intersection Signal Delay (s/veh): 16.5

Intersection LOS: B

Intersection Capacity Utilization 57.0%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: First Avenue & Redan Street

	Ø1		Ø2		Ø3		Ø4
18 s		47 s		13 s		32 s	
	Ø5		Ø6		Ø7		Ø8
10 s		55 s		12 s		33 s	

HCM 7th Signalized Intersection Summary

1: First Avenue & Redan Street

Total AM Peak Hour
(250363) 1055 Talbot Street, St. Thomas TIA

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	62	38	66	20	49	29	361	49	178	357	29
Future Volume (veh/h)	62	62	38	66	20	49	29	361	49	178	357	29
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1900	1811	1618	1900	1752	1663	1811	1841	1870	1841	1900
Adj Flow Rate, veh/h	70	70	43	75	23	56	33	410	56	202	406	33
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	0	6	19	0	10	16	6	4	2	4	0
Cap, veh/h	340	131	81	291	60	145	438	939	127	516	1261	102
Arrive On Green	0.06	0.12	0.12	0.06	0.12	0.12	0.04	0.31	0.31	0.11	0.38	0.38
Sat Flow, veh/h	1781	1102	677	1541	491	1194	1584	3044	413	1781	3276	265
Grp Volume(v), veh/h	70	0	113	75	0	79	33	231	235	202	216	223
Grp Sat Flow(s),veh/h/ln	1781	0	1778	1541	0	1685	1584	1721	1736	1781	1749	1793
Q Serve(g_s), s	1.9	0.0	3.3	2.3	0.0	2.4	0.8	5.9	6.0	3.9	4.8	4.8
Cycle Q Clear(g_c), s	1.9	0.0	3.3	2.3	0.0	2.4	0.8	5.9	6.0	3.9	4.8	4.8
Prop In Lane	1.00		0.38	1.00		0.71	1.00		0.24	1.00		0.15
Lane Grp Cap(c), veh/h	340	0	212	291	0	205	438	531	536	516	673	690
V/C Ratio(X)	0.21	0.00	0.53	0.26	0.00	0.39	0.08	0.43	0.44	0.39	0.32	0.32
Avail Cap(c_a), veh/h	459	0	837	419	0	823	525	1277	1288	735	1551	1590
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.4	0.0	22.9	19.6	0.0	22.4	12.1	15.2	15.3	10.3	11.9	11.9
Incr Delay (d2), s/veh	0.3	0.0	2.1	0.5	0.0	1.2	0.1	0.6	0.6	0.5	0.3	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	0.0	0.9	0.3	0.0	0.6	0.0	0.2	0.2	0.1	0.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	19.7	0.0	25.0	20.0	0.0	23.6	12.2	15.8	15.8	10.8	12.2	12.2
LnGrp LOS	B		C	C		C	B	B	B	B	B	B
Approach Vol, veh/h	183			154			499			641		
Approach Delay, s/veh	23.0			21.9			15.6			11.7		
Approach LOS	C			C			B			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.2	23.1	8.4	12.6	7.0	27.3	8.3	12.7				
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0				
Max Green Setting (Gmax), s	13.0	41.0	8.0	26.0	5.0	49.0	7.0	27.0				
Max Q Clear Time (g_c+l1), s	5.9	8.0	4.3	5.3	2.8	6.8	3.9	4.4				
Green Ext Time (p_c), s	0.6	8.8	0.1	1.4	0.0	8.8	0.1	0.9				
Intersection Summary												
HCM 7th Control Delay, s/veh	15.5											
HCM 7th LOS	B											

Lanes, Volumes, Timings

Total AM Peak Hour

2: Northerly Site Access/Canadian Tire & Redan S(250363) 1055 Talbot Street, St. Thomas TIA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	278	58	28	149	11	22	0	43	9	0	35
Future Volume (vph)	45	278	58	28	149	11	22	0	43	9	0	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		15.0	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.977			0.991				0.850		0.892	
Flt Protected		0.994			0.993			0.950			0.990	
Satd. Flow (prot)	0	3469	0	0	3403	0	0	1825	1633	0	1696	0
Flt Permitted		0.994			0.993			0.950			0.990	
Satd. Flow (perm)	0	3469	0	0	3403	0	0	1825	1633	0	1696	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		86.9			115.7			87.5			121.4	
Travel Time (s)		6.3			8.3			6.3			8.7	
Confl. Peds. (#/hr)	3					3						
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	0%	3%	0%	0%	7%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	56	348	73	35	186	14	28	0	54	11	0	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	477	0	0	235	0	0	28	54	0	55	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 36.2% ICU Level of Service A

Analysis Period (min) 15

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔			↔	↔		↔↔	
Traffic Vol, veh/h	45	278	58	28	149	11	22	0	43	9	0	35
Future Vol, veh/h	45	278	58	28	149	11	22	0	43	9	0	35
Conflicting Peds, #/hr	3	0	0	0	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	15	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	3	0	0	7	0	0	0	0	0	0	0
Mvmt Flow	56	348	73	35	186	14	28	0	54	11	0	44
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	203	0	0	420	0	0	659	769	210	552	799	103
Stage 1	-	-	-	-	-	-	496	496	-	266	266	-
Stage 2	-	-	-	-	-	-	163	273	-	286	533	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1381	-	-	1150	-	-	353	334	802	421	321	938
Stage 1	-	-	-	-	-	-	529	549	-	722	692	-
Stage 2	-	-	-	-	-	-	829	688	-	703	529	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1377	-	-	1150	-	-	310	307	802	361	295	936
Mov Cap-2 Maneuver	-	-	-	-	-	-	310	307	-	361	295	-
Stage 1	-	-	-	-	-	-	505	523	-	697	668	-
Stage 2	-	-	-	-	-	-	764	663	-	625	504	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.11			1.38			12.49			10.53		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1 NBLn2		EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	310 802		342	-	-	489	-	-	706			
HCM Lane V/C Ratio	0.089 0.067		0.041	-	-	0.03	-	-	0.078			
HCM Ctrl Dly (s/v)	17.7 9.8		7.7	0.3	-	8.2	0.2	-	10.5			
HCM Lane LOS	C A		A	A	-	A	A	-	B			
HCM 95th %tile Q(veh)	0.3 0.2		0.1	-	-	0.1	-	-	0.3			

Lanes, Volumes, Timings
1: First Avenue & Redan Street

Total PM Peak Hour
(250363) 1055 Talbot Street, St. Thomas TIA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	148	35	196	86	245	61	450	117	394	458	69
Future Volume (vph)	79	148	35	196	86	245	61	450	117	394	458	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	20.0		0.0	25.0		0.0	40.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	30.0			0.0			100.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00	1.00		1.00	0.99		1.00				1.00	
Frt		0.972			0.889			0.969			0.980	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1755	1862	0	1738	1679	0	1674	3455	0	1825	3479	0
Flt Permitted	0.285			0.402			0.447			0.298		
Satd. Flow (perm)	526	1862	0	734	1679	0	787	3455	0	572	3479	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			123			31			20	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		166.8			86.9			112.3			167.4	
Travel Time (s)		12.0			6.3			8.1			12.1	
Confl. Peds. (#/hr)	1		2	2		1	1					1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	0%	0%	5%	0%	1%	9%	3%	0%	0%	2%	6%
Adj. Flow (vph)	82	154	36	204	90	255	64	469	122	410	477	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	190	0	204	345	0	64	591	0	410	549	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	30.0		10.0	30.0		10.0	40.0		10.0	40.0	
Total Split (s)	10.0	30.0		13.0	33.0		10.0	41.0		26.0	57.0	
Total Split (%)	9.1%	27.3%		11.8%	30.0%		9.1%	37.3%		23.6%	51.8%	
Maximum Green (s)	5.0	24.0		8.0	27.0		5.0	35.0		21.0	51.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Ped		None	Ped	
Walk Time (s)		12.0			12.0			22.0			22.0	
Flash Don't Walk (s)		12.0			12.0			12.0			12.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	22.1	16.1		28.7	21.4		40.4	34.3		57.2	48.4	
Actuated g/C Ratio	0.23	0.17		0.29	0.22		0.41	0.35		0.59	0.50	
v/c Ratio	0.45	0.60		0.68	0.74		0.17	0.48		0.74	0.32	

Lanes, Volumes, Timings
1: First Avenue & Redan Street

Total PM Peak Hour
(250363) 1055 Talbot Street, St. Thomas TIA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay (s/veh)	33.9	44.3		40.5	34.1		13.0	26.3		20.5	16.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	33.9	44.3		40.5	34.1		13.0	26.3		20.5	16.0	
LOS	C	D		D	C		B	C		C	B	
Approach Delay (s/veh)		41.1			36.5			25.0			17.9	
Approach LOS		D			D			C			B	
Queue Length 50th (m)	11.2	31.8		30.1	40.9		4.8	43.2		38.3	31.4	
Queue Length 95th (m)	22.7	54.7		50.8	74.9		12.1	68.8		68.2	49.4	
Internal Link Dist (m)		142.8			62.9			88.3			143.4	
Turn Bay Length (m)	20.0			20.0			25.0			40.0		
Base Capacity (vph)	183	470		298	557		371	1271		607	1845	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.45	0.40		0.68	0.62		0.17	0.46		0.68	0.30	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 97.5

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay (s/veh): 26.6

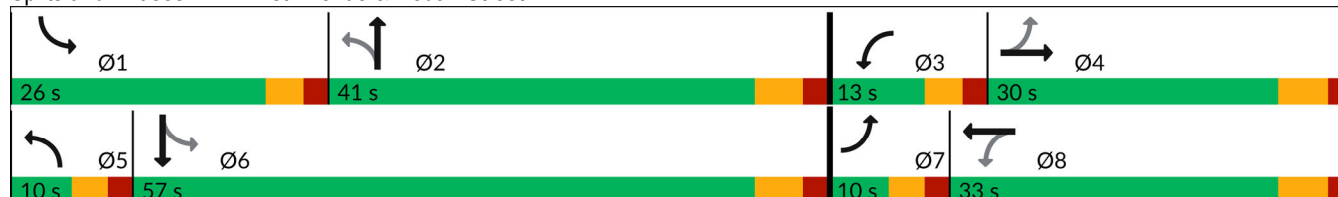
Intersection LOS: C

Intersection Capacity Utilization 80.4%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: First Avenue & Redan Street



HCM 7th Signalized Intersection Summary

1: First Avenue & Redan Street

Total PM Peak Hour
(250363) 1055 Talbot Street, St. Thomas TIA

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	79	148	35	196	86	245	61	450	117	394	458	69
Future Volume (veh/h)	79	148	35	196	86	245	61	450	117	394	458	69
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1841	1900	1900	1826	1900	1885	1767	1856	1900	1900	1870	1811
Adj Flow Rate, veh/h	82	154	36	204	90	255	64	469	122	410	477	72
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	4	0	0	5	0	1	9	3	0	0	2	6
Cap, veh/h	223	313	73	372	108	307	373	750	194	519	1280	192
Arrive On Green	0.05	0.21	0.21	0.09	0.25	0.25	0.04	0.27	0.27	0.19	0.41	0.41
Sat Flow, veh/h	1753	1488	348	1739	437	1237	1682	2772	716	1810	3098	465
Grp Volume(v), veh/h	82	0	190	204	0	345	64	297	294	410	273	276
Grp Sat Flow(s),veh/h/ln	1753	0	1836	1739	0	1674	1682	1763	1726	1810	1777	1786
Q Serve(g_s), s	3.3	0.0	8.2	8.0	0.0	17.6	2.4	13.3	13.5	13.8	9.6	9.7
Cycle Q Clear(g_c), s	3.3	0.0	8.2	8.0	0.0	17.6	2.4	13.3	13.5	13.8	9.6	9.7
Prop In Lane	1.00		0.19	1.00		0.74	1.00		0.42	1.00		0.26
Lane Grp Cap(c), veh/h	223	0	386	372	0	415	373	477	467	519	734	738
V/C Ratio(X)	0.37	0.00	0.49	0.55	0.00	0.83	0.17	0.62	0.63	0.79	0.37	0.37
Avail Cap(c_a), veh/h	230	0	488	372	0	500	392	683	669	602	1003	1009
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.1	0.0	31.4	25.7	0.0	32.2	22.0	28.9	28.9	18.3	18.4	18.4
Incr Delay (d2), s/veh	1.0	0.0	1.0	1.7	0.0	9.7	0.2	1.3	1.4	6.1	0.3	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.3	0.0	3.7	3.2	0.0	8.3	0.8	5.3	5.3	3.9	2.5	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.1	0.0	32.4	27.3	0.0	41.9	22.2	30.2	30.3	24.4	18.7	18.7
LnGrp LOS	C		C	C		D	C	C	C	C	B	B
Approach Vol, veh/h	272				549				655		959	
Approach Delay, s/veh	31.1				36.5				29.5		21.1	
Approach LOS	C				D				C		C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.9	30.4	13.0	25.0	9.0	43.3	9.6	28.4				
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0				
Max Green Setting (Gmax), s	21.0	35.0	8.0	24.0	5.0	51.0	5.0	27.0				
Max Q Clear Time (g_c+l1), s	15.8	15.5	10.0	10.2	4.4	11.7	5.3	19.6				
Green Ext Time (p_c), s	1.1	8.7	0.0	2.1	0.0	11.3	0.0	2.7				
Intersection Summary												
HCM 7th Control Delay, s/veh			28.0									
HCM 7th LOS			C									

Lanes, Volumes, Timings

Total PM Peak Hour

2: Northerly Site Access/Canadian Tire & Redan S (250363) 1055 Talbot Street, St. Thomas TIA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	470	100	34	382	19	84	0	88	15	0	78
Future Volume (vph)	92	470	100	34	382	19	84	0	88	15	0	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		15.0	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.977			0.993				0.850		0.887	
Flt Protected		0.993			0.996			0.950			0.992	
Satd. Flow (prot)	0	3541	0	0	3517	0	0	1825	1633	0	1688	0
Flt Permitted		0.993			0.996			0.950			0.992	
Satd. Flow (perm)	0	3541	0	0	3517	0	0	1825	1633	0	1688	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		86.9			115.7			87.5			121.4	
Travel Time (s)		6.3			8.3			6.3			8.7	
Confl. Peds. (#/hr)	9					9	1					1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	3%	0%	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	97	495	105	36	402	20	88	0	93	16	0	82
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	697	0	0	458	0	0	88	93	0	98	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 53.8% ICU Level of Service A

Analysis Period (min) 15

Intersection												
Int Delay, s/veh	6.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔			↔	↔		↔↔	
Traffic Vol, veh/h	92	470	100	34	382	19	84	0	88	15	0	78
Future Vol, veh/h	92	470	100	34	382	19	84	0	88	15	0	78
Conflicting Peds, #/hr	9	0	0	0	0	9	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	15	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	3	0	0	0	0	1	0	0
Mvmt Flow	97	495	105	36	402	20	88	0	93	16	0	82

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	431	0	0	600	0	0	1015	1244	300	934	1286	221
Stage 1	-	-	-	-	-	-	741	741	-	493	493	-
Stage 2	-	-	-	-	-	-	274	503	-	441	794	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.52	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.52	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.52	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.51	4	3.3
Pot Cap-1 Maneuver	1139	-	-	987	-	-	195	176	702	222	166	789
Stage 1	-	-	-	-	-	-	379	426	-	529	551	-
Stage 2	-	-	-	-	-	-	715	545	-	568	403	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1129	-	-	987	-	-	150	150	702	164	141	781
Mov Cap-2 Maneuver	-	-	-	-	-	-	150	150	-	164	141	-
Stage 1	-	-	-	-	-	-	339	382	-	503	523	-
Stage 2	-	-	-	-	-	-	613	518	-	442	361	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.63	0.96	34.19	14.25
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	150	702	402	-	-	264	-	-	487
HCM Lane V/C Ratio	0.589	0.132	0.086	-	-	0.036	-	-	0.201
HCM Ctrl Dly (s/v)	58.6	10.9	8.5	0.6	-	8.8	0.3	-	14.3
HCM Lane LOS	F	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	3.1	0.5	0.3	-	-	0.1	-	-	0.7

Lanes, Volumes, Timings
1: First Avenue & Redan Street

Total Saturday Peak Hour
(250363) 1055 Talbot Street, St. Thomas TIA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	170	40	237	110	240	55	552	165	514	398	38
Future Volume (vph)	106	170	40	237	110	240	55	552	165	514	398	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	20.0		0.0	25.0		0.0	40.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	30.0			0.0			100.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00	1.00		1.00	0.99							
Frt		0.971			0.897			0.966			0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1825	1860	0	1772	1689	0	1674	3526	0	1825	3570	0
Flt Permitted	0.190			0.457			0.494			0.202		
Satd. Flow (perm)	364	1860	0	851	1689	0	871	3526	0	388	3570	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			92			37			13	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		166.8			86.9			112.3			167.4	
Travel Time (s)		12.0			6.3			8.1			12.1	
Confl. Peds. (#/hr)	5		2	2		5						
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	3%	0%	1%	9%	0%	0%	0%	1%	0%
Adj. Flow (vph)	108	173	41	242	112	245	56	563	168	524	406	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	108	214	0	242	357	0	56	731	0	524	445	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	30.0		10.0	30.0		10.0	40.0		10.0	40.0	
Total Split (s)	10.0	30.0		10.0	30.0		10.0	41.0		29.0	60.0	
Total Split (%)	9.1%	27.3%		9.1%	27.3%		9.1%	37.3%		26.4%	54.5%	
Maximum Green (s)	5.0	24.0		5.0	24.0		5.0	35.0		24.0	54.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Ped		None	Ped	
Walk Time (s)		12.0			12.0			22.0			22.0	
Flash Don't Walk (s)		12.0			12.0			12.0			12.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	27.0	21.0		27.0	21.0		40.3	34.3		64.1	55.2	
Actuated g/C Ratio	0.25	0.20		0.25	0.20		0.38	0.32		0.60	0.52	
v/c Ratio	0.67	0.57		0.93	0.88		0.15	0.63		0.94	0.24	

Lanes, Volumes, Timings
1: First Avenue & Redan Street

Total Saturday Peak Hour
(250363) 1055 Talbot Street, St. Thomas TIA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay (s/veh)	50.3	42.9		77.4	53.2		13.3	32.3		47.9	15.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	50.3	42.9		77.4	53.2		13.3	32.3		47.9	15.0	
LOS	D	D		E	D		B	C		D	B	
Approach Delay (s/veh)		45.4			63.0			30.9			32.8	
Approach LOS		D			E			C			C	
Queue Length 50th (m)	16.5	38.3		40.3	54.6		4.8	66.8		76.7	27.3	
Queue Length 95th (m)	#34.6	62.4		#83.3	#100.9		10.0	86.7		#143.7	37.5	
Internal Link Dist (m)		142.8			62.9			88.3			143.4	
Turn Bay Length (m)	20.0			20.0			25.0			40.0		
Base Capacity (vph)	161	429		259	453		368	1190		559	1884	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.67	0.50		0.93	0.79		0.15	0.61		0.94	0.24	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 106.1

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay (s/veh): 40.5

Intersection LOS: D

Intersection Capacity Utilization 94.1%

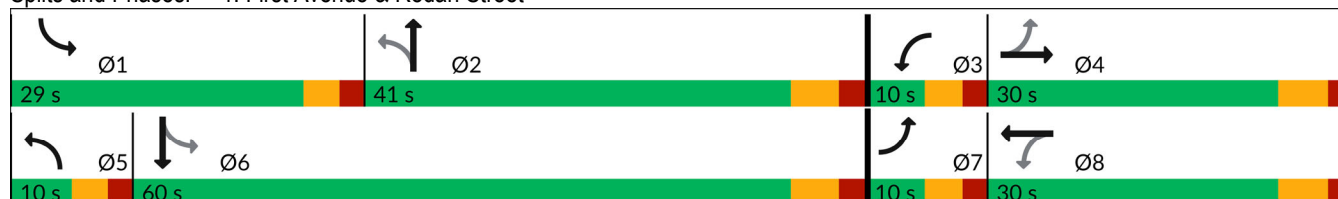
ICU Level of Service F

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: First Avenue & Redan Street



HCM 7th Signalized Intersection Summary

1: First Avenue & Redan Street

Total Saturday Peak Hour
(250363) 1055 Talbot Street, St. Thomas TIA

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	170	40	237	110	240	55	552	165	514	398	38
Future Volume (veh/h)	106	170	40	237	110	240	55	552	165	514	398	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1900	1900	1900	1856	1900	1885	1767	1900	1900	1900	1885	1900
Adj Flow Rate, veh/h	108	173	41	242	112	245	56	563	168	524	406	39
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	3	0	1	9	0	0	0	1	0
Cap, veh/h	179	340	80	301	121	265	388	779	232	552	1560	149
Arrive On Green	0.05	0.23	0.23	0.05	0.23	0.23	0.04	0.28	0.28	0.23	0.47	0.47
Sat Flow, veh/h	1810	1483	351	1767	528	1155	1682	2742	816	1810	3303	316
Grp Volume(v), veh/h	108	0	214	242	0	357	56	370	361	524	219	226
Grp Sat Flow(s),veh/h/ln	1810	0	1834	1767	0	1683	1682	1805	1753	1810	1791	1828
Q Serve(g_s), s	4.8	0.0	10.6	5.0	0.0	21.5	2.4	19.2	19.3	21.3	7.6	7.7
Cycle Q Clear(g_c), s	4.8	0.0	10.6	5.0	0.0	21.5	2.4	19.2	19.3	21.3	7.6	7.7
Prop In Lane	1.00		0.19	1.00		0.69	1.00		0.47	1.00		0.17
Lane Grp Cap(c), veh/h	179	0	420	301	0	386	388	513	498	552	846	863
V/C Ratio(X)	0.60	0.00	0.51	0.80	0.00	0.93	0.14	0.72	0.72	0.95	0.26	0.26
Avail Cap(c_a), veh/h	179	0	424	301	0	389	404	609	591	560	932	951
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.3	0.0	34.9	38.7	0.0	39.2	24.6	33.4	33.5	22.5	16.5	16.5
Incr Delay (d2), s/veh	5.6	0.0	1.0	14.5	0.0	27.7	0.2	3.4	3.6	25.8	0.2	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.6	0.0	5.3	8.7	0.0	13.0	1.0	8.9	8.8	11.1	2.2	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	37.0	0.0	35.9	53.1	0.0	66.9	24.8	36.9	37.1	48.2	16.6	16.7
LnGrp LOS	D		D	D		E	C	D	D	D	B	B
Approach Vol, veh/h	322					599		787		969		
Approach Delay, s/veh	36.3					61.3		36.1		33.7		
Approach LOS	D					E		D		C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	28.5	35.5	10.0	29.8	9.0	55.0	10.0	29.8				
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0				
Max Green Setting (Gmax), s	24.0	35.0	5.0	24.0	5.0	54.0	5.0	24.0				
Max Q Clear Time (g_c+I1), s	23.3	21.3	7.0	12.6	4.4	9.7	6.8	23.5				
Green Ext Time (p_c), s	0.3	8.2	0.0	2.1	0.0	9.0	0.0	0.2				
Intersection Summary												
HCM 7th Control Delay, s/veh			40.9									
HCM 7th LOS			D									

Lanes, Volumes, Timings

Total Saturday Peak Hour

2: Northerly Site Access/Canadian Tire & Redan S (250363) 1055 Talbot Street, St. Thomas TIA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	614	132	48	424	18	70	0	108	19	0	93
Future Volume (vph)	119	614	132	48	424	18	70	0	108	19	0	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		15.0	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.977			0.994				0.850		0.888	
Flt Protected		0.993			0.995			0.950			0.991	
Satd. Flow (prot)	0	3541	0	0	3549	0	0	1825	1633	0	1688	0
Flt Permitted		0.993			0.995			0.950			0.991	
Satd. Flow (perm)	0	3541	0	0	3549	0	0	1825	1633	0	1688	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		86.9			115.7			87.5			121.4	
Travel Time (s)		6.3			8.3			6.3			8.7	
Confl. Peds. (#/hr)	3					3						
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%	2%	0%	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	129	667	143	52	461	20	76	0	117	21	0	101
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	939	0	0	533	0	0	76	117	0	122	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 61.8% ICU Level of Service B

Analysis Period (min) 15

Intersection												
Int Delay, s/veh	11.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔			↔	↔		↔↔	
Traffic Vol, veh/h	119	614	132	48	424	18	70	0	108	19	0	93
Future Vol, veh/h	119	614	132	48	424	18	70	0	108	19	0	93
Conflicting Peds, #/hr	3	0	0	0	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	15	-	-	-
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	2	0	0	0	0	1	0	0
Mvmt Flow	129	667	143	52	461	20	76	0	117	21	0	101
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	483	0	0	811	0	0	1333	1586	405	1170	1648	243
Stage 1	-	-	-	-	-	-	998	998	-	578	578	-
Stage 2	-	-	-	-	-	-	335	588	-	592	1070	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.52	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.52	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.52	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.51	4	3.3
Pot Cap-1 Maneuver	1090	-	-	824	-	-	114	109	600	149	100	764
Stage 1	-	-	-	-	-	-	265	324	-	471	504	-
Stage 2	-	-	-	-	-	-	658	499	-	462	300	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1087	-	-	824	-	-	78	85	600	94	78	761
Mov Cap-2 Maneuver	-	-	-	-	-	-	78	85	-	94	78	-
Stage 1	-	-	-	-	-	-	224	274	-	435	466	-
Stage 2	-	-	-	-	-	-	529	461	-	314	254	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.9			1.45			82.36			21.04		
HCM LOS							F			C		
Minor Lane/Major Mvmt	NBLn1 NBLn2		EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	78 600		397	-	-	334	-	-	345			
HCM Lane V/C Ratio	0.981 0.195		0.119	-	-	0.063	-	-	0.353			
HCM Ctrl Dly (s/v)	190.2 12.4		8.8	1	-	9.7	0.6	-	21			
HCM Lane LOS	F B		A	A	-	A	A	-	C			
HCM 95th %tile Q(veh)	5.2 0.7		0.4	-	-	0.2	-	-	1.6			