

APPENDIX G

Synchro Capacity Analysis and SIDRA Capacity Analysis Results

Lanes, Volumes, Timings
1: Tenth Line & Tenth Side Road

Existing AM
02/20/2025

	↖	→	↘	↙	←	↖	↙	↑	↘	↙	↓	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	1	257	247	109	180	21	19	14	26	130	206	6
Future Volume (vph)	1	257	247	109	180	21	19	14	26	130	206	6
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		0.934			0.991			0.941			0.998	
Flt Protected					0.983			0.984			0.981	
Satd. Flow (prot)	0	1764	0	0	1825	0	0	1779	0	0	1874	0
Flt Permitted					0.983			0.984			0.981	
Satd. Flow (perm)	0	1764	0	0	1825	0	0	1779	0	0	1874	0
Link Speed (k/h)		48			48			48			48	
Link Distance (m)		240.0			324.7			168.2			352.4	
Travel Time (s)		18.0			24.4			12.6			26.4	
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 (%)	100%	3%	0%	3%	2%	5%	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	1	271	260	115	189	22	20	15	27	137	217	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	532	0	0	326	0	0	62	0	0	360	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.3			3.3	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type: Other

Control Type: Roundabout

Intersection Capacity Utilization 80.5% ICU Level of Service D

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
1: Tenth Line & Tenth Side Road

Existing AM
02/20/2025

	↖	→	↘	↙	←	↖	↙	↑	↘	↙	↓	↘
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	1	257	247	109	180	21	19	14	26	130	206	6
Future Volume (veh/h)	1	257	247	109	180	21	19	14	26	130	206	6
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
Hourly flow rate (vph)	1	271	260	115	189	22	20	15	27	137	217	6
Approach Volume (veh/h)		532			326			62			360	
Crossing Volume (veh/h)		469			36			409			324	
High Capacity (veh/h)		957			1346			1004			1074	
High v/c (veh/h)		0.56			0.24			0.06			0.34	
Low Capacity (veh/h)		775			1126			817			880	
Low v/c (veh/h)		0.69			0.29			0.08			0.41	
Intersection Summary												
Maximum v/c High			0.56									
Maximum v/c Low			0.69									
Intersection Capacity Utilization		80.5%			ICU Level of Service					D		

Lanes, Volumes, Timings

2: Winston Churchill Blvd/Adamson Street South & Tenth Side Road

Existing AM

02/20/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	←	→	←	↑	↓	↘
Traffic Volume (vph)	296	127	10	198	434	295
Future Volume (vph)	296	127	10	198	434	295
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.3	3.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.959				0.945	
Flt Protected	0.966			0.997		
Satd. Flow (prot)	1695	0	0	1764	1705	0
Flt Permitted	0.966			0.942		
Satd. Flow (perm)	1695	0	0	1667	1705	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	23				36	
Link Speed (k/h)	48			48	48	
Link Distance (m)	348.4			182.6	433.4	
Travel Time (s)	26.1			13.7	32.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	3%	2%	10%	6%	1%	3%
Adj. Flow (vph)	312	134	11	208	457	311
Shared Lane Traffic (%)						
Lane Group Flow (vph)	446	0	0	219	768	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.04	1.04
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1		1	2	2	
Detector Template	Left		Left	Thru	Thru	
Leading Detector (m)	6.1		6.1	30.5	30.5	
Trailing Detector (m)	0.0		0.0	0.0	0.0	
Detector 1 Position(m)	0.0		0.0	0.0	0.0	
Detector 1 Size(m)	6.1		6.1	1.8	1.8	
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm		pm+pt	NA	NA	
Protected Phases			1	2	2	
Permitted Phases	4		2			
Detector Phase	4		1	2	2	

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TYLinSynchro 11 Report
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Lanes, Volumes, Timings

2: Winston Churchill Blvd/Adamson Street South & Tenth Side Road

Existing AM

02/20/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	12.0		5.0	8.0	8.0	
Minimum Split (s)	29.0		8.0	28.3	28.3	
Total Split (s)	50.0		10.0	50.0	50.0	
Total Split (%)	45.5%		9.1%	45.5%	45.5%	
Maximum Green (s)	42.3		7.0	42.7	42.7	
Yellow Time (s)	4.6		3.0	4.0	4.0	
All-Red Time (s)	3.1		0.0	3.3	3.3	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	7.7			7.3	7.3	
Lead/Lag			Lead	Lag	Lag	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	Min	Min	
Walk Time (s)	12.0			12.0	12.0	
Flash Dont Walk (s)	5.0			9.0	9.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effect Green (s)	26.0			43.0	43.0	
Actuated g/C Ratio	0.31			0.51	0.51	
v/c Ratio	0.83			0.26	0.86	
Control Delay	38.8			14.2	31.2	
Queue Delay	0.0			0.0	0.0	
Total Delay	38.8			14.2	31.2	
LOS	D			B	C	
Approach Delay	38.8			14.2	31.2	
Approach LOS	D			B	C	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 84.1

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 31.0

Intersection LOS: C

Intersection Capacity Utilization 77.5%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 2: Winston Churchill Blvd/Adamson Street South & Tenth Side Road

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Queues
2: Winston Churchill Blvd/Adamson Street South & Tenth Side Road

Existing AM
02/20/2025

	EBL	NBT	SBT
Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	446	219	768
v/c Ratio	0.83	0.26	0.86
Control Delay	38.8	14.2	31.2
Queue Delay	0.0	0.0	0.0
Total Delay	38.8	14.2	31.2
Queue Length 50th (m)	62.3	18.5	97.0
Queue Length 95th (m)	95.6	40.6	#209.1
Internal Link Dist (m)	324.4	158.6	409.4
Turn Bay Length (m)			
Base Capacity (vph)	869	852	889
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.51	0.26	0.86

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
2: Winston Churchill Blvd/Adamson Street South & Tenth Side Road

Existing AM
02/20/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	296	127	10	198	434	295
Future Volume (vph)	296	127	10	198	434	295
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.3	3.3
Total Lost time (s)	7.7			7.3	7.3	
Lane Util. Factor	1.00			1.00	1.00	
Flt	0.96			1.00	0.95	
Flt Protected	0.97			1.00	1.00	
Satd. Flow (prot)	1696			1765	1705	
Flt Permitted	0.97			0.94	1.00	
Satd. Flow (perm)	1696			1667	1705	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	312	134	11	208	457	311
RTOR Reduction (vph)	16	0	0	0	18	0
Lane Group Flow (vph)	430	0	0	219	750	0
Heavy Vehicles (%)	3%	2%	10%	6%	1%	3%
Turn Type	Perm		pm+pt	NA	NA	
Protected Phases			1	2	2	
Permitted Phases	4		2			
Actuated Green, G (s)	26.0			43.0	43.0	
Effective Green, g (s)	26.0			43.0	43.0	
Actuated g/C Ratio	0.31			0.51	0.51	
Clearance Time (s)	7.7			7.3	7.3	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	524			853	872	
v/s Ratio Prot					c0.44	
v/s Ratio Perm	c0.25			0.13		
v/c Ratio	0.82			0.26	0.86	
Uniform Delay, d1	26.8			11.5	17.9	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	10.0			0.2	8.7	
Delay (s)	36.8			11.7	26.6	
Level of Service	D			B	C	
Approach Delay (s)	36.8			11.7	26.6	
Approach LOS	D			B	C	

Intersection Summary

HCM 2000 Control Delay	27.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	84.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
3: Tenth Line & Danby Road/Street A

Existing AM
02/20/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰		↱	↰	↱		↰	↱		↰	↱	
Traffic Volume (vph)	1	0	156	0	0	0	32	17	0	0	178	2
Future Volume (vph)	1	0	156	0	0	0	32	17	0	0	178	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.7	2.8	3.7	3.7	3.7	3.3	3.5	3.7	3.7	3.5	3.5
Storage Length (m)	25.0		25.0	0.0		0.0	30.0		0.0	0.0		0.0
Storage Lanes	1		0	0		0	1		0	0		0
Taper Length (m)	23.0			2.5			21.0			7.6		
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
Ped Bike Factor												
Frt			0.850								0.999	
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1645	0	1443	0	1883	0	1678	1879	0	0	1877	0
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	1645	0	1443	0	1883	0	1678	1879	0	0	1877	0
Link Speed (k/h)		48			48			48			48	
Link Distance (m)		106.1			72.9			352.4			158.0	
Travel Time (s)		8.0			5.5			26.4			11.9	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	2%	2%	2%	2%	2%	4%	0%	2%	2%	0%	0%
Adj. Flow (vph)	1	0	171	0	0	0	35	19	0	0	196	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	0	171	0	0	0	35	19	0	0	198	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		2.8			2.8			3.3			3.3	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			1.6			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.13	0.99	1.13	0.99	0.99	0.99	1.04	1.01	0.99	0.99	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	26.3%											
ICU Level of Service	A											
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
3: Tenth Line & Danby Road/Street A

Existing AM
02/20/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	0	156	0	0	0	32	17	0	0	178	2
Future Volume (Veh/h)	1	0	156	0	0	0	32	17	0	0	178	2
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	1	0	171	0	0	0	35	19	0	0	196	2
Pedestrians	1											
Lane Width (m)	2.8											
Walking Speed (m/s)	1.1											
Percent Blockage	0											
Right turn flare (veh)												
Median type							None			None		
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	287	287	198	457	288	19	199				19	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	287	287	198	457	288	19	199				19	
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	100	100	80	100	100	100	97				100	
cM capacity (veh/h)	655	606	842	401	605	1059	1360				1597	
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1						
Volume Total	1	171	0	35	19	198						
Volume Left	1	0	0	35	0	0						
Volume Right	0	171	0	0	0	2						
cSH	655	842	1700	1360	1700	1597						
Volume to Capacity	0.00	0.20	0.00	0.03	0.01	0.00						
Queue Length 95th (m)	0.0	5.8	0.0	0.6	0.0	0.0						
Control Delay (s)	10.5	10.4	0.0	7.7	0.0	0.0						
Lane LOS	B	B	A	A								
Approach Delay (s)	10.4		0.0	5.0	0.0							
Approach LOS	B		A									
Intersection Summary												
Average Delay				4.8								
Intersection Capacity Utilization	26.3%			ICU Level of Service				A				
Analysis Period (min)	15											

Lanes, Volumes, Timings
4: Tenth Line/Argyll Road & Street E

Existing AM
02/20/2025

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↱			↱
Traffic Volume (vph)	0	0	18	0	0	180
Future Volume (vph)	0	0	18	0	0	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1883	0	1921	0	0	1921
Flt Permitted						
Satd. Flow (perm)	1883	0	1921	0	0	1921
Link Speed (k/h)	48		48			48
Link Distance (m)	67.3		347.4			55.0
Travel Time (s)	5.0		26.1			4.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	0%	2%	2%	0%
Adj. Flow (vph)	0	0	20	0	0	196
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	20	0	0	196
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 12.8%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
4: Tenth Line/Argyll Road & Street E

Existing AM
02/20/2025

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↱			↱
Traffic Volume (veh/h)	0	0	18	0	0	180
Future Volume (Veh/h)	0	0	18	0	0	180
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	20	0	0	196
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	216	20			20	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	216	20			20	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	772	1058			1596	
Direction, Lane #						
Volume Total	0	20	196			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1596			
Volume to Capacity	0.00	0.01	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS						
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			12.8%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
6: Tenth Side Road & Street B

Existing AM
02/20/2025

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Volume (vph)	0	413	305	0	0	0
Future Volume (vph)	0	413	305	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.7	3.7
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fit Protected						
Satd. Flow (prot)	0	1879	1879	0	1883	0
Fit Permitted						
Satd. Flow (perm)	0	1879	1879	0	1883	0
Link Speed (k/h)		48	48		48	
Link Distance (m)		324.7	348.4		203.4	
Travel Time (s)		24.4	26.1		15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	2%	2%	2%
Adj. Flow (vph)	0	449	332	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	449	332	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Stop	Stop		Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 25.1%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
6: Tenth Side Road & Street B

Existing AM
02/20/2025

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Volume (veh/h)	0	413	305	0	0	0
Future Volume (Veh/h)	0	413	305	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	449	332	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	166	0	0	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	166	0	0	0	0	
tC, single (s)	7.1	6.5	6.5	6.2	4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.0	4.0	3.3	2.2	
p0 queue free %	100	50	63	100	100	
cM capacity (veh/h)	569	900	900	1085	1623	
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	449	332	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	900	900	1700			
Volume to Capacity	0.50	0.37	0.00			
Queue Length 95th (m)	21.6	13.0	0.0			
Control Delay (s)	12.9	11.3	0.0			
Lane LOS	B	B				
Approach Delay (s)	12.9	11.3	0.0			
Approach LOS	B	B				
Intersection Summary						
Average Delay		12.2				
Intersection Capacity Utilization		25.1%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings
1: Tenth Line & Tenth Side Road

Existing PM
02/20/2025

	↖	→	↘	↙	←	↖	↙	↑	↗	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	1	196	44	42	208	89	192	194	140	40	52	3
Future Volume (vph)	1	196	44	42	208	89	192	194	140	40	52	3
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		0.975			0.964			0.964			0.996	
Flt Protected					0.994			0.982			0.979	
Satd. Flow (prot)	0	1873	0	0	1841	0	0	1809	0	0	1873	0
Flt Permitted					0.994			0.982			0.979	
Satd. Flow (perm)	0	1873	0	0	1841	0	0	1809	0	0	1873	0
Link Speed (k/h)		30			30			30			30	
Link Distance (m)		240.0			324.7			168.2			352.4	
Travel Time (s)		28.8			39.0			20.2			42.3	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%
Adj. Flow (vph)	1	209	47	45	221	95	204	206	149	43	55	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	257	0	0	361	0	0	559	0	0	101	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.3			3.3	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	60		60	60		60	60		60	60		60
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type: Other

Control Type: Roundabout

Intersection Capacity Utilization 77.7% ICU Level of Service D

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
1: Tenth Line & Tenth Side Road

Existing PM
02/20/2025

	↖	→	↘	↙	←	↖	↙	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	1	196	44	42	208	89	192	194	140	40	52	3
Future Volume (veh/h)	1	196	44	42	208	89	192	194	140	40	52	3
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	1	209	47	45	221	95	204	206	149	43	55	3
Approach Volume (veh/h)		257			361			559			101	
Crossing Volume (veh/h)		143			411			253			470	
High Capacity (veh/h)		1238			1002			1136			956	
High v/c (veh/h)		0.21			0.36			0.49			0.11	
Low Capacity (veh/h)		1028			816			935			775	
Low v/c (veh/h)		0.25			0.44			0.60			0.13	
Intersection Summary												
Maximum v/c High					0.49							
Maximum v/c Low					0.60							
Intersection Capacity Utilization		77.7%			ICU Level of Service					D		

Lanes, Volumes, Timings

2: Winston Churchill Blvd/Adamson Street South & Tenth Side Road

Existing PM

02/20/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	←	←	←	←	←	←
Traffic Volume (vph)	304	16	67	409	229	314
Future Volume (vph)	304	16	67	409	229	314
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.3	3.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.993			0.922		
Flt Protected	0.955			0.993		
Satd. Flow (prot)	1765	0	0	1850	1653	0
Flt Permitted	0.955			0.859		
Satd. Flow (perm)	1765	0	0	1600	1653	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	2				86	
Link Speed (k/h)	30			30	30	
Link Distance (m)	348.4			182.6	433.4	
Travel Time (s)	41.8			21.9	52.0	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	0%	0%	1%	3%	2%
Adj. Flow (vph)	310	16	68	417	234	320
Shared Lane Traffic (%)						
Lane Group Flow (vph)	326	0	0	485	554	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.04	1.04
Turning Speed (k/h)	97	97	97			97
Number of Detectors	1		1	2	2	
Detector Template	Left		Left	Thru	Thru	
Leading Detector (m)	6.1		6.1	30.5	30.5	
Trailing Detector (m)	0.0		0.0	0.0	0.0	
Detector 1 Position(m)	0.0		0.0	0.0	0.0	
Detector 1 Size(m)	6.1		6.1	1.8	1.8	
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm		pm+pt	NA	NA	
Protected Phases			1	2	2	
Permitted Phases	4		2			
Detector Phase	4		1	2	2	

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TYLinSynchro 11 Report
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Lanes, Volumes, Timings

2: Winston Churchill Blvd/Adamson Street South & Tenth Side Road

Existing PM

02/20/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	12.0		5.0	8.0	8.0	
Minimum Split (s)	29.0		8.0	28.3	28.3	
Total Split (s)	40.0		10.0	60.0	60.0	
Total Split (%)	36.4%		9.1%	54.5%	54.5%	
Maximum Green (s)	32.3		7.0	52.7	52.7	
Yellow Time (s)	4.6		3.0	4.0	4.0	
All-Red Time (s)	3.1		0.0	3.3	3.3	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	7.7			7.3	7.3	
Lead/Lag			Lead	Lag	Lag	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	Max	Max	
Walk Time (s)	12.0			12.0	12.0	
Flash Dont Walk (s)	5.0			9.0	9.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effect Green (s)	21.3			52.9	52.9	
Actuated g/C Ratio	0.24			0.59	0.59	
v/c Ratio	0.77			0.51	0.55	
Control Delay	44.2			14.1	12.5	
Queue Delay	0.0			0.0	0.0	
Total Delay	44.2			14.1	12.5	
LOS	D			B	B	
Approach Delay	44.2			14.1	12.5	
Approach LOS	D			B	B	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 89.3

Natural Cycle: 75

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 20.6

Intersection LOS: C

Intersection Capacity Utilization 92.9%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 2: Winston Churchill Blvd/Adamson Street South & Tenth Side Road

15108 Fieldgate Georgetown
TYLinSynchro 11 Report
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Queues
2: Winston Churchill Blvd/Adamson Street South & Tenth Side Road

Existing PM
02/20/2025

	EBL	NBT	SBT
Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	326	485	554
v/c Ratio	0.77	0.51	0.55
Control Delay	44.2	14.1	12.5
Queue Delay	0.0	0.0	0.0
Total Delay	44.2	14.1	12.5
Queue Length 50th (m)	51.8	44.5	43.4
Queue Length 95th (m)	79.5	86.5	88.0
Internal Link Dist (m)	324.4	158.6	409.4
Turn Bay Length (m)			
Base Capacity (vph)	642	947	1014
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.51	0.51	0.55
Intersection Summary			

HCM Signalized Intersection Capacity Analysis
2: Winston Churchill Blvd/Adamson Street South & Tenth Side Road

Existing PM
02/20/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	304	16	67	409	229	314
Future Volume (vph)	304	16	67	409	229	314
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.3	3.3
Total Lost time (s)	7.7			7.3	7.3	
Lane Util. Factor	1.00			1.00	1.00	
Flt	0.99			1.00	0.92	
Flt Protected	0.95			0.99	1.00	
Satd. Flow (prot)	1765			1850	1653	
Flt Permitted	0.95			0.86	1.00	
Satd. Flow (perm)	1765			1601	1653	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	310	16	68	417	234	320
RTOR Reduction (vph)	2	0	0	0	35	0
Lane Group Flow (vph)	324	0	0	485	519	0
Heavy Vehicles (%)	1%	0%	0%	1%	3%	2%
Turn Type	Perm		pm+pt	NA	NA	
Protected Phases			1	2	2	
Permitted Phases	4		2			
Actuated Green, G (s)	21.3			52.9	52.9	
Effective Green, g (s)	21.3			52.9	52.9	
Actuated g/C Ratio	0.24			0.59	0.59	
Clearance Time (s)	7.7			7.3	7.3	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	421			949	980	
v/s Ratio Prot					c0.31	
v/s Ratio Perm	c0.18			0.30		
v/c Ratio	0.77			0.51	0.53	
Uniform Delay, d1	31.7			10.6	10.8	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	8.5			0.5	2.0	
Delay (s)	40.1			11.1	12.8	
Level of Service	D			B	B	
Approach Delay (s)	40.1			11.1	12.8	
Approach LOS	D			B	B	
Intersection Summary						
HCM 2000 Control Delay			18.7		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.62			
Actuated Cycle Length (s)			89.2		Sum of lost time (s)	18.0
Intersection Capacity Utilization			92.9%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings
3: Tenth Line & Danby Road/Street A

Existing PM
02/20/2025

	←	→	↙	↘	←	↙	↘	→	↙	↘	→	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↙		↘		↔		↙	↘			↔		
Traffic Volume (vph)	3	0	48	0	0	0	116	184	0	0	42	7	
Future Volume (vph)	3	0	48	0	0	0	116	184	0	0	42	7	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (m)	2.8	3.7	2.8	3.7	3.7	3.7	3.3	3.5	3.7	3.7	3.5	3.5	
Storage Length (m)	25.0		25.0	0.0		0.0	30.0		0.0	0.0		0.0	
Storage Lanes	1		0	0		0	1		0	0		0	
Taper Length (m)	23.0			2.5			21.0			7.6			
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	
Ped Bike Factor													
Frt			0.850								0.981		
Flt Protected	0.950						0.950						
Satd. Flow (prot)	1645	0	1471	0	1883	0	1745	1879	0	0	1806	0	
Flt Permitted	0.950						0.950						
Satd. Flow (perm)	1645	0	1471	0	1883	0	1745	1879	0	0	1806	0	
Link Speed (k/h)		30			30			30			30		
Link Distance (m)		106.1			72.9			352.4			158.0		
Travel Time (s)		12.7			8.7			42.3			19.0		
Confl. Peds. (#/hr)							3					3	
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%	2%	0%	2%	2%	2%	0%	0%	2%	2%	0%	15%	
Adj. Flow (vph)	3	0	51	0	0	0	122	194	0	0	44	7	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	3	0	51	0	0	0	122	194	0	0	51	0	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No	
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(m)		2.8			2.8			3.3			3.3		
Link Offset(m)		0.0			0.0			0.0			0.0		
Crosswalk Width(m)		4.9			1.6			4.9			4.9		
Two way Left Turn Lane													
Headway Factor	1.13	0.99	1.13	0.99	0.99	0.99	1.04	1.01	0.99	0.99	1.01	1.01	
Turning Speed (k/h)	60		60	97		97	60		97	97		60	
Sign Control		Stop			Stop			Free			Free		
Intersection Summary													
Area Type:	Other												
Control Type:	Unsignalized												
Intersection Capacity Utilization	23.1%												
ICU Level of Service	A												
Analysis Period (min)	15												

HCM Unsignalized Intersection Capacity Analysis
3: Tenth Line & Danby Road/Street A

Existing PM
02/20/2025

	←	→	↙	↘	←	↙	↘	→	↙	↘	→	↙	↘
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↙		↘		↔		↙	↘			↔		
Traffic Volume (veh/h)	3	0	48	0	0	0	116	184	0	0	42	7	
Future Volume (Veh/h)	3	0	48	0	0	0	116	184	0	0	42	7	
Sign Control	Stop			Stop			Free			Free			
Grade	0%			0%			0%			0%			
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	
Hourly flow rate (vph)	3	0	51	0	0	0	122	194	0	0	44	7	
Pedestrians	3												
Lane Width (m)	2.8												
Walking Speed (m/s)	3.5												
Percent Blockage	0												
Right turn flare (veh)													
Median type	None												
Median storage veh													
Upstream signal (m)													
pX, platoon unblocked													
vC, conflicting volume	488	488	50	536	492	194	54			194			
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	488	488	50	536	492	194	54			194			
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1			
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2			
p0 queue free %	99	100	95	100	100	100	92			100			
cM capacity (veh/h)	463	442	1023	406	440	847	1563			1379			
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1							
Volume Total	3	51	0	122	194	51							
Volume Left	3	0	0	122	0	0							
Volume Right	0	51	0	0	0	7							
cSH	463	1023	1700	1563	1700	1379							
Volume to Capacity	0.01	0.05	0.00	0.08	0.11	0.00							
Queue Length 95th (m)	0.1	1.2	0.0	1.9	0.0	0.0							
Control Delay (s)	12.8	8.7	0.0	7.5	0.0	0.0							
Lane LOS	B	A	A	A									
Approach Delay (s)	8.9		0.0	2.9		0.0							
Approach LOS	A		A										
Intersection Summary													
Average Delay	3.3												
Intersection Capacity Utilization	23.1%												
ICU Level of Service	A												
Analysis Period (min)	15												

Lanes, Volumes, Timings
4: Tenth Line/Argyll Road & Street E

Existing PM
02/20/2025

	←	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↘
Traffic Volume (vph)	0	0	187	0	0	49
Future Volume (vph)	0	0	187	0	0	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1883	0	1921	0	0	1921
Flt Permitted						
Satd. Flow (perm)	1883	0	1921	0	0	1921
Link Speed (k/h)	30		30			30
Link Distance (m)	67.3		347.4			55.0
Travel Time (s)	8.1		41.7			6.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	0%	2%	2%	0%
Adj. Flow (vph)	0	0	203	0	0	53
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	203	0	0	53
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97		97	97	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 13.2%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
4: Tenth Line/Argyll Road & Street E

Existing PM
02/20/2025

	←	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↘
Traffic Volume (veh/h)	0	0	187	0	0	49
Future Volume (Veh/h)	0	0	187	0	0	49
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	203	0	0	53
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	256	203			203	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	256	203			203	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	733	838			1369	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	0	203	53			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1369			
Volume to Capacity	0.00	0.12	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			13.2%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
6: Tenth Side Road & Street B

Existing PM
02/20/2025

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Volume (vph)	0	376	381	0	0	0
Future Volume (vph)	0	376	381	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.7	3.7
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fit Protected						
Satd. Flow (prot)	0	1879	1879	0	1883	0
Fit Permitted						
Satd. Flow (perm)	0	1879	1879	0	1883	0
Link Speed (k/h)		30	30		30	
Link Distance (m)		324.7	348.4		203.4	
Travel Time (s)		39.0	41.8		24.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	2%	2%	2%
Adj. Flow (vph)	0	409	414	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	409	414	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	0.99	0.99
Turning Speed (k/h)	97			97	97	
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 23.4%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
6: Tenth Side Road & Street B

Existing PM
02/20/2025

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Volume (veh/h)	0	376	381	0	0	0
Future Volume (Veh/h)	0	376	381	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	409	414	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			348			
pX, platoon unblocked						
vC, conflicting volume	414				823	414
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	414				823	414
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1145				343	638
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	409	414	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1145	1700	1700			
Volume to Capacity	0.00	0.24	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization		23.4%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings
2: Winston Churchill Blvd/Adamson Street South & Tenth Side Road
Future Background 2029 AM
02/24/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Volume (vph)	312	133	11	207	452	309
Future Volume (vph)	312	133	11	207	452	309
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.3	3.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.960				0.945	
Flt Protected	0.966			0.997		
Satd. Flow (prot)	1697	0	0	1764	1705	0
Flt Permitted	0.966			0.891		
Satd. Flow (perm)	1697	0	0	1576	1705	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	20				44	
Link Speed (k/h)	48			48	48	
Link Distance (m)	348.4			182.6	433.4	
Travel Time (s)	26.1			13.7	32.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	3%	2%	10%	6%	1%	3%
Adj. Flow (vph)	328	140	12	218	476	325
Shared Lane Traffic (%)						
Lane Group Flow (vph)	468	0	0	230	801	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.04	1.04
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1		1	2	2	
Detector Template	Left		Left	Thru	Thru	
Leading Detector (m)	6.1		6.1	30.5	30.5	
Trailing Detector (m)	0.0		0.0	0.0	0.0	
Detector 1 Position(m)	0.0		0.0	0.0	0.0	
Detector 1 Size(m)	6.1		6.1	1.8	1.8	
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm		pm+pt	NA	NA	
Protected Phases			1	2	2	
Permitted Phases	4		2			
Detector Phase	4		1	2	2	

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TYLin

Synchro 11 Report
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Lanes, Volumes, Timings
2: Winston Churchill Blvd/Adamson Street South & Tenth Side Road
Future Background 2029 AM
02/24/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	12.0		5.0	8.0	8.0	
Minimum Split (s)	30.7		9.5	30.3	30.3	
Total Split (s)	39.0		9.5	61.5	61.5	
Total Split (%)	35.5%		8.6%	55.9%	55.9%	
Maximum Green (s)	31.3		6.5	54.2	54.2	
Yellow Time (s)	4.6		3.0	4.0	4.0	
All-Red Time (s)	3.1		0.0	3.3	3.3	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	7.7			7.3	7.3	
Lead/Lag			Lead	Lag	Lag	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	Min	Min	
Walk Time (s)	12.0			12.0	12.0	
Flash Dont Walk (s)	5.0			9.0	9.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effect Green (s)	29.7			49.2	49.2	
Actuated g/C Ratio	0.32			0.52	0.52	
v/c Ratio	0.85			0.28	0.88	
Control Delay	46.4			13.7	31.5	
Queue Delay	0.0			0.0	0.0	
Total Delay	46.4			13.7	31.5	
LOS	D			B	C	
Approach Delay	46.4			13.7	31.5	
Approach LOS	D			B	C	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 94.1

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 33.4

Intersection LOS: C

Intersection Capacity Utilization 80.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 2: Winston Churchill Blvd/Adamson Street South & Tenth Side Road



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TYLin

Synchro 11 Report
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Queues
2: Winston Churchill Blvd/Adamson Street South & Tenth Side Road
Future Background 2029 AM
02/24/2025

	EBL	NBT	SBT
Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	468	230	801
v/c Ratio	0.85	0.28	0.88
Control Delay	46.4	13.7	31.5
Queue Delay	0.0	0.0	0.0
Total Delay	46.4	13.7	31.5
Queue Length 50th (m)	82.2	23.0	120.4
Queue Length 95th (m)	#137.0	37.0	#200.7
Internal Link Dist (m)	324.4	158.6	409.4
Turn Bay Length (m)			
Base Capacity (vph)	586	921	1014
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.80	0.25	0.79

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
2: Winston Churchill Blvd/Adamson Street South & Tenth Side Road
Future Background 2029 AM
02/24/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	312	133	11	207	452	309
Future Volume (vph)	312	133	11	207	452	309
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.3	3.3
Total Lost time (s)	7.7			7.3	7.3	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.96			1.00	0.95	
Flt Protected	0.97			1.00	1.00	
Satd. Flow (prot)	1696			1764	1705	
Flt Permitted	0.97			0.89	1.00	
Satd. Flow (perm)	1696			1577	1705	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	328	140	12	218	476	325
RTOR Reduction (vph)	14	0	0	0	21	0
Lane Group Flow (vph)	454	0	0	230	780	0
Heavy Vehicles (%)	3%	2%	10%	6%	1%	3%
Turn Type	Perm		pm+pt	NA	NA	
Protected Phases			1	2	2	
Permitted Phases	4		2			
Actuated Green, G (s)	29.7			49.2	49.2	
Effective Green, g (s)	29.7			49.2	49.2	
Actuated g/C Ratio	0.32			0.52	0.52	
Clearance Time (s)	7.7			7.3	7.3	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	536			826	893	
v/s Ratio Prot					c0.46	
v/s Ratio Perm	c0.27			0.15		
v/c Ratio	0.85			0.28	0.87	
Uniform Delay, d1	30.0			12.5	19.6	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	11.9			0.2	9.5	
Delay (s)	41.8			12.6	29.1	
Level of Service	D			B	C	
Approach Delay (s)	41.8			12.6	29.1	
Approach LOS	D			B	C	

Intersection Summary

HCM 2000 Control Delay	30.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	93.9	Sum of lost time (s)	18.0
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
3: Tenth Line & Danby Road/Street A

Future Background 2029 AM
02/24/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰		↱	↰	↱		↰	↱		↰	↱	
Traffic Volume (vph)	2	0	183	0	0	0	38	20	0	0	209	3
Future Volume (vph)	2	0	183	0	0	0	38	20	0	0	209	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.7	2.8	3.7	3.7	3.7	3.3	3.5	3.7	3.7	3.5	3.5
Storage Length (m)	25.0		25.0	0.0		0.0	30.0		0.0	0.0		0.0
Storage Lanes	1		0	0		0	1		0	0		0
Taper Length (m)	23.0			2.5			21.0			7.6		
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
Ped Bike Factor												
Frt			0.850								0.998	
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1645	0	1443	0	1883	0	1678	1879	0	0	1875	0
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	1645	0	1443	0	1883	0	1678	1879	0	0	1875	0
Link Speed (k/h)		48			48			48			48	
Link Distance (m)		106.1			72.9			352.4			158.0	
Travel Time (s)		8.0			5.5			26.4			11.9	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	2%	2%	2%	2%	2%	4%	0%	2%	2%	0%	0%
Adj. Flow (vph)	2	0	201	0	0	0	42	22	0	0	230	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	2	0	201	0	0	0	42	22	0	0	233	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		2.8			2.8			3.3			3.3	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			1.6			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.13	0.99	1.13	0.99	0.99	0.99	1.04	1.01	0.99	0.99	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	29.3%											
ICU Level of Service	A											
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
3: Tenth Line & Danby Road/Street A

Future Background 2029 AM
02/24/2025

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	2	0	183	0	0	0	38	20	0	0	209	3	
Future Volume (Veh/h)	2	0	183	0	0	0	38	20	0	0	209	3	
Sign Control	Stop			Stop			Free			Free			
Grade	0%			0%			0%			0%			
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	
Hourly flow rate (vph)	2	0	201	0	0	0	42	22	0	0	230	3	
Pedestrians	1												
Lane Width (m)	2.8												
Walking Speed (m/s)	1.1												
Percent Blockage	0												
Right turn flare (veh)													
Median type	None										None		
Median storage veh													
Upstream signal (m)													
pX, platoon unblocked													
vC, conflicting volume	338	338	232	538	340	22	234				22		
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	338	338	232	538	340	22	234				22		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1		
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2		
p0 queue free %	100	100	75	100	100	100	97				100		
cM capacity (veh/h)	603	564	806	332	563	1055	1321				1593		
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1							
Volume Total	2	201	0	42	22	233							
Volume Left	2	0	0	42	0	0							
Volume Right	0	201	0	0	0	3							
cSH	603	806	1700	1321	1700	1593							
Volume to Capacity	0.00	0.25	0.00	0.03	0.01	0.00							
Queue Length 95th (m)	0.1	7.5	0.0	0.7	0.0	0.0							
Control Delay (s)	11.0	10.9	0.0	7.8	0.0	0.0							
Lane LOS	B	B	A	A									
Approach Delay (s)	10.9		0.0	5.1		0.0							
Approach LOS	B		A										
Intersection Summary													
Average Delay	5.1												
Intersection Capacity Utilization	29.3%			ICU Level of Service			A						
Analysis Period (min)	15												

Lanes, Volumes, Timings
4: Tenth Line/Argyll Road & Street E

Future Background 2029 AM
02/24/2025

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (vph)	0	0	22	0	0	211
Future Volume (vph)	0	0	22	0	0	211
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1921	0	1921	0	0	1921
Flt Permitted						
Satd. Flow (perm)	1921	0	1921	0	0	1921
Link Speed (k/h)	48		48			48
Link Distance (m)	67.3		347.4			55.0
Travel Time (s)	5.0		26.1			4.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	0	24	0	0	229
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	24	0	0	229
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 14.4%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
4: Tenth Line/Argyll Road & Street E

Future Background 2029 AM
02/24/2025

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (veh/h)	0	0	22	0	0	211
Future Volume (Veh/h)	0	0	22	0	0	211
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	24	0	0	229
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	253	24			24	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	253	24			24	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	740	1058			1604	
Direction, Lane #						
Volume Total	0	24	229			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1604			
Volume to Capacity	0.00	0.01	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS						
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			14.4%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
6: Tenth Side Road & Street B

Future Background 2029 AM
02/24/2025

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	433	320	0	0	0
Future Volume (vph)	0	433	320	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.7	3.7
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fit						
Fit Protected						
Satd. Flow (prot)	0	1824	1842	0	1883	0
Fit Permitted						
Satd. Flow (perm)	0	1824	1842	0	1883	0
Link Speed (k/h)		48	48		48	
Link Distance (m)		324.7	348.4		203.4	
Travel Time (s)		24.4	26.1		15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	3%	2%	0%	2%	2%
Adj. Flow (vph)	0	471	348	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	471	348	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 26.1%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
6: Tenth Side Road & Street B

Future Background 2029 AM
02/24/2025

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	433	320	0	0	0
Future Volume (Veh/h)	0	433	320	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	471	348	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			348			
pX, platoon unblocked						
vC, conflicting volume	348				819	348
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	348				819	348
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1222				345	695
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	471	348	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1222	1700	1700			
Volume to Capacity	0.00	0.20	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
Intersection Summary						
Average Delay		0.0				
Intersection Capacity Utilization		26.1%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings
2: Winston Churchill Blvd/Adamson Street South & Tenth Side Road
Future Background 2029 PM
02/24/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	←	←	←	←	←	←
Traffic Volume (vph)	320	17	70	426	239	330
Future Volume (vph)	320	17	70	426	239	330
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.3	3.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.993			0.922		
Flt Protected	0.955			0.993		
Satd. Flow (prot)	1765	0	0	1850	1653	0
Flt Permitted	0.955			0.815		
Satd. Flow (perm)	1765	0	0	1518	1653	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	2				87	
Link Speed (k/h)	30			30	30	
Link Distance (m)	348.4			182.6	433.4	
Travel Time (s)	41.8			21.9	52.0	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	0%	0%	1%	3%	2%
Adj. Flow (vph)	327	17	71	435	244	337
Shared Lane Traffic (%)						
Lane Group Flow (vph)	344	0	0	506	581	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.04	1.04
Turning Speed (k/h)	97	97	97			97
Number of Detectors	1		1	2	2	
Detector Template	Left		Left	Thru	Thru	
Leading Detector (m)	6.1		6.1	30.5	30.5	
Trailing Detector (m)	0.0		0.0	0.0	0.0	
Detector 1 Position(m)	0.0		0.0	0.0	0.0	
Detector 1 Size(m)	6.1		6.1	1.8	1.8	
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm		pm+pt	NA	NA	
Protected Phases			1	2	2	
Permitted Phases	4		2			
Detector Phase	4		1	2	2	

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TYLin

Synchro 11 Report
Page 3

Lanes, Volumes, Timings
2: Winston Churchill Blvd/Adamson Street South & Tenth Side Road
Future Background 2029 PM
02/24/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	12.0		5.0	8.0	8.0	
Minimum Split (s)	30.7		9.5	30.3	30.3	
Total Split (s)	40.0		10.0	60.0	60.0	
Total Split (%)	36.4%		9.1%	54.5%	54.5%	
Maximum Green (s)	32.3		7.0	52.7	52.7	
Yellow Time (s)	4.6		3.0	4.0	4.0	
All-Red Time (s)	3.1		0.0	3.3	3.3	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	7.7			7.3	7.3	
Lead/Lag			Lead	Lag	Lag	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	Max	Max	
Walk Time (s)	12.0			12.0	12.0	
Flash Dont Walk (s)	5.0			9.0	9.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effect Green (s)	22.4			52.9	52.9	
Actuated g/C Ratio	0.25			0.59	0.59	
v/c Ratio	0.78			0.57	0.58	
Control Delay	44.5			16.1	13.7	
Queue Delay	0.0			0.0	0.0	
Total Delay	44.5			16.1	13.7	
LOS	D			B	B	
Approach Delay	44.5			16.1	13.7	
Approach LOS	D			B	B	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 90.4

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 21.9

Intersection LOS: C

Intersection Capacity Utilization 96.4%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 2: Winston Churchill Blvd/Adamson Street South & Tenth Side Road



15108 Fieldgate Georgetown
TYLin

Synchro 11 Report
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Queues
2: Winston Churchill Blvd/Adamson Street South & Tenth Side Road
Future Background 2029 PM
02/24/2025

	EBL	NBT	SBT
Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	344	506	581
v/c Ratio	0.78	0.57	0.58
Control Delay	44.5	16.1	13.7
Queue Delay	0.0	0.0	0.0
Total Delay	44.5	16.1	13.7
Queue Length 50th (m)	55.3	50.2	48.7
Queue Length 95th (m)	84.3	99.1	98.9
Internal Link Dist (m)	324.4	158.6	409.4
Turn Bay Length (m)			
Base Capacity (vph)	634	888	1003
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.54	0.57	0.58
Intersection Summary			

HCM Signalized Intersection Capacity Analysis
2: Winston Churchill Blvd/Adamson Street South & Tenth Side Road
Future Background 2029 PM
02/24/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	320	17	70	426	239	330
Future Volume (vph)	320	17	70	426	239	330
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.3	3.3
Total Lost time (s)	7.7			7.3	7.3	
Lane Util. Factor	1.00			1.00	1.00	
Flt	0.99			1.00	0.92	
Flt Protected	0.95			0.99	1.00	
Satd. Flow (prot)	1765			1850	1653	
Flt Permitted	0.95			0.81	1.00	
Satd. Flow (perm)	1765			1518	1653	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	327	17	71	435	244	337
RTOR Reduction (vph)	2	0	0	0	36	0
Lane Group Flow (vph)	342	0	0	506	545	0
Heavy Vehicles (%)	1%	0%	0%	1%	3%	2%
Turn Type	Perm		pm+pt	NA	NA	
Protected Phases			1	2	2	
Permitted Phases	4		2			
Actuated Green, G (s)	22.4			52.9	52.9	
Effective Green, g (s)	22.4			52.9	52.9	
Actuated g/C Ratio	0.25			0.59	0.59	
Clearance Time (s)	7.7			7.3	7.3	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	437			889	968	
v/s Ratio Prot					0.33	
v/s Ratio Perm	c0.19			c0.33		
v/c Ratio	0.78			0.57	0.56	
Uniform Delay, d1	31.7			11.6	11.6	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	8.9			0.8	2.4	
Delay (s)	40.6			12.5	13.9	
Level of Service	D			B	B	
Approach Delay (s)	40.6			12.5	13.9	
Approach LOS	D			B	B	
Intersection Summary						
HCM 2000 Control Delay			19.8		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.66			
Actuated Cycle Length (s)			90.3		Sum of lost time (s)	18.0
Intersection Capacity Utilization			96.4%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings
3: Tenth Line & Danby Road/Street A

Future Background 2029 PM
02/24/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰		↱	↰	↱		↰	↱		↰	↱	
Traffic Volume (vph)	4	0	57	0	0	0	136	216	0	0	50	9
Future Volume (vph)	4	0	57	0	0	0	136	216	0	0	50	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.7	2.8	3.7	3.7	3.7	3.3	3.5	3.7	3.7	3.5	3.5
Storage Length (m)	25.0		25.0	0.0		0.0	30.0		0.0	0.0		0.0
Storage Lanes	1		0	0		0	1		0	0		0
Taper Length (m)	23.0			2.5			21.0			7.6		
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
Ped Bike Factor												
Frt			0.850								0.980	
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1645	0	1471	0	1883	0	1745	1879	0	0	1802	0
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	1645	0	1471	0	1883	0	1745	1879	0	0	1802	0
Link Speed (k/h)		30			30			30			30	
Link Distance (m)		106.1			72.9			352.4			158.0	
Travel Time (s)		12.7			8.7			42.3			19.0	
Confl. Peds. (#/hr)							3					3
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%	2%	0%	2%	2%	2%	0%	0%	2%	2%	0%	15%
Adj. Flow (vph)	4	0	60	0	0	0	143	227	0	0	53	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	0	60	0	0	0	143	227	0	0	62	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		2.8			2.8			3.3			3.3	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			1.6			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.13	0.99	1.13	0.99	0.99	0.99	1.04	1.01	0.99	0.99	1.01	1.01
Turning Speed (k/h)	60		60	97		97	60		97	97		60
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	24.2%											
ICU Level of Service	A											
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
3: Tenth Line & Danby Road/Street A

Future Background 2029 PM
02/24/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	0	57	0	0	0	136	216	0	0	50	9
Future Volume (Veh/h)	4	0	57	0	0	0	136	216	0	0	50	9
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
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
Hourly flow rate (vph)	4	0	60	0	0	0	143	227	0	0	53	9
Pedestrians	3											
Lane Width (m)	2.8											
Walking Speed (m/s)	3.5											
Percent Blockage	0											
Right turn flare (veh)												
Median type	None								None			
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	574	574	60	630	578	227	65				227	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	574	574	60	630	578	227	65				227	
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	99	100	94	100	100	100	91				100	
cM capacity (veh/h)	402	389	1010	344	387	812	1549				1341	
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1						
Volume Total	4	60	0	143	227	62						
Volume Left	4	0	0	143	0	0						
Volume Right	0	60	0	0	0	9						
cSH	402	1010	1700	1549	1700	1341						
Volume to Capacity	0.01	0.06	0.00	0.09	0.13	0.00						
Queue Length 95th (m)	0.2	1.4	0.0	2.3	0.0	0.0						
Control Delay (s)	14.0	8.8	0.0	7.6	0.0	0.0						
Lane LOS	B	A	A	A								
Approach Delay (s)	9.1	0.0		2.9	0.0							
Approach LOS	A	A										
Intersection Summary												
Average Delay	3.4											
Intersection Capacity Utilization	24.2%			ICU Level of Service				A				
Analysis Period (min)	15											

Lanes, Volumes, Timings
4: Tenth Line/Argyll Road & Street E

Future Background 2029 PM
02/24/2025

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↘
Traffic Volume (vph)	0	0	219	0	0	58
Future Volume (vph)	0	0	219	0	0	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1921	0	1921	0	0	1921
Flt Permitted						
Satd. Flow (perm)	1921	0	1921	0	0	1921
Link Speed (k/h)	30		30			30
Link Distance (m)	67.3		347.4			55.0
Travel Time (s)	8.1		41.7			6.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	0	238	0	0	63
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	238	0	0	63
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97		97	97	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 14.9%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
4: Tenth Line/Argyll Road & Street E

Future Background 2029 PM
02/24/2025

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↘
Traffic Volume (veh/h)	0	0	219	0	0	58
Future Volume (Veh/h)	0	0	219	0	0	58
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	238	0	0	63
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	301	238			238	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	301	238			238	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	695	806			1341	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	0	238	63			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1341			
Volume to Capacity	0.00	0.14	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			14.9%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
6: Tenth Side Road & Street B

Future Background 2029 PM
02/24/2025

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Volume (vph)	0	395	400	0	0	0
Future Volume (vph)	0	395	400	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.7	3.7
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fit Protected						
Satd. Flow (prot)	0	1860	1879	0	1883	0
Fit Permitted						
Satd. Flow (perm)	0	1860	1879	0	1883	0
Link Speed (k/h)		30	30		30	
Link Distance (m)		324.7	348.4		203.4	
Travel Time (s)		39.0	41.8		24.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	0%	0%	2%	2%
Adj. Flow (vph)	0	429	435	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	429	435	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	0.99	0.99
Turning Speed (k/h)	97			97	97	
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 24.4%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
6: Tenth Side Road & Street B

Future Background 2029 PM
02/24/2025

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Volume (veh/h)	0	395	400	0	0	0
Future Volume (Veh/h)	0	395	400	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	429	435	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			348			
pX, platoon unblocked						
vC, conflicting volume	435				864	435
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	435				864	435
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1135				325	621
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	429	435	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1135	1700	1700			
Volume to Capacity	0.00	0.26	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			24.4%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
3: Tenth Line & Danby Road/Street A

2031 Future Background AM
02/24/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔	↔	↔	↔			↔	↔
Traffic Volume (vph)	2	0	198	0	0	0	41	22	0	0	226	3
Future Volume (vph)	2	0	198	0	0	0	41	22	0	0	226	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.7	2.8	3.7	3.7	3.7	3.3	3.5	3.7	3.7	3.5	3.5
Storage Length (m)	25.0		25.0	0.0		0.0	30.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (m)	23.0			2.5			21.0			7.6		
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
Ped Bike Factor												
Frt		0.850									0.998	
Flt Protected		0.950					0.950					
Satd. Flow (prot)	0	1825	1443	0	1883	0	1678	1879	0	0	1875	0
Flt Permitted		0.950					0.950					
Satd. Flow (perm)	0	1825	1443	0	1883	0	1678	1879	0	0	1875	0
Link Speed (k/h)		48			48			48			48	
Link Distance (m)		106.1			72.9			352.4			158.0	
Travel Time (s)		8.0			5.5			26.4			11.9	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	2%	2%	2%	2%	2%	4%	0%	2%	2%	0%	0%
Adj. Flow (vph)	2	0	218	0	0	0	45	24	0	0	248	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2	218	0	0	0	45	24	0	0	251	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.3			3.3	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			1.6			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.13	0.99	1.13	0.99	0.99	0.99	1.04	1.01	0.99	0.99	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	31.0%											
ICU Level of Service	A											
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
3: Tenth Line & Danby Road/Street A

2031 Future Background AM
02/24/2025

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	2	0	198	0	0	0	41	22	0	0	226	3	
Future Volume (Veh/h)	2	0	198	0	0	0	41	22	0	0	226	3	
Sign Control		Stop			Stop			Free			Free		
Grade		0%			0%			0%			0%		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	
Hourly flow rate (vph)	2	0	218	0	0	0	45	24	0	0	248	3	
Pedestrians		1											
Lane Width (m)		3.2											
Walking Speed (m/s)		1.1											
Percent Blockage		0											
Right turn flare (veh)													
Median type								None			None		
Median storage veh													
Upstream signal (m)													
pX, platoon unblocked													
vC, conflicting volume	364	364	250	582	366	24	252			24			
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	364	364	250	582	366	24	252			24			
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1			
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2			
p0 queue free %	100	100	72	100	100	100	97			100			
cM capacity (veh/h)	579	544	788	299	543	1052	1301			1591			
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1							
Volume Total	2	218	0	45	24	251							
Volume Left	2	0	0	45	0	0							
Volume Right	0	218	0	0	0	3							
cSH	579	788	1700	1301	1700	1591							
Volume to Capacity	0.00	0.28	0.00	0.03	0.01	0.00							
Queue Length 95th (m)	0.1	8.6	0.0	0.8	0.0	0.0							
Control Delay (s)	11.2	11.3	0.0	7.9	0.0	0.0							
Lane LOS	B	B	A	A									
Approach Delay (s)	11.3		0.0	5.1		0.0							
Approach LOS	B		A										
Intersection Summary													
Average Delay	5.3												
Intersection Capacity Utilization	31.0%			ICU Level of Service				A					
Analysis Period (min)	15												

Lanes, Volumes, Timings
4: Tenth Line/Argyll Road & Street E

2031 Future Background AM
02/24/2025

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (vph)	0	0	23	0	0	0
Future Volume (vph)	0	0	23	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1921	0	1921	0	0	1921
Flt Permitted						
Satd. Flow (perm)	1921	0	1921	0	0	1921
Link Speed (k/h)	48		48			48
Link Distance (m)	67.3		347.4			55.0
Travel Time (s)	5.0		26.1			4.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	0	25	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	25	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	97		14	97	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 6.7%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
4: Tenth Line/Argyll Road & Street E

2031 Future Background AM
02/24/2025

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (veh/h)	0	0	23	0	0	0
Future Volume (Veh/h)	0	0	23	0	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	25	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	25	25			25	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	25	25			25	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	996	1057			1603	
Direction, Lane #						
Volume Total	0	25	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.08	0.01	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS						
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			6.7%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
6: Tenth Side Road & Street B

2031 Future Background AM
02/24/2025

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↔	↔↔		↔	
Traffic Volume (vph)	0	712	1389	0	0	0
Future Volume (vph)	0	712	1389	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.7	3.7
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Fit						
Fit Protected						
Satd. Flow (prot)	0	3570	3570	0	1883	0
Fit Permitted						
Satd. Flow (perm)	0	3570	3570	0	1883	0
Link Speed (k/h)		48	48		48	
Link Distance (m)		324.7	174.1		203.4	
Travel Time (s)		24.4	13.1		15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	2%	2%	2%
Adj. Flow (vph)	0	774	1510	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	774	1510	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 41.7%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
6: Tenth Side Road & Street B

2031 Future Background AM
02/24/2025

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↔	↔↔		↔	
Traffic Volume (veh/h)	0	712	1389	0	0	0
Future Volume (Veh/h)	0	712	1389	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	774	1510	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None	None				
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1510				1897	755
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1510				1897	755
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	439				61	351
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	258	516	1007	503	0	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	0	0	
cSH	439	1700	1700	1700	1700	
Volume to Capacity	0.00	0.30	0.59	0.30	0.00	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	
Lane LOS					A	
Approach Delay (s)	0.0		0.0		0.0	
Approach LOS					A	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			41.7%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
1: Tenth Line & Tenth Side Road

2031 Future Background PM
02/24/2025

	↖	→	↘	↙	←	↖	↙	↗	↘	↖	↙	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕			↕↕			↕↕	
Traffic Volume (vph)	2	1160	47	45	572	95	243	246	178	51	66	4
Future Volume (vph)	2	1160	47	45	572	95	243	246	178	51	66	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Frt		0.994			0.980			0.964			0.996	
Flt Protected					0.997			0.982			0.979	
Satd. Flow (prot)	0	3628	0	0	3566	0	0	1809	0	0	1873	0
Flt Permitted					0.997			0.982			0.979	
Satd. Flow (perm)	0	3628	0	0	3566	0	0	1809	0	0	1873	0
Link Speed (k/h)		30			30			30			30	
Link Distance (m)		240.0			324.7			168.2			352.4	
Travel Time (s)		28.8			39.0			20.2			42.3	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%
Adj. Flow (vph)	2	1234	50	48	609	101	259	262	189	54	70	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1286	0	0	758	0	0	710	0	0	128	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.3			3.3	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	60		60	60		60	60		60	60		60
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type: Other

Control Type: Roundabout

Intersection Capacity Utilization 104.0% ICU Level of Service G

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
1: Tenth Line & Tenth Side Road

2031 Future Background PM
02/24/2025

	↖	→	↘	↙	←	↖	↙	↗	↘	↖	↙	↗
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	2	1160	47	45	572	95	243	246	178	51	66	4
Future Volume (veh/h)	2	1160	47	45	572	95	243	246	178	51	66	4
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	2	1234	50	48	609	101	259	262	189	54	70	4
Approach Volume (veh/h)		1286			758			710			128	
Crossing Volume (veh/h)		172			523			1290#			916	
High Capacity (veh/h)		1210			916			490			667	
High v/c (veh/h)		1.06			0.83			1.45			0.19	
Low Capacity (veh/h)		1003			739			370			521	
Low v/c (veh/h)		1.28			1.03			1.92			0.25	

Intersection Summary

Maximum v/c High 1.45

Maximum v/c Low 1.92

Intersection Capacity Utilization 104.0% ICU Level of Service G

Crossing flow exceeds 1200, method is not applicable

Lanes, Volumes, Timings
3: Tenth Line & Danby Road/Street A

2031 Future Background PM
02/24/2025

	←	→	↙	↘	←	↙	↘	→	↙	↘	→	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕	↕		↕		↕	↕			↕	↕	
Traffic Volume (vph)	4	0	61	0	0	0	147	233	0	0	54	9	
Future Volume (vph)	4	0	61	0	0	0	147	233	0	0	54	9	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (m)	2.8	3.7	2.8	3.7	3.7	3.7	3.3	3.5	3.7	3.7	3.5	3.5	
Storage Length (m)	25.0		25.0	0.0		0.0	30.0		0.0	0.0		0.0	
Storage Lanes	0		0	0		0	1		0	0		0	
Taper Length (m)	23.0			2.5			21.0			7.6			
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	
Ped Bike Factor													
Frt			0.850								0.982		
Flt Protected		0.950					0.950						
Satd. Flow (prot)	0	1825	1471	0	1883	0	1745	1879	0	0	1808	0	
Flt Permitted		0.950					0.950						
Satd. Flow (perm)	0	1825	1471	0	1883	0	1745	1879	0	0	1808	0	
Link Speed (k/h)		30			30			30			30		
Link Distance (m)		106.1			72.9			352.4			158.0		
Travel Time (s)		12.7			8.7			42.3			19.0		
Confl. Peds. (#/hr)							3					3	
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%	2%	0%	2%	2%	2%	0%	0%	2%	2%	0%	15%	
Adj. Flow (vph)	4	0	64	0	0	0	155	245	0	0	57	9	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	4	64	0	0	0	155	245	0	0	66	0	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No	
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(m)		0.0			0.0			3.3			3.3		
Link Offset(m)		0.0			0.0			0.0			0.0		
Crosswalk Width(m)		4.9			1.6			4.9			4.9		
Two way Left Turn Lane													
Headway Factor	1.13	0.99	1.13	0.99	0.99	0.99	1.04	1.01	0.99	0.99	1.01	1.01	
Turning Speed (k/h)	60		60	97		97	60		97	97		60	
Sign Control		Stop			Stop			Free			Free		
Intersection Summary													
Area Type:	Other												
Control Type:	Unsignalized												
Intersection Capacity Utilization	24.8%												
ICU Level of Service	A												
Analysis Period (min)	15												

HCM Unsignalized Intersection Capacity Analysis
3: Tenth Line & Danby Road/Street A

2031 Future Background PM
02/24/2025

	←	→	↙	↘	←	↙	↘	→	↙	↘	→	↙	↘
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕	↕		↕		↕	↕			↕	↕	
Traffic Volume (veh/h)	4	0	61	0	0	0	147	233	0	0	54	9	
Future Volume (Veh/h)	4	0	61	0	0	0	147	233	0	0	54	9	
Sign Control	Stop			Stop			Free			Free			
Grade	0%			0%			0%			0%			
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	
Hourly flow rate (vph)	4	0	64	0	0	0	155	245	0	0	57	9	
Pedestrians	3												
Lane Width (m)	3.2												
Walking Speed (m/s)	3.5												
Percent Blockage	0												
Right turn flare (veh)													
Median type	None												
Median storage veh													
Upstream signal (m)													
pX, platoon unblocked													
vC, conflicting volume	620	620	64	680	624	245	69			245			
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	620	620	64	680	624	245	69			245			
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1			
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2			
p0 queue free %	99	100	94	100	100	100	90			100			
cM capacity (veh/h)	372	363	1005	315	361	794	1544			1321			
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1							
Volume Total	4	64	0	155	245	66							
Volume Left	4	0	0	155	0	0							
Volume Right	0	64	0	0	0	9							
cSH	372	1005	1700	1544	1700	1321							
Volume to Capacity	0.01	0.06	0.00	0.10	0.14	0.00							
Queue Length 95th (m)	0.2	1.5	0.0	2.5	0.0	0.0							
Control Delay (s)	14.8	8.8	0.0	7.6	0.0	0.0							
Lane LOS	B	A	A	A									
Approach Delay (s)	9.2		0.0	2.9		0.0							
Approach LOS	A		A										
Intersection Summary													
Average Delay	3.4												
Intersection Capacity Utilization	24.8%												
ICU Level of Service	A												
Analysis Period (min)	15												

Lanes, Volumes, Timings
4: Tenth Line/Argyll Road & Street E

2031 Future Background PM
02/24/2025

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (vph)	0	0	237	0	0	63
Future Volume (vph)	0	0	237	0	0	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1921	0	1921	0	0	1921
Flt Permitted						
Satd. Flow (perm)	1921	0	1921	0	0	1921
Link Speed (k/h)	30		30			30
Link Distance (m)	67.3		347.4			55.0
Travel Time (s)	8.1		41.7			6.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	0	258	0	0	68
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	258	0	0	68
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	9		97	15	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 15.8%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
4: Tenth Line/Argyll Road & Street E

2031 Future Background PM
02/24/2025

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (veh/h)	0	0	237	0	0	63
Future Volume (Veh/h)	0	0	237	0	0	63
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	258	0	0	68
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	326	258			258	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	326	258			258	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	672	786			1318	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	0	258	68			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1318			
Volume to Capacity	0.08	0.15	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			15.8%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
6: Tenth Side Road & Street B

2031 Future Background PM
02/24/2025

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↔	↔↔		↔	
Traffic Volume (vph)	0	1389	712	0	0	0
Future Volume (vph)	0	1389	712	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.7	3.7
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Fit						
Fit Protected						
Satd. Flow (prot)	0	3570	3570	0	1883	0
Fit Permitted						
Satd. Flow (perm)	0	3570	3570	0	1883	0
Link Speed (k/h)		30	30		30	
Link Distance (m)		324.7	174.1		203.4	
Travel Time (s)		39.0	20.9		24.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	2%	2%	2%
Adj. Flow (vph)	0	1510	774	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1510	774	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	0.99	0.99
Turning Speed (k/h)	97			97	97	
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 41.7%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
6: Tenth Side Road & Street B

2031 Future Background PM
02/24/2025

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↔	↔↔		↔	
Traffic Volume (veh/h)	0	1389	712	0	0	0
Future Volume (Veh/h)	0	1389	712	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1510	774	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	774				1529	387
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	774				1529	387
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	837				108	611
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	503	1007	516	258	0	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	0	0	
cSH	837	1700	1700	1700	1700	
Volume to Capacity	0.00	0.59	0.30	0.15	0.00	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	
Lane LOS					A	
Approach Delay (s)	0.0		0.0		0.0	
Approach LOS					A	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			41.7%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings

2: Winston Churchill Blvd/Adamson Street South & 10 Side Road

Future Total 2029 AM

03/16/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	393	180	32	207	452	336
Future Volume (vph)	393	180	32	207	452	336
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.3	3.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.958				0.942	
Flt Protected	0.967			0.993		
Satd. Flow (prot)	1706	0	0	1767	1699	0
Flt Permitted	0.967			0.485		
Satd. Flow (perm)	1706	0	0	863	1699	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	22				44	
Link Speed (k/h)	48			48	48	
Link Distance (m)	348.4			182.6	433.4	
Travel Time (s)	26.1			13.7	32.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	3%	6%	1%	3%
Adj. Flow (vph)	414	189	34	218	476	354
Shared Lane Traffic (%)						
Lane Group Flow (vph)	603	0	0	252	830	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.04	1.04
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1		1	2	2	
Detector Template	Left		Left	Thru	Thru	
Leading Detector (m)	6.1		6.1	30.5	30.5	
Trailing Detector (m)	0.0		0.0	0.0	0.0	
Detector 1 Position(m)	0.0		0.0	0.0	0.0	
Detector 1 Size(m)	6.1		6.1	1.8	1.8	
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm		pm+pt	NA	NA	
Protected Phases			1	2	2	
Permitted Phases	4		2			
Detector Phase	4		1	2	2	

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TYLinSynchro 11 Report
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Lanes, Volumes, Timings

2: Winston Churchill Blvd/Adamson Street South & 10 Side Road

Future Total 2029 AM

03/16/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	12.0		5.0	8.0	8.0	
Minimum Split (s)	30.7		9.5	30.3	30.3	
Total Split (s)	44.0		9.5	56.5	56.5	
Total Split (%)	40.0%		8.6%	51.4%	51.4%	
Maximum Green (s)	36.3		6.5	49.2	49.2	
Yellow Time (s)	4.6		3.0	4.0	4.0	
All-Red Time (s)	3.1		0.0	3.3	3.3	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	7.7			7.3	7.3	
Lead/Lag			Lead	Lag	Lag	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	Min	Min	
Walk Time (s)	12.0			12.0	12.0	
Flash Dont Walk (s)	5.0			9.0	9.0	
Pedestrian Calls (/hr)	0			0	0	
Act Effect Green (s)	36.3			49.2	49.2	
Actuated g/C Ratio	0.36			0.49	0.49	
v/c Ratio	0.96			0.60	0.97	
Control Delay	58.3			25.8	49.7	
Queue Delay	0.0			0.0	0.0	
Total Delay	58.3			25.8	49.7	
LOS	E			C	D	
Approach Delay	58.3			25.8	49.7	
Approach LOS	E			C	D	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 100.5

Natural Cycle: 150

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 49.2

Intersection LOS: D

Intersection Capacity Utilization 89.6%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: Winston Churchill Blvd/Adamson Street South & 10 Side Road

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TYLinSynchro 11 Report
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Queues

2: Winston Churchill Blvd/Adamson Street South & 10 Side Road

Future Total 2029 AM

03/16/2025

	EBL	NBT	SBT
Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	603	252	830
v/c Ratio	0.96	0.60	0.97
Control Delay	58.3	25.8	49.7
Queue Delay	0.0	0.0	0.0
Total Delay	58.3	25.8	49.7
Queue Length 50th (m)	110.0	34.1	146.0
Queue Length 95th (m)	#179.9	61.1	#231.2
Internal Link Dist (m)	324.4	158.6	409.4
Turn Bay Length (m)			
Base Capacity (vph)	630	422	854
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.96	0.60	0.97

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

2: Winston Churchill Blvd/Adamson Street South & 10 Side Road

Future Total 2029 AM

03/16/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	393	180	32	207	452	336
Future Volume (vph)	393	180	32	207	452	336
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.3	3.3
Total Lost time (s)	7.7			7.3	7.3	
Lane Util. Factor	1.00			1.00	1.00	
Flt	0.96			1.00	0.94	
Flt Protected	0.97			0.99	1.00	
Satd. Flow (prot)	1706			1767	1699	
Flt Permitted	0.97			0.48	1.00	
Satd. Flow (perm)	1706			863	1699	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	414	189	34	218	476	354
RTOR Reduction (vph)	14	0	0	0	22	0
Lane Group Flow (vph)	589	0	0	252	808	0
Heavy Vehicles (%)	2%	2%	3%	6%	1%	3%
Turn Type	Perm		pm+pt	NA	NA	
Protected Phases			1	2	2	
Permitted Phases	4		2			
Actuated Green, G (s)	36.3			49.2	49.2	
Effective Green, g (s)	36.3			49.2	49.2	
Actuated g/C Ratio	0.36			0.49	0.49	
Clearance Time (s)	7.7			7.3	7.3	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	616			422	831	
v/s Ratio Prot					c0.48	
v/s Ratio Perm	c0.35			0.29		
v/c Ratio	0.96			0.60	0.97	
Uniform Delay, d1	31.3			18.5	25.0	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	25.5			2.3	24.3	
Delay (s)	56.9			20.8	49.3	
Level of Service	E			C	D	
Approach Delay (s)	56.9			20.8	49.3	
Approach LOS	E			C	D	

Intersection Summary

HCM 2000 Control Delay	47.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	100.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
3: 10th Line & Danby Road/Street A

Future Total 2029 AM
03/16/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	→	↱	↰	↱	→	↰	↱	→	↰	↱	→
Traffic Volume (vph)	2	16	183	24	39	14	38	31	6	6	236	3
Future Volume (vph)	2	16	183	24	39	14	38	31	6	6	236	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.7	2.8	3.7	3.7	3.7	3.3	3.5	3.7	3.7	3.5	3.5
Storage Length (m)	25.0		25.0	0.0		0.0	30.0		0.0	0.0		0.0
Storage Lanes	1		0	0		0	1		0	0		0
Taper Length (m)	23.0			2.5			21.0			7.6		
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
Ped Bike Factor												
Frt			0.850		0.976			0.974			0.998	
Flt Protected	0.950				0.985		0.950				0.999	
Satd. Flow (prot)	1645	0	1443	0	1847	0	1662	1830	0	0	1873	0
Flt Permitted	0.950				0.985		0.950				0.999	
Satd. Flow (perm)	1645	0	1443	0	1847	0	1662	1830	0	0	1873	0
Link Speed (k/h)		48			48			48			48	
Link Distance (m)		106.1			72.9			352.4			158.0	
Travel Time (s)		8.0			5.5			26.4			11.9	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	5%	0%	0%	0%	0%	0%
Adj. Flow (vph)	2	18	201	26	43	15	42	34	7	7	259	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	2	18	201	0	84	0	42	41	0	0	269	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		2.8			2.8			3.3			3.3	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			1.6			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.13	0.99	1.13	0.99	0.99	0.99	1.04	1.01	0.99	0.99	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization Err%	ICU Level of Service H											
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
3: 10th Line & Danby Road/Street A

Future Total 2029 AM
03/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	16	183	24	39	14	38	31	6	6	236	3
Future Volume (Veh/h)	2	16	183	24	39	14	38	31	6	6	236	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	2	18	201	26	43	15	42	34	7	7	259	3
Pedestrians		1										
Lane Width (m)		2.8										
Walking Speed (m/s)		1.1										
Percent Blockage		0										
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	430	400	262	606	398	38	263			41		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	430	400	262	606	398	38	263			41		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	97	74	91	92	99	97			100		
cM capacity (veh/h)	483	521	777	289	522	1040	1283			1581		
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1						
Volume Total	2	219	84	42	41	269						
Volume Left	2	0	26	42	0	7						
Volume Right	0	201	15	0	7	3						
cSH	483	746	450	1283	1700	1581						
Volume to Capacity	0.00	0.29	0.19	0.03	0.02	0.00						
Queue Length 95th (m)	0.1	9.3	5.2	0.8	0.0	0.1						
Control Delay (s)	12.5	11.8	14.8	7.9	0.0	0.2						
Lane LOS	B	B	B	A		A						
Approach Delay (s)	11.8		14.8	4.0		0.2						
Approach LOS	B		B									
Intersection Summary												
Average Delay	6.5											
Intersection Capacity Utilization	Err%			ICU Level of Service			H					
Analysis Period (min)	15											

Lanes, Volumes, Timings
4: 10th Line/Argyll Road & Street E

Future Total 2029 AM
03/16/2025

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (vph)	27	26	36	11	9	217
Future Volume (vph)	27	26	36	11	9	217
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.934		0.968			
Flt Protected	0.975					0.998
Satd. Flow (prot)	1749	0	1860	0	0	1917
Flt Permitted	0.975					0.998
Satd. Flow (perm)	1749	0	1860	0	0	1917
Link Speed (k/h)	48		48			48
Link Distance (m)	67.3		347.4			59.5
Travel Time (s)	5.0		26.1			4.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	29	28	39	12	10	236
Shared Lane Traffic (%)						
Lane Group Flow (vph)	57	0	51	0	0	246
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 28.6% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
4: 10th Line/Argyll Road & Street E

Future Total 2029 AM
03/16/2025

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (veh/h)	27	26	36	11	9	217
Future Volume (Veh/h)	27	26	36	11	9	217
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	29	28	39	12	10	236
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	301	45			51	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	301	45			51	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	97			99	
cM capacity (veh/h)	690	1031			1568	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	57	51	246
Volume Left	29	0	10
Volume Right	28	12	0
cSH	824	1700	1568
Volume to Capacity	0.07	0.03	0.01
Queue Length 95th (m)	1.7	0.0	0.1
Control Delay (s)	9.7	0.0	0.3
Lane LOS	A		A
Approach Delay (s)	9.7	0.0	0.3
Approach LOS	A		

Intersection Summary

Average Delay	1.8		
Intersection Capacity Utilization	28.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
5: Street B/Street C & Street A

Future Total 2029 AM
03/16/2025

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	6	8	8	31	76	18
Future Volume (vph)	6	8	8	31	76	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.924				0.974	
Flt Protected	0.979			0.990		
Satd. Flow (prot)	1738	0	0	1902	1871	0
Flt Permitted	0.979			0.990		
Satd. Flow (perm)	1738	0	0	1902	1871	0
Link Speed (k/h)	48			48	48	
Link Distance (m)	235.7			183.2	189.8	
Travel Time (s)	17.7			13.7	14.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	7	9	9	34	83	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	0	0	43	103	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop			Stop	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	18.5%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
5: Street B/Street C & Street A

Future Total 2029 AM
03/16/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	6	8	8	31	76	18
Future Volume (vph)	6	8	8	31	76	18
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	9	9	34	83	20
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total (vph)	16	43	103			
Volume Left (vph)	7	9	0			
Volume Right (vph)	9	0	20			
Hadj (s)	-0.25	0.04	-0.12			
Departure Headway (s)	4.0	4.1	3.9			
Degree Utilization, x	0.02	0.05	0.11			
Capacity (veh/h)	875	865	923			
Control Delay (s)	7.0	7.3	7.3			
Approach Delay (s)	7.0	7.3	7.3			
Approach LOS	A	A	A			
Intersection Summary						
Delay		7.3				
Level of Service		A				
Intersection Capacity Utilization		18.5%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings
6: 10 Side Road & Street B

Future Total 2029 AM
03/16/2025

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰		↰	↱
Traffic Volume (vph)	14	433	320	48	128	18
Future Volume (vph)	14	433	320	48	128	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.7	3.7
Storage Length (m)	30.0			0.0	30.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	60.0				60.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.982			0.850	
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1785	1879	1845	0	1825	1633
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1785	1879	1845	0	1825	1633
Link Speed (k/h)		48	48		48	
Link Distance (m)		324.7	348.4		148.4	
Travel Time (s)		24.4	26.1		11.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	15	471	348	52	139	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	15	471	400	0	139	20
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 36.5%
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
6: 10 Side Road & Street B

Future Total 2029 AM
03/16/2025

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	↰	↱	↰		↰	↱
Lane Configurations	↰	↱	↰		↰	↱
Traffic Volume (veh/h)	14	433	320	48	128	18
Future Volume (Veh/h)	14	433	320	48	128	18
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	471	348	52	139	20
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None	None				
Median storage veh						
Upstream signal (m)			348			
pX, platoon unblocked						
vC, conflicting volume	400				875	374
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	400				875	374
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				56	97
cM capacity (veh/h)	1170				318	677

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	15	471	400	139	20
Volume Left	15	0	0	139	0
Volume Right	0	0	52	0	20
cSH	1170	1700	1700	318	677
Volume to Capacity	0.01	0.28	0.24	0.44	0.03
Queue Length 95th (m)	0.3	0.0	0.0	16.1	0.7
Control Delay (s)	8.1	0.0	0.0	24.8	10.5
Lane LOS	A			C	B
Approach Delay (s)	0.3		0.0	23.0	
Approach LOS				C	

Intersection Summary

Average Delay 3.6
Intersection Capacity Utilization 36.5%
Analysis Period (min) 15

Lanes, Volumes, Timings
9: Street B & Street P

Future Total 2029 AM
03/16/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	0	52	18	0	6	21	33	6	2	82	0
Future Volume (vph)	0	0	52	18	0	6	21	33	6	2	82	0
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		0.865			0.965			0.986				
Flt Protected					0.964			0.983			0.999	
Satd. Flow (prot)	0	1662	0	0	1787	0	0	1862	0	0	1919	0
Flt Permitted					0.964			0.983			0.999	
Satd. Flow (perm)	0	1662	0	0	1787	0	0	1862	0	0	1919	0
Link Speed (k/h)		48			48			48			48	
Link Distance (m)		109.6			77.3			148.4			183.2	
Travel Time (s)		8.2			5.8			11.1			13.7	
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)	0	0	57	20	0	7	23	36	7	2	89	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	57	0	0	27	0	0	66	0	0	91	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 24.6% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
9: Street B & Street P

Future Total 2029 AM
03/16/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	0	52	18	0	6	21	33	6	2	82	0
Future Volume (Veh/h)	0	0	52	18	0	6	21	33	6	2	82	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	57	20	0	7	23	36	7	2	89	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None				None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	186	182	89	236	178	40	89			43		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	186	182	89	236	178	40	89			43		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	94	97	100	99	98			100		
cM capacity (veh/h)	765	704	975	672	707	1038	1519			1579		

Direction, Lane #

	EB 1	WB 1	NB 1	SB 1
Volume Total	57	27	66	91
Volume Left	0	20	23	2
Volume Right	57	7	7	0
cSH	975	740	1519	1579
Volume to Capacity	0.06	0.04	0.02	0.00
Queue Length 95th (m)	1.4	0.9	0.4	0.0
Control Delay (s)	8.9	10.0	2.7	0.2
Lane LOS	A	B	A	A
Approach Delay (s)	8.9	10.0	2.7	0.2
Approach LOS	A	B		

Intersection Summary

Average Delay	4.0			
Intersection Capacity Utilization	24.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Lanes, Volumes, Timings
11: Street C/Street D & Street E

Future Total 2029 AM
03/16/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	2	12	47	0	1	7
Future Volume (vph)	2	12	47	0	1	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.883				0.880	
Flt Protected	0.993			0.950		
Satd. Flow (prot)	1684	0	0	1825	1691	0
Flt Permitted	0.993			0.950		
Satd. Flow (perm)	1684	0	0	1825	1691	0
Link Speed (k/h)	48			48	48	
Link Distance (m)	155.5			304.2	72.8	
Travel Time (s)	11.7			22.8	5.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	2	13	51	0	1	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	15	0	0	51	9	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 19.3%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
11: Street C/Street D & Street E

Future Total 2029 AM
03/16/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	2	12	47	0	1	7
Future Volume (Veh/h)	2	12	47	0	1	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	13	51	0	1	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	107	5	9			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	107	5	9			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	97			
cM capacity (veh/h)	867	1084	1624			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	15	51	9			
Volume Left	2	51	0			
Volume Right	13	0	8			
cSH	1049	1624	1700			
Volume to Capacity	0.01	0.03	0.01			
Queue Length 95th (m)	0.3	0.7	0.0			
Control Delay (s)	8.5	7.3	0.0			
Lane LOS	A	A				
Approach Delay (s)	8.5	7.3	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		6.7				
Intersection Capacity Utilization		19.3%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings
2: Winston Churchill Blvd/Adamson Street South & 10 Side Road
03/16/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	←	←	←	←	←	←
Traffic Volume (vph)	393	180	32	207	452	336
Future Volume (vph)	393	180	32	207	452	336
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.3	3.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.958				0.942	
Flt Protected	0.967			0.993		
Satd. Flow (prot)	1706	0	0	1767	1699	0
Flt Permitted	0.967			0.494		
Satd. Flow (perm)	1706	0	0	879	1699	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	21				41	
Link Speed (k/h)	48			48	48	
Link Distance (m)	348.4			182.6	433.4	
Travel Time (s)	26.1			13.7	32.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	3%	6%	1%	3%
Adj. Flow (vph)	414	189	34	218	476	354
Shared Lane Traffic (%)						
Lane Group Flow (vph)	603	0	0	252	830	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.04	1.04
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1		1	2	2	
Detector Template	Left		Left	Thru	Thru	
Leading Detector (m)	6.1		6.1	30.5	30.5	
Trailing Detector (m)	0.0		0.0	0.0	0.0	
Detector 1 Position(m)	0.0		0.0	0.0	0.0	
Detector 1 Size(m)	6.1		6.1	1.8	1.8	
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm		pm+pt	NA	NA	
Protected Phases			1	2	2	
Permitted Phases	4		2			
Detector Phase	4		1	2	2	

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Synchro 11 Report
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Lanes, Volumes, Timings
2: Winston Churchill Blvd/Adamson Street South & 10 Side Road
03/16/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	12.0		5.0	8.0	8.0	
Minimum Split (s)	30.7		9.5	30.3	30.3	
Total Split (s)	48.0		9.5	62.5	62.5	
Total Split (%)	40.0%		7.9%	52.1%	52.1%	
Maximum Green (s)	40.3		6.5	55.2	55.2	
Yellow Time (s)	4.6		3.0	4.0	4.0	
All-Red Time (s)	3.1		0.0	3.3	3.3	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	7.7			7.3	7.3	
Lead/Lag			Lead	Lag	Lag	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	Min	Min	
Walk Time (s)	12.0			12.0	12.0	
Flash Dont Walk (s)	5.0			9.0	9.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effect Green (s)	40.3			55.2	55.2	
Actuated g/C Ratio	0.36			0.50	0.50	
v/c Ratio	0.95			0.57	0.96	
Control Delay	59.2			25.9	47.6	
Queue Delay	0.0			0.0	0.0	
Total Delay	59.2			25.9	47.6	
LOS	E			C	D	
Approach Delay	59.2			25.9	47.6	
Approach LOS	E			C	D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 110.5

Natural Cycle: 150

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 48.5

Intersection LOS: D

Intersection Capacity Utilization 89.6%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: Winston Churchill Blvd/Adamson Street South & 10 Side Road



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Synchro 11 Report
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Queues Future Total 2029 AM with Improvements
2: Winston Churchill Blvd/Adamson Street South & 10 Side Road 03/16/2025

	EBL	NBT	SBT
Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	603	252	830
v/c Ratio	0.95	0.57	0.96
Control Delay	59.2	25.9	47.6
Queue Delay	0.0	0.0	0.0
Total Delay	59.2	25.9	47.6
Queue Length 50th (m)	121.6	36.8	159.8
Queue Length 95th (m)	#192.8	63.8	#246.5
Internal Link Dist (m)	324.4	158.6	409.4
Turn Bay Length (m)			
Base Capacity (vph)	635	439	869
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.95	0.57	0.96

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis Future Total 2029 AM with Improvements
2: Winston Churchill Blvd/Adamson Street South & 10 Side Road 03/16/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	393	180	32	207	452	336
Future Volume (vph)	393	180	32	207	452	336
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.3	3.3
Total Lost time (s)	7.7			7.3	7.3	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.96			1.00	0.94	
Flt Protected	0.97			0.99	1.00	
Satd. Flow (prot)	1706			1767	1699	
Flt Permitted	0.97			0.49	1.00	
Satd. Flow (perm)	1706			879	1699	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	414	189	34	218	476	354
RTOR Reduction (vph)	13	0	0	0	21	0
Lane Group Flow (vph)	590	0	0	252	809	0
Heavy Vehicles (%)	2%	2%	3%	6%	1%	3%
Turn Type	Perm			pm+pt	NA	NA
Protected Phases				1	2	2
Permitted Phases	4			2		
Actuated Green, G (s)	40.3			55.2	55.2	
Effective Green, g (s)	40.3			55.2	55.2	
Actuated g/C Ratio	0.36			0.50	0.50	
Clearance Time (s)	7.7			7.3	7.3	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	622			439	848	
v/s Ratio Prot					c0.48	
v/s Ratio Perm	c0.35			0.29		
v/c Ratio	0.95			0.57	0.95	
Uniform Delay, d1	34.1			19.4	26.5	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	23.7			1.8	20.5	
Delay (s)	57.8			21.2	46.9	
Level of Service	E			C	D	
Approach Delay (s)	57.8			21.2	46.9	
Approach LOS	E			C	D	

Intersection Summary

HCM 2000 Control Delay	47.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	110.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
3: 10th Line & Danby Road/Street A
Future Total 2029 AM with Improvements
03/16/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	→	↱	↰	↱	→	↰	↱	→	↰	↱	→
Traffic Volume (vph)	2	16	183	24	39	14	38	31	6	6	236	3
Future Volume (vph)	2	16	183	24	39	14	38	31	6	6	236	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.7	2.8	3.7	3.7	3.7	3.3	3.5	3.7	3.7	3.5	3.5
Storage Length (m)	25.0		25.0	0.0		0.0	30.0		0.0	0.0		0.0
Storage Lanes	1		0	0		0	1		0	0		0
Taper Length (m)	23.0			2.5			21.0			7.6		
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
Ped Bike Factor												
Frt			0.850		0.976			0.974			0.998	
Flt Protected	0.950				0.985		0.950				0.999	
Satd. Flow (prot)	1645	0	1443	0	1847	0	1662	1830	0	0	1873	0
Flt Permitted	0.950				0.985		0.950				0.999	
Satd. Flow (perm)	1645	0	1443	0	1847	0	1662	1830	0	0	1873	0
Link Speed (k/h)		48			48			48			48	
Link Distance (m)		106.1			72.9			352.4			158.0	
Travel Time (s)		8.0			5.5			26.4			11.9	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	5%	0%	0%	0%	0%	0%
Adj. Flow (vph)	2	18	201	26	43	15	42	34	7	7	259	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	2	18	201	0	84	0	42	41	0	0	269	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		2.8			2.8			3.3			3.3	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			1.6			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.13	0.99	1.13	0.99	0.99	0.99	1.04	1.01	0.99	0.99	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization Err%	ICU Level of Service H											
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
3: 10th Line & Danby Road/Street A
Future Total 2029 AM with Improvements
03/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	16	183	24	39	14	38	31	6	6	236	3
Future Volume (Veh/h)	2	16	183	24	39	14	38	31	6	6	236	3
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	2	18	201	26	43	15	42	34	7	7	259	3
Pedestrians	1											
Lane Width (m)	2.8											
Walking Speed (m/s)	1.1											
Percent Blockage	0											
Right turn flare (veh)												
Median type							None			None		
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	430	400	262	606	398	38	263				41	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	430	400	262	606	398	38	263				41	
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	100	97	74	91	92	99	97				100	
cM capacity (veh/h)	483	521	777	289	522	1040	1283				1581	
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1						
Volume Total	2	219	84	42	41	269						
Volume Left	2	0	26	42	0	7						
Volume Right	0	201	15	0	7	3						
cSH	483	746	450	1283	1700	1581						
Volume to Capacity	0.00	0.29	0.19	0.03	0.02	0.00						
Queue Length 95th (m)	0.1	9.3	5.2	0.8	0.0	0.1						
Control Delay (s)	12.5	11.8	14.8	7.9	0.0	0.2						
Lane LOS	B	B	B	A		A						
Approach Delay (s)	11.8		14.8	4.0		0.2						
Approach LOS	B		B									
Intersection Summary												
Average Delay				6.5								
Intersection Capacity Utilization	Err%			ICU Level of Service			H					
Analysis Period (min)	15											

Lanes, Volumes, Timings
4: 10th Line/Argyll Road & Street E

Future Total 2029 AM with Improvements
03/16/2025

	←	↖	↗	→	↘	↙
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↙
Traffic Volume (vph)	27	26	36	11	9	217
Future Volume (vph)	27	26	36	11	9	217
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.934		0.968			
Flt Protected	0.975					0.998
Satd. Flow (prot)	1749	0	1860	0	0	1917
Flt Permitted	0.975					0.998
Satd. Flow (perm)	1749	0	1860	0	0	1917
Link Speed (k/h)	48		48			48
Link Distance (m)	67.3		347.4			47.2
Travel Time (s)	5.0		26.1			3.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	29	28	39	12	10	236
Shared Lane Traffic (%)						
Lane Group Flow (vph)	57	0	51	0	0	246
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 28.6% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Future Total 2029 AM with Improvements
4: 10th Line/Argyll Road & Street E 03/16/2025

	←	↖	↗	→	↘	↙
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↙
Traffic Volume (veh/h)	27	26	36	11	9	217
Future Volume (Veh/h)	27	26	36	11	9	217
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	29	28	39	12	10	236
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	301	45			51	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	301	45			51	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	97			99	
cM capacity (veh/h)	690	1031			1568	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	57	51	246
Volume Left	29	0	10
Volume Right	28	12	0
cSH	824	1700	1568
Volume to Capacity	0.07	0.03	0.01
Queue Length 95th (m)	1.7	0.0	0.1
Control Delay (s)	9.7	0.0	0.3
Lane LOS	A		A
Approach Delay (s)	9.7	0.0	0.3
Approach LOS	A		

Intersection Summary

Average Delay	1.8		
Intersection Capacity Utilization	28.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
5: Street B/Street C & Street A

Future Total 2029 AM with Improvements
03/16/2025

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	6	8	8	31	76	18
Future Volume (vph)	6	8	8	31	76	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.924				0.974	
Flt Protected	0.979			0.990		
Satd. Flow (prot)	1738	0	0	1902	1871	0
Flt Permitted	0.979			0.990		
Satd. Flow (perm)	1738	0	0	1902	1871	0
Link Speed (k/h)	48			48	48	
Link Distance (m)	235.7			183.2	189.8	
Travel Time (s)	17.7			13.7	14.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	7	9	9	34	83	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	0	0	43	103	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop			Stop	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	18.5%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
5: Street B/Street C & Street A

Future Total 2029 AM with Improvements
03/16/2025

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	6	8	8	31	76	18
Future Volume (vph)	6	8	8	31	76	18
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	9	9	34	83	20
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total (vph)	16	43	103			
Volume Left (vph)	7	9	0			
Volume Right (vph)	9	0	20			
Hadj (s)	-0.25	0.04	-0.12			
Departure Headway (s)	4.0	4.1	3.9			
Degree Utilization, x	0.02	0.05	0.11			
Capacity (veh/h)	875	865	923			
Control Delay (s)	7.0	7.3	7.3			
Approach Delay (s)	7.0	7.3	7.3			
Approach LOS	A	A	A			
Intersection Summary						
Delay	7.3					
Level of Service	A					
Intersection Capacity Utilization	18.5%			ICU Level of Service A		
Analysis Period (min)	15					

Lanes, Volumes, Timings
6: 10 Side Road & Street B

Future Total 2029 AM with Improvements
03/16/2025

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	14	433	320	48	128	18
Future Volume (vph)	14	433	320	48	128	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.7	3.7
Storage Length (m)	30.0			0.0	30.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	60.0			60.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.982			0.850	
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1785	1879	1845	0	1825	1633
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1785	1879	1845	0	1825	1633
Link Speed (k/h)		48	48		48	
Link Distance (m)		324.7	348.4		148.4	
Travel Time (s)		24.4	26.1		11.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	15	471	348	52	139	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	15	471	400	0	139	20
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 36.5%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
6: 10 Side Road & Street B

Future Total 2029 AM with Improvements
03/16/2025

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (veh/h)	14	433	320	48	128	18
Future Volume (Veh/h)	14	433	320	48	128	18
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	471	348	52	139	20
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)			348			
pX, platoon unblocked						
vC, conflicting volume	400				875	374
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	400				875	374
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				56	97
cM capacity (veh/h)	1170				318	677
Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2	
Volume Total	15	471	400	139	20	
Volume Left	15	0	0	139	0	
Volume Right	0	0	52	0	20	
cSH	1170	1700	1700	318	677	
Volume to Capacity	0.01	0.28	0.24	0.44	0.03	
Queue Length 95th (m)	0.3	0.0	0.0	16.1	0.7	
Control Delay (s)	8.1	0.0	0.0	24.8	10.5	
Lane LOS	A			C	B	
Approach Delay (s)	0.3		0.0	23.0		
Approach LOS				C		
Intersection Summary						
Average Delay			3.6			
Intersection Capacity Utilization			36.5%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
9: Street B & Street P

Future Total 2029 AM with Improvements
03/16/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	0	52	18	0	6	21	33	6	2	82	0
Future Volume (vph)	0	0	52	18	0	6	21	33	6	2	82	0
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		0.865			0.965			0.986				
Flt Protected					0.964			0.983			0.999	
Satd. Flow (prot)	0	1662	0	0	1787	0	0	1862	0	0	1919	0
Flt Permitted					0.964			0.983			0.999	
Satd. Flow (perm)	0	1662	0	0	1787	0	0	1862	0	0	1919	0
Link Speed (k/h)		48			48			48			48	
Link Distance (m)		109.6			77.3			148.4			183.2	
Travel Time (s)		8.2			5.8			11.1			13.7	
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)	0	0	57	20	0	7	23	36	7	2	89	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	57	0	0	27	0	0	66	0	0	91	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 24.6% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
9: Street B & Street P

Future Total 2029 AM with Improvements
03/16/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	0	52	18	0	6	21	33	6	2	82	0
Future Volume (Veh/h)	0	0	52	18	0	6	21	33	6	2	82	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	57	20	0	7	23	36	7	2	89	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	186	182	89	236	178	40	89			43		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	186	182	89	236	178	40	89			43		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	94	97	100	99	98			100		
cM capacity (veh/h)	765	704	975	672	707	1038	1519			1579		

Direction, Lane #

	EB 1	WB 1	NB 1	SB 1
Volume Total	57	27	66	91
Volume Left	0	20	23	2
Volume Right	57	7	7	0
cSH	975	740	1519	1579
Volume to Capacity	0.06	0.04	0.02	0.00
Queue Length 95th (m)	1.4	0.9	0.4	0.0
Control Delay (s)	8.9	10.0	2.7	0.2
Lane LOS	A	B	A	A
Approach Delay (s)	8.9	10.0	2.7	0.2
Approach LOS	A	B		

Intersection Summary

Average Delay	4.0			
Intersection Capacity Utilization	24.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Lanes, Volumes, Timings
11: Street C/Street D & Street E

Future Total 2029 AM with Improvements
03/16/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	2	12	47	0	1	7
Future Volume (vph)	2	12	47	0	1	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.883				0.880	
Flt Protected	0.993			0.950		
Satd. Flow (prot)	1684	0	0	1825	1691	0
Flt Permitted	0.993			0.950		
Satd. Flow (perm)	1684	0	0	1825	1691	0
Link Speed (k/h)	48			48	48	
Link Distance (m)	155.5			304.2	72.8	
Travel Time (s)	11.7			22.8	5.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	2	13	51	0	1	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	15	0	0	51	9	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 19.3%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
11: Street C/Street D & Street E

Future Total 2029 AM with Improvements
03/16/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	2	12	47	0	1	7
Future Volume (Veh/h)	2	12	47	0	1	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	13	51	0	1	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	107	5	9			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	107	5	9			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	97			
cM capacity (veh/h)	867	1084	1624			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	15	51	9			
Volume Left	2	51	0			
Volume Right	13	0	8			
cSH	1049	1624	1700			
Volume to Capacity	0.01	0.03	0.01			
Queue Length 95th (m)	0.3	0.7	0.0			
Control Delay (s)	8.5	7.3	0.0			
Lane LOS	A	A				
Approach Delay (s)	8.5	7.3	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		6.7				
Intersection Capacity Utilization		19.3%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings

2: Winston Churchill Blvd/Adamson Street South & 10 Side Road

Future Total 2029 PM

03/16/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	383	54	130	426	239	413
Future Volume (vph)	383	54	130	426	239	413
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.3	3.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.983				0.915	
Flt Protected	0.958			0.988		
Satd. Flow (prot)	1754	0	0	1842	1642	0
Flt Permitted	0.958			0.540		
Satd. Flow (perm)	1754	0	0	1007	1642	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	6				125	
Link Speed (k/h)	30			30	30	
Link Distance (m)	348.4			182.6	433.4	
Travel Time (s)	41.8			21.9	52.0	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	0%	0%	1%	3%	2%
Adj. Flow (vph)	391	55	133	435	244	421
Shared Lane Traffic (%)						
Lane Group Flow (vph)	446	0	0	568	665	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.04	1.04
Turning Speed (k/h)	97	97	97			97
Number of Detectors	1		1	2	2	
Detector Template	Left		Left	Thru	Thru	
Leading Detector (m)	6.1		6.1	30.5	30.5	
Trailing Detector (m)	0.0		0.0	0.0	0.0	
Detector 1 Position(m)	0.0		0.0	0.0	0.0	
Detector 1 Size(m)	6.1		6.1	1.8	1.8	
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm		pm+pt	NA	NA	
Protected Phases			1	2	2	
Permitted Phases	4		2			
Detector Phase	4		1	2	2	

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TYLinSynchro 11 Report
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Lanes, Volumes, Timings

2: Winston Churchill Blvd/Adamson Street South & 10 Side Road

Future Total 2029 PM

03/16/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	12.0		5.0	8.0	8.0	
Minimum Split (s)	30.7		9.5	30.3	30.3	
Total Split (s)	33.0		9.5	67.5	67.5	
Total Split (%)	30.0%		8.6%	61.4%	61.4%	
Maximum Green (s)	25.3		6.5	60.2	60.2	
Yellow Time (s)	4.6		3.0	4.0	4.0	
All-Red Time (s)	3.1		0.0	3.3	3.3	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	7.7			7.3	7.3	
Lead/Lag			Lead	Lag	Lag	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	Max	Max	
Walk Time (s)	12.0			12.0	12.0	
Flash Dont Walk (s)	5.0			9.0	9.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effect Green (s)	25.3			60.2	60.2	
Actuated g/C Ratio	0.25			0.60	0.60	
v/c Ratio	1.00			0.94	0.64	
Control Delay	81.2			45.6	13.8	
Queue Delay	0.0			0.0	0.0	
Total Delay	81.2			45.6	13.8	
LOS	F			D	B	
Approach Delay	81.2			45.6	13.8	
Approach LOS	F			D	B	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 100.5

Natural Cycle: 150

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.00

Intersection Signal Delay: 42.5

Intersection LOS: D

Intersection Capacity Utilization 110.6%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 2: Winston Churchill Blvd/Adamson Street South & 10 Side Road

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Queues
2: Winston Churchill Blvd/Adamson Street South & 10 Side Road
Future Total 2029 PM
03/16/2025

	EBL	NBT	SBT
Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	446	568	665
v/c Ratio	1.00	0.94	0.64
Control Delay	81.2	45.6	13.8
Queue Delay	0.0	0.0	0.0
Total Delay	81.2	45.6	13.8
Queue Length 50th (m)	86.1	94.6	63.2
Queue Length 95th (m)	#149.4	#171.8	99.4
Internal Link Dist (m)	324.4	158.6	409.4
Turn Bay Length (m)			
Base Capacity (vph)	446	603	1033
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.00	0.94	0.64

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

HCM Signalized Intersection Capacity Analysis
2: Winston Churchill Blvd/Adamson Street South & 10 Side Road
Future Total 2029 PM
03/16/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	383	54	130	426	239	413
Future Volume (vph)	383	54	130	426	239	413
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.3	3.3
Total Lost time (s)	7.7			7.3	7.3	
Lane Util. Factor	1.00			1.00	1.00	
Flt	0.98			1.00	0.91	
Flt Protected	0.96			0.99	1.00	
Satd. Flow (prot)	1755			1843	1641	
Flt Permitted	0.96			0.54	1.00	
Satd. Flow (perm)	1755			1008	1641	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	391	55	133	435	244	421
RTOR Reduction (vph)	4	0	0	0	50	0
Lane Group Flow (vph)	442	0	0	568	615	0
Heavy Vehicles (%)	1%	0%	0%	1%	3%	2%
Turn Type	Perm		pm+pt	NA	NA	
Protected Phases			1	2	2	
Permitted Phases	4		2			
Actuated Green, G (s)	25.3			60.2	60.2	
Effective Green, g (s)	25.3			60.2	60.2	
Actuated g/C Ratio	0.25			0.60	0.60	
Clearance Time (s)	7.7			7.3	7.3	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	441			603	982	
v/s Ratio Prot					0.37	
v/s Ratio Perm	c0.25			c0.56		
v/c Ratio	1.00			0.94	0.63	
Uniform Delay, d1	37.6			18.5	12.9	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	43.1			23.2	3.0	
Delay (s)	80.7			41.7	15.9	
Level of Service	F			D	B	
Approach Delay (s)	80.7			41.7	15.9	
Approach LOS	F			D	B	

Intersection Summary			
HCM 2000 Control Delay	41.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	100.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	110.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
3: 10th Line & Danby Road/Street A

Future Total 2029 PM
03/16/2025

	←	→	↙	↘	←	↙	↘	→	↙	↘	→	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↙		↘		↔		↙	↘		↔	↔		
Traffic Volume (vph)	4	43	57	18	35	8	136	225	29	21	72	9	
Future Volume (vph)	4	43	57	18	35	8	136	225	29	21	72	9	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (m)	2.8	3.7	2.8	3.7	3.7	3.7	3.3	3.5	3.7	3.7	3.5	3.5	
Storage Length (m)	25.0		25.0	0.0		0.0	30.0		0.0	0.0		0.0	
Storage Lanes	1		0	0		0	1		0	0		0	
Taper Length (m)	23.0			2.5			21.0			7.6			
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	
Ped Bike Factor													
Frt			0.850		0.983			0.983			0.989		
Flt Protected	0.950				0.985		0.950				0.990		
Satd. Flow (prot)	1645	0	1471	0	1860	0	1745	1847	0	0	1823	0	
Flt Permitted	0.950				0.985		0.950				0.990		
Satd. Flow (perm)	1645	0	1471	0	1860	0	1745	1847	0	0	1823	0	
Link Speed (k/h)		30			30			30			30		
Link Distance (m)		106.1			72.9			352.4			158.0		
Travel Time (s)		12.7			8.7			42.3			19.0		
Confl. Peds. (#/hr)							3					3	
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%	0%	0%	0%	0%	0%	0%	0%	11%	
Adj. Flow (vph)	4	45	60	19	37	8	143	237	31	22	76	9	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	4	45	60	0	64	0	143	268	0	0	107	0	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No	
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(m)		2.8			2.8			3.3			3.3		
Link Offset(m)		0.0			0.0			0.0			0.0		
Crosswalk Width(m)		4.9			1.6			4.9			4.9		
Two way Left Turn Lane													
Headway Factor	1.13	0.99	1.13	0.99	0.99	0.99	1.04	1.01	0.99	0.99	1.01	1.01	
Turning Speed (k/h)	60		60	97		97	60		97	97		60	
Sign Control		Stop			Stop			Free			Free		
Intersection Summary													
Area Type:	Other												
Control Type:	Unsignalized												
Intersection Capacity Utilization Err%	ICU Level of Service H												
Analysis Period (min)	15												

HCM Unsignalized Intersection Capacity Analysis
3: 10th Line & Danby Road/Street A

Future Total 2029 PM
03/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	43	57	18	35	8	136	225	29	21	72	9
Future Volume (Veh/h)	4	43	57	18	35	8	136	225	29	21	72	9
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
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
Hourly flow rate (vph)	4	45	60	19	37	8	143	237	31	22	76	9
Pedestrians	3											
Lane Width (m)	2.8											
Walking Speed (m/s)	3.5											
Percent Blockage	0											
Right turn flare (veh)												
Median type	None								None			
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	677	682	84	746	670	252	88			268		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	677	682	84	746	670	252	88			268		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	87	94	93	89	99	91			98		
cM capacity (veh/h)	307	334	981	257	339	791	1519			1307		
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1						
Volume Total	4	105	64	143	268	107						
Volume Left	4	0	19	143	0	22						
Volume Right	0	60	8	0	31	9						
cSH	307	536	331	1519	1700	1307						
Volume to Capacity	0.01	0.20	0.19	0.09	0.16	0.02						
Queue Length 95th (m)	0.3	5.5	5.4	2.4	0.0	0.4						
Control Delay (s)	16.9	13.4	18.5	7.6	0.0	1.7						
Lane LOS	C	B	C	A		A						
Approach Delay (s)	13.5		18.5	2.6		1.7						
Approach LOS	B		C									
Intersection Summary												
Average Delay	5.7											
Intersection Capacity Utilization	Err%											
ICU Level of Service	H											
Analysis Period (min)	15											

Lanes, Volumes, Timings
4: 10th Line/Argyll Road & Street E

Future Total 2029 PM
03/16/2025

	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	W	N	N	S	S
Traffic Volume (vph)	22	27	227	9	19	79
Future Volume (vph)	22	27	227	9	19	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.926		0.995			
Flt Protected	0.978					0.990
Satd. Flow (prot)	1740	0	1912	0	0	1902
Flt Permitted	0.978					0.990
Satd. Flow (perm)	1740	0	1912	0	0	1902
Link Speed (k/h)	30		30			30
Link Distance (m)	67.3		347.4			59.5
Travel Time (s)	8.1		41.7			7.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	24	29	247	10	21	86
Shared Lane Traffic (%)						
Lane Group Flow (vph)	53	0	257	0	0	107
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97		97	97	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 30.5% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
4: 10th Line/Argyll Road & Street E

Future Total 2029 PM
03/16/2025

	WBL	WBR	NBT	NBR	SBL	SBT
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	W	N	N	S	S
Traffic Volume (veh/h)	22	27	227	9	19	79
Future Volume (Veh/h)	22	27	227	9	19	79
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	29	247	10	21	86
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	380	252			257	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	380	252			257	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	96			98	
cM capacity (veh/h)	616	792			1320	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	53	257	107
Volume Left	24	0	21
Volume Right	29	10	0
cSH	701	1700	1320
Volume to Capacity	0.08	0.15	0.02
Queue Length 95th (m)	1.9	0.0	0.4
Control Delay (s)	10.6	0.0	1.6
Lane LOS	B		A
Approach Delay (s)	10.6	0.0	1.6
Approach LOS	B		

Intersection Summary

Average Delay	1.8		
Intersection Capacity Utilization	30.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
5: Street B/Street C & Street A

Future Total 2029 PM
03/16/2025

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	27	24	16	122	52	11
Future Volume (vph)	27	24	16	122	52	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.936				0.977	
Flt Protected	0.974			0.994		
Satd. Flow (prot)	1751	0	0	1910	1877	0
Flt Permitted	0.974			0.994		
Satd. Flow (perm)	1751	0	0	1910	1877	0
Link Speed (k/h)	30			30	30	
Link Distance (m)	235.7			183.2	189.8	
Travel Time (s)	28.3			22.0	22.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	29	26	17	133	57	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	55	0	0	150	69	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97	97			97
Sign Control	Stop			Stop	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	24.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
5: Street B/Street C & Street A

Future Total 2029 PM
03/16/2025

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	27	24	16	122	52	11
Future Volume (vph)	27	24	16	122	52	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	29	26	17	133	57	12
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total (vph)	55	150	69			
Volume Left (vph)	29	17	0			
Volume Right (vph)	26	0	12			
Hadj (s)	-0.18	0.02	-0.10			
Departure Headway (s)	4.2	4.1	4.1			
Degree Utilization, x	0.06	0.17	0.08			
Capacity (veh/h)	814	853	864			
Control Delay (s)	7.5	8.0	7.4			
Approach Delay (s)	7.5	8.0	7.4			
Approach LOS	A	A	A			
Intersection Summary						
Delay	7.7					
Level of Service	A					
Intersection Capacity Utilization	24.0%			ICU Level of Service		A
Analysis Period (min)	15					

Lanes, Volumes, Timings
6: 10 Side Road & Street B

Future Total 2029 PM
03/16/2025

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰		↰	↱
Traffic Volume (vph)	67	395	400	143	100	22
Future Volume (vph)	67	395	400	143	100	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.7	3.7
Storage Length (m)	30.0			0.0	30.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	60.0			60.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.965			0.850	
Flt Protected	0.950			0.950		
Satd. Flow (prot)	1785	1879	1813	0	1825	1633
Flt Permitted	0.950			0.950		
Satd. Flow (perm)	1785	1879	1813	0	1825	1633
Link Speed (k/h)		30	30		30	
Link Distance (m)		324.7	348.4		148.4	
Travel Time (s)		39.0	41.8		17.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	73	429	435	155	109	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	73	429	590	0	109	24
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	0.99	0.99
Turning Speed (k/h)	97			97	97	97
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 49.0%
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
6: 10 Side Road & Street B

Future Total 2029 PM
03/16/2025

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	↰	↱	↰		↰	↱
Lane Configurations	↰	↱	↰		↰	↱
Traffic Volume (veh/h)	67	395	400	143	100	22
Future Volume (Veh/h)	67	395	400	143	100	22
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	73	429	435	155	109	24
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None	None				
Median storage veh						
Upstream signal (m)			348			
pX, platoon unblocked						
vC, conflicting volume	590				1088	512
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	590				1088	512
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	93				51	96
cM capacity (veh/h)	995				223	566

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	73	429	590	109	24
Volume Left	73	0	0	109	0
Volume Right	0	0	155	0	24
cSH	995	1700	1700	223	566
Volume to Capacity	0.07	0.25	0.35	0.49	0.04
Queue Length 95th (m)	1.8	0.0	0.0	18.6	1.0
Control Delay (s)	8.9	0.0	0.0	35.6	11.6
Lane LOS	A			E	B
Approach Delay (s)	1.3		0.0	31.2	
Approach LOS				D	

Intersection Summary

Average Delay 3.9
Intersection Capacity Utilization 49.0%
Analysis Period (min) 15

Lanes, Volumes, Timings
9: Street B & Street P

Future Total 2029 PM
03/16/2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	36	12	0	4	58	134	18	5	71	0
Future Volume (vph)	0	0	36	12	0	4	58	134	18	5	71	0
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		0.865			0.968			0.988				
Flt Protected					0.963			0.986			0.997	
Satd. Flow (prot)	0	1662	0	0	1791	0	0	1871	0	0	1915	0
Flt Permitted					0.963			0.986			0.997	
Satd. Flow (perm)	0	1662	0	0	1791	0	0	1871	0	0	1915	0
Link Speed (k/h)		30			30			30			30	
Link Distance (m)		109.6			77.3			148.4			183.2	
Travel Time (s)		13.2			9.3			17.8			22.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	0	39	13	0	4	63	146	20	5	77	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	39	0	0	17	0	0	229	0	0	82	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97		97	97		97	97		97	97		97
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 32.3% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
9: Street B & Street P

Future Total 2029 PM
03/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	36	12	0	4	58	134	18	5	71	0
Future Volume (Veh/h)	0	0	36	12	0	4	58	134	18	5	71	0
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	39	13	0	4	63	146	20	5	77	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None								None			
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	373	379	77	408	369	156	77				166	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	373	379	77	408	369	156	77				166	
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	100	100	96	97	100	100	96				100	
cM capacity (veh/h)	565	532	990	517	538	895	1535				1424	

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	39	17	229	82
Volume Left	0	13	63	5
Volume Right	39	4	20	0
cSH	990	574	1535	1424
Volume to Capacity	0.04	0.03	0.04	0.00
Queue Length 95th (m)	0.9	0.7	1.0	0.1
Control Delay (s)	8.8	11.5	2.3	0.5
Lane LOS	A	B	A	A
Approach Delay (s)	8.8	11.5	2.3	0.5
Approach LOS	A	B		

Intersection Summary

Average Delay 3.0
Intersection Capacity Utilization 32.3% ICU Level of Service A
Analysis Period (min) 15

Lanes, Volumes, Timings
11: Street C/Street D & Street E

Future Total 2029 PM
03/16/2025

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	4	24	45	0	1	5
Future Volume (vph)	4	24	45	0	1	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.883				0.887	
Flt Protected	0.993			0.950		
Satd. Flow (prot)	1684	0	0	1825	1704	0
Flt Permitted	0.993			0.950		
Satd. Flow (perm)	1684	0	0	1825	1704	0
Link Speed (k/h)	30			30	30	
Link Distance (m)	155.5			304.2	72.8	
Travel Time (s)	18.7			36.5	8.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	4	26	49	0	1	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	30	0	0	49	6	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97	97			97
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 19.2% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
11: Street C/Street D & Street E

Future Total 2029 PM
03/16/2025

Intersection Sign configuration not allowed in HCM analysis.

Lanes, Volumes, Timings
2: Winston Churchill Blvd/Adamson Street South & 10 Side Road
03/16/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	←	←	←	←	←	←
Traffic Volume (vph)	383	54	130	426	239	413
Future Volume (vph)	383	54	130	426	239	413
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.3	3.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.983				0.915	
Flt Protected	0.958			0.988		
Satd. Flow (prot)	1754	0	0	1842	1642	0
Flt Permitted	0.958			0.533		
Satd. Flow (perm)	1754	0	0	994	1642	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	6				117	
Link Speed (k/h)	30			30	30	
Link Distance (m)	348.4			182.6	433.4	
Travel Time (s)	41.8			21.9	52.0	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	0%	0%	1%	3%	2%
Adj. Flow (vph)	391	55	133	435	244	421
Shared Lane Traffic (%)						
Lane Group Flow (vph)	446	0	0	568	665	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.04	1.04
Turning Speed (k/h)	97	97	97			97
Number of Detectors	1		1	2	2	
Detector Template	Left		Left	Thru	Thru	
Leading Detector (m)	6.1		6.1	30.5	30.5	
Trailing Detector (m)	0.0		0.0	0.0	0.0	
Detector 1 Position(m)	0.0		0.0	0.0	0.0	
Detector 1 Size(m)	6.1		6.1	1.8	1.8	
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm		pm+pt	NA	NA	
Protected Phases			1	2	2	
Permitted Phases	4		2			
Detector Phase	4		1	2	2	

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Synchro 11 Report
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Lanes, Volumes, Timings
2: Winston Churchill Blvd/Adamson Street South & 10 Side Road
03/16/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	12.0		5.0	8.0	8.0	
Minimum Split (s)	30.7		9.5	30.3	30.3	
Total Split (s)	36.5		9.5	74.0	74.0	
Total Split (%)	30.4%		7.9%	61.7%	61.7%	
Maximum Green (s)	28.8		6.5	66.7	66.7	
Yellow Time (s)	4.6		3.0	4.0	4.0	
All-Red Time (s)	3.1		0.0	3.3	3.3	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	7.7			7.3	7.3	
Lead/Lag			Lead	Lag	Lag	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	Max	Max	
Walk Time (s)	12.0			12.0	12.0	
Flash Dont Walk (s)	5.0			9.0	9.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effect Green (s)	28.8			66.7	66.7	
Actuated g/C Ratio	0.26			0.60	0.60	
v/c Ratio	0.97			0.95	0.64	
Control Delay	75.3			48.2	14.8	
Queue Delay	0.0			0.0	0.0	
Total Delay	75.3			48.2	14.8	
LOS	E			D	B	
Approach Delay	75.3			48.2	14.8	
Approach LOS	E			D	B	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 110.5

Natural Cycle: 150

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 42.2

Intersection LOS: D

Intersection Capacity Utilization 110.6%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 2: Winston Churchill Blvd/Adamson Street South & 10 Side Road



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Synchro 11 Report
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Queues Future Total 2029 PM with Improvements
2: Winston Churchill Blvd/Adamson Street South & 10 Side Road 03/16/2025

	EBL	NBT	SBT
Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	446	568	665
v/c Ratio	0.97	0.95	0.64
Control Delay	75.3	48.2	14.8
Queue Delay	0.0	0.0	0.0
Total Delay	75.3	48.2	14.8
Queue Length 50th (m)	94.2	105.8	71.1
Queue Length 95th (m)	#157.1	#185.8	108.1
Internal Link Dist (m)	324.4	158.6	409.4
Turn Bay Length (m)			
Base Capacity (vph)	461	599	1037
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.97	0.95	0.64

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis Future Total 2029 PM with Improvements
2: Winston Churchill Blvd/Adamson Street South & 10 Side Road 03/16/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	383	54	130	426	239	413
Future Volume (vph)	383	54	130	426	239	413
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.3	3.3
Total Lost time (s)	7.7			7.3	7.3	
Lane Util. Factor	1.00			1.00	1.00	
Flt	0.98			1.00	0.91	
Flt Protected	0.96			0.99	1.00	
Satd. Flow (prot)	1755			1843	1641	
Flt Permitted	0.96			0.53	1.00	
Satd. Flow (perm)	1755			994	1641	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	391	55	133	435	244	421
RTOR Reduction (vph)	4	0	0	0	46	0
Lane Group Flow (vph)	442	0	0	568	619	0
Heavy Vehicles (%)	1%	0%	0%	1%	3%	2%
Turn Type	Perm		pm+pt	NA	NA	
Protected Phases			1	2	2	
Permitted Phases	4		2			
Actuated Green, G (s)	28.8			66.7	66.7	
Effective Green, g (s)	28.8			66.7	66.7	
Actuated g/C Ratio	0.26			0.60	0.60	
Clearance Time (s)	7.7			7.3	7.3	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	457			599	990	
v/s Ratio Prot					0.38	
v/s Ratio Perm	c0.25			c0.57		
v/c Ratio	0.97			0.95	0.62	
Uniform Delay, d1	40.4			20.3	13.9	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	33.2			24.3	3.0	
Delay (s)	73.5			44.6	16.9	
Level of Service	E			D	B	
Approach Delay (s)	73.5			44.6	16.9	
Approach LOS	E			D	B	

Intersection Summary

HCM 2000 Control Delay	41.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	110.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	110.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
3: 10th Line & Danby Road/Street A
Future Total 2029 PM with Improvements
03/16/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	→	↱	↰	↱	→	↰	↱	→	↰	↱	→
Traffic Volume (vph)	4	43	57	18	35	8	136	225	29	21	72	9
Future Volume (vph)	4	43	57	18	35	8	136	225	29	21	72	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.7	2.8	3.7	3.7	3.7	3.3	3.5	3.7	3.7	3.5	3.5
Storage Length (m)	25.0		25.0	0.0		0.0	30.0		0.0	0.0		0.0
Storage Lanes	1		0	0		0	1		0	0		0
Taper Length (m)	23.0			2.5			21.0			7.6		
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
Ped Bike Factor												
Frt			0.850		0.983			0.983			0.989	
Flt Protected	0.950				0.985		0.950				0.990	
Satd. Flow (prot)	1645	0	1471	0	1860	0	1745	1847	0	0	1823	0
Flt Permitted	0.950				0.985		0.950				0.990	
Satd. Flow (perm)	1645	0	1471	0	1860	0	1745	1847	0	0	1823	0
Link Speed (k/h)		30			30			30			30	
Link Distance (m)		106.1			72.9			352.4			158.0	
Travel Time (s)		12.7			8.7			42.3			19.0	
Confl. Peds. (#/hr)							3					3
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%	0%	0%	0%	0%	0%	0%	0%	11%
Adj. Flow (vph)	4	45	60	19	37	8	143	237	31	22	76	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	45	60	0	64	0	143	268	0	0	107	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		2.8			2.8			3.3			3.3	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			1.6			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.13	0.99	1.13	0.99	0.99	0.99	1.04	1.01	0.99	0.99	1.01	1.01
Turning Speed (k/h)	60		60	97		97	60		97	97		60
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization Err%	ICU Level of Service H											
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
3: 10th Line & Danby Road/Street A
Future Total 2029 PM with Improvements
03/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	43	57	18	35	8	136	225	29	21	72	9
Future Volume (Veh/h)	4	43	57	18	35	8	136	225	29	21	72	9
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
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
Hourly flow rate (vph)	4	45	60	19	37	8	143	237	31	22	76	9
Pedestrians	3											
Lane Width (m)	2.8											
Walking Speed (m/s)	3.5											
Percent Blockage	0											
Right turn flare (veh)												
Median type	None								None			
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	677	682	84	746	670	252	88				268	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	677	682	84	746	670	252	88				268	
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	99	87	94	93	89	99	91				98	
cM capacity (veh/h)	307	334	981	257	339	791	1519				1307	
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1						
Volume Total	4	105	64	143	268	107						
Volume Left	4	0	19	143	0	22						
Volume Right	0	60	8	0	31	9						
cSH	307	536	331	1519	1700	1307						
Volume to Capacity	0.01	0.20	0.19	0.09	0.16	0.02						
Queue Length 95th (m)	0.3	5.5	5.4	2.4	0.0	0.4						
Control Delay (s)	16.9	13.4	18.5	7.6	0.0	1.7						
Lane LOS	C	B	C	A		A						
Approach Delay (s)	13.5		18.5	2.6		1.7						
Approach LOS	B		C									
Intersection Summary												
Average Delay				5.7								
Intersection Capacity Utilization	Err%			ICU Level of Service			H					
Analysis Period (min)	15											

Lanes, Volumes, Timings
4: 10th Line/Argyll Road & Street E

Future Total 2029 PM with Improvements
03/16/2025

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	22	27	227	9	19	79
Future Volume (vph)	22	27	227	9	19	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.926		0.995			
Flt Protected	0.978					0.990
Satd. Flow (prot)	1740	0	1912	0	0	1902
Flt Permitted	0.978					0.990
Satd. Flow (perm)	1740	0	1912	0	0	1902
Link Speed (k/h)	30		30			30
Link Distance (m)	67.3		347.4			47.2
Travel Time (s)	8.1		41.7			5.7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	24	29	247	10	21	86
Shared Lane Traffic (%)						
Lane Group Flow (vph)	53	0	257	0	0	107
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97		97	97	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	30.5%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis Future Total 2029 PM with Improvements
4: 10th Line/Argyll Road & Street E 03/16/2025

	WBL	WBR	NBT	NBR	SBL	SBT
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (veh/h)	22	27	227	9	19	79
Future Volume (Veh/h)	22	27	227	9	19	79
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	29	247	10	21	86
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	380	252			257	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	380	252			257	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	96			98	
cM capacity (veh/h)	616	792			1320	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	53	257	107			
Volume Left	24	0	21			
Volume Right	29	10	0			
cSH	701	1700	1320			
Volume to Capacity	0.08	0.15	0.02			
Queue Length 95th (m)	1.9	0.0	0.4			
Control Delay (s)	10.6	0.0	1.6			
Lane LOS	B		A			
Approach Delay (s)	10.6	0.0	1.6			
Approach LOS	B					
Intersection Summary						
Average Delay			1.8			
Intersection Capacity Utilization			30.5%			
Analysis Period (min)			15			
ICU Level of Service A						

Lanes, Volumes, Timings
5: Street B/Street C & Street A

Future Total 2029 PM with Improvements
03/16/2025

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	27	24	16	122	52	11
Future Volume (vph)	27	24	16	122	52	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.936				0.977	
Flt Protected	0.974			0.994		
Satd. Flow (prot)	1751	0	0	1910	1877	0
Flt Permitted	0.974			0.994		
Satd. Flow (perm)	1751	0	0	1910	1877	0
Link Speed (k/h)	30			30	30	
Link Distance (m)	235.7			183.2	189.8	
Travel Time (s)	28.3			22.0	22.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	29	26	17	133	57	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	55	0	0	150	69	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97	97			97
Sign Control	Stop			Stop	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	24.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
5: Street B/Street C & Street A

Future Total 2029 PM with Improvements
03/16/2025

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	27	24	16	122	52	11
Future Volume (vph)	27	24	16	122	52	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	29	26	17	133	57	12
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total (vph)	55	150	69			
Volume Left (vph)	29	17	0			
Volume Right (vph)	26	0	12			
Hadj (s)	-0.18	0.02	-0.10			
Departure Headway (s)	4.2	4.1	4.1			
Degree Utilization, x	0.06	0.17	0.08			
Capacity (veh/h)	814	853	864			
Control Delay (s)	7.5	8.0	7.4			
Approach Delay (s)	7.5	8.0	7.4			
Approach LOS	A	A	A			
Intersection Summary						
Delay	7.7					
Level of Service	A					
Intersection Capacity Utilization	24.0%			ICU Level of Service A		
Analysis Period (min)	15					

Lanes, Volumes, Timings
6: 10 Side Road & Street B

Future Total 2029 PM with Improvements
03/16/2025

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰		↰	↱
Traffic Volume (vph)	67	395	400	143	100	22
Future Volume (vph)	67	395	400	143	100	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.7	3.7
Storage Length (m)	30.0			0.0	30.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	60.0			60.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.965			0.850	
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1785	1879	1813	0	1825	1633
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1785	1879	1813	0	1825	1633
Link Speed (k/h)		30	30		30	
Link Distance (m)		324.7	348.4		148.4	
Travel Time (s)		39.0	41.8		17.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	73	429	435	155	109	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	73	429	590	0	109	24
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	0.99	0.99
Turning Speed (k/h)	97			97	97	97
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 49.0%
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
6: 10 Side Road & Street B

Future Total 2029 PM with Improvements
03/16/2025

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	↰	↱	↰		↰	↱
Lane Configurations	↰	↱	↰		↰	↱
Traffic Volume (veh/h)	67	395	400	143	100	22
Future Volume (Veh/h)	67	395	400	143	100	22
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	73	429	435	155	109	24
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None	None				
Median storage veh						
Upstream signal (m)			348			
pX, platoon unblocked						
vC, conflicting volume	590				1088	512
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	590				1088	512
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	93				51	96
cM capacity (veh/h)	995				223	566

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	73	429	590	109	24
Volume Left	73	0	0	109	0
Volume Right	0	0	155	0	24
cSH	995	1700	1700	223	566
Volume to Capacity	0.07	0.25	0.35	0.49	0.04
Queue Length 95th (m)	1.8	0.0	0.0	18.6	1.0
Control Delay (s)	8.9	0.0	0.0	35.6	11.6
Lane LOS	A			E	B
Approach Delay (s)	1.3		0.0	31.2	
Approach LOS				D	

Intersection Summary

Average Delay 3.9
Intersection Capacity Utilization 49.0%
Analysis Period (min) 15

Lanes, Volumes, Timings
9: Street B & Street P

Future Total 2029 PM with Improvements
03/16/2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	36	12	0	4	58	134	18	5	71	0
Future Volume (vph)	0	0	36	12	0	4	58	134	18	5	71	0
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		0.865			0.968			0.988				
Flt Protected					0.963			0.986			0.997	
Satd. Flow (prot)	0	1662	0	0	1791	0	0	1871	0	0	1915	0
Flt Permitted					0.963			0.986			0.997	
Satd. Flow (perm)	0	1662	0	0	1791	0	0	1871	0	0	1915	0
Link Speed (k/h)		30			30			30			30	
Link Distance (m)		109.6			77.3			148.4			183.2	
Travel Time (s)		13.2			9.3			17.8			22.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	0	39	13	0	4	63	146	20	5	77	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	39	0	0	17	0	0	229	0	0	82	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97		97	97		97	97		97	97		97
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 32.3% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
9: Street B & Street P

Future Total 2029 PM with Improvements
03/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	36	12	0	4	58	134	18	5	71	0
Future Volume (Veh/h)	0	0	36	12	0	4	58	134	18	5	71	0
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	39	13	0	4	63	146	20	5	77	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None								None			
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	373	379	77	408	369	156	77	166				
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	373	379	77	408	369	156	77	166				
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1	4.1				
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2	2.2				
p0 queue free %	100	100	96	97	100	100	96	100				
cM capacity (veh/h)	565	532	990	517	538	895	1535	1424				

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	39	17	229	82
Volume Left	0	13	63	5
Volume Right	39	4	20	0
cSH	990	574	1535	1424
Volume to Capacity	0.04	0.03	0.04	0.00
Queue Length 95th (m)	0.9	0.7	1.0	0.1
Control Delay (s)	8.8	11.5	2.3	0.5
Lane LOS	A	B	A	A
Approach Delay (s)	8.8	11.5	2.3	0.5
Approach LOS	A	B		

Intersection Summary

Average Delay 3.0
Intersection Capacity Utilization 32.3% ICU Level of Service A
Analysis Period (min) 15

Lanes, Volumes, Timings
11: Street C/Street D & Street E

Future Total 2029 PM with Improvements
03/16/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	4	24	45	0	1	5
Future Volume (vph)	4	24	45	0	1	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.883				0.887	
Flt Protected	0.993			0.950		
Satd. Flow (prot)	1684	0	0	1825	1704	0
Flt Permitted	0.993			0.950		
Satd. Flow (perm)	1684	0	0	1825	1704	0
Link Speed (k/h)	30			30	30	
Link Distance (m)	155.5			304.2	72.8	
Travel Time (s)	18.7			36.5	8.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	4	26	49	0	1	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	30	0	0	49	6	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97	97			97
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 19.2% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Future Total 2029 PM with Improvements
11: Street C/Street D & Street E 03/16/2025

Intersection Sign configuration not allowed in HCM analysis.

Lanes, Volumes, Timings
3: 10th Line & Danby Road/Street A

Future Total 2031 AM
03/16/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰		↱	↰	↱		↰	↱		↰	↱	
Traffic Volume (vph)	2	16	198	24	39	14	41	33	6	6	253	3
Future Volume (vph)	2	16	198	24	39	14	41	33	6	6	253	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.7	2.8	3.7	3.7	3.7	3.3	3.5	3.7	3.7	3.5	3.5
Storage Length (m)	25.0		25.0	0.0		0.0	30.0		0.0	0.0		0.0
Storage Lanes	1		0	0		0	1		0	0		0
Taper Length (m)	23.0			2.5			21.0			7.6		
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
Ped Bike Factor												
Frt			0.850		0.976			0.976			0.999	
Flt Protected	0.950				0.985		0.950				0.999	
Satd. Flow (prot)	1645	0	1443	0	1847	0	1662	1834	0	0	1875	0
Flt Permitted	0.950				0.985		0.950				0.999	
Satd. Flow (perm)	1645	0	1443	0	1847	0	1662	1834	0	0	1875	0
Link Speed (k/h)		48			48			48			48	
Link Distance (m)		106.1			72.9			352.4			158.0	
Travel Time (s)		8.0			5.5			26.4			11.9	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	5%	0%	0%	0%	0%	0%
Adj. Flow (vph)	2	18	218	26	43	15	45	36	7	7	278	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	2	18	218	0	84	0	45	43	0	0	288	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		2.8			2.8			3.3			3.3	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			1.6			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.13	0.99	1.13	0.99	0.99	0.99	1.04	1.01	0.99	0.99	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization Err%	ICU Level of Service H											
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
3: 10th Line & Danby Road/Street A

Future Total 2031 AM
03/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	16	198	24	39	14	41	33	6	6	253	3
Future Volume (Veh/h)	2	16	198	24	39	14	41	33	6	6	253	3
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	2	18	218	26	43	15	45	36	7	7	278	3
Pedestrians	1											
Lane Width (m)	2.8											
Walking Speed (m/s)	1.1											
Percent Blockage	0											
Right turn flare (veh)												
Median type	None								None			
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	457	428	280	650	426	40	282				43	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	457	428	280	650	426	40	282				43	
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	100	96	71	90	91	99	96				100	
cM capacity (veh/h)	462	501	758	259	503	1038	1262				1579	
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1						
Volume Total	2	236	84	45	43	288						
Volume Left	2	0	26	45	0	7						
Volume Right	0	218	15	0	7	3						
cSH	462	729	419	1262	1700	1579						
Volume to Capacity	0.00	0.32	0.20	0.04	0.03	0.00						
Queue Length 95th (m)	0.1	10.7	5.6	0.8	0.0	0.1						
Control Delay (s)	12.8	12.3	15.7	8.0	0.0	0.2						
Lane LOS	B	B	C	A		A						
Approach Delay (s)	12.3		15.7	4.1		0.2						
Approach LOS	B		C									
Intersection Summary												
Average Delay				6.7								
Intersection Capacity Utilization	Err%			ICU Level of Service			H					
Analysis Period (min)	15											

Lanes, Volumes, Timings
4: 10th Line/Argyll Road & Street E

Future Total 2031 AM
03/16/2025

	←	←	↑	↘	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘		↘			↘
Traffic Volume (vph)	27	26	37	11	9	234
Future Volume (vph)	27	26	37	11	9	234
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.934		0.969			
Flt Protected	0.975					0.998
Satd. Flow (prot)	1749	0	1862	0	0	1917
Flt Permitted	0.975					0.998
Satd. Flow (perm)	1749	0	1862	0	0	1917
Link Speed (k/h)	48		48			48
Link Distance (m)	67.3		347.4			57.0
Travel Time (s)	5.0		26.1			4.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	29	28	40	12	10	254
Shared Lane Traffic (%)						
Lane Group Flow (vph)	57	0	52	0	0	264
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 29.5% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
4: 10th Line/Argyll Road & Street E

Future Total 2031 AM
03/16/2025

	←	←	↑	↘	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘		↘			↘
Traffic Volume (veh/h)	27	26	37	11	9	234
Future Volume (Veh/h)	27	26	37	11	9	234
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	29	28	40	12	10	254
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	320	46			52	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	320	46			52	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	97			99	
cM capacity (veh/h)	673	1029			1567	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	57	52	264
Volume Left	29	0	10
Volume Right	28	12	0
cSH	811	1700	1567
Volume to Capacity	0.07	0.03	0.01
Queue Length 95th (m)	1.7	0.0	0.1
Control Delay (s)	9.8	0.0	0.3
Lane LOS	A		A
Approach Delay (s)	9.8	0.0	0.3
Approach LOS	A		

Intersection Summary

Average Delay	1.7		
Intersection Capacity Utilization	29.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
5: Street B/Street C & Street A

Future Total 2031 AM
03/16/2025

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	6	8	8	31	76	18
Future Volume (vph)	6	8	8	31	76	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.924				0.974	
Flt Protected	0.979			0.990		
Satd. Flow (prot)	1738	0	0	1902	1871	0
Flt Permitted	0.979			0.990		
Satd. Flow (perm)	1738	0	0	1902	1871	0
Link Speed (k/h)	48			48	48	
Link Distance (m)	235.7			183.2	189.8	
Travel Time (s)	17.7			13.7	14.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	7	9	9	34	83	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	0	0	43	103	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop			Stop	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	18.5%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
5: Street B/Street C & Street A

Future Total 2031 AM
03/16/2025

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	6	8	8	31	76	18
Future Volume (vph)	6	8	8	31	76	18
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	9	9	34	83	20
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total (vph)	16	43	103			
Volume Left (vph)	7	9	0			
Volume Right (vph)	9	0	20			
Hadj (s)	-0.25	0.04	-0.12			
Departure Headway (s)	4.0	4.1	3.9			
Degree Utilization, x	0.02	0.05	0.11			
Capacity (veh/h)	875	865	923			
Control Delay (s)	7.0	7.3	7.3			
Approach Delay (s)	7.0	7.3	7.3			
Approach LOS	A	A	A			
Intersection Summary						
Delay	7.3					
Level of Service	A					
Intersection Capacity Utilization	18.5%			ICU Level of Service		
Analysis Period (min)	15					
A						

Lanes, Volumes, Timings
6: 10 Side Road & Street B

Future Total 2031 AM
03/16/2025

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↩	↗↗	↗↗		↩	↗
Traffic Volume (vph)	14	717	1403	49	129	18
Future Volume (vph)	14	717	1403	49	129	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.7	3.7
Storage Length (m)	30.0			0.0	30.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	60.0			60.0		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.995			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1785	3570	3552	0	1825	1633
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1785	3570	3552	0	1825	1633
Link Speed (k/h)		48	48		48	
Link Distance (m)		324.7	348.4		148.4	
Travel Time (s)		24.4	26.1		11.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	15	779	1525	53	140	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	15	779	1578	0	140	20
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 54.2%
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
6: 10 Side Road & Street B

Future Total 2031 AM
03/16/2025

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	↩	↗↗	↗↗		↩	↗
Lane Configurations	↩	↗↗	↗↗		↩	↗
Traffic Volume (veh/h)	14	717	1403	49	129	18
Future Volume (Veh/h)	14	717	1403	49	129	18
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	779	1525	53	140	20
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1578				1971	789
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1578				1971	789
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				0	94
cM capacity (veh/h)	423				54	338

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	15	390	390	1017	561	140	20
Volume Left	15	0	0	0	0	140	0
Volume Right	0	0	0	0	53	0	20
cSH	423	1700	1700	1700	1700	54	338
Volume to Capacity	0.04	0.23	0.23	0.60	0.33	2.60	0.06
Queue Length 95th (m)	0.8	0.0	0.0	0.0	0.0	109.5	1.4
Control Delay (s)	13.8	0.0	0.0	0.0	0.0	887.5	16.3
Lane LOS	B					F	C
Approach Delay (s)	0.3			0.0		778.6	
Approach LOS						F	

Intersection Summary

Average Delay 49.3
Intersection Capacity Utilization 54.2%
Analysis Period (min) 15

Lanes, Volumes, Timings
7: Norval Bypass & Street T

Future Total 2031 AM
03/16/2025

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↕		↔	↕
Traffic Volume (vph)	32	7	900	12	1	1350
Future Volume (vph)	32	7	900	12	1	1350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	15.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	2.5				30.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt	0.975		0.998			
Flt Protected	0.961				0.950	
Satd. Flow (prot)	1800	0	3643	0	1825	3650
Flt Permitted	0.961				0.950	
Satd. Flow (perm)	1800	0	3643	0	1825	3650
Link Speed (k/h)	48		48		48	
Link Distance (m)	69.7		183.3		256.6	
Travel Time (s)	5.2		13.7		19.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	35	8	978	13	1	1467
Shared Lane Traffic (%)						
Lane Group Flow (vph)	43	0	991	0	1	1467
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		3.7		3.7	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free		Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 47.3% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
7: Norval Bypass & Street T

Future Total 2031 AM
03/16/2025

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↕		↔	↕
Traffic Volume (veh/h)	32	7	900	12	1	1350
Future Volume (Veh/h)	32	7	900	12	1	1350
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	35	8	978	13	1	1467
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1720	496			991	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1720	496			991	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	57	98			100	
cM capacity (veh/h)	82	525			706	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	43	652	339	1	734	734
Volume Left	35	0	0	1	0	0
Volume Right	8	0	13	0	0	0
cSH	97	1700	1700	706	1700	1700
Volume to Capacity	0.44	0.38	0.20	0.00	0.43	0.43
Queue Length 95th (m)	14.2	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	68.4	0.0	0.0	10.1	0.0	0.0
Lane LOS	F			B		
Approach Delay (s)	68.4	0.0		0.0		
Approach LOS	F					

Intersection Summary

Average Delay	1.2					
Intersection Capacity Utilization	47.3%		ICU Level of Service	A		
Analysis Period (min)	15					

Lanes, Volumes, Timings
9: Street B & Street P

Future Total 2031 AM
03/16/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	0	52	18	0	6	21	33	6	2	82	0
Future Volume (vph)	0	0	52	18	0	6	21	33	6	2	82	0
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		0.865			0.965			0.986				
Flt Protected					0.964			0.983			0.999	
Satd. Flow (prot)	0	1662	0	0	1787	0	0	1862	0	0	1919	0
Flt Permitted					0.964			0.983			0.999	
Satd. Flow (perm)	0	1662	0	0	1787	0	0	1862	0	0	1919	0
Link Speed (k/h)		48			48			48			48	
Link Distance (m)		109.6			77.3			148.4			183.2	
Travel Time (s)		8.2			5.8			11.1			13.7	
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)	0	0	57	20	0	7	23	36	7	2	89	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	57	0	0	27	0	0	66	0	0	91	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 24.6% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
9: Street B & Street P

Future Total 2031 AM
03/16/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	0	52	18	0	6	21	33	6	2	82	0
Future Volume (Veh/h)	0	0	52	18	0	6	21	33	6	2	82	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	57	20	0	7	23	36	7	2	89	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None				None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	186	182	89	236	178	40	89			43		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	186	182	89	236	178	40	89			43		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	94	97	100	99	98			100		
cM capacity (veh/h)	765	704	975	672	707	1038	1519			1579		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	57	27	66	91
Volume Left	0	20	23	2
Volume Right	57	7	7	0
cSH	975	740	1519	1579
Volume to Capacity	0.06	0.04	0.02	0.00
Queue Length 95th (m)	1.4	0.9	0.4	0.0
Control Delay (s)	8.9	10.0	2.7	0.2
Lane LOS	A	B	A	A
Approach Delay (s)	8.9	10.0	2.7	0.2
Approach LOS	A	B		

Intersection Summary

Average Delay	4.0			
Intersection Capacity Utilization	24.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Lanes, Volumes, Timings
11: Street C/Street D & Street E

Future Total 2031 AM
03/16/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	2	12	47	0	1	7
Future Volume (vph)	2	12	47	0	1	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.883				0.880	
Flt Protected	0.993			0.950		
Satd. Flow (prot)	1684	0	0	1825	1691	0
Flt Permitted	0.993			0.950		
Satd. Flow (perm)	1684	0	0	1825	1691	0
Link Speed (k/h)	48			48	48	
Link Distance (m)	155.5			304.2	72.8	
Travel Time (s)	11.7			22.8	5.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	2	13	51	0	1	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	15	0	0	51	9	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 19.3%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
11: Street C/Street D & Street E

Future Total 2031 AM
03/16/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	2	12	47	0	1	7
Future Volume (Veh/h)	2	12	47	0	1	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	13	51	0	1	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	107	5	9			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	107	5	9			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	97			
cM capacity (veh/h)	867	1084	1624			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	15	51	9			
Volume Left	2	51	0			
Volume Right	13	0	8			
cSH	1049	1624	1700			
Volume to Capacity	0.01	0.03	0.01			
Queue Length 95th (m)	0.3	0.7	0.0			
Control Delay (s)	8.5	7.3	0.0			
Lane LOS	A	A				
Approach Delay (s)	8.5	7.3	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		6.7				
Intersection Capacity Utilization		19.3%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings
3: 10th Line & Danby Road/Street A
Future Total 2031 AM with Improvements
03/16/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	→	↱	↰	↱	→	↰	↱	→	↰	↱	→
Traffic Volume (vph)	2	16	198	24	39	14	41	33	6	6	253	3
Future Volume (vph)	2	16	198	24	39	14	41	33	6	6	253	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.7	2.8	3.7	3.7	3.7	3.3	3.5	3.7	3.7	3.5	3.5
Storage Length (m)	25.0		25.0	0.0		0.0	30.0		0.0	0.0		0.0
Storage Lanes	1		0	0		0	1		0	0		0
Taper Length (m)	23.0			2.5			21.0			7.6		
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
Ped Bike Factor												
Frt			0.850		0.976			0.976			0.999	
Flt Protected	0.950				0.985		0.950				0.999	
Satd. Flow (prot)	1645	0	1443	0	1847	0	1662	1834	0	0	1875	0
Flt Permitted	0.950				0.985		0.950				0.999	
Satd. Flow (perm)	1645	0	1443	0	1847	0	1662	1834	0	0	1875	0
Link Speed (k/h)		48			48			48			48	
Link Distance (m)		106.1			72.9			352.4			158.0	
Travel Time (s)		8.0			5.5			26.4			11.9	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	5%	0%	0%	0%	0%	0%
Adj. Flow (vph)	2	18	218	26	43	15	45	36	7	7	278	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	2	18	218	0	84	0	45	43	0	0	288	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		2.8			2.8			3.3			3.3	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			1.6			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.13	0.99	1.13	0.99	0.99	0.99	1.04	1.01	0.99	0.99	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization Err%	ICU Level of Service H											
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
3: 10th Line & Danby Road/Street A
Future Total 2031 AM with Improvements
03/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	16	198	24	39	14	41	33	6	6	253	3
Future Volume (Veh/h)	2	16	198	24	39	14	41	33	6	6	253	3
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	2	18	218	26	43	15	45	36	7	7	278	3
Pedestrians	1											
Lane Width (m)	2.8											
Walking Speed (m/s)	1.1											
Percent Blockage	0											
Right turn flare (veh)												
Median type	None								None			
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	457	428	280	650	426	40	282				43	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	457	428	280	650	426	40	282				43	
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	100	96	71	90	91	99	96				100	
cM capacity (veh/h)	462	501	758	259	503	1038	1262				1579	
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1						
Volume Total	2	236	84	45	43	288						
Volume Left	2	0	26	45	0	7						
Volume Right	0	218	15	0	7	3						
cSH	462	729	419	1262	1700	1579						
Volume to Capacity	0.00	0.32	0.20	0.04	0.03	0.00						
Queue Length 95th (m)	0.1	10.7	5.6	0.8	0.0	0.1						
Control Delay (s)	12.8	12.3	15.7	8.0	0.0	0.2						
Lane LOS	B	B	C	A		A						
Approach Delay (s)	12.3		15.7	4.1		0.2						
Approach LOS	B		C									
Intersection Summary												
Average Delay				6.7								
Intersection Capacity Utilization	Err%			ICU Level of Service			H					
Analysis Period (min)	15											

Lanes, Volumes, Timings
4: 10th Line/Argyll Road & Street E

Future Total 2031 AM with Improvements
03/16/2025

	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	27	26	37	11	9	0
Future Volume (vph)	27	26	37	11	9	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.934		0.969			
Frt Protected	0.975					0.950
Satd. Flow (prot)	1749	0	1862	0	0	1825
Frt Permitted	0.975					0.950
Satd. Flow (perm)	1749	0	1862	0	0	1825
Link Speed (k/h)	48		48			48
Link Distance (m)	67.3		347.4			57.0
Travel Time (s)	5.0		26.1			4.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	29	28	40	12	10	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	57	0	52	0	0	10
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 17.2% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Future Total 2031 AM with Improvements
4: 10th Line/Argyll Road & Street E 03/16/2025

	WBL	WBR	NBT	NBR	SBL	SBT
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (veh/h)	27	26	37	11	9	0
Future Volume (Veh/h)	27	26	37	11	9	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	29	28	40	12	10	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	66	46			52	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	66	46			52	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	97			99	
cM capacity (veh/h)	938	1029			1567	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	57	52	10
Volume Left	29	0	10
Volume Right	28	12	0
cSH	981	1700	1567
Volume to Capacity	0.06	0.03	0.01
Queue Length 95th (m)	1.4	0.0	0.1
Control Delay (s)	8.9	0.0	7.3
Lane LOS	A		A
Approach Delay (s)	8.9	0.0	7.3
Approach LOS	A		

Intersection Summary

Average Delay	4.9		
Intersection Capacity Utilization	17.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
5: Street B/Street C & Street A

Future Total 2031 AM with Improvements
03/16/2025

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	6	8	8	31	76	18
Future Volume (vph)	6	8	8	31	76	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.924				0.974	
Flt Protected	0.979			0.990		
Satd. Flow (prot)	1738	0	0	1902	1871	0
Flt Permitted	0.979			0.990		
Satd. Flow (perm)	1738	0	0	1902	1871	0
Link Speed (k/h)	48			48	48	
Link Distance (m)	235.7			183.2	189.8	
Travel Time (s)	17.7			13.7	14.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	7	9	9	34	83	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	0	0	43	103	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop			Stop	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	18.5%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
5: Street B/Street C & Street A

Future Total 2031 AM with Improvements
03/16/2025

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	6	8	8	31	76	18
Future Volume (vph)	6	8	8	31	76	18
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	9	9	34	83	20
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total (vph)	16	43	103			
Volume Left (vph)	7	9	0			
Volume Right (vph)	9	0	20			
Hadj (s)	-0.25	0.04	-0.12			
Departure Headway (s)	4.0	4.1	3.9			
Degree Utilization, x	0.02	0.05	0.11			
Capacity (veh/h)	875	865	923			
Control Delay (s)	7.0	7.3	7.3			
Approach Delay (s)	7.0	7.3	7.3			
Approach LOS	A	A	A			
Intersection Summary						
Delay	7.3					
Level of Service	A					
Intersection Capacity Utilization	18.5%			ICU Level of Service A		
Analysis Period (min)	15					

Lanes, Volumes, Timings
6: 10 Side Road & Street B

Future Total 2031 AM with Improvements
03/16/2025

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	14	717	1403	49	129	18
Future Volume (vph)	14	717	1403	49	129	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.7	3.7
Storage Length (m)	30.0			0.0	30.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	60.0			60.0		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.995			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1785	3570	3552	0	1825	1633
Flt Permitted	0.088				0.950	
Satd. Flow (perm)	165	3570	3552	0	1825	1633
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			8			20
Link Speed (k/h)		48	48		48	
Link Distance (m)		324.7	348.4		148.4	
Travel Time (s)		24.4	26.1		11.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	15	779	1525	53	140	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	15	779	1578	0	140	20
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	0.99	0.99
Turning Speed (k/h)	24			14	24	14
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	6.1	30.5	30.5		6.1	6.1
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	6.1	1.8	1.8		6.1	6.1
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)		28.7	28.7			
Detector 2 Size(m)		1.8	1.8			
Detector 2 Type		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm	NA	NA		Prot	Perm

Lanes, Volumes, Timings
6: 10 Side Road & Street B

Future Total 2031 AM with Improvements
03/16/2025

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		4	8		6	
Permitted Phases	4					6
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	22.5	22.5	22.5		22.5	22.5
Total Split (s)	63.0	63.0	63.0		27.0	27.0
Total Split (%)	70.0%	70.0%	70.0%		30.0%	30.0%
Maximum Green (s)	58.5	58.5	58.5		22.5	22.5
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		Max	Max
Walk Time (s)	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	45.6	45.6	45.6		22.9	22.9
Actuated g/C Ratio	0.59	0.59	0.59		0.30	0.30
v/c Ratio	0.15	0.37	0.76		0.26	0.04
Control Delay	10.7	8.6	14.1		25.5	11.4
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	10.7	8.6	14.1		25.5	11.4
LOS	B	A	B		C	B
Approach Delay		8.7	14.1		23.8	
Approach LOS		A	B		C	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 77.6

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 13.0

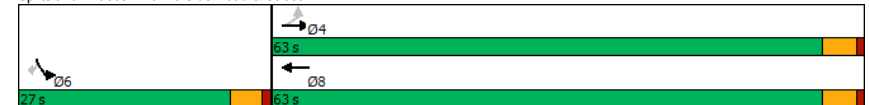
Intersection LOS: B

Intersection Capacity Utilization 55.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: 10 Side Road & Street B



Queues
6: 10 Side Road & Street B

Future Total 2031 AM with Improvements
03/16/2025

	EBL	EBT	WBT	SBL	SBR
Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	15	779	1578	140	20
v/c Ratio	0.15	0.37	0.76	0.26	0.04
Control Delay	10.7	8.6	14.1	25.5	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	10.7	8.6	14.1	25.5	11.4
Queue Length 50th (m)	0.9	28.2	80.1	15.9	0.0
Queue Length 95th (m)	3.9	37.3	102.1	35.4	5.3
Internal Link Dist (m)		300.7	324.4	124.4	
Turn Bay Length (m)	30.0			30.0	
Base Capacity (vph)	126	2734	2722	537	495
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.12	0.28	0.58	0.26	0.04
Intersection Summary					

HCM Signalized Intersection Capacity Analysis
6: 10 Side Road & Street B

Future Total 2031 AM with Improvements
03/16/2025

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	14	717	1403	49	129	18
Future Volume (vph)	14	717	1403	49	129	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.7	3.7
Total Lost time (s)	4.5	4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1785	3570	3552		1825	1633
Flt Permitted	0.09	1.00	1.00		0.95	1.00
Satd. Flow (perm)	165	3570	3552		1825	1633
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	779	1525	53	140	20
RTOR Reduction (vph)	0	0	3	0	0	14
Lane Group Flow (vph)	15	779	1575	0	140	6
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases	4					6
Actuated Green, G (s)	45.6	45.6	45.6		22.9	22.9
Effective Green, g (s)	45.6	45.6	45.6		22.9	22.9
Actuated g/C Ratio	0.59	0.59	0.59		0.30	0.30
Clearance Time (s)	4.5	4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	97	2100	2089		539	482
v/s Ratio Prot		0.22	c0.44		c0.08	
v/s Ratio Perm	0.09					0.00
v/c Ratio	0.15	0.37	0.75		0.26	0.01
Uniform Delay, d1	7.2	8.4	11.8		20.8	19.3
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.7	0.1	1.6		1.2	0.0
Delay (s)	8.0	8.5	13.4		22.0	19.3
Level of Service	A	A	B		C	B
Approach Delay (s)		8.5	13.4		21.7	
Approach LOS		A	B		C	
Intersection Summary						
HCM 2000 Control Delay			12.4		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.59			
Actuated Cycle Length (s)			77.5		Sum of lost time (s)	9.0
Intersection Capacity Utilization			55.0%		ICU Level of Service	A
Analysis Period (min)			15			

c Critical Lane Group

Lanes, Volumes, Timings
7: Norval Bypass & Street T

Future Total 2031 AM with Improvements
03/16/2025

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Volume (vph)	32	7	900	12	1	1350
Future Volume (vph)	32	7	900	12	1	1350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	15.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	2.5				30.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt	0.975		0.998			
Fit Protected	0.961				0.950	
Satd. Flow (prot)	1800	0	3643	0	1825	3650
Fit Permitted	0.961				0.950	
Satd. Flow (perm)	1800	0	3643	0	1825	3650
Link Speed (k/h)	48		48		48	
Link Distance (m)	69.7		183.3		256.6	
Travel Time (s)	5.2		13.7		19.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	35	8	978	13	1	1467
Shared Lane Traffic (%)						
Lane Group Flow (vph)	43	0	991	0	1	1467
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		3.7		3.7	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free		Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 47.3% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
7: Norval Bypass & Street T

Future Total 2031 AM with Improvements
03/16/2025

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Volume (veh/h)	32	7	900	12	1	1350
Future Volume (Veh/h)	32	7	900	12	1	1350
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	35	8	978	13	1	1467
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1720	496			991	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1720	496			991	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	57	98			100	
cM capacity (veh/h)	82	525			706	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	43	652	339	1	734	734
Volume Left	35	0	0	1	0	0
Volume Right	8	0	13	0	0	0
cSH	97	1700	1700	706	1700	1700
Volume to Capacity	0.44	0.38	0.20	0.00	0.43	0.43
Queue Length 95th (m)	14.2	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	68.4	0.0	0.0	10.1	0.0	0.0
Lane LOS	F			B		
Approach Delay (s)	68.4	0.0		0.0		
Approach LOS	F					

Intersection Summary

Average Delay	1.2					
Intersection Capacity Utilization	47.3%			ICU Level of Service	A	
Analysis Period (min)	15					

Lanes, Volumes, Timings
9: Street B & Street P

Future Total 2031 AM with Improvements
03/16/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	0	52	18	0	6	21	33	6	2	82	0
Future Volume (vph)	0	0	52	18	0	6	21	33	6	2	82	0
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		0.865			0.965			0.986				
Flt Protected					0.964			0.983			0.999	
Satd. Flow (prot)	0	1662	0	0	1787	0	0	1862	0	0	1919	0
Flt Permitted					0.964			0.983			0.999	
Satd. Flow (perm)	0	1662	0	0	1787	0	0	1862	0	0	1919	0
Link Speed (k/h)		48			48			48			48	
Link Distance (m)		109.6			77.3			148.4			183.2	
Travel Time (s)		8.2			5.8			11.1			13.7	
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)	0	0	57	20	0	7	23	36	7	2	89	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	57	0	0	27	0	0	66	0	0	91	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Right	Left	Left	Right	Right
Median Width(m)		0.0			0.0			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 24.6% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
9: Street B & Street P

Future Total 2031 AM with Improvements
03/16/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	0	52	18	0	6	21	33	6	2	82	0
Future Volume (Veh/h)	0	0	52	18	0	6	21	33	6	2	82	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	57	20	0	7	23	36	7	2	89	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)								148				
pX, platoon unblocked												
vC, conflicting volume	186	182	89	236	178	40	89			43		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	186	182	89	236	178	40	89			43		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	94	97	100	99	98			100		
cM capacity (veh/h)	765	704	975	672	707	1038	1519			1579		

Direction, Lane #

	EB 1	WB 1	NB 1	SB 1
Volume Total	57	27	66	91
Volume Left	0	20	23	2
Volume Right	57	7	7	0
cSH	975	740	1519	1579
Volume to Capacity	0.06	0.04	0.02	0.00
Queue Length 95th (m)	1.4	0.9	0.4	0.0
Control Delay (s)	8.9	10.0	2.7	0.2
Lane LOS	A	B	A	A
Approach Delay (s)	8.9	10.0	2.7	0.2
Approach LOS	A	B		

Intersection Summary

Average Delay	4.0			
Intersection Capacity Utilization	24.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Lanes, Volumes, Timings
11: Street C/Street D & Street E

Future Total 2031 AM with Improvements
03/16/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	2	12	47	0	1	7
Future Volume (vph)	2	12	47	0	1	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.883				0.880	
Flt Protected	0.993			0.950		
Satd. Flow (prot)	1684	0	0	1825	1691	0
Flt Permitted	0.993			0.950		
Satd. Flow (perm)	1684	0	0	1825	1691	0
Link Speed (k/h)	48			48	48	
Link Distance (m)	155.5			304.2	72.8	
Travel Time (s)	11.7			22.8	5.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	2	13	51	0	1	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	15	0	0	51	9	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 19.3%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
11: Street C/Street D & Street E

Future Total 2031 AM with Improvements
03/16/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Movement						
Lane Configurations						
Traffic Volume (veh/h)	2	12	47	0	1	7
Future Volume (Veh/h)	2	12	47	0	1	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	13	51	0	1	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	107	5	9			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	107	5	9			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	97			
cM capacity (veh/h)	867	1084	1624			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	15	51	9			
Volume Left	2	51	0			
Volume Right	13	0	8			
cSH	1049	1624	1700			
Volume to Capacity	0.01	0.03	0.01			
Queue Length 95th (m)	0.3	0.7	0.0			
Control Delay (s)	8.5	7.3	0.0			
Lane LOS	A	A				
Approach Delay (s)	8.5	7.3	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		6.7				
Intersection Capacity Utilization		19.3%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings
3: 10th Line & Danby Road/Street A

Future Total 2031 PM
03/16/2025

	←	→	↙	↘	←	↙	↘	→	↙	↘	→	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↙		↘		↔		↙	↘			↔		
Traffic Volume (vph)	4	43	61	18	35	8	147	242	29	21	76	9	
Future Volume (vph)	4	43	61	18	35	8	147	242	29	21	76	9	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (m)	2.8	3.7	2.8	3.7	3.7	3.7	3.3	3.5	3.7	3.7	3.5	3.5	
Storage Length (m)	25.0		25.0	0.0		0.0	30.0		0.0	0.0		0.0	
Storage Lanes	1		0	0		0	1		0	0		0	
Taper Length (m)	23.0			2.5			21.0			7.6			
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	
Ped Bike Factor													
Frt			0.850		0.983			0.984			0.989		
Flt Protected	0.950				0.985		0.950				0.990		
Satd. Flow (prot)	1645	0	1471	0	1860	0	1745	1849	0	0	1823	0	
Flt Permitted	0.950				0.985		0.950				0.990		
Satd. Flow (perm)	1645	0	1471	0	1860	0	1745	1849	0	0	1823	0	
Link Speed (k/h)		30			30			30			30		
Link Distance (m)		106.1			72.9			352.4			158.0		
Travel Time (s)		12.7			8.7			42.3			19.0		
Confl. Peds. (#/hr)							3					3	
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%	0%	0%	0%	0%	0%	0%	0%	11%	
Adj. Flow (vph)	4	45	64	19	37	8	155	255	31	22	80	9	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	4	45	64	0	64	0	155	286	0	0	111	0	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No	
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(m)		2.8			2.8			3.3			3.3		
Link Offset(m)		0.0			0.0			0.0			0.0		
Crosswalk Width(m)		4.9			1.6			4.9			4.9		
Two way Left Turn Lane													
Headway Factor	1.13	0.99	1.13	0.99	0.99	0.99	1.04	1.01	0.99	0.99	1.01	1.01	
Turning Speed (k/h)	60		60	97		97	60		97	97		60	
Sign Control		Stop			Stop			Free			Free		
Intersection Summary													
Area Type:	Other												
Control Type:	Unsignalized												
Intersection Capacity Utilization Err%	ICU Level of Service H												
Analysis Period (min)	15												

HCM Unsignalized Intersection Capacity Analysis
3: 10th Line & Danby Road/Street A

Future Total 2031 PM
03/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	43	61	18	35	8	147	242	29	21	76	9
Future Volume (Veh/h)	4	43	61	18	35	8	147	242	29	21	76	9
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
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
Hourly flow rate (vph)	4	45	64	19	37	8	155	255	31	22	80	9
Pedestrians	3											
Lane Width (m)	2.8											
Walking Speed (m/s)	3.5											
Percent Blockage	0											
Right turn flare (veh)												
Median type	None								None			
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	723	728	88	796	716	270	92				286	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	723	728	88	796	716	270	92				286	
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	99	86	93	92	88	99	90				98	
cM capacity (veh/h)	282	311	976	233	316	773	1514				1288	
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1						
Volume Total	4	109	64	155	286	111						
Volume Left	4	0	19	155	0	22						
Volume Right	0	64	8	0	31	9						
cSH	282	518	306	1514	1700	1288						
Volume to Capacity	0.01	0.21	0.21	0.10	0.17	0.02						
Queue Length 95th (m)	0.3	6.0	5.9	2.6	0.0	0.4						
Control Delay (s)	17.9	13.8	19.8	7.6	0.0	1.7						
Lane LOS	C	B	C	A		A						
Approach Delay (s)	13.9		19.8	2.7		1.7						
Approach LOS	B		C									
Intersection Summary												
Average Delay	5.8											
Intersection Capacity Utilization	Err%			ICU Level of Service				H				
Analysis Period (min)	15											

Lanes, Volumes, Timings
4: 10th Line/Argyll Road & Street E

Future Total 2031 PM
03/16/2025

	←	↖	↗	→	↘	↙
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↙
Traffic Volume (vph)	22	27	245	9	19	84
Future Volume (vph)	22	27	245	9	19	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.926		0.995			
Flt Protected	0.978					0.991
Satd. Flow (prot)	1740	0	1912	0	0	1904
Flt Permitted	0.978					0.991
Satd. Flow (perm)	1740	0	1912	0	0	1904
Link Speed (k/h)	30		30			30
Link Distance (m)	67.3		347.4			57.0
Travel Time (s)	8.1		41.7			6.8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	24	29	266	10	21	91
Shared Lane Traffic (%)						
Lane Group Flow (vph)	53	0	276	0	0	112
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97		97	97	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 30.8%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
4: 10th Line/Argyll Road & Street E

Future Total 2031 PM
03/16/2025

	←	↖	↗	→	↘	↙
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↙
Traffic Volume (veh/h)	22	27	245	9	19	84
Future Volume (Veh/h)	22	27	245	9	19	84
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	29	266	10	21	91
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	404	271			276	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	404	271			276	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	96			98	
cM capacity (veh/h)	597	773			1299	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	53	276	112			
Volume Left	24	0	21			
Volume Right	29	10	0			
cSH	682	1700	1299			
Volume to Capacity	0.08	0.16	0.02			
Queue Length 95th (m)	1.9	0.0	0.4			
Control Delay (s)	10.7	0.0	1.6			
Lane LOS	B		A			
Approach Delay (s)	10.7	0.0	1.6			
Approach LOS	B					
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization 30.8%			ICU Level of Service		A	
Analysis Period (min)			15			

Lanes, Volumes, Timings
5: Street B/Street C & Street A

Future Total 2031 PM
03/16/2025

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	27	24	16	122	52	11
Future Volume (vph)	27	24	16	122	52	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.936				0.977	
Flt Protected	0.974			0.994		
Satd. Flow (prot)	1751	0	0	1910	1877	0
Flt Permitted	0.974			0.994		
Satd. Flow (perm)	1751	0	0	1910	1877	0
Link Speed (k/h)	30			30	30	
Link Distance (m)	235.7			183.2	189.8	
Travel Time (s)	28.3			22.0	22.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	29	26	17	133	57	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	55	0	0	150	69	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97	97			97
Sign Control	Stop			Stop	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	24.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
5: Street B/Street C & Street A

Future Total 2031 PM
03/16/2025

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	27	24	16	122	52	11
Future Volume (vph)	27	24	16	122	52	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	29	26	17	133	57	12
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total (vph)	55	150	69			
Volume Left (vph)	29	17	0			
Volume Right (vph)	26	0	12			
Hadj (s)	-0.18	0.02	-0.10			
Departure Headway (s)	4.2	4.1	4.1			
Degree Utilization, x	0.06	0.17	0.08			
Capacity (veh/h)	814	853	864			
Control Delay (s)	7.5	8.0	7.4			
Approach Delay (s)	7.5	8.0	7.4			
Approach LOS	A	A	A			
Intersection Summary						
Delay	7.7					
Level of Service	A					
Intersection Capacity Utilization	24.0%			ICU Level of Service		A
Analysis Period (min)	15					

Lanes, Volumes, Timings
6: 10 Side Road & Street B

Future Total 2031 PM
03/16/2025

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↩	↗↗	↗↗		↩	↗
Traffic Volume (vph)	67	1402	721	145	101	22
Future Volume (vph)	67	1402	721	145	101	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.7	3.7
Storage Length (m)	30.0			0.0	30.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	60.0			60.0		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt		0.975			0.850	
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1785	3570	3481	0	1825	1633
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1785	3570	3481	0	1825	1633
Link Speed (k/h)		30	30		30	
Link Distance (m)		324.7	348.4		148.4	
Travel Time (s)		39.0	41.8		17.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	73	1524	784	158	110	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	73	1524	942	0	110	24
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.9	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	0.99	0.99
Turning Speed (k/h)	97			97	97	97
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 51.0%
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
6: 10 Side Road & Street B

Future Total 2031 PM
03/16/2025

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↩	↗↗	↗↗		↩	↗
Traffic Volume (veh/h)	67	1402	721	145	101	22
Future Volume (Veh/h)	67	1402	721	145	101	22
Sign Control	Free	Free	Free	Stop	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	73	1524	784	158	110	24
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None	None				
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	942				1771	471
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	942				1771	471
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	90				0	96
cM capacity (veh/h)	736				68	545

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	73	762	762	523	419	110	24
Volume Left	73	0	0	0	0	110	0
Volume Right	0	0	0	0	158	0	24
cSH	736	1700	1700	1700	1700	68	545
Volume to Capacity	0.10	0.45	0.45	0.31	0.25	1.61	0.04
Queue Length 95th (m)	2.5	0.0	0.0	0.0	0.0	72.4	1.0
Control Delay (s)	10.4	0.0	0.0	0.0	0.0	431.9	11.9
Lane LOS	B					F	B
Approach Delay (s)	0.5			0.0		356.7	
Approach LOS						F	

Intersection Summary

Average Delay 18.2
Intersection Capacity Utilization 51.0%
Analysis Period (min) 15

Lanes, Volumes, Timings
7: Norval Bypass & Street T

Future Total 2031 PM
03/16/2025

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↕		↔	↕
Traffic Volume (vph)	20	5	1350	32	5	900
Future Volume (vph)	20	5	1350	32	5	900
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	15.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	2.5				30.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt	0.975		0.997			
Flt Protected	0.961				0.950	
Satd. Flow (prot)	1800	0	3639	0	1825	3650
Flt Permitted	0.961				0.950	
Satd. Flow (perm)	1800	0	3639	0	1825	3650
Link Speed (k/h)	30		30		30	
Link Distance (m)	69.7		183.3		256.6	
Travel Time (s)	8.4		22.0		30.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	22	5	1467	35	5	978
Shared Lane Traffic (%)						
Lane Group Flow (vph)	27	0	1502	0	5	978
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		3.7		3.7	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97		97	97	
Sign Control	Stop		Free		Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 48.3%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
7: Norval Bypass & Street T

Future Total 2031 PM
03/16/2025

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↕		↔	↕
Traffic Volume (veh/h)	20	5	1350	32	5	900
Future Volume (Veh/h)	20	5	1350	32	5	900
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	5	1467	35	5	978
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1984	751			1502	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1984	751			1502	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	59	99			99	
cM capacity (veh/h)	54	358			452	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	27	978	524	5	489	489
Volume Left	22	0	0	5	0	0
Volume Right	5	0	35	0	0	0
cSH	64	1700	1700	452	1700	1700
Volume to Capacity	0.42	0.58	0.31	0.01	0.29	0.29
Queue Length 95th (m)	12.3	0.0	0.0	0.3	0.0	0.0
Control Delay (s)	96.7	0.0	0.0	13.1	0.0	0.0
Lane LOS	F			B		
Approach Delay (s)	96.7	0.0		0.1		
Approach LOS	F					
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization			48.3%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
9: Street B & Street P

Future Total 2031 PM
03/16/2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	36	12	0	4	58	134	18	5	71	0
Future Volume (vph)	0	0	36	12	0	4	58	134	18	5	71	0
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	0.865				0.968		0.988					
Flt Protected					0.963		0.986				0.997	
Satd. Flow (prot)	0	1662	0	0	1791	0	0	1871	0	0	1915	0
Flt Permitted					0.963		0.986				0.997	
Satd. Flow (perm)	0	1662	0	0	1791	0	0	1871	0	0	1915	0
Link Speed (k/h)	30				30		30				30	
Link Distance (m)	109.6				77.3		148.4				183.2	
Travel Time (s)	13.2				9.3		17.8				22.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	0	39	13	0	4	63	146	20	5	77	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	39	0	0	17	0	0	229	0	0	82	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	0.0				0.0		3.7				3.7	
Link Offset(m)	0.0				0.0		0.0				0.0	
Crosswalk Width(m)	1.6				1.6		1.6				1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97		97	97		97	97		97	97		97
Sign Control	Stop				Stop		Free				Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 32.3% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
9: Street B & Street P

Future Total 2031 PM
03/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	36	12	0	4	58	134	18	5	71	0
Future Volume (Veh/h)	0	0	36	12	0	4	58	134	18	5	71	0
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	39	13	0	4	63	146	20	5	77	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None								None			
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	373	379	77	408	369	156	77				166	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	373	379	77	408	369	156	77				166	
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	100	100	96	97	100	100	96				100	
cM capacity (veh/h)	565	532	990	517	538	895	1535				1424	

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	39	17	229	82
Volume Left	0	13	63	5
Volume Right	39	4	20	0
cSH	990	574	1535	1424
Volume to Capacity	0.04	0.03	0.04	0.00
Queue Length 95th (m)	0.9	0.7	1.0	0.1
Control Delay (s)	8.8	11.5	2.3	0.5
Lane LOS	A	B	A	A
Approach Delay (s)	8.8	11.5	2.3	0.5
Approach LOS	A	B		

Intersection Summary

Average Delay 3.0
Intersection Capacity Utilization 32.3% ICU Level of Service A
Analysis Period (min) 15

Lanes, Volumes, Timings
11: Street C/Street D & Street E

Future Total 2031 PM
03/16/2025

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	4	24	45	0	1	5
Future Volume (vph)	4	24	45	0	1	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.883				0.887	
Flt Protected	0.993			0.950		
Satd. Flow (prot)	1684	0	0	1825	1704	0
Flt Permitted	0.993			0.950		
Satd. Flow (perm)	1684	0	0	1825	1704	0
Link Speed (k/h)	30			30	30	
Link Distance (m)	155.5			304.2	72.8	
Travel Time (s)	18.7			36.5	8.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	4	26	49	0	1	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	30	0	0	49	6	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97	97			97
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 19.2% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
11: Street C/Street D & Street E

Future Total 2031 PM
03/16/2025

Intersection Sign configuration not allowed in HCM analysis.

Lanes, Volumes, Timings
3: 10th Line & Danby Road/Street A
Future Total 2031 PM with Improvements
03/16/2025

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	→	↱	↰	↱	→	↰	↱	→	↰	↱	→
Traffic Volume (vph)	4	43	61	18	35	8	147	242	29	21	76	9
Future Volume (vph)	4	43	61	18	35	8	147	242	29	21	76	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.7	2.8	3.7	3.7	3.7	3.3	3.5	3.7	3.7	3.5	3.5
Storage Length (m)	25.0		25.0	0.0		0.0	30.0		0.0	0.0		0.0
Storage Lanes	1		0	0		0	1		0	0		0
Taper Length (m)	23.0			2.5			21.0			7.6		
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
Ped Bike Factor												
Frt			0.850		0.983			0.984			0.989	
Flt Protected	0.950				0.985		0.950				0.990	
Satd. Flow (prot)	1645	0	1471	0	1860	0	1745	1849	0	0	1823	0
Flt Permitted	0.950				0.985		0.950				0.990	
Satd. Flow (perm)	1645	0	1471	0	1860	0	1745	1849	0	0	1823	0
Link Speed (k/h)		30			30			30			30	
Link Distance (m)		106.1			72.9			352.4			158.0	
Travel Time (s)		12.7			8.7			42.3			19.0	
Confl. Peds. (#/hr)							3					3
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%	0%	0%	0%	0%	0%	0%	0%	11%
Adj. Flow (vph)	4	45	64	19	37	8	155	255	31	22	80	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	45	64	0	64	0	155	286	0	0	111	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		2.8			2.8			3.3			3.3	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			1.6			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.13	0.99	1.13	0.99	0.99	0.99	1.04	1.01	0.99	0.99	1.01	1.01
Turning Speed (k/h)	60		60	97		97	60		97	97		60
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization Err%	ICU Level of Service H											
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
3: 10th Line & Danby Road/Street A
Future Total 2031 PM with Improvements
03/16/2025

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	4	43	61	18	35	8	147	242	29	21	76	9	
Future Volume (Veh/h)	4	43	61	18	35	8	147	242	29	21	76	9	
Sign Control	Stop			Stop			Free			Free			
Grade	0%			0%			0%			0%			
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	
Hourly flow rate (vph)	4	45	64	19	37	8	155	255	31	22	80	9	
Pedestrians	3												
Lane Width (m)	2.8												
Walking Speed (m/s)	3.5												
Percent Blockage	0												
Right turn flare (veh)													
Median type	None								None				
Median storage veh													
Upstream signal (m)													
pX, platoon unblocked													
vC, conflicting volume	723	728	88	796	716	270	92				286		
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	723	728	88	796	716	270	92				286		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1		
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2		
p0 queue free %	99	86	93	92	88	99	90				98		
cM capacity (veh/h)	282	311	976	233	316	773	1514				1288		
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1							
Volume Total	4	109	64	155	286	111							
Volume Left	4	0	19	155	0	22							
Volume Right	0	64	8	0	31	9							
cSH	282	518	306	1514	1700	1288							
Volume to Capacity	0.01	0.21	0.21	0.10	0.17	0.02							
Queue Length 95th (m)	0.3	6.0	5.9	2.6	0.0	0.4							
Control Delay (s)	17.9	13.8	19.8	7.6	0.0	1.7							
Lane LOS	C	B	C	A		A							
Approach Delay (s)	13.9		19.8	2.7		1.7							
Approach LOS	B		C										
Intersection Summary													
Average Delay	5.8												
Intersection Capacity Utilization	Err%			ICU Level of Service			H						
Analysis Period (min)	15												

Lanes, Volumes, Timings
4: 10th Line/Argyll Road & Street E

Future Total 2031 PM with Improvements
03/16/2025

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	22	27	245	9	19	84
Future Volume (vph)	22	27	245	9	19	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.926		0.995			
Flt Protected	0.978					0.991
Satd. Flow (prot)	1740	0	1912	0	0	1904
Flt Permitted	0.978					0.991
Satd. Flow (perm)	1740	0	1912	0	0	1904
Link Speed (k/h)	30		30			30
Link Distance (m)	67.3		347.4			57.0
Travel Time (s)	8.1		41.7			6.8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	24	29	266	10	21	91
Shared Lane Traffic (%)						
Lane Group Flow (vph)	53	0	276	0	0	112
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97		97	97	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	30.8%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis Future Total 2031 PM with Improvements
4: 10th Line/Argyll Road & Street E 03/16/2025

	WBL	WBR	NBT	NBR	SBL	SBT
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (veh/h)	22	27	245	9	19	84
Future Volume (Veh/h)	22	27	245	9	19	84
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	29	266	10	21	91
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	404	271			276	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	404	271			276	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	96			98	
cM capacity (veh/h)	597	773			1299	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	53	276	112			
Volume Left	24	0	21			
Volume Right	29	10	0			
cSH	682	1700	1299			
Volume to Capacity	0.08	0.16	0.02			
Queue Length 95th (m)	1.9	0.0	0.4			
Control Delay (s)	10.7	0.0	1.6			
Lane LOS	B		A			
Approach Delay (s)	10.7	0.0	1.6			
Approach LOS	B					
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization			30.8%			
Analysis Period (min)			15			
ICU Level of Service A						

Lanes, Volumes, Timings
5: Street B/Street C & Street A

Future Total 2031 PM with Improvements
03/16/2025

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	27	24	16	122	52	11
Future Volume (vph)	27	24	16	122	52	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.936				0.977	
Flt Protected	0.974			0.994		
Satd. Flow (prot)	1751	0	0	1910	1877	0
Flt Permitted	0.974			0.994		
Satd. Flow (perm)	1751	0	0	1910	1877	0
Link Speed (k/h)	30			30	30	
Link Distance (m)	235.7			183.2	189.8	
Travel Time (s)	28.3			22.0	22.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	29	26	17	133	57	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	55	0	0	150	69	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97	97			97
Sign Control	Stop			Stop	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	24.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
5: Street B/Street C & Street A

Future Total 2031 PM with Improvements
03/16/2025

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	27	24	16	122	52	11
Future Volume (vph)	27	24	16	122	52	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	29	26	17	133	57	12
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total (vph)	55	150	69			
Volume Left (vph)	29	17	0			
Volume Right (vph)	26	0	12			
Hadj (s)	-0.18	0.02	-0.10			
Departure Headway (s)	4.2	4.1	4.1			
Degree Utilization, x	0.06	0.17	0.08			
Capacity (veh/h)	814	853	864			
Control Delay (s)	7.5	8.0	7.4			
Approach Delay (s)	7.5	8.0	7.4			
Approach LOS	A	A	A			
Intersection Summary						
Delay	7.7					
Level of Service	A					
Intersection Capacity Utilization	24.0%			ICU Level of Service A		
Analysis Period (min)	15					

Lanes, Volumes, Timings
6: 10 Side Road & Street B

Future Total 2031 PM with Improvements
03/16/2025

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	67	1402	721	145	101	22
Future Volume (vph)	67	1402	721	145	101	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.7	3.7
Storage Length (m)	30.0			0.0	30.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	60.0			60.0		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.975			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1785	3570	3481	0	1825	1633
Flt Permitted	0.261				0.950	
Satd. Flow (perm)	490	3570	3481	0	1825	1633
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			55			24
Link Speed (k/h)	30	30		30		
Link Distance (m)	324.7	348.4		148.4		
Travel Time (s)	39.0	41.8		17.8		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	73	1524	784	158	110	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	73	1524	942	0	110	24
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)	3.5	3.5		3.7		
Link Offset(m)	0.0	0.0		0.0		
Crosswalk Width(m)	4.9	1.6		1.6		
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	0.99	0.99
Turning Speed (k/h)	97			97	97	97
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	6.1	30.5	30.5		6.1	6.1
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	6.1	1.8	1.8		6.1	6.1
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)		28.7	28.7			
Detector 2 Size(m)		1.8	1.8			
Detector 2 Type		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm	NA	NA		Perm	Perm

Lanes, Volumes, Timings
6: 10 Side Road & Street B

Future Total 2031 PM with Improvements
03/16/2025

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		4	8			
Permitted Phases	4				6	6
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	22.5	22.5	22.5		22.5	22.5
Total Split (s)	64.0	64.0	64.0		26.0	26.0
Total Split (%)	71.1%	71.1%	71.1%		28.9%	28.9%
Maximum Green (s)	59.5	59.5	59.5		21.5	21.5
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		Max	Max
Walk Time (s)	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	51.7	51.7	51.7		21.8	21.8
Actuated g/C Ratio	0.63	0.63	0.63		0.26	0.26
v/c Ratio	0.24	0.68	0.43		0.23	0.05
Control Delay	8.6	11.6	7.7		28.3	11.3
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	8.6	11.6	7.7		28.3	11.3
LOS	A	B	A		C	B
Approach Delay		11.5	7.7		25.3	
Approach LOS		B	A		C	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 82.7

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 10.9

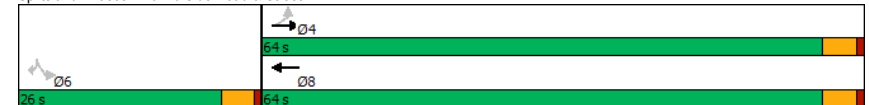
Intersection LOS: B

Intersection Capacity Utilization 51.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: 10 Side Road & Street B



Queues
6: 10 Side Road & Street B

Future Total 2031 PM with Improvements
03/16/2025

	EBL	EBT	WBT	SBL	SBR
Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	73	1524	942	110	24
v/c Ratio	0.24	0.68	0.43	0.23	0.05
Control Delay	8.6	11.6	7.7	28.3	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	8.6	11.6	7.7	28.3	11.3
Queue Length 50th (m)	4.5	72.5	32.6	15.3	0.0
Queue Length 95th (m)	10.8	92.1	43.1	29.2	6.0
Internal Link Dist (m)		300.7	324.4	124.4	
Turn Bay Length (m)	30.0			30.0	
Base Capacity (vph)	357	2608	2557	481	448
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.20	0.58	0.37	0.23	0.05
Intersection Summary					

HCM Signalized Intersection Capacity Analysis
6: 10 Side Road & Street B

Future Total 2031 PM with Improvements
03/16/2025

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	67	1402	721	145	101	22
Future Volume (vph)	67	1402	721	145	101	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.7	3.7
Total Lost time (s)	4.5	4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.97		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1785	3570	3480		1825	1633
Flt Permitted	0.26	1.00	1.00		0.95	1.00
Satd. Flow (perm)	491	3570	3480		1825	1633
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	73	1524	784	158	110	24
RTOR Reduction (vph)	0	0	21	0	0	18
Lane Group Flow (vph)	73	1524	921	0	110	6
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		4	8			
Permitted Phases	4				6	6
Actuated Green, G (s)	51.7	51.7	51.7		21.8	21.8
Effective Green, g (s)	51.7	51.7	51.7		21.8	21.8
Actuated g/C Ratio	0.63	0.63	0.63		0.26	0.26
Clearance Time (s)	4.5	4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	307	2237	2180		482	431
v/s Ratio Prot		c0.43	0.26			
v/s Ratio Perm	0.15				c0.06	0.00
v/c Ratio	0.24	0.68	0.42		0.23	0.01
Uniform Delay, d1	6.8	10.0	7.8		23.8	22.4
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.4	0.9	0.1		1.1	0.1
Delay (s)	7.2	10.9	8.0		24.9	22.5
Level of Service	A	B	A		C	C
Approach Delay (s)		10.7	8.0		24.4	
Approach LOS		B	A		C	
Intersection Summary						
HCM 2000 Control Delay			10.4		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.55			
Actuated Cycle Length (s)			82.5		Sum of lost time (s)	9.0
Intersection Capacity Utilization			51.9%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings
7: Norval Bypass & Street T

Future Total 2031 PM with Improvements
03/16/2025

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Volume (vph)	20	5	1350	32	5	900
Future Volume (vph)	20	5	1350	32	5	900
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	15.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	2.5				30.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt	0.975		0.997			
Fit Protected	0.961				0.950	
Satd. Flow (prot)	1800	0	3639	0	1825	3650
Fit Permitted	0.961				0.950	
Satd. Flow (perm)	1800	0	3639	0	1825	3650
Link Speed (k/h)	30		30		30	
Link Distance (m)	69.7		183.3		256.6	
Travel Time (s)	8.4		22.0		30.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	22	5	1467	35	5	978
Shared Lane Traffic (%)						
Lane Group Flow (vph)	27	0	1502	0	5	978
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		3.7		3.7	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97		97	97	
Sign Control	Stop		Free		Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 48.3% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
7: Norval Bypass & Street T

Future Total 2031 PM with Improvements
03/16/2025

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Volume (veh/h)	20	5	1350	32	5	900
Future Volume (Veh/h)	20	5	1350	32	5	900
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	5	1467	35	5	978
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1984	751			1502	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1984	751			1502	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	59	99			99	
cM capacity (veh/h)	54	358			452	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	27	978	524	5	489	489
Volume Left	22	0	0	5	0	0
Volume Right	5	0	35	0	0	0
cSH	64	1700	1700	452	1700	1700
Volume to Capacity	0.42	0.58	0.31	0.01	0.29	0.29
Queue Length 95th (m)	12.3	0.0	0.0	0.3	0.0	0.0
Control Delay (s)	96.7	0.0	0.0	13.1	0.0	0.0
Lane LOS	F			B		
Approach Delay (s)	96.7	0.0		0.1		
Approach LOS	F					

Intersection Summary

Average Delay 1.1
Intersection Capacity Utilization 48.3% ICU Level of Service A
Analysis Period (min) 15

Lanes, Volumes, Timings
9: Street B & Street P

Future Total 2031 PM with Improvements
03/16/2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	36	12	0	4	58	134	18	5	71	0
Future Volume (vph)	0	0	36	12	0	4	58	134	18	5	71	0
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		0.865			0.968			0.988				
Flt Protected					0.963			0.986			0.997	
Satd. Flow (prot)	0	1662	0	0	1791	0	0	1871	0	0	1915	0
Flt Permitted					0.963			0.986			0.997	
Satd. Flow (perm)	0	1662	0	0	1791	0	0	1871	0	0	1915	0
Link Speed (k/h)		30			30			30			30	
Link Distance (m)		109.6			77.3			148.4			183.2	
Travel Time (s)		13.2			9.3			17.8			22.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	0	39	13	0	4	63	146	20	5	77	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	39	0	0	17	0	0	229	0	0	82	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97		97	97		97	97		97	97		97
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 32.3% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
9: Street B & Street P

Future Total 2031 PM with Improvements
03/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	36	12	0	4	58	134	18	5	71	0
Future Volume (Veh/h)	0	0	36	12	0	4	58	134	18	5	71	0
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	39	13	0	4	63	146	20	5	77	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type									None	None		
Median storage (veh)												
Upstream signal (m)									148			
pX, platoon unblocked												
vC, conflicting volume	373	379	77	408	369	156	77				166	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	373	379	77	408	369	156	77				166	
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	100	100	96	97	100	100	96				100	
cM capacity (veh/h)	565	532	990	517	538	895	1535				1424	

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	39	17	229	82
Volume Left	0	13	63	5
Volume Right	39	4	20	0
cSH	990	574	1535	1424
Volume to Capacity	0.04	0.03	0.04	0.00
Queue Length 95th (m)	0.9	0.7	1.0	0.1
Control Delay (s)	8.8	11.5	2.3	0.5
Lane LOS	A	B	A	A
Approach Delay (s)	8.8	11.5	2.3	0.5
Approach LOS	A	B		

Intersection Summary

Average Delay 3.0
Intersection Capacity Utilization 32.3% ICU Level of Service A
Analysis Period (min) 15

MOVEMENT SUMMARY

 **Site: 1 [Ex -AM Tenth Line and Tenth Side Road (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Roundabout with 1-lane approaches and circulating road

MUTCD (FHWA 2009) example number: 2B-22

Roundabout Guide (TRB 2010) example number: A-1

Site Category: Base Year

Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Tenth Line South Leg															
3	L2	All MCs	20	0.0	20	0.0	0.070	12.1	LOS B	0.4	3.0	0.57	0.63	0.57	54.7
8	T1	All MCs	15	0.0	15	0.0	0.070	5.8	LOS A	0.4	3.0	0.57	0.63	0.57	56.0
18	R2	All MCs	27	0.0	27	0.0	0.070	6.1	LOS A	0.4	3.0	0.57	0.63	0.57	55.4
Approach			62	0.0	62	0.0	0.070	7.9	LOS A	0.4	3.0	0.57	0.63	0.57	55.3
East: 10 Side Road East Leg															
1	L2	All MCs	118	2.8	118	2.8	0.268	10.1	LOS B	1.8	13.8	0.20	0.48	0.20	56.0
6	T1	All MCs	196	1.1	196	1.1	0.268	3.8	LOS A	1.8	13.8	0.20	0.48	0.20	57.4
16	R2	All MCs	23	4.8	23	4.8	0.268	4.1	LOS A	1.8	13.8	0.20	0.48	0.20	56.7
Approach			337	1.9	337	1.9	0.268	6.0	LOS A	1.8	13.8	0.20	0.48	0.20	56.8
North: Tenth Line North Leg															
7	L2	All MCs	141	0.8	141	0.8	0.375	12.2	LOS B	2.4	18.0	0.58	0.61	0.58	54.2
4	T1	All MCs	224	0.0	224	0.0	0.375	5.9	LOS A	2.4	18.0	0.58	0.61	0.58	55.5
14	R2	All MCs	7	0.0	7	0.0	0.375	6.2	LOS A	2.4	18.0	0.58	0.61	0.58	54.9
Approach			372	0.3	372	0.3	0.375	8.3	LOS A	2.4	18.0	0.58	0.61	0.58	55.0
West: 10 Side Road West Leg															
5	L2	All MCs	1	100.0	1	100.0	0.654	25.9	LOS C	6.8	52.6	0.86	0.81	1.08	48.1
2	T1	All MCs	279	2.7	279	2.7	0.654	10.6	LOS B	6.8	52.6	0.86	0.81	1.08	53.9
12	R2	All MCs	268	0.0	268	0.0	0.654	10.7	LOS B	6.8	52.6	0.86	0.81	1.08	53.5
Approach			549	1.6	549	1.6	0.654	10.7	LOS B	6.8	52.6	0.86	0.81	1.08	53.7
All Vehicles			1320	1.2	1320	1.2	0.654	8.7	LOS A	6.8	52.6	0.60	0.66	0.69	54.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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SR_Ex_20250220.sip9

MOVEMENT SUMMARY

 **Site: 1 [Ex -PM Tenth Line and Tenth Side Road - Copy (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Roundabout with 1-lane approaches and circulating road

MUTCD (FHWA 2009) example number: 2B-22

Roundabout Guide (TRB 2010) example number: A-1

Site Category: Base Year

Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh	Dist] m				km/h
			veh/h		veh/h		v/c	sec							
South: Tenth Line South Leg															
3	L2	All MCs	204	0.0	204	0.0	0.534	12.0	LOS B	4.1	31.3	0.63	0.60	0.63	54.4
8	T1	All MCs	206	0.0	206	0.0	0.534	5.7	LOS A	4.1	31.3	0.63	0.60	0.63	55.6
18	R2	All MCs	149	1.4	149	1.4	0.534	6.1	LOS A	4.1	31.3	0.63	0.60	0.63	55.0
Approach			560	0.4	560	0.4	0.534	8.1	LOS A	4.1	31.3	0.63	0.60	0.63	55.0
East: 10 Side Road East Leg															
1	L2	All MCs	46	0.0	46	0.0	0.409	12.7	LOS B	2.9	21.7	0.70	0.63	0.70	54.9
6	T1	All MCs	226	0.0	226	0.0	0.409	6.4	LOS A	2.9	21.7	0.70	0.63	0.70	56.1
16	R2	All MCs	97	0.0	97	0.0	0.409	6.7	LOS A	2.9	21.7	0.70	0.63	0.70	55.5
Approach			368	0.0	368	0.0	0.409	7.3	LOS A	2.9	21.7	0.70	0.63	0.70	55.8
North: Tenth Line North Leg															
7	L2	All MCs	43	0.0	43	0.0	0.118	12.5	LOS B	0.7	5.0	0.59	0.64	0.59	54.0
4	T1	All MCs	57	0.0	57	0.0	0.118	6.2	LOS A	0.7	5.0	0.59	0.64	0.59	55.2
14	R2	All MCs	3	0.0	3	0.0	0.118	6.5	LOS A	0.7	5.0	0.59	0.64	0.59	54.7
Approach			103	0.0	103	0.0	0.118	8.8	LOS A	0.7	5.0	0.59	0.64	0.59	54.7
West: 10 Side Road West Leg															
5	L2	All MCs	1	0.0	1	0.0	0.227	10.7	LOS B	1.3	10.2	0.37	0.43	0.37	56.9
2	T1	All MCs	213	0.0	213	0.0	0.227	4.4	LOS A	1.3	10.2	0.37	0.43	0.37	58.2
12	R2	All MCs	48	0.0	48	0.0	0.227	4.7	LOS A	1.3	10.2	0.37	0.43	0.37	57.6
Approach			262	0.0	262	0.0	0.227	4.5	LOS A	1.3	10.2	0.37	0.43	0.37	58.1
All Vehicles			1293	0.2	1293	0.2	0.534	7.2	LOS A	4.1	31.3	0.59	0.58	0.59	55.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

 **Site: 1 [2029FB -AM Tenth Line and Tenth Side Road (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Roundabout with 1-lane approaches and circulating road
MUTCD (FHWA 2009) example number: 2B-22
Roundabout Guide (TRB 2010) example number: A-1
Site Category: Base Year
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]		[Total HV]					[Veh. veh	Dist]				km/h
			veh/h	%	veh/h	%	v/c	sec			m				
South: Tenth Line South Leg															
3	L2	All MCs	24	0.0	24	0.0	0.088	12.4	LOS B	0.5	3.8	0.61	0.64	0.61	54.5
8	T1	All MCs	18	0.0	18	0.0	0.088	6.1	LOS A	0.5	3.8	0.61	0.64	0.61	55.8
18	R2	All MCs	33	0.0	33	0.0	0.088	6.4	LOS A	0.5	3.8	0.61	0.64	0.61	55.2
Approach			75	0.0	75	0.0	0.088	8.3	LOS A	0.5	3.8	0.61	0.64	0.61	55.1
East: 10 Side Road East Leg															
1	L2	All MCs	124	2.6	124	2.6	0.287	10.2	LOS B	1.9	15.0	0.23	0.48	0.23	55.9
6	T1	All MCs	207	2.1	207	2.1	0.287	3.9	LOS A	1.9	15.0	0.23	0.48	0.23	57.2
16	R2	All MCs	24	4.5	24	4.5	0.287	4.2	LOS A	1.9	15.0	0.23	0.48	0.23	56.5
Approach			354	2.5	354	2.5	0.287	6.1	LOS A	1.9	15.0	0.23	0.48	0.23	56.7
North: Tenth Line North Leg															
7	L2	All MCs	166	1.3	166	1.3	0.452	12.6	LOS B	3.0	23.3	0.64	0.63	0.64	53.9
4	T1	All MCs	262	0.0	262	0.0	0.452	6.3	LOS A	3.0	23.3	0.64	0.63	0.64	55.2
14	R2	All MCs	9	0.0	9	0.0	0.452	6.5	LOS A	3.0	23.3	0.64	0.63	0.64	54.7
Approach			437	0.5	437	0.5	0.452	8.7	LOS A	3.0	23.3	0.64	0.63	0.64	54.7
West: 10 Side Road West Leg															
5	L2	All MCs	2	100.0	2	100.0	0.746	31.6	LOS C	9.4	72.6	0.96	0.95	1.38	45.9
2	T1	All MCs	295	3.0	295	3.0	0.746	14.4	LOS B	9.4	72.6	0.96	0.95	1.38	51.1
12	R2	All MCs	280	0.0	280	0.0	0.746	14.3	LOS B	9.4	72.6	0.96	0.95	1.38	50.7
Approach			577	1.9	577	1.9	0.746	14.4	LOS B	9.4	72.6	0.96	0.95	1.38	50.9
All Vehicles			1443	1.5	1443	1.5	0.746	10.3	LOS B	9.4	72.6	0.67	0.72	0.83	53.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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2029_20250225.sip9

MOVEMENT SUMMARY

 **Site: 1 [2029FB -PM Tenth Line and Tenth Side Road (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Roundabout with 1-lane approaches and circulating road
MUTCD (FHWA 2009) example number: 2B-22
Roundabout Guide (TRB 2010) example number: A-1
Site Category: Base Year
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh	Dist] m				km/h
South: Tenth Line South Leg															
3	L2	All MCs	239	0.0	239	0.0	0.639	13.3	LOS B	6.2	47.6	0.73	0.66	0.79	53.6
8	T1	All MCs	241	0.0	241	0.0	0.639	7.0	LOS A	6.2	47.6	0.73	0.66	0.79	54.8
18	R2	All MCs	174	1.8	174	1.8	0.639	7.4	LOS A	6.2	47.6	0.73	0.66	0.79	54.2
Approach			655	0.5	655	0.5	0.639	9.4	LOS A	6.2	47.6	0.73	0.66	0.79	54.2
East: 10 Side Road East Leg															
1	L2	All MCs	48	0.0	48	0.0	0.468	13.7	LOS B	3.6	27.1	0.78	0.69	0.81	54.4
6	T1	All MCs	239	0.0	239	0.0	0.468	7.4	LOS A	3.6	27.1	0.78	0.69	0.81	55.6
16	R2	All MCs	101	0.0	101	0.0	0.468	7.6	LOS A	3.6	27.1	0.78	0.69	0.81	55.0
Approach			388	0.0	388	0.0	0.468	8.2	LOS A	3.6	27.1	0.78	0.69	0.81	55.3
North: Tenth Line North Leg															
7	L2	All MCs	51	0.0	51	0.0	0.147	12.9	LOS B	0.8	6.4	0.63	0.66	0.63	53.8
4	T1	All MCs	66	0.0	66	0.0	0.147	6.6	LOS A	0.8	6.4	0.63	0.66	0.63	55.0
14	R2	All MCs	4	0.0	4	0.0	0.147	6.9	LOS A	0.8	6.4	0.63	0.66	0.63	54.4
Approach			122	0.0	122	0.0	0.147	9.2	LOS A	0.8	6.4	0.63	0.66	0.63	54.4
West: 10 Side Road West Leg															
5	L2	All MCs	2	0.0	2	0.0	0.245	10.8	LOS B	1.5	11.3	0.40	0.45	0.40	56.7
2	T1	All MCs	225	0.0	225	0.0	0.245	4.5	LOS A	1.5	11.3	0.40	0.45	0.40	58.0
12	R2	All MCs	50	0.0	50	0.0	0.245	4.8	LOS A	1.5	11.3	0.40	0.45	0.40	57.4
Approach			277	0.0	277	0.0	0.245	4.6	LOS A	1.5	11.3	0.40	0.45	0.40	57.9
All Vehicles			1442	0.2	1442	0.2	0.639	8.2	LOS A	6.2	47.6	0.67	0.63	0.71	55.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if $v/c > 1$ irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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2029_20250225.sip9

MOVEMENT SUMMARY

 **Site: 1 [2031FB -AM Tenth Line and Tenth Side Road (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Roundabout with 1-lane approaches and circulating road
MUTCD (FHWA 2009) example number: 2B-22
Roundabout Guide (TRB 2010) example number: A-1
Site Category: Base Year
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]		[Total HV]					[Veh. veh	Dist]				km/h
			veh/h	%	veh/h	%	v/c	sec			m				
South: Tenth Line South Leg															
3	L2	All MCs	26	0.0	26	0.0	0.108	13.7	LOS B	0.6	4.8	0.69	0.69	0.69	53.7
8	T1	All MCs	19	0.0	19	0.0	0.108	7.4	LOS A	0.6	4.8	0.69	0.69	0.69	54.8
18	R2	All MCs	35	0.0	35	0.0	0.108	7.7	LOS A	0.6	4.8	0.69	0.69	0.69	54.3
Approach			80	0.0	80	0.0	0.108	9.6	LOS A	0.6	4.8	0.69	0.69	0.69	54.2
East: 10 Side Road East Leg															
1	L2	All MCs	126	2.6	126	2.6	0.540	10.3	LOS B	5.3	41.0	0.33	0.42	0.33	56.2
6	T1	All MCs	1359	2.0	1359	2.0	0.540	4.0	LOS A	5.4	41.4	0.32	0.39	0.32	58.1
16	R2	All MCs	25	4.3	25	4.3	0.540	4.5	LOS A	5.4	41.4	0.31	0.37	0.31	57.6
Approach			1510	2.1	1510	2.1	0.540	4.5	LOS A	5.4	41.4	0.32	0.39	0.32	57.9
North: Tenth Line North Leg															
7	L2	All MCs	179	1.2	179	1.2	2.613	782.6	LOS F	97.5	744.0	1.00	3.06	7.78	4.5
4	T1	All MCs	284	0.0	284	0.0	2.613	775.3	LOS F	97.5	744.0	1.00	3.06	7.78	4.5
14	R2	All MCs	9	0.0	9	0.0	2.613	775.5	LOS F	97.5	744.0	1.00	3.06	7.78	4.5
Approach			472	0.5	472	0.5	2.613	778.0	LOS F	97.5	744.0	1.00	3.06	7.78	4.5
West: 10 Side Road West Leg															
5	L2	All MCs	2	100.0	2	100.0	0.386	16.7	LOS B	2.6	20.6	0.61	0.54	0.61	50.4
2	T1	All MCs	559	2.9	559	2.9	0.386	5.5	LOS A	2.8	21.2	0.60	0.54	0.60	56.9
12	R2	All MCs	286	0.0	286	0.0	0.386	5.6	LOS A	2.8	21.2	0.59	0.55	0.59	56.5
Approach			847	2.2	847	2.2	0.386	5.6	LOS A	2.8	21.2	0.60	0.55	0.60	56.7
All Vehicles			2908	1.8	2908	1.8	2.613	130.4	LOS F	97.5	744.0	0.52	0.88	1.62	19.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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2031_20250225.sip9

MOVEMENT SUMMARY

 **Site: 1 [2031FB -AM Improvements Tenth Line and Tenth Side Road (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Roundabout with 1-lane approaches and circulating road

MUTCD (FHWA 2009) example number: 2B-22

Roundabout Guide (TRB 2010) example number: A-1

Site Category: Base Year

Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]		[Total HV]										
			veh/h	%	veh/h	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Tenth Line South Leg															
3	L2	All MCs	26	0.0	26	0.0	0.056	12.2	LOS B	0.2	1.9	0.58	0.71	0.58	53.5
8	T1	All MCs	19	0.0	19	0.0	0.056	5.9	LOS A	0.2	1.9	0.58	0.71	0.58	54.7
18	R2	All MCs	35	0.0	35	0.0	0.048	6.7	LOS A	0.2	1.6	0.59	0.68	0.59	56.5
Approach			80	0.0	80	0.0	0.056	8.3	LOS A	0.2	1.9	0.59	0.70	0.59	55.0
East: 10 Side Road East Leg															
1	L2	All MCs	126	2.6	126	2.6	0.597	10.3	LOS B	5.4	41.5	0.31	0.42	0.31	56.3
6	T1	All MCs	1359	2.0	1359	2.0	0.597	4.0	LOS A	5.4	41.5	0.31	0.39	0.31	58.1
16	R2	All MCs	25	4.3	25	4.3	0.597	4.5	LOS A	5.4	41.5	0.31	0.37	0.31	57.6
Approach			1510	2.1	1510	2.1	0.597	4.5	LOS A	5.4	41.5	0.31	0.40	0.31	57.9
North: Tenth Line North Leg															
7	L2	All MCs	179	1.2	179	1.2	0.644	18.5	LOS B	4.3	32.6	0.83	1.03	1.22	50.1
4	T1	All MCs	284	0.0	284	0.0	0.644	11.9	LOS B	4.3	32.6	0.81	1.00	1.14	51.6
14	R2	All MCs	9	0.0	9	0.0	0.145	11.6	LOS B	0.5	4.1	0.73	0.83	0.73	53.0
Approach			472	0.5	472	0.5	0.644	14.4	LOS B	4.3	32.6	0.82	1.01	1.17	51.0
West: 10 Side Road West Leg															
5	L2	All MCs	2 100.0		2 100.0		0.510	23.5	LOS C	3.2	25.0	0.71	0.73	0.81	50.0
2	T1	All MCs	559	2.9	559	2.9	0.510	7.3	LOS A	3.3	25.1	0.71	0.73	0.80	56.3
12	R2	All MCs	286	0.0	286	0.0	0.510	7.2	LOS A	3.3	25.1	0.70	0.73	0.78	55.9
Approach			847	2.2	847	2.2	0.510	7.3	LOS A	3.3	25.1	0.70	0.73	0.79	56.2
All Vehicles			2908	1.8	2908	1.8	0.644	7.0	LOS A	5.4	41.5	0.51	0.60	0.60	56.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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2031_20250225_Imp.sip9

MOVEMENT SUMMARY

 **Site: 1 [2031FB -PM Tenth Line and Tenth Side Road - Copy
(Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Roundabout with 1-lane approaches and circulating road
MUTCD (FHWA 2009) example number: 2B-22
Roundabout Guide (TRB 2010) example number: A-1
Site Category: Base Year
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Tenth Line South Leg															
3	L2	All MCs	259	0.0	259	0.0	2.295	622.3	LOS F	135.0	1031.5	1.00	3.74	8.91	5.5
8	T1	All MCs	262	0.0	262	0.0	2.295	616.0	LOS F	135.0	1031.5	1.00	3.74	8.91	5.6
18	R2	All MCs	194	2.2	194	2.2	2.295	617.0	LOS F	135.0	1031.5	1.00	3.74	8.91	5.5
Approach			714	0.6	714	0.6	2.295	618.5	LOS F	135.0	1031.5	1.00	3.74	8.91	5.5
East: 10 Side Road East Leg															
1	L2	All MCs	49	0.0	49	0.0	0.329	11.2	LOS B	2.4	18.0	0.55	0.51	0.55	55.5
6	T1	All MCs	622	0.0	622	0.0	0.329	4.8	LOS A	2.5	18.7	0.54	0.50	0.54	57.0
16	R2	All MCs	103	0.0	103	0.0	0.329	5.1	LOS A	2.5	18.7	0.54	0.49	0.54	56.6
Approach			774	0.0	774	0.0	0.329	5.2	LOS A	2.5	18.7	0.54	0.50	0.54	56.9
North: Tenth Line North Leg															
7	L2	All MCs	55	0.0	55	0.0	0.201	15.3	LOS B	1.2	9.4	0.77	0.74	0.77	52.3
4	T1	All MCs	72	0.0	72	0.0	0.201	9.0	LOS A	1.2	9.4	0.77	0.74	0.77	53.4
14	R2	All MCs	4	0.0	4	0.0	0.201	9.3	LOS A	1.2	9.4	0.77	0.74	0.77	52.9
Approach			132	0.0	132	0.0	0.201	11.7	LOS B	1.2	9.4	0.77	0.74	0.77	52.9
West: 10 Side Road West Leg															
5	L2	All MCs	2	0.0	2	0.0	0.515	11.2	LOS B	4.3	32.7	0.54	0.47	0.54	55.9
2	T1	All MCs	1261	0.0	1261	0.0	0.515	4.8	LOS A	4.4	33.3	0.54	0.47	0.54	57.3
12	R2	All MCs	51	0.0	51	0.0	0.515	5.1	LOS A	4.4	33.3	0.53	0.47	0.53	56.6
Approach			1314	0.0	1314	0.0	0.515	4.8	LOS A	4.4	33.3	0.54	0.47	0.54	57.2
All Vehicles			2933	0.1	2933	0.1	2.295	154.6	LOS F	135.0	1031.5	0.66	1.29	2.59	17.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if $v/c > 1$ irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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2031_20250225.sip9

MOVEMENT SUMMARY

 **Site: 1 [2031FB -PM Improvements Tenth Line and Tenth Side Road (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Roundabout with 1-lane approaches and circulating road

MUTCD (FHWA 2009) example number: 2B-22

Roundabout Guide (TRB 2010) example number: A-1

Site Category: Base Year

Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Tenth Line South Leg															
3	L2	All MCs	259	0.0	259	0.0	0.786	20.4	LOS C	6.7	51.0	0.89	1.12	1.49	48.6
8	T1	All MCs	262	0.0	262	0.0	0.786	14.1	LOS B	6.7	51.0	0.89	1.12	1.49	49.6
18	R2	All MCs	194	2.2	194	2.2	0.467	12.7	LOS B	2.2	17.3	0.79	0.95	0.98	51.6
Approach			714	0.6	714	0.6	0.786	16.0	LOS B	6.7	51.0	0.87	1.08	1.35	49.7
East: 10 Side Road East Leg															
1	L2	All MCs	49	0.0	49	0.0	0.463	13.1	LOS B	3.3	24.7	0.75	0.69	0.78	54.4
6	T1	All MCs	622	0.0	622	0.0	0.463	6.7	LOS A	3.3	25.0	0.75	0.69	0.78	55.9
16	R2	All MCs	103	0.0	103	0.0	0.463	7.1	LOS A	3.3	25.0	0.75	0.68	0.78	55.6
Approach			774	0.0	774	0.0	0.463	7.1	LOS A	3.3	25.0	0.75	0.69	0.78	55.8
North: Tenth Line North Leg															
7	L2	All MCs	55	0.0	55	0.0	0.157	12.7	LOS B	0.7	5.6	0.65	0.74	0.65	53.6
4	T1	All MCs	72	0.0	72	0.0	0.157	6.8	LOS A	0.7	5.6	0.65	0.74	0.65	54.8
14	R2	All MCs	4	0.0	4	0.0	0.035	9.4	LOS A	0.1	1.0	0.64	0.74	0.64	54.7
Approach			132	0.0	132	0.0	0.157	9.4	LOS A	0.7	5.6	0.65	0.74	0.65	54.3
West: 10 Side Road West Leg															
5	L2	All MCs	2	0.0	2	0.0	0.562	11.0	LOS B	4.0	30.3	0.49	0.48	0.49	56.2
2	T1	All MCs	1261	0.0	1261	0.0	0.562	4.7	LOS A	4.0	30.3	0.49	0.48	0.49	57.5
12	R2	All MCs	51	0.0	51	0.0	0.562	5.1	LOS A	4.0	30.3	0.49	0.48	0.49	56.8
Approach			1314	0.0	1314	0.0	0.562	4.7	LOS A	4.0	30.3	0.49	0.48	0.49	57.5
All Vehicles			2933	0.1	2933	0.1	0.786	8.3	LOS A	6.7	51.0	0.66	0.69	0.78	54.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

 Site: 1 [2029FT -AM 10th Line and 10 Side Road (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Roundabout with 1-lane approaches and circulating road

MUTCD (FHWA 2009) example number: 2B-22

Roundabout Guide (TRB 2010) example number: A-1

Site Category: Base Year

Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]		[Total HV]					[Veh. veh	Dist]				km/h
			veh/h	%	veh/h	%	v/c	sec			m				
South: 10th Line South Leg															
3	L2	All MCs	24	0.0	24	0.0	0.123	12.5	LOS B	0.7	5.5	0.62	0.64	0.62	54.8
8	T1	All MCs	32	0.0	32	0.0	0.123	6.2	LOS A	0.7	5.5	0.62	0.64	0.62	56.1
18	R2	All MCs	47	0.0	47	0.0	0.123	6.5	LOS A	0.7	5.5	0.62	0.64	0.62	55.5
Approach			103	0.0	103	0.0	0.123	7.8	LOS A	0.7	5.5	0.62	0.64	0.62	55.5
East: 10 Side Road East Leg															
1	L2	All MCs	141	2.3	141	2.3	0.308	10.3	LOS B	2.1	16.3	0.28	0.49	0.28	55.6
6	T1	All MCs	209	2.1	209	2.1	0.308	4.0	LOS A	2.1	16.3	0.28	0.49	0.28	56.9
16	R2	All MCs	24	4.5	24	4.5	0.308	4.3	LOS A	2.1	16.3	0.28	0.49	0.28	56.2
Approach			374	2.3	374	2.3	0.308	6.4	LOS A	2.1	16.3	0.28	0.49	0.28	56.3
North: 10th Line North Leg															
7	L2	All MCs	166	1.3	166	1.3	0.519	13.3	LOS B	3.9	30.1	0.70	0.67	0.73	53.7
4	T1	All MCs	307	0.0	307	0.0	0.519	6.9	LOS A	3.9	30.1	0.70	0.67	0.73	55.0
14	R2	All MCs	20	0.0	20	0.0	0.519	7.2	LOS A	3.9	30.1	0.70	0.67	0.73	54.5
Approach			492	0.4	492	0.4	0.519	9.1	LOS A	3.9	30.1	0.70	0.67	0.73	54.5
West: 10 Side Road West Leg															
5	L2	All MCs	7	33.3	7	33.3	0.804	28.6	LOS C	11.6	89.2	1.00	1.07	1.61	46.2
2	T1	All MCs	295	3.0	295	3.0	0.804	18.3	LOS B	11.6	89.2	1.00	1.07	1.61	48.5
12	R2	All MCs	280	0.0	280	0.0	0.804	18.2	LOS B	11.6	89.2	1.00	1.07	1.61	48.1
Approach			582	1.9	582	1.9	0.804	18.4	LOS B	11.6	89.2	1.00	1.07	1.61	48.3
All Vehicles			1551	1.4	1551	1.4	0.804	11.8	LOS B	11.6	89.2	0.71	0.77	0.95	52.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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2029_20250225.sip9

MOVEMENT SUMMARY

 **Site: 1 [2029FT -PM 10th Line and 10 Side Road (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Roundabout with 1-lane approaches and circulating road

MUTCD (FHWA 2009) example number: 2B-22

Roundabout Guide (TRB 2010) example number: A-1

Site Category: Base Year

Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh	Dist] m				km/h
South: 10th Line South Leg															
3	L2	All MCs	239	0.0	239	0.0	0.742	15.5	LOS B	9.6	73.1	0.85	0.76	1.02	52.4
8	T1	All MCs	262	0.0	262	0.0	0.742	9.2	LOS A	9.6	73.1	0.85	0.76	1.02	53.5
18	R2	All MCs	244	1.3	244	1.3	0.742	9.6	LOS A	9.6	73.1	0.85	0.76	1.02	53.0
Approach			745	0.4	745	0.4	0.742	11.4	LOS B	9.6	73.1	0.85	0.76	1.02	53.0
East: 10 Side Road East Leg															
1	L2	All MCs	64	0.0	64	0.0	0.524	14.8	LOS B	4.5	34.2	0.84	0.75	0.93	53.7
6	T1	All MCs	247	0.0	247	0.0	0.524	8.5	LOS A	4.5	34.2	0.84	0.75	0.93	54.9
16	R2	All MCs	101	0.0	101	0.0	0.524	8.8	LOS A	4.5	34.2	0.84	0.75	0.93	54.3
Approach			412	0.0	412	0.0	0.524	9.6	LOS A	4.5	34.2	0.84	0.75	0.93	54.5
North: 10th Line North Leg															
7	L2	All MCs	51	0.0	51	0.0	0.205	13.2	LOS B	1.2	9.4	0.67	0.67	0.67	54.0
4	T1	All MCs	98	0.0	98	0.0	0.205	6.9	LOS A	1.2	9.4	0.67	0.67	0.67	55.2
14	R2	All MCs	16	0.0	16	0.0	0.205	7.2	LOS A	1.2	9.4	0.67	0.67	0.67	54.7
Approach			165	0.0	165	0.0	0.205	8.9	LOS A	1.2	9.4	0.67	0.67	0.67	54.8
West: 10 Side Road West Leg															
5	L2	All MCs	23	0.0	23	0.0	0.277	11.2	LOS B	1.7	13.1	0.47	0.49	0.47	56.1
2	T1	All MCs	227	0.0	227	0.0	0.277	4.9	LOS A	1.7	13.1	0.47	0.49	0.47	57.4
12	R2	All MCs	50	0.0	50	0.0	0.277	5.1	LOS A	1.7	13.1	0.47	0.49	0.47	56.8
Approach			300	0.0	300	0.0	0.277	5.4	LOS A	1.7	13.1	0.47	0.49	0.47	57.2
All Vehicles			1622	0.2	1622	0.2	0.742	9.6	LOS A	9.6	73.1	0.76	0.70	0.86	54.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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2029_20250225.sip9

MOVEMENT SUMMARY

 Site: 1 [2031FT -AM 10th Line and 10 Side Road (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Roundabout with 1-lane approaches and circulating road

MUTCD (FHWA 2009) example number: 2B-22

Roundabout Guide (TRB 2010) example number: A-1

Site Category: Base Year

Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh	Dist] m				km/h
			veh/h		veh/h		v/c	sec							
South: 10th Line South Leg															
3	L2	All MCs	26	0.0	26	0.0	0.073	12.3	LOS B	0.3	2.5	0.60	0.70	0.60	54.0
8	T1	All MCs	33	0.0	33	0.0	0.073	6.0	LOS A	0.3	2.5	0.60	0.70	0.60	55.2
18	R2	All MCs	51	0.0	51	0.0	0.069	6.7	LOS A	0.3	2.3	0.60	0.69	0.60	56.5
Approach			109	0.0	109	0.0	0.073	7.8	LOS A	0.3	2.5	0.60	0.69	0.60	55.5
East: 10 Side Road East Leg															
1	L2	All MCs	146	2.2	146	2.2	0.621	10.4	LOS B	5.6	43.6	0.37	0.44	0.37	56.0
6	T1	All MCs	1374	2.0	1374	2.0	0.621	4.1	LOS A	5.6	43.7	0.37	0.41	0.37	57.7
16	R2	All MCs	25	4.3	25	4.3	0.621	4.7	LOS A	5.6	43.7	0.37	0.39	0.37	57.2
Approach			1545	2.0	1545	2.0	0.621	4.7	LOS A	5.6	43.7	0.37	0.42	0.37	57.6
North: 10th Line North Leg															
7	L2	All MCs	179	1.2	179	1.2	0.751	21.2	LOS C	5.8	44.5	0.88	1.12	1.47	48.6
4	T1	All MCs	328	0.0	328	0.0	0.751	14.2	LOS B	5.8	44.5	0.86	1.09	1.38	50.0
14	R2	All MCs	20	0.0	20	0.0	0.170	11.8	LOS B	0.6	4.9	0.75	0.85	0.75	52.8
Approach			527	0.4	527	0.4	0.751	16.5	LOS B	5.8	44.5	0.86	1.09	1.38	49.6
West: 10 Side Road West Leg															
5	L2	All MCs	7	33.3	7	33.3	0.542	17.8	LOS B	3.5	27.7	0.75	0.78	0.88	53.1
2	T1	All MCs	563	2.9	563	2.9	0.542	8.0	LOS A	3.7	28.1	0.74	0.78	0.88	56.0
12	R2	All MCs	286	0.0	286	0.0	0.542	7.8	LOS A	3.7	28.1	0.74	0.78	0.86	55.5
Approach			855	2.2	855	2.2	0.542	8.0	LOS A	3.7	28.1	0.74	0.78	0.87	55.8
All Vehicles			3037	1.7	3037	1.7	0.751	7.8	LOS A	5.8	44.5	0.57	0.65	0.70	55.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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2031_20250225.sip9

MOVEMENT SUMMARY

 **Site: 1 [2031FT -PM 10th Line and 10 Side Road (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Roundabout with 1-lane approaches and circulating road

MUTCD (FHWA 2009) example number: 2B-22

Roundabout Guide (TRB 2010) example number: A-1

Site Category: Base Year

Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh	Dist] m				km/h
South: 10th Line South Leg															
3	L2	All MCs	259	0.0	259	0.0	0.855	23.7	LOS C	8.5	64.4	0.93	1.22	1.76	46.7
8	T1	All MCs	282	0.0	282	0.0	0.855	17.4	LOS B	8.5	64.4	0.93	1.22	1.76	47.6
18	R2	All MCs	261	1.6	261	1.6	0.592	13.7	LOS B	3.3	25.5	0.83	1.00	1.13	50.9
Approach			801	0.5	801	0.5	0.855	18.2	LOS B	8.5	64.4	0.90	1.15	1.55	48.3
East: 10 Side Road East Leg															
1	L2	All MCs	66	0.0	66	0.0	0.497	13.5	LOS B	3.6	27.3	0.77	0.74	0.84	54.1
6	T1	All MCs	638	0.0	638	0.0	0.497	7.1	LOS A	3.6	27.7	0.77	0.73	0.84	55.7
16	R2	All MCs	103	0.0	103	0.0	0.497	7.4	LOS A	3.6	27.7	0.77	0.72	0.83	55.5
Approach			808	0.0	808	0.0	0.497	7.6	LOS A	3.6	27.7	0.77	0.73	0.84	55.6
North: 10th Line North Leg															
7	L2	All MCs	55	0.0	55	0.0	0.214	13.0	LOS B	1.0	7.9	0.68	0.74	0.68	53.9
4	T1	All MCs	103	0.0	103	0.0	0.214	6.7	LOS A	1.0	7.9	0.68	0.75	0.68	55.0
14	R2	All MCs	16	0.0	16	0.0	0.048	9.6	LOS A	0.2	1.4	0.66	0.79	0.66	54.2
Approach			175	0.0	175	0.0	0.214	9.0	LOS A	1.0	7.9	0.68	0.75	0.68	54.6
West: 10 Side Road West Leg															
5	L2	All MCs	23	0.0	23	0.0	0.598	11.3	LOS B	4.4	33.1	0.56	0.53	0.57	55.7
2	T1	All MCs	1275	0.0	1275	0.0	0.598	5.0	LOS A	4.4	33.1	0.56	0.53	0.57	57.1
12	R2	All MCs	51	0.0	51	0.0	0.598	5.5	LOS A	4.4	33.1	0.56	0.53	0.57	56.5
Approach			1349	0.0	1349	0.0	0.598	5.2	LOS A	4.4	33.1	0.56	0.53	0.57	57.0
All Vehicles			3133	0.1	3133	0.1	0.855	9.4	LOS A	8.5	64.4	0.71	0.75	0.90	54.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: SIDRA HCM.

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Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Lanes, Volumes, Timings
11: Street C/Street D & Street E

Future Total 2031 PM with Improvements
03/16/2025

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	4	24	45	0	1	5
Future Volume (vph)	4	24	45	0	1	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.883				0.887	
Flt Protected	0.993			0.950		
Satd. Flow (prot)	1684	0	0	1825	1704	0
Flt Permitted	0.993			0.950		
Satd. Flow (perm)	1684	0	0	1825	1704	0
Link Speed (k/h)	30			30	30	
Link Distance (m)	155.5			304.2	72.8	
Travel Time (s)	18.7			36.5	8.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	4	26	49	0	1	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	30	0	0	49	6	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97	97			97
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 19.2% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Future Total 2031 PM with Improvements
11: Street C/Street D & Street E 03/16/2025

Intersection Sign configuration not allowed in HCM analysis.