

Lanes, Volumes, Timings  
6: Trafalgar Road & Steeles Avenue

2021 Background AM - Remedial Measures  
Premier Gateway Phase 1B Employment Area



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	580	190	470	485	35	125	280	355	150	1045	325
Future Volume (vph)	55	580	190	470	485	35	125	280	355	150	1045	325
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	115.0		40.0	130.0		70.0	100.0		65.0	250.0		80.0
Storage Lanes	2		1	2		1	2		1	1		1
Taper Length (m)	100.0			100.0			80.0			100.0		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2633	3085	1179	3400	2843	1455	2148	3167	1524	1752	3438	950
Flt Permitted	0.950			0.950			0.950			0.580		
Satd. Flow (perm)	2633	3085	1179	3400	2843	1455	2148	3167	1524	1070	3438	950
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			138			102			355			232
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		879.8			311.3			332.0			289.5	
Travel Time (s)		52.8			18.7			17.1			14.9	
Peak Hour 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
Heavy Vehicles (%)	33%	17%	37%	3%	27%	11%	63%	14%	6%	3%	5%	70%
Adj. Flow (vph)	55	580	190	470	485	35	125	280	355	150	1045	325
Shared Lane Traffic (%)												
Lane Group Flow (vph)	55	580	190	470	485	35	125	280	355	150	1045	325
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)		7.2			7.2			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	8.0	20.0	20.0	8.0	20.0	20.0	9.0	20.0	20.0

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2021 Background AM - Remedial Measures  
Premier Gateway Phase 1B Employment Area

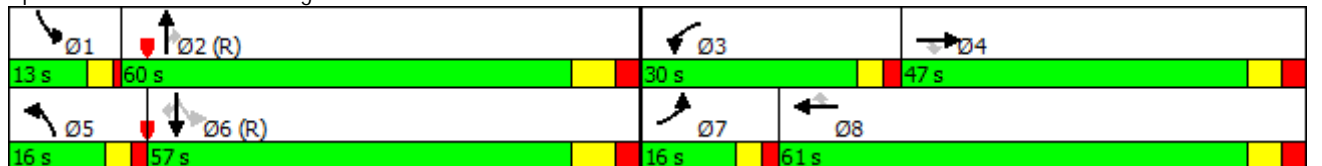


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	12.0	27.0	27.0	13.0	27.0	27.0	13.0	28.0	28.0	13.0	28.0	28.0
Total Split (s)	16.0	47.0	47.0	30.0	61.0	61.0	16.0	60.0	60.0	13.0	57.0	57.0
Total Split (%)	10.7%	31.3%	31.3%	20.0%	40.7%	40.7%	10.7%	40.0%	40.0%	8.7%	38.0%	38.0%
Maximum Green (s)	11.0	40.0	40.0	25.0	54.0	54.0	11.0	52.0	52.0	9.0	49.0	49.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	2.0	3.0	3.0	2.0	3.0	3.0	2.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	8.0	8.0	4.0	8.0	8.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	4.0	3.0	3.0	4.0	0.2	0.2	3.0	0.2	0.2
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		26.0	26.0		26.0	26.0		26.0	26.0		26.0	26.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	8.7	33.6	33.6	24.2	51.5	51.5	13.1	57.6	57.6	68.7	54.1	54.1
Actuated g/C Ratio	0.06	0.22	0.22	0.16	0.34	0.34	0.09	0.38	0.38	0.46	0.36	0.36
v/c Ratio	0.36	0.84	0.51	0.86	0.50	0.06	0.67	0.23	0.44	0.28	0.84	0.66
Control Delay	74.1	66.9	19.5	77.0	41.0	0.2	83.4	33.2	5.0	23.4	52.3	19.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.1	66.9	19.5	77.0	41.0	0.2	83.4	33.2	5.0	23.4	52.3	19.6
LOS	E	E	B	E	D	A	F	C	A	C	D	B
Approach Delay		56.5			56.6			28.3			42.5	
Approach LOS		E			E			C			D	

Intersection Summary

Area Type:	Other
Cycle Length:	150
Actuated Cycle Length:	150
Offset:	0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle:	85
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.86
Intersection Signal Delay:	46.1
Intersection LOS:	D
Intersection Capacity Utilization	86.5%
ICU Level of Service	E
Analysis Period (min)	15

Splits and Phases: 6: Trafalgar Road & Steeles Avenue



Queues  
6: Trafalgar Road & Steeles Avenue

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Premier Gateway Phase 1B Employment Area



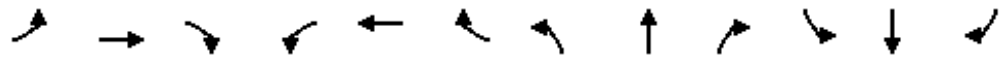
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	55	580	190	470	485	35	125	280	355	150	1045	325
v/c Ratio	0.36	0.84	0.51	0.86	0.50	0.06	0.67	0.23	0.44	0.28	0.84	0.66
Control Delay	74.1	66.9	19.5	77.0	41.0	0.2	83.4	33.2	5.0	23.4	52.3	19.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.1	66.9	19.5	77.0	41.0	0.2	83.4	33.2	5.0	23.4	52.3	19.6
Queue Length 50th (m)	8.7	91.7	13.3	74.3	63.8	0.0	19.4	32.2	0.0	25.2	164.9	24.8
Queue Length 95th (m)	16.4	109.5	37.5	#99.5	79.3	0.0	#38.5	45.6	22.8	42.8	#209.5	67.3
Internal Link Dist (m)		855.8			287.3			308.0			265.5	
Turn Bay Length (m)	115.0		40.0	130.0		70.0	100.0		65.0	250.0		80.0
Base Capacity (vph)	193	822	415	566	1023	589	187	1215	803	538	1240	490
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.71	0.46	0.83	0.47	0.06	0.67	0.23	0.44	0.28	0.84	0.66

Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis 2021 Background AM - Remedial Measures 6: Trafalgar Road & Steeles Avenue

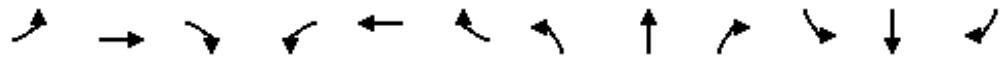
Premier Gateway Phase 1B Employment Area



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	580	190	470	485	35	125	280	355	150	1045	325
Future Volume (vph)	55	580	190	470	485	35	125	280	355	150	1045	325
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	8.0	8.0	4.0	8.0	8.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	2633	3085	1179	3400	2843	1455	2148	3167	1524	1752	3438	950
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.58	1.00	1.00
Satd. Flow (perm)	2633	3085	1179	3400	2843	1455	2148	3167	1524	1070	3438	950
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	580	190	470	485	35	125	280	355	150	1045	325
RTOR Reduction (vph)	0	0	106	0	0	23	0	0	221	0	0	150
Lane Group Flow (vph)	55	580	84	470	485	12	125	280	134	150	1045	175
Heavy Vehicles (%)	33%	17%	37%	3%	27%	11%	63%	14%	6%	3%	5%	70%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2	6		6
Actuated Green, G (s)	7.3	34.6	34.6	24.2	51.5	51.5	13.1	56.6	56.6	63.7	53.1	53.1
Effective Green, g (s)	7.3	34.6	34.6	24.2	51.5	51.5	13.1	56.6	56.6	63.7	53.1	53.1
Actuated g/C Ratio	0.05	0.23	0.23	0.16	0.34	0.34	0.09	0.38	0.38	0.42	0.35	0.35
Clearance Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	8.0	8.0	4.0	8.0	8.0
Vehicle Extension (s)	3.0	3.0	3.0	4.0	3.0	3.0	4.0	0.2	0.2	3.0	0.2	0.2
Lane Grp Cap (vph)	128	711	271	548	976	499	187	1195	575	502	1217	336
v/s Ratio Prot	0.02	c0.19		c0.14	0.17		c0.06	c0.09		0.02	c0.30	
v/s Ratio Perm			0.07			0.01			0.09	0.11		0.18
v/c Ratio	0.43	0.82	0.31	0.86	0.50	0.02	0.67	0.23	0.23	0.30	0.86	0.52
Uniform Delay, d1	69.3	54.7	47.8	61.2	39.0	32.6	66.3	31.9	31.9	27.1	45.0	38.4
Progression 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
Incremental Delay, d2	2.3	7.2	0.7	13.0	0.4	0.0	9.6	0.5	0.9	0.3	8.0	5.7
Delay (s)	71.6	61.9	48.5	74.2	39.4	32.6	75.9	32.4	32.8	27.5	53.0	44.1
Level of Service	E	E	D	E	D	C	E	C	C	C	D	D
Approach Delay (s)		59.4			55.7			39.7			48.5	
Approach LOS		E			E			D			D	

## Intersection Summary

HCM 2000 Control Delay	50.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	86.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	965	15	30	625	25	5	5	10	185	5	370
Future Volume (vph)	80	965	15	30	625	25	5	5	10	185	5	370
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	105.0		55.0	30.0		30.0	0.0		0.0	70.0		0.0
Storage Lanes	1		1	1		1	2		0	1		0
Taper Length (m)	55.0			90.0			7.5			45.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Fr't			0.850			0.850		0.900			0.852	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	3252	1404	1752	2983	1482	2633	1574	0	1787	1603	0
Flt Permitted	0.346			0.204			0.950			0.748		
Satd. Flow (perm)	626	3252	1404	376	2983	1482	2633	1574	0	1407	1603	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			218			218		10			370	
Link Speed (k/h)		60			60			50			70	
Link Distance (m)		200.7			870.8			218.1			3086.4	
Travel Time (s)		12.0			52.2			15.7			158.7	
Peak Hour 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
Heavy Vehicles (%)	5%	11%	15%	3%	21%	9%	33%	0%	13%	1%	0%	1%
Adj. Flow (vph)	80	965	15	30	625	25	5	5	10	185	5	370
Shared Lane Traffic (%)												
Lane Group Flow (vph)	80	965	15	30	625	25	5	15	0	185	375	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)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	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	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Perm	NA	
Protected Phases	7	4		3	8		5	2				6
Permitted Phases	4		4	8		8				6		
Detector Phase	7	4	4	3	8	8	5	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0		10.0	10.0	

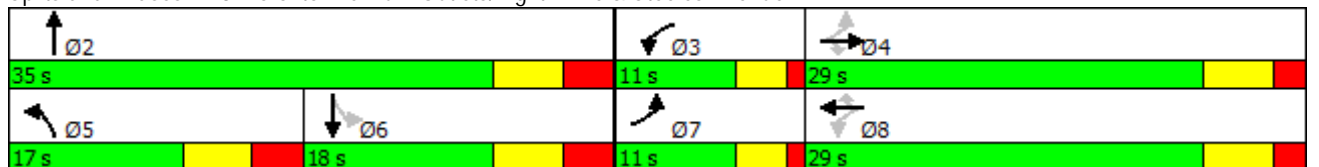


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	11.0	26.0	26.0	11.0	26.0	26.0	17.0	17.0		17.0	17.0	
Total Split (s)	11.0	29.0	29.0	11.0	29.0	29.0	17.0	35.0		18.0	18.0	
Total Split (%)	14.7%	38.7%	38.7%	14.7%	38.7%	38.7%	22.7%	46.7%		24.0%	24.0%	
Maximum Green (s)	7.0	23.0	23.0	7.0	23.0	23.0	10.0	28.0		11.0	11.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	7.0	7.0		7.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	4.0	4.0		3.0	3.0	
Recall Mode	None	Max	Max	None	Max	Max	None	None		Max	Max	
Walk Time (s)		7.0	7.0		7.0	7.0		7.0				
Flash Dont Walk (s)		17.0	17.0		17.0	17.0		21.0				
Pedestrian Calls (#/hr)		0	0		0	0		0				
Act Effct Green (s)	31.4	26.9	26.9	30.6	24.7	24.7	10.3	13.9		11.3	11.3	
Actuated g/C Ratio	0.54	0.46	0.46	0.53	0.43	0.43	0.18	0.24		0.19	0.19	
v/c Ratio	0.17	0.64	0.02	0.08	0.49	0.03	0.01	0.04		0.68	0.61	
Control Delay	8.0	17.8	0.1	7.8	16.2	0.1	25.2	12.0		40.6	8.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	8.0	17.8	0.1	7.8	16.2	0.1	25.2	12.0		40.6	8.7	
LOS	A	B	A	A	B	A	C	B		D	A	
Approach Delay		16.8			15.2			15.3			19.3	
Approach LOS		B			B			B			B	

Intersection Summary

Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	58
Natural Cycle:	75
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.68
Intersection Signal Delay:	16.9
Intersection LOS:	B
Intersection Capacity Utilization:	69.8%
ICU Level of Service:	C
Analysis Period (min):	15

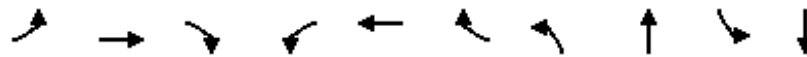
Splits and Phases: 8: Toronto Premium Outlets/Eighth Line & Steeles Avenue



Queues

2021 Background AM - Remedial Measures

8: Toronto Premium Outlets/Eighth Line & Steeles Avenue Premier Gateway Phase 1B Employment Area



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	80	965	15	30	625	25	5	15	185	375
v/c Ratio	0.17	0.64	0.02	0.08	0.49	0.03	0.01	0.04	0.68	0.61
Control Delay	8.0	17.8	0.1	7.8	16.2	0.1	25.2	12.0	40.6	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.0	17.8	0.1	7.8	16.2	0.1	25.2	12.0	40.6	8.7
Queue Length 50th (m)	3.0	28.9	0.0	1.1	26.7	0.0	0.2	0.5	19.9	0.5
Queue Length 95th (m)	13.2	#113.1	0.0	6.4	60.6	0.0	1.8	4.1	#65.1	25.1
Internal Link Dist (m)		176.7			846.8			194.1		3062.4
Turn Bay Length (m)	105.0		55.0	30.0		30.0			70.0	
Base Capacity (vph)	474	1506	767	369	1270	756	467	787	274	610
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.64	0.02	0.08	0.49	0.03	0.01	0.02	0.68	0.61

Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis 2021 Background AM - Remedial Measures

## 8: Toronto Premium Outlets/Eighth Line & Steeles Avenue Premier Gateway Phase 1B Employment Area



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	965	15	30	625	25	5	5	10	185	5	370
Future Volume (vph)	80	965	15	30	625	25	5	5	10	185	5	370
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0	6.0	7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.90		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	3252	1404	1752	2983	1482	2633	1574		1787	1603	
Flt Permitted	0.35	1.00	1.00	0.20	1.00	1.00	0.95	1.00		0.75	1.00	
Satd. Flow (perm)	626	3252	1404	375	2983	1482	2633	1574		1407	1603	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	80	965	15	30	625	25	5	5	10	185	5	370
RTOR Reduction (vph)	0	0	9	0	0	15	0	7	0	0	307	0
Lane Group Flow (vph)	80	965	6	30	625	10	5	8	0	185	68	0
Heavy Vehicles (%)	5%	11%	15%	3%	21%	9%	33%	0%	13%	1%	0%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Perm	NA	
Protected Phases	7	4		3	8		5	2				6
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)	30.7	26.9	26.9	27.9	25.5	25.5	1.5	19.8		11.3	11.3	
Effective Green, g (s)	30.7	26.9	26.9	27.9	25.5	25.5	1.5	19.8		11.3	11.3	
Actuated g/C Ratio	0.46	0.41	0.41	0.42	0.39	0.39	0.02	0.30		0.17	0.17	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	4.0	4.0		3.0	3.0	
Lane Grp Cap (vph)	353	1323	571	208	1150	571	59	471		240	274	
v/s Ratio Prot	c0.01	c0.30		0.01	0.21		c0.00	0.01				0.04
v/s Ratio Perm	0.09		0.00	0.06		0.01				c0.13		
v/c Ratio	0.23	0.73	0.01	0.14	0.54	0.02	0.08	0.02		0.77	0.25	
Uniform Delay, d1	10.1	16.5	11.7	11.7	15.8	12.6	31.6	16.3		26.2	23.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	3.6	0.0	0.3	1.8	0.1	0.8	0.0		21.0	2.2	
Delay (s)	10.4	20.1	11.7	12.1	17.6	12.6	32.5	16.3		47.1	25.9	
Level of Service	B	C	B	B	B	B	C	B		D	C	
Approach Delay (s)		19.2			17.2			20.4			32.9	
Approach LOS		B			B			C			C	

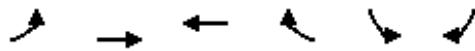
### Intersection Summary

HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	66.1	Sum of lost time (s)	24.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lanes, Volumes, Timings  
10: Steeles Avenue & Ninth Line

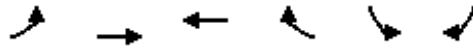
2021 Background AM - Remedial Measures  
Premier Gateway Phase 1B Employment Area



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	80	1105	630	225	595	75
Future Volume (vph)	80	1105	630	225	595	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0			75.0	90.0	0.0
Storage Lanes	1			1	1	1
Taper Length (m)	100.0				40.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Fr <sub>t</sub>				0.850		0.850
Fl <sub>t</sub> Protected	0.950				0.950	
Satd. Flow (prot)	1556	3312	3059	1509	3433	1324
Fl <sub>t</sub> Permitted	0.305				0.950	
Satd. Flow (perm)	500	3312	3059	1509	3433	1324
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				225		75
Link Speed (k/h)		70	70		70	
Link Distance (m)		525.4	728.8		3120.2	
Travel Time (s)		27.0	37.5		160.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	16%	9%	18%	7%	2%	22%
Adj. Flow (vph)	80	1105	630	225	595	75
Shared Lane Traffic (%)						
Lane Group Flow (vph)	80	1105	630	225	595	75
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		7.2	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (m)	2.0	10.0	10.0	2.0	2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6	2.0	2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases	4			8		6
Detector Phase	7	4	8	8	6	6
Switch Phase						
Minimum Initial (s)	7.0	20.0	20.0	20.0	10.0	10.0

Lanes, Volumes, Timings  
10: Steeles Avenue & Ninth Line

2021 Background AM - Remedial Measures  
Premier Gateway Phase 1B Employment Area

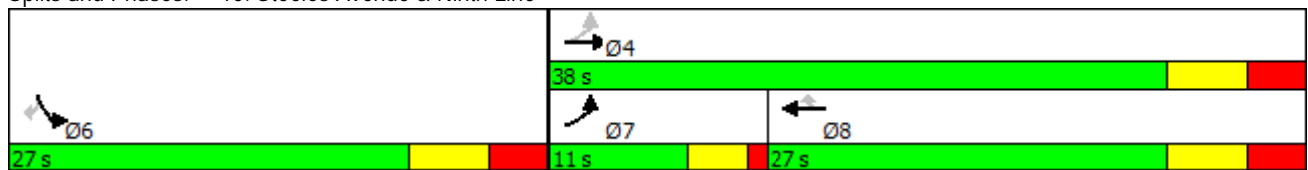


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Split (s)	11.0	27.0	27.0	27.0	17.0	17.0
Total Split (s)	11.0	38.0	27.0	27.0	27.0	27.0
Total Split (%)	16.9%	58.5%	41.5%	41.5%	41.5%	41.5%
Maximum Green (s)	7.0	31.0	20.0	20.0	20.0	20.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.0	7.0	7.0	7.0	7.0
Lead/Lag	Lead		Lag		Lag	
Lead-Lag Optimize?	Yes		Yes		Yes	
Vehicle Extension (s)	3.0	0.2	0.2	0.2	3.0	3.0
Recall Mode	None	Max	Max	Max	Max	Max
Act Effect Green (s)	34.0	31.0	22.2	22.2	20.0	20.0
Actuated g/C Ratio	0.52	0.48	0.34	0.34	0.31	0.31
v/c Ratio	0.21	0.70	0.60	0.34	0.56	0.16
Control Delay	9.3	16.3	21.7	4.5	21.4	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.3	16.3	21.7	4.5	21.4	5.8
LOS	A	B	C	A	C	A
Approach Delay	15.9		17.1		19.6	
Approach LOS	B		B		B	

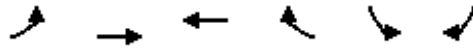
Intersection Summary

Area Type:	Other
Cycle Length:	65
Actuated Cycle Length:	65
Natural Cycle:	55
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.70
Intersection Signal Delay:	17.2
Intersection LOS:	B
Intersection Capacity Utilization:	59.2%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 10: Steeles Avenue & Ninth Line



Queues  
10: Steeles Avenue & Ninth Line

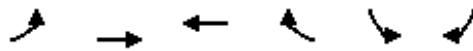


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	80	1105	630	225	595	75
v/c Ratio	0.21	0.70	0.60	0.34	0.56	0.16
Control Delay	9.3	16.3	21.7	4.5	21.4	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.3	16.3	21.7	4.5	21.4	5.8
Queue Length 50th (m)	4.7	54.3	36.2	0.0	32.2	0.0
Queue Length 95th (m)	10.6	75.6	53.1	13.7	47.0	8.2
Internal Link Dist (m)		501.4	704.8		3096.2	
Turn Bay Length (m)	65.0			75.0	90.0	
Base Capacity (vph)	375	1579	1044	663	1056	459
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.70	0.60	0.34	0.56	0.16
<b>Intersection Summary</b>						

# HCM Signalized Intersection Capacity Analysis 2021 Background AM - Remedial Measures

## 10: Steeles Avenue & Ninth Line

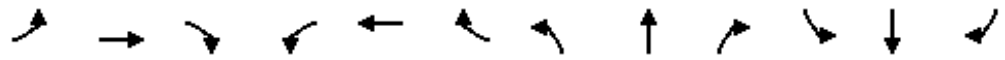
Premier Gateway Phase 1B Employment Area



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	80	1105	630	225	595	75
Future Volume (vph)	80	1105	630	225	595	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0	7.0	7.0	7.0	7.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1556	3312	3059	1509	3433	1324
Flt Permitted	0.30	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	500	3312	3059	1509	3433	1324
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	80	1105	630	225	595	75
RTOR Reduction (vph)	0	0	0	149	0	52
Lane Group Flow (vph)	80	1105	630	76	595	23
Heavy Vehicles (%)	16%	9%	18%	7%	2%	22%
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases	4			8		6
Actuated Green, G (s)	31.8	31.8	22.2	22.2	20.0	20.0
Effective Green, g (s)	31.8	31.8	22.2	22.2	20.0	20.0
Actuated g/C Ratio	0.48	0.48	0.34	0.34	0.30	0.30
Clearance Time (s)	4.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	0.2	0.2	0.2	3.0	3.0
Lane Grp Cap (vph)	331	1600	1032	509	1043	402
v/s Ratio Prot	0.02	c0.33	0.21		c0.17	
v/s Ratio Perm	0.10			0.05		0.02
v/c Ratio	0.24	0.69	0.61	0.15	0.57	0.06
Uniform Delay, d1	9.7	13.2	18.2	15.2	19.3	16.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	2.5	2.7	0.6	2.3	0.3
Delay (s)	10.0	15.7	20.9	15.8	21.5	16.5
Level of Service	B	B	C	B	C	B
Approach Delay (s)		15.3	19.6		21.0	
Approach LOS		B	B		C	
<b>Intersection Summary</b>						
HCM 2000 Control Delay			18.0		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.70			
Actuated Cycle Length (s)			65.8		Sum of lost time (s)	18.0
Intersection Capacity Utilization			59.2%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings  
14: Trafalgar Rd & 5 Side Road

2021 Background AM - Remedial Measures  
Premier Gateway Phase 1B Employment Area



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	365	250	60	100	10	15	340	35	30	1245	35
Future Volume (vph)	35	365	250	60	100	10	15	340	35	30	1245	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		40.0	40.0		0.0	40.0		0.0	50.0		20.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	80.0			80.0			100.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt			0.850		0.986			0.986				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1656	1863	1568	1687	1757	0	1444	2860	0	1480	3374	1292
Flt Permitted	0.686			0.389			0.129			0.509		
Satd. Flow (perm)	1196	1863	1568	691	1757	0	196	2860	0	793	3374	1292
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			215		7			14				95
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		617.5			665.2			264.1			262.0	
Travel Time (s)		37.1			39.9			11.9			11.8	
Peak Hour 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
Heavy Vehicles (%)	9%	2%	3%	7%	1%	63%	25%	25%	19%	22%	7%	25%
Adj. Flow (vph)	35	365	250	60	100	10	15	340	35	30	1245	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	365	250	60	110	0	15	375	0	30	1245	35
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0		7.0	25.0		7.0	25.0	25.0

Lanes, Volumes, Timings  
14: Trafalgar Rd & 5 Side Road

2021 Background AM - Remedial Measures  
Premier Gateway Phase 1B Employment Area

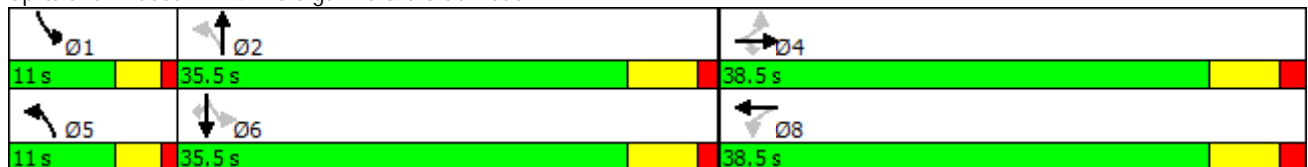


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	38.4	38.4	38.4	21.4	21.4		11.0	31.0		11.0	31.0	31.0
Total Split (s)	38.5	38.5	38.5	38.5	38.5		11.0	35.5		11.0	35.5	35.5
Total Split (%)	45.3%	45.3%	45.3%	45.3%	45.3%		12.9%	41.8%		12.9%	41.8%	41.8%
Maximum Green (s)	32.1	32.1	32.1	32.1	32.1		7.0	29.5		7.0	29.5	29.5
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6		3.0	4.6		3.0	4.6	4.6
All-Red Time (s)	1.8	1.8	1.8	1.8	1.8		1.0	1.4		1.0	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.4		4.0	6.0		4.0	6.0	6.0
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		3.0	5.0		3.0	5.0	5.0
Recall Mode	None	None	None	None	None		None	Max		None	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)	25.0	25.0	25.0	25.0	25.0			20.0			20.0	20.0
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	0
Act Effct Green (s)	21.9	21.9	21.9	21.9	21.9		34.7	30.3		35.4	32.2	32.2
Actuated g/C Ratio	0.32	0.32	0.32	0.32	0.32		0.51	0.44		0.52	0.47	0.47
v/c Ratio	0.09	0.61	0.39	0.27	0.19		0.07	0.30		0.06	0.79	0.05
Control Delay	17.6	25.0	6.2	21.7	17.3		10.5	15.1		10.0	22.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	17.6	25.0	6.2	21.7	17.3		10.5	15.1		10.0	22.6	0.1
LOS	B	C	A	C	B		B	B		A	C	A
Approach Delay		17.4			18.8			15.0			21.7	
Approach LOS		B			B			B			C	

Intersection Summary

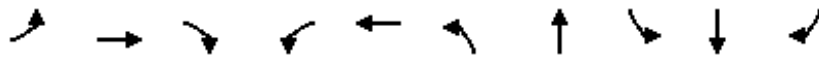
Area Type:	Other
Cycle Length:	85
Actuated Cycle Length:	68.6
Natural Cycle:	85
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.79
Intersection Signal Delay:	19.3
Intersection LOS:	B
Intersection Capacity Utilization:	81.8%
ICU Level of Service:	D
Analysis Period (min):	15

Splits and Phases: 14: Trafalgar Rd & 5 Side Road



Queues  
14: Trafalgar Rd & 5 Side Road

2021 Background AM - Remedial Measures  
Premier Gateway Phase 1B Employment Area



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	35	365	250	60	110	15	375	30	1245	35
v/c Ratio	0.09	0.61	0.39	0.27	0.19	0.07	0.30	0.06	0.79	0.05
Control Delay	17.6	25.0	6.2	21.7	17.3	10.5	15.1	10.0	22.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.6	25.0	6.2	21.7	17.3	10.5	15.1	10.0	22.6	0.1
Queue Length 50th (m)	2.9	36.3	2.9	5.2	8.7	0.8	12.8	1.7	61.6	0.0
Queue Length 95th (m)	9.9	73.8	18.9	16.5	22.6	4.2	36.1	6.9	#166.0	0.0
Internal Link Dist (m)		593.5			641.2		240.1		238.0	
Turn Bay Length (m)	40.0		40.0	40.0		40.0		50.0		20.0
Base Capacity (vph)	574	895	865	332	848	230	1271	480	1583	656
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.41	0.29	0.18	0.13	0.07	0.30	0.06	0.79	0.05

Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis 2021 Background AM - Remedial Measures

## 14: Trafalgar Rd & 5 Side Road

Premier Gateway Phase 1B Employment Area



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	365	250	60	100	10	15	340	35	30	1245	35
Future Volume (vph)	35	365	250	60	100	10	15	340	35	30	1245	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.4	6.4	6.4	6.4	6.4		4.0	6.0		4.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1656	1863	1568	1687	1757		1444	2860		1480	3374	1292
Flt Permitted	0.69	1.00	1.00	0.39	1.00		0.13	1.00		0.51	1.00	1.00
Satd. Flow (perm)	1196	1863	1568	690	1757		196	2860		793	3374	1292
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	35	365	250	60	100	10	15	340	35	30	1245	35
RTOR Reduction (vph)	0	0	149	0	5	0	0	8	0	0	0	19
Lane Group Flow (vph)	35	365	101	60	105	0	15	367	0	30	1245	16
Heavy Vehicles (%)	9%	2%	3%	7%	1%	63%	25%	25%	19%	22%	7%	25%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Actuated Green, G (s)	21.9	21.9	21.9	21.9	21.9		32.1	31.0		34.5	32.2	32.2
Effective Green, g (s)	21.9	21.9	21.9	21.9	21.9		32.1	31.0		34.5	32.2	32.2
Actuated g/C Ratio	0.31	0.31	0.31	0.31	0.31		0.45	0.43		0.48	0.45	0.45
Clearance Time (s)	6.4	6.4	6.4	6.4	6.4		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		3.0	5.0		3.0	5.0	5.0
Lane Grp Cap (vph)	365	569	479	211	537		107	1238		404	1517	581
v/s Ratio Prot		c0.20			0.06		0.00	0.13		c0.00	c0.37	
v/s Ratio Perm	0.03		0.06	0.09			0.06			0.03		0.01
v/c Ratio	0.10	0.64	0.21	0.28	0.20		0.14	0.30		0.07	0.82	0.03
Uniform Delay, d1	17.8	21.5	18.4	18.9	18.3		12.7	13.2		9.8	17.2	11.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	3.4	0.5	1.6	0.4		0.6	0.6		0.1	5.1	0.1
Delay (s)	18.0	24.8	18.9	20.4	18.7		13.3	13.8		9.9	22.3	11.1
Level of Service	B	C	B	C	B		B	B		A	C	B
Approach Delay (s)		22.2			19.3			13.8			21.7	
Approach LOS		C			B			B			C	

### Intersection Summary

HCM 2000 Control Delay	20.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	71.6	Sum of lost time (s)	16.4
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lanes, Volumes, Timings  
16: Ninth Line & 5 Side Road

2021 Background AM - Remedial Measures  
Premier Gateway Phase 1B Employment Area



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	470	25	2	120	15	10	320	20	275	680	25
Future Volume (vph)	20	470	25	2	120	15	10	320	20	275	680	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		0.0	40.0		40.0	40.0		0.0	40.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.992				0.850		0.991			0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1641	1811	0	1805	1863	1615	1289	3214	0	1805	3391	0
Flt Permitted	0.680			0.258			0.384			0.456		
Satd. Flow (perm)	1175	1811	0	490	1863	1615	521	3214	0	866	3391	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				117		10			7	
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		580.9			458.3			3120.2			329.9	
Travel Time (s)		34.9			27.5			160.5			17.0	
Peak Hour 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
Heavy Vehicles (%)	10%	4%	6%	0%	2%	0%	40%	12%	0%	0%	6%	4%
Adj. Flow (vph)	20	470	25	2	120	15	10	320	20	275	680	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	20	495	0	2	120	15	10	340	0	275	705	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	8	2	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	20.0	20.0		5.0	20.0	

Lanes, Volumes, Timings  
16: Ninth Line & 5 Side Road

2021 Background AM - Remedial Measures  
Premier Gateway Phase 1B Employment Area

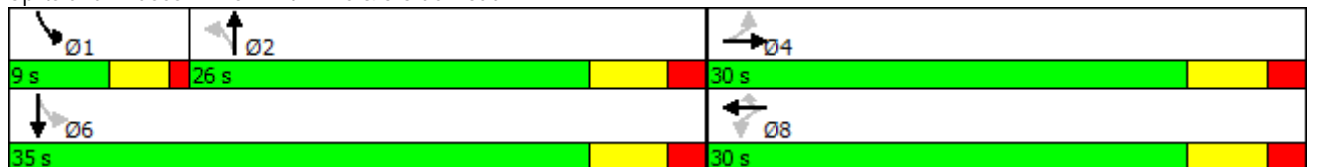


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	24.0	24.0		24.0	24.0	24.0	26.0	26.0		9.0	26.0	
Total Split (s)	30.0	30.0		30.0	30.0	30.0	26.0	26.0		9.0	35.0	
Total Split (%)	46.2%	46.2%		46.2%	46.2%	46.2%	40.0%	40.0%		13.8%	53.8%	
Maximum Green (s)	24.0	24.0		24.0	24.0	24.0	20.0	20.0		5.0	29.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		4.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.5	3.5		3.5	3.5	3.5	5.5	5.5		3.0	5.5	
Recall Mode	None	None		None	None	None	Max	Max		None	Max	
Walk Time (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	
Flash Dont Walk (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0			7.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0			0	
Act Effct Green (s)	20.6	20.6		20.6	20.6	20.6	20.1	20.1		31.1	29.1	
Actuated g/C Ratio	0.33	0.33		0.33	0.33	0.33	0.33	0.33		0.50	0.47	
v/c Ratio	0.05	0.82		0.01	0.19	0.02	0.06	0.32		0.54	0.44	
Control Delay	13.8	30.9		13.5	15.1	0.1	17.1	17.1		14.8	12.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	13.8	30.9		13.5	15.1	0.1	17.1	17.1		14.8	12.5	
LOS	B	C		B	B	A	B	B		B	B	
Approach Delay		30.3			13.5			17.1			13.1	
Approach LOS		C			B			B			B	

Intersection Summary

Area Type:	Other
Cycle Length:	65
Actuated Cycle Length:	61.7
Natural Cycle:	60
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.82
Intersection Signal Delay:	18.3
Intersection LOS:	B
Intersection Capacity Utilization:	77.5%
ICU Level of Service:	D
Analysis Period (min):	15

Splits and Phases: 16: Ninth Line & 5 Side Road



Queues  
16: Ninth Line & 5 Side Road

2021 Background AM - Remedial Measures  
Premier Gateway Phase 1B Employment Area



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	20	495	2	120	15	10	340	275	705
v/c Ratio	0.05	0.82	0.01	0.19	0.02	0.06	0.32	0.54	0.44
Control Delay	13.8	30.9	13.5	15.1	0.1	17.1	17.1	14.8	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.8	30.9	13.5	15.1	0.1	17.1	17.1	14.8	12.5
Queue Length 50th (m)	1.6	52.4	0.2	10.0	0.0	0.9	16.2	19.2	29.3
Queue Length 95th (m)	5.6	#90.3	1.4	20.3	0.0	4.2	27.0	35.2	44.4
Internal Link Dist (m)		556.9		434.3			3096.2		305.9
Turn Bay Length (m)	40.0		40.0		40.0	40.0		40.0	
Base Capacity (vph)	458	709	191	727	701	169	1051	512	1602
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.70	0.01	0.17	0.02	0.06	0.32	0.54	0.44

Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis 2021 Background AM - Remedial Measures

## 16: Ninth Line & 5 Side Road

Premier Gateway Phase 1B Employment Area



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	20	470	25	2	120	15	10	320	20	275	680	25	
Future Volume (vph)	20	470	25	2	120	15	10	320	20	275	680	25	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		4.0	6.0		
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95		
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.99		1.00	0.99		
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1641	1811		1805	1863	1615	1289	3215		1805	3390		
Flt Permitted	0.68	1.00		0.26	1.00	1.00	0.38	1.00		0.46	1.00		
Satd. Flow (perm)	1174	1811		490	1863	1615	521	3215		867	3390		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	20	470	25	2	120	15	10	320	20	275	680	25	
RTOR Reduction (vph)	0	3	0	0	0	10	0	7	0	0	4	0	
Lane Group Flow (vph)	20	492	0	2	120	5	10	333	0	275	701	0	
Heavy Vehicles (%)	10%	4%	6%	0%	2%	0%	40%	12%	0%	0%	6%	4%	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA		
Protected Phases		4			8			2		1	6		
Permitted Phases	4			8		8	2			6			
Actuated Green, G (s)	20.6	20.6		20.6	20.6	20.6	20.1	20.1		29.1	29.1		
Effective Green, g (s)	20.6	20.6		20.6	20.6	20.6	20.1	20.1		29.1	29.1		
Actuated g/C Ratio	0.33	0.33		0.33	0.33	0.33	0.33	0.33		0.47	0.47		
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		4.0	6.0		
Vehicle Extension (s)	3.5	3.5		3.5	3.5	3.5	5.5	5.5		3.0	5.5		
Lane Grp Cap (vph)	391	604		163	622	539	169	1047		484	1598		
v/s Ratio Prot		c0.27			0.06			0.10		c0.05	0.21		
v/s Ratio Perm	0.02			0.00		0.00	0.02			c0.22			
v/c Ratio	0.05	0.81		0.01	0.19	0.01	0.06	0.32		0.57	0.44		
Uniform Delay, d1	13.9	18.8		13.7	14.6	13.7	14.3	15.6		10.8	10.9		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	0.1	8.5		0.0	0.2	0.0	0.7	0.8		1.5	0.9		
Delay (s)	14.0	27.3		13.8	14.8	13.7	15.0	16.4		12.3	11.7		
Level of Service	B	C		B	B	B	B	B		B	B		
Approach Delay (s)		26.8			14.7			16.4			11.9		
Approach LOS		C			B			B			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			16.8									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.72										
Actuated Cycle Length (s)			61.7									Sum of lost time (s)	16.0
Intersection Capacity Utilization			77.5%									ICU Level of Service	D
Analysis Period (min)			15										
c	Critical Lane Group												

Lanes, Volumes, Timings  
6: Trafalgar Road & Steeles Avenue

2021 Background PM - Remedial Measures  
Premier Gateway Phase 1B Employment Area



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	325	600	115	600	895	160	165	640	570	40	295	65
Future Volume (vph)	325	600	115	600	895	160	165	640	570	40	295	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	115.0		40.0	130.0		70.0	100.0		65.0	250.0		80.0
Storage Lanes	2		1	2		1	2		1	1		1
Taper Length (m)	100.0			100.0			80.0			100.0		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2653	3139	1262	3433	3312	1583	3099	3505	1568	1805	3471	1129
Flt Permitted	0.950			0.950			0.950			0.342		
Satd. Flow (perm)	2653	3139	1262	3433	3312	1583	3099	3505	1568	650	3471	1129
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			187			148			505			179
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		879.8			311.3			332.0			289.5	
Travel Time (s)		52.8			18.7			17.1			14.9	
Peak Hour 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
Heavy Vehicles (%)	32%	15%	28%	2%	9%	2%	13%	3%	3%	0%	4%	43%
Adj. Flow (vph)	325	600	115	600	895	160	165	640	570	40	295	65
Shared Lane Traffic (%)												
Lane Group Flow (vph)	325	600	115	600	895	160	165	640	570	40	295	65
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)		7.2			7.2			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	8.0	20.0	20.0	8.0	20.0	20.0	7.0	20.0	20.0

Lanes, Volumes, Timings  
6: Trafalgar Road & Steeles Avenue

2021 Background PM - Remedial Measures  
Premier Gateway Phase 1B Employment Area

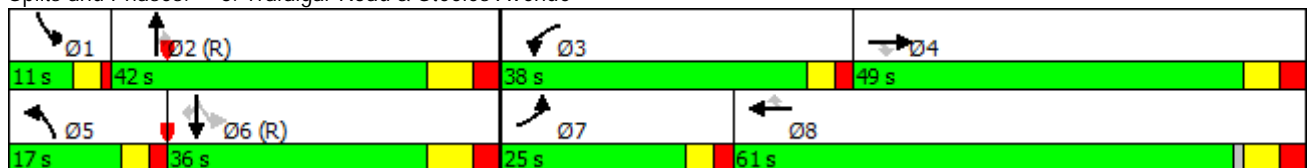


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	12.0	27.0	27.0	13.0	27.0	27.0	13.0	28.0	28.0	11.0	28.0	28.0
Total Split (s)	25.0	49.0	49.0	38.0	61.0	61.0	17.0	42.0	42.0	11.0	36.0	36.0
Total Split (%)	17.9%	35.0%	35.0%	27.1%	43.6%	43.6%	12.1%	30.0%	30.0%	7.9%	25.7%	25.7%
Maximum Green (s)	20.0	42.0	42.0	33.0	54.0	54.0	12.0	34.0	34.0	7.0	28.0	28.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	2.0	3.0	3.0	2.0	3.0	3.0	2.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	8.0	8.0	4.0	8.0	8.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	4.0	3.0	3.0	4.0	0.2	0.2	3.0	0.2	0.2
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		26.0	26.0		26.0	26.0		26.0	26.0		26.0	26.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effect Green (s)	19.4	34.8	34.8	29.7	45.0	45.0	13.0	46.1	46.1	49.3	37.5	37.5
Actuated g/C Ratio	0.14	0.25	0.25	0.21	0.32	0.32	0.09	0.33	0.33	0.35	0.27	0.27
v/c Ratio	0.88	0.77	0.25	0.83	0.84	0.26	0.57	0.56	0.67	0.14	0.32	0.15
Control Delay	84.0	56.0	1.3	62.8	51.8	6.7	68.7	43.1	10.7	28.1	44.2	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	84.0	56.0	1.3	62.8	51.8	6.7	68.7	43.1	10.7	28.1	44.2	0.7
LOS	F	E	A	E	D	A	E	D	B	C	D	A
Approach Delay		58.7			51.5			32.7			35.5	
Approach LOS		E			D			C			D	

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	140
Offset:	0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle:	85
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.88
Intersection Signal Delay:	46.0
Intersection LOS:	D
Intersection Capacity Utilization	78.2%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 6: Trafalgar Road & Steeles Avenue



Queues  
6: Trafalgar Road & Steeles Avenue

2021 Background PM - Remedial Measures  
Premier Gateway Phase 1B Employment Area



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	325	600	115	600	895	160	165	640	570	40	295	65
v/c Ratio	0.88	0.77	0.25	0.83	0.84	0.26	0.57	0.56	0.67	0.14	0.32	0.15
Control Delay	84.0	56.0	1.3	62.8	51.8	6.7	68.7	43.1	10.7	28.1	44.2	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	84.0	56.0	1.3	62.8	51.8	6.7	68.7	43.1	10.7	28.1	44.2	0.7
Queue Length 50th (m)	48.4	86.0	0.0	86.2	127.2	2.4	24.0	83.0	13.7	6.9	36.9	0.0
Queue Length 95th (m)	#74.3	103.5	0.0	106.1	142.0	17.4	36.5	114.6	62.4	16.2	55.1	0.0
Internal Link Dist (m)		855.8			287.3			308.0			265.5	
Turn Bay Length (m)	115.0		40.0	130.0		70.0	100.0		65.0	250.0		80.0
Base Capacity (vph)	379	941	509	809	1301	711	297	1153	854	292	930	433
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.64	0.23	0.74	0.69	0.23	0.56	0.56	0.67	0.14	0.32	0.15

Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis 2021 Background PM - Remedial Measures 6: Trafalgar Road & Steeles Avenue

Premier Gateway Phase 1B Employment Area

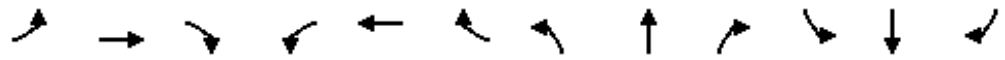


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	325	600	115	600	895	160	165	640	570	40	295	65
Future Volume (vph)	325	600	115	600	895	160	165	640	570	40	295	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	8.0	8.0	4.0	8.0	8.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	2653	3139	1262	3433	3312	1583	3099	3505	1568	1805	3471	1129
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.34	1.00	1.00
Satd. Flow (perm)	2653	3139	1262	3433	3312	1583	3099	3505	1568	650	3471	1129
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	325	600	115	600	895	160	165	640	570	40	295	65
RTOR Reduction (vph)	0	0	86	0	0	100	0	0	342	0	0	48
Lane Group Flow (vph)	325	600	29	600	895	60	165	640	228	40	295	17
Heavy Vehicles (%)	32%	15%	28%	2%	9%	2%	13%	3%	3%	0%	4%	43%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2	6		6
Actuated Green, G (s)	19.4	34.8	34.8	29.7	45.1	45.1	13.0	45.2	45.2	43.8	37.5	37.5
Effective Green, g (s)	19.4	34.8	34.8	29.7	45.1	45.1	13.0	45.2	45.2	43.8	37.5	37.5
Actuated g/C Ratio	0.14	0.25	0.25	0.21	0.32	0.32	0.09	0.32	0.32	0.31	0.27	0.27
Clearance Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	8.0	8.0	4.0	8.0	8.0
Vehicle Extension (s)	3.0	3.0	3.0	4.0	3.0	3.0	4.0	0.2	0.2	3.0	0.2	0.2
Lane Grp Cap (vph)	367	780	313	728	1066	509	287	1131	506	255	929	302
v/s Ratio Prot	0.12	0.19		c0.17	c0.27		c0.05	c0.18		0.01	0.08	
v/s Ratio Perm			0.02			0.04			0.15	0.04		0.02
v/c Ratio	0.89	0.77	0.09	0.82	0.84	0.12	0.57	0.57	0.45	0.16	0.32	0.06
Uniform Delay, d1	59.2	48.9	40.4	52.7	44.1	33.4	60.9	39.3	37.6	33.9	41.0	38.1
Progression 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
Incremental Delay, d2	21.6	4.6	0.1	7.9	5.9	0.1	3.3	2.1	2.9	0.3	0.9	0.4
Delay (s)	80.8	53.5	40.6	60.5	50.0	33.5	64.2	41.3	40.4	34.2	41.9	38.5
Level of Service	F	D	D	E	D	C	E	D	D	C	D	D
Approach Delay (s)		60.6			52.2			43.7			40.6	
Approach LOS		E			D			D			D	

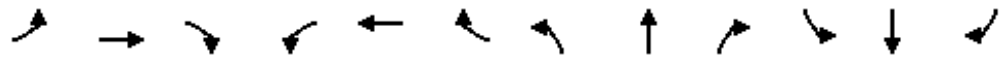
## Intersection Summary

HCM 2000 Control Delay	50.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	230	900	20	120	1345	120	55	30	105	35	20	65
Future Volume (vph)	230	900	20	120	1345	120	55	30	105	35	20	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	105.0		55.0	30.0		30.0	0.0		0.0	70.0		0.0
Storage Lanes	1		1	1		1	2		0	1		0
Taper Length (m)	55.0			90.0			7.5			45.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850		0.883			0.885	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3223	1615	1770	3374	1599	3367	1652	0	1752	1656	0
Flt Permitted	0.090			0.262			0.950			0.671		
Satd. Flow (perm)	171	3223	1615	488	3374	1599	3367	1652	0	1238	1656	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			182			182		105			65	
Link Speed (k/h)		60			60			50			70	
Link Distance (m)		200.7			870.8			218.1			3086.4	
Travel Time (s)		12.0			52.2			15.7			158.7	
Peak Hour 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
Heavy Vehicles (%)	0%	12%	0%	2%	7%	1%	4%	0%	2%	3%	0%	2%
Adj. Flow (vph)	230	900	20	120	1345	120	55	30	105	35	20	65
Shared Lane Traffic (%)												
Lane Group Flow (vph)	230	900	20	120	1345	120	55	135	0	35	85	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)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Perm	NA	
Protected Phases	7	4		3	8		5	2				6
Permitted Phases	4		4	8		8				6		
Detector Phase	7	4	4	3	8	8	5	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0		10.0	10.0	

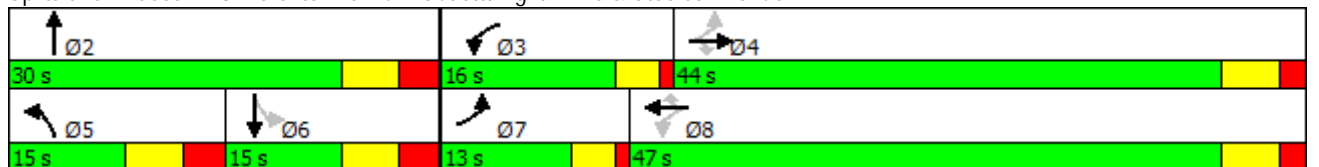


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	11.0	26.0	26.0	11.0	26.0	26.0	17.0	17.0		17.0	17.0	
Total Split (s)	13.0	44.0	44.0	16.0	47.0	47.0	15.0	30.0		15.0	15.0	
Total Split (%)	14.4%	48.9%	48.9%	17.8%	52.2%	52.2%	16.7%	33.3%		16.7%	16.7%	
Maximum Green (s)	9.0	38.0	38.0	12.0	41.0	41.0	8.0	23.0		8.0	8.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	7.0	7.0		7.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	4.0	4.0		3.0	3.0	
Recall Mode	None	Max	Max	None	Max	Max	None	None		Max	Max	
Walk Time (s)		7.0	7.0		7.0	7.0		7.0				
Flash Dont Walk (s)		17.0	17.0		17.0	17.0		21.0				
Pedestrian Calls (#/hr)		0	0		0	0		0				
Act Effct Green (s)	53.7	44.6	44.6	51.3	41.2	41.2	8.0	17.4		8.9	8.9	
Actuated g/C Ratio	0.63	0.53	0.53	0.60	0.49	0.49	0.09	0.21		0.10	0.10	
v/c Ratio	0.82	0.53	0.02	0.29	0.82	0.14	0.17	0.32		0.27	0.37	
Control Delay	42.9	16.9	0.1	8.2	25.1	0.9	38.8	10.9		43.7	20.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	42.9	16.9	0.1	8.2	25.1	0.9	38.8	10.9		43.7	20.0	
LOS	D	B	A	A	C	A	D	B		D	B	
Approach Delay		21.8			22.0			19.0			26.9	
Approach LOS		C			C			B			C	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	84.8
Natural Cycle:	90
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.82
Intersection Signal Delay:	21.9
Intersection LOS:	C
Intersection Capacity Utilization:	86.6%
ICU Level of Service:	E
Analysis Period (min):	15

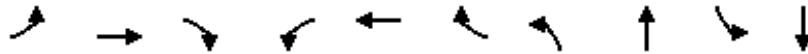
Splits and Phases: 8: Toronto Premium Outlets/Eighth Line & Steeles Avenue



## Queues

## 2021 Background PM - Remedial Measures

## 8: Toronto Premium Outlets/Eighth Line &amp; Steeles Avenue Premier Gateway Phase 1B Employment Area



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	230	900	20	120	1345	120	55	135	35	85
v/c Ratio	0.82	0.53	0.02	0.29	0.82	0.14	0.17	0.32	0.27	0.37
Control Delay	42.9	16.9	0.1	8.2	25.1	0.9	38.8	10.9	43.7	20.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.9	16.9	0.1	8.2	25.1	0.9	38.8	10.9	43.7	20.0
Queue Length 50th (m)	24.7	61.2	0.0	8.0	112.5	0.0	4.8	4.1	6.1	3.4
Queue Length 95th (m)	#68.5	84.9	0.0	14.9	#148.0	2.8	10.7	18.3	15.8	17.6
Internal Link Dist (m)		176.7			846.8			194.1		3062.4
Turn Bay Length (m)	105.0		55.0	30.0		30.0			70.0	
Base Capacity (vph)	282	1695	935	501	1641	871	319	527	130	232
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.53	0.02	0.24	0.82	0.14	0.17	0.26	0.27	0.37

## Intersection Summary

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

Queue shown is maximum after two cycles.

# HCM Signalized Intersection Capacity Analysis 2021 Background PM - Remedial Measures

## 8: Toronto Premium Outlets/Eighth Line & Steeles Avenue Premier Gateway Phase 1B Employment Area



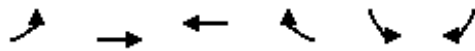
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	230	900	20	120	1345	120	55	30	105	35	20	65
Future Volume (vph)	230	900	20	120	1345	120	55	30	105	35	20	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0	6.0	7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3223	1615	1770	3374	1599	3367	1653		1752	1657	
Flt Permitted	0.09	1.00	1.00	0.26	1.00	1.00	0.95	1.00		0.67	1.00	
Satd. Flow (perm)	170	3223	1615	489	3374	1599	3367	1653		1237	1657	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	230	900	20	120	1345	120	55	30	105	35	20	65
RTOR Reduction (vph)	0	0	10	0	0	63	0	81	0	0	58	0
Lane Group Flow (vph)	230	900	10	120	1345	57	55	54	0	35	27	0
Heavy Vehicles (%)	0%	12%	0%	2%	7%	1%	4%	0%	2%	3%	0%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Perm	NA	
Protected Phases	7	4		3	8		5	2				6
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)	53.7	44.6	44.6	48.7	42.1	42.1	4.5	20.4		8.9	8.9	
Effective Green, g (s)	53.7	44.6	44.6	48.7	42.1	42.1	4.5	20.4		8.9	8.9	
Actuated g/C Ratio	0.61	0.50	0.50	0.55	0.48	0.48	0.05	0.23		0.10	0.10	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	4.0	4.0		3.0	3.0	
Lane Grp Cap (vph)	270	1622	812	364	1603	759	171	380		124	166	
v/s Ratio Prot	c0.09	0.28		0.02	0.40		c0.02	0.03				0.02
v/s Ratio Perm	c0.43		0.01	0.16		0.04				c0.03		
v/c Ratio	0.85	0.55	0.01	0.33	0.84	0.08	0.32	0.14		0.28	0.16	
Uniform Delay, d1	21.1	15.2	11.0	10.0	20.3	12.7	40.6	27.1		36.9	36.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	21.9	1.4	0.0	0.5	5.4	0.2	1.5	0.2		5.6	2.1	
Delay (s)	43.0	16.5	11.0	10.5	25.7	12.8	42.1	27.4		42.5	38.5	
Level of Service	D	B	B	B	C	B	D	C		D	D	
Approach Delay (s)		21.7			23.6			31.6			39.7	
Approach LOS		C			C			C			D	

### Intersection Summary

HCM 2000 Control Delay	24.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	88.6	Sum of lost time (s)	24.0
Intersection Capacity Utilization	86.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings  
10: Steeles Avenue & Ninth Line

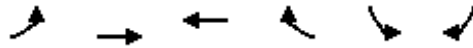
2021 Background PM - Remedial Measures  
Premier Gateway Phase 1B Employment Area



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	105	935	1495	735	280	70
Future Volume (vph)	105	935	1495	735	280	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0			75.0	90.0	0.0
Storage Lanes	1			1	1	1
Taper Length (m)	100.0				40.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Fr <sub>t</sub>				0.850		0.850
Fl <sub>t</sub> Protected	0.950				0.950	
Satd. Flow (prot)	1719	3252	3406	1615	3367	1524
Fl <sub>t</sub> Permitted	0.097				0.950	
Satd. Flow (perm)	176	3252	3406	1615	3367	1524
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				735		70
Link Speed (k/h)		70	70		70	
Link Distance (m)		525.4	728.8		3120.2	
Travel Time (s)		27.0	37.5		160.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	11%	6%	0%	4%	6%
Adj. Flow (vph)	105	935	1495	735	280	70
Shared Lane Traffic (%)						
Lane Group Flow (vph)	105	935	1495	735	280	70
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		7.2	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (m)	2.0	10.0	10.0	2.0	2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6	2.0	2.0	2.0
Detector 1 Type	CI+Ex	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	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases	4			8		6
Detector Phase	7	4	8	8	6	6
Switch Phase						
Minimum Initial (s)	7.0	20.0	20.0	20.0	10.0	10.0

Lanes, Volumes, Timings  
10: Steeles Avenue & Ninth Line

2021 Background PM - Remedial Measures  
Premier Gateway Phase 1B Employment Area

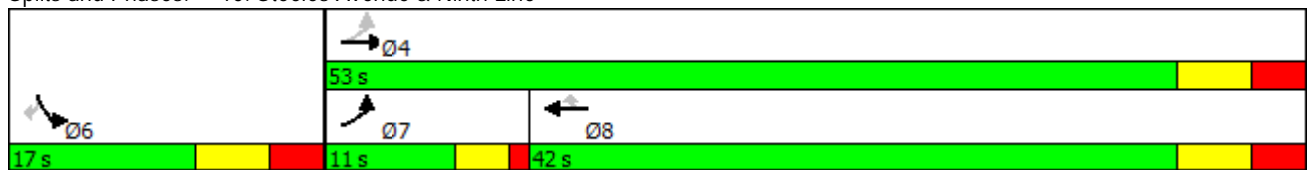


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Split (s)	11.0	27.0	27.0	27.0	17.0	17.0
Total Split (s)	11.0	53.0	42.0	42.0	17.0	17.0
Total Split (%)	15.7%	75.7%	60.0%	60.0%	24.3%	24.3%
Maximum Green (s)	7.0	46.0	35.0	35.0	10.0	10.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.0	7.0	7.0	7.0	7.0
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	0.2	0.2	0.2	3.0	3.0
Recall Mode	None	Max	Max	Max	Max	Max
Act Effect Green (s)	49.0	46.0	37.2	37.2	10.0	10.0
Actuated g/C Ratio	0.70	0.66	0.53	0.53	0.14	0.14
v/c Ratio	0.38	0.44	0.83	0.61	0.58	0.25
Control Delay	8.5	6.6	20.0	3.4	33.5	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.5	6.6	20.0	3.4	33.5	10.3
LOS	A	A	C	A	C	B
Approach Delay	6.8		14.5		28.9	
Approach LOS	A		B		C	

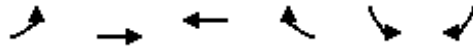
Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	70
Natural Cycle:	65
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.83
Intersection Signal Delay:	13.7
Intersection LOS:	B
Intersection Capacity Utilization:	70.5%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 10: Steeles Avenue & Ninth Line



Queues  
10: Steeles Avenue & Ninth Line



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	105	935	1495	735	280	70
v/c Ratio	0.38	0.44	0.83	0.61	0.58	0.25
Control Delay	8.5	6.6	20.0	3.4	33.5	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.5	6.6	20.0	3.4	33.5	10.3
Queue Length 50th (m)	3.7	27.6	90.4	0.0	18.9	0.0
Queue Length 95th (m)	10.5	38.4	#139.7	16.0	30.4	10.4
Internal Link Dist (m)		501.4	704.8		3096.2	
Turn Bay Length (m)	65.0			75.0	90.0	
Base Capacity (vph)	277	2137	1810	1203	481	277
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.44	0.83	0.61	0.58	0.25

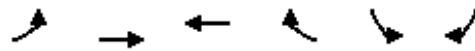
Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis 2021 Background PM - Remedial Measures

## 10: Steeles Avenue & Ninth Line

Premier Gateway Phase 1B Employment Area



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	105	935	1495	735	280	70
Future Volume (vph)	105	935	1495	735	280	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0	7.0	7.0	7.0	7.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1719	3252	3406	1615	3367	1524
Flt Permitted	0.10	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	176	3252	3406	1615	3367	1524
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	105	935	1495	735	280	70
RTOR Reduction (vph)	0	0	0	349	0	60
Lane Group Flow (vph)	105	935	1495	386	280	10
Heavy Vehicles (%)	5%	11%	6%	0%	4%	6%
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases	4			8		6
Actuated Green, G (s)	46.8	46.8	37.2	37.2	10.0	10.0
Effective Green, g (s)	46.8	46.8	37.2	37.2	10.0	10.0
Actuated g/C Ratio	0.66	0.66	0.53	0.53	0.14	0.14
Clearance Time (s)	4.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	0.2	0.2	0.2	3.0	3.0
Lane Grp Cap (vph)	238	2149	1789	848	475	215
v/s Ratio Prot	0.03	c0.29	c0.44		c0.08	
v/s Ratio Perm	0.26			0.24		0.01
v/c Ratio	0.44	0.44	0.84	0.46	0.59	0.05
Uniform Delay, d1	9.4	5.7	14.2	10.5	28.5	26.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3	0.6	4.8	1.8	5.3	0.4
Delay (s)	10.7	6.4	19.0	12.2	33.8	26.7
Level of Service	B	A	B	B	C	C
Approach Delay (s)		6.8	16.8		32.3	
Approach LOS		A	B		C	

### Intersection Summary

HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	70.8	Sum of lost time (s)	18.0
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lanes, Volumes, Timings  
14: Trafalgar Rd & 5 Side Road

2021 Background PM - Remedial Measures  
Premier Gateway Phase 1B Employment Area



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	155	40	45	355	40	90	1160	55	10	530	65
Future Volume (vph)	50	155	40	45	355	40	90	1160	55	10	530	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		40.0	40.0		0.0	40.0		0.0	50.0		20.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	80.0			80.0			100.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Fr <sub>t</sub>			0.850		0.985			0.993				0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1656	1863	1482	1805	1872	0	1770	3453	0	1583	3438	1509
Fl <sub>t</sub> Permitted	0.314			0.659			0.380			0.147		
Satd. Flow (perm)	547	1863	1482	1252	1872	0	708	3453	0	245	3438	1509
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			90		8			6				90
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		617.5			665.2			264.1			262.0	
Travel Time (s)		37.1			39.9			11.9			11.8	
Peak Hour 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
Heavy Vehicles (%)	9%	2%	9%	0%	0%	0%	2%	4%	0%	14%	5%	7%
Adj. Flow (vph)	50	155	40	45	355	40	90	1160	55	10	530	65
Shared Lane Traffic (%)												
Lane Group Flow (vph)	50	155	40	45	395	0	90	1215	0	10	530	65
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		6			6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0		7.0	25.0		7.0	25.0	25.0

Lanes, Volumes, Timings  
14: Trafalgar Rd & 5 Side Road

2021 Background PM - Remedial Measures  
Premier Gateway Phase 1B Employment Area

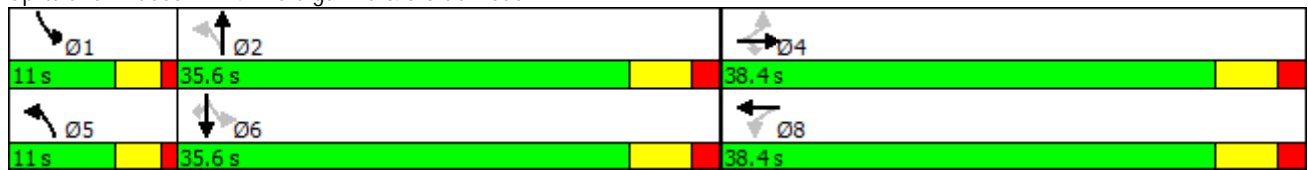


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	21.0	21.0	21.0	21.0	21.0		11.0	31.0		11.0	31.0	31.0
Total Split (s)	38.4	38.4	38.4	38.4	38.4		11.0	35.6		11.0	35.6	35.6
Total Split (%)	45.2%	45.2%	45.2%	45.2%	45.2%		12.9%	41.9%		12.9%	41.9%	41.9%
Maximum Green (s)	32.4	32.4	32.4	32.4	32.4		7.0	29.6		7.0	29.6	29.6
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	2.0		1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0		4.0	6.0	6.0
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		3.0	5.0		3.0	5.0	5.0
Recall Mode	None	None	None	None	None		None	Max		None	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)	25.0	25.0	25.0	25.0	25.0			20.0			20.0	20.0
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	0
Act Effct Green (s)	22.5	22.5	22.5	22.5	22.5		39.9	36.7		37.5	30.2	30.2
Actuated g/C Ratio	0.31	0.31	0.31	0.31	0.31		0.54	0.50		0.51	0.41	0.41
v/c Ratio	0.30	0.27	0.08	0.12	0.68		0.18	0.70		0.04	0.37	0.10
Control Delay	24.8	20.6	0.5	19.0	28.5		10.1	19.6		9.9	17.9	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	24.8	20.6	0.5	19.0	28.5		10.1	19.6		9.9	17.9	2.9
LOS	C	C	A	B	C		B	B		A	B	A
Approach Delay		18.2			27.6			19.0			16.2	
Approach LOS		B			C			B			B	

Intersection Summary

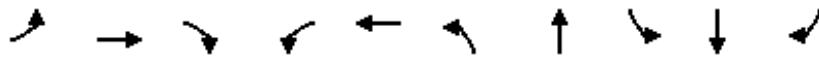
Area Type:	Other
Cycle Length:	85
Actuated Cycle Length:	73.3
Natural Cycle:	65
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.70
Intersection Signal Delay:	19.7
Intersection LOS:	B
Intersection Capacity Utilization:	91.6%
ICU Level of Service:	F
Analysis Period (min):	15

Splits and Phases: 14: Trafalgar Rd & 5 Side Road



Queues  
14: Trafalgar Rd & 5 Side Road

2021 Background PM - Remedial Measures  
Premier Gateway Phase 1B Employment Area



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	50	155	40	45	395	90	1215	10	530	65
v/c Ratio	0.30	0.27	0.08	0.12	0.68	0.18	0.70	0.04	0.37	0.10
Control Delay	24.8	20.6	0.5	19.0	28.5	10.1	19.6	9.9	17.9	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.8	20.6	0.5	19.0	28.5	10.1	19.6	9.9	17.9	2.9
Queue Length 50th (m)	5.7	17.5	0.0	4.8	50.6	5.5	60.9	0.6	28.4	0.0
Queue Length 95th (m)	14.8	31.2	0.7	11.9	78.8	15.5	#157.2	3.3	50.6	5.2
Internal Link Dist (m)		593.5			641.2		240.1		238.0	
Turn Bay Length (m)	40.0		40.0	40.0		40.0		50.0		20.0
Base Capacity (vph)	246	839	717	564	848	488	1729	255	1415	674
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.18	0.06	0.08	0.47	0.18	0.70	0.04	0.37	0.10

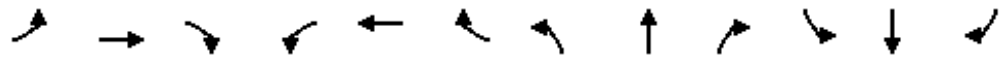
Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis 2021 Background PM - Remedial Measures

## 14: Trafalgar Rd & 5 Side Road

Premier Gateway Phase 1B Employment Area



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	155	40	45	355	40	90	1160	55	10	530	65
Future Volume (vph)	50	155	40	45	355	40	90	1160	55	10	530	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0		4.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1656	1863	1482	1805	1871		1770	3454		1583	3438	1509
Flt Permitted	0.31	1.00	1.00	0.66	1.00		0.38	1.00		0.15	1.00	1.00
Satd. Flow (perm)	548	1863	1482	1251	1871		708	3454		246	3438	1509
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	155	40	45	355	40	90	1160	55	10	530	65
RTOR Reduction (vph)	0	0	28	0	6	0	0	3	0	0	0	37
Lane Group Flow (vph)	50	155	12	45	389	0	90	1212	0	10	530	28
Heavy Vehicles (%)	9%	2%	9%	0%	0%	0%	2%	4%	0%	14%	5%	7%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Actuated Green, G (s)	22.5	22.5	22.5	22.5	22.5		41.8	36.6		33.7	32.5	32.5
Effective Green, g (s)	22.5	22.5	22.5	22.5	22.5		41.8	36.6		33.7	32.5	32.5
Actuated g/C Ratio	0.29	0.29	0.29	0.29	0.29		0.55	0.48		0.44	0.43	0.43
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		3.0	5.0		3.0	5.0	5.0
Lane Grp Cap (vph)	161	549	437	368	551		461	1656		129	1464	642
v/s Ratio Prot		0.08			c0.21		c0.01	c0.35		0.00	0.15	
v/s Ratio Perm	0.09		0.01	0.04			0.09			0.03		0.02
v/c Ratio	0.31	0.28	0.03	0.12	0.71		0.20	0.73		0.08	0.36	0.04
Uniform Delay, d1	20.9	20.7	19.1	19.7	24.0		8.5	15.9		12.9	14.9	12.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.3	0.6	0.1	0.3	5.2		0.2	2.9		0.3	0.7	0.1
Delay (s)	23.2	21.3	19.2	20.0	29.1		8.7	18.8		13.2	15.6	12.9
Level of Service	C	C	B	B	C		A	B		B	B	B
Approach Delay (s)		21.3			28.2			18.1			15.2	
Approach LOS		C			C			B			B	

### Intersection Summary

HCM 2000 Control Delay	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	76.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	91.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings  
16: Ninth Line & 5 Side Road

2021 Background PM - Remedial Measures  
Premier Gateway Phase 1B Employment Area



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	210	15	10	470	235	15	790	10	30	325	25
Future Volume (vph)	30	210	15	10	470	235	15	790	10	30	325	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		0.0	40.0		40.0	40.0		0.0	40.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.990				0.850		0.998			0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1881	0	1805	1900	1615	1805	3601	0	1805	3537	0
Flt Permitted	0.327			0.618			0.542			0.306		
Satd. Flow (perm)	603	1881	0	1174	1900	1615	1030	3601	0	581	3537	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				79		3			19	
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		580.9			458.3			3120.2			329.9	
Travel Time (s)		34.9			27.5			160.5			17.0	
Peak Hour 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
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	0%	0%	3%	0%	1%	0%
Adj. Flow (vph)	30	210	15	10	470	235	15	790	10	30	325	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	225	0	10	470	235	15	800	0	30	350	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	20.0	20.0		20.0	20.0	

Lanes, Volumes, Timings  
16: Ninth Line & 5 Side Road

2021 Background PM - Remedial Measures  
Premier Gateway Phase 1B Employment Area

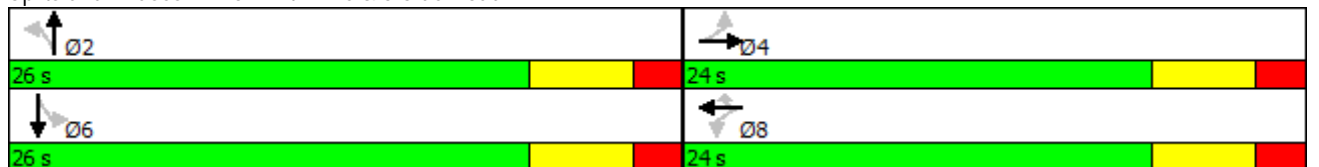


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	24.0	24.0		24.0	24.0	24.0	26.0	26.0		26.0	26.0	
Total Split (s)	24.0	24.0		24.0	24.0	24.0	26.0	26.0		26.0	26.0	
Total Split (%)	48.0%	48.0%		48.0%	48.0%	48.0%	52.0%	52.0%		52.0%	52.0%	
Maximum Green (s)	18.0	18.0		18.0	18.0	18.0	20.0	20.0		20.0	20.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.5	3.5		3.5	3.5	3.5	5.5	5.5		5.5	5.5	
Recall Mode	None	None		None	None	None	Max	Max		Max	Max	
Walk Time (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Flash Dont Walk (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)	15.8	15.8		15.8	15.8	15.8	20.1	20.1		20.1	20.1	
Actuated g/C Ratio	0.33	0.33		0.33	0.33	0.33	0.42	0.42		0.42	0.42	
v/c Ratio	0.15	0.36		0.03	0.75	0.40	0.03	0.53		0.12	0.23	
Control Delay	13.2	13.4		10.6	23.1	10.4	9.5	12.4		11.2	9.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	13.2	13.4		10.6	23.1	10.4	9.5	12.4		11.2	9.5	
LOS	B	B		B	C	B	A	B		B	A	
Approach Delay		13.4			18.7			12.4			9.7	
Approach LOS		B			B			B			A	

Intersection Summary

Area Type:	Other
Cycle Length:	50
Actuated Cycle Length:	48
Natural Cycle:	50
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.75
Intersection Signal Delay:	14.1
Intersection LOS:	B
Intersection Capacity Utilization:	59.9%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 16: Ninth Line & 5 Side Road



Queues  
16: Ninth Line & 5 Side Road

2021 Background PM - Remedial Measures  
Premier Gateway Phase 1B Employment Area



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	30	225	10	470	235	15	800	30	350
v/c Ratio	0.15	0.36	0.03	0.75	0.40	0.03	0.53	0.12	0.23
Control Delay	13.2	13.4	10.6	23.1	10.4	9.5	12.4	11.2	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.2	13.4	10.6	23.1	10.4	9.5	12.4	11.2	9.5
Queue Length 50th (m)	1.8	14.2	0.6	36.2	10.0	0.8	28.7	1.7	10.2
Queue Length 95th (m)	6.5	27.8	3.0	#65.4	23.6	3.5	43.0	6.1	17.5
Internal Link Dist (m)		556.9		434.3			3096.2		305.9
Turn Bay Length (m)	40.0		40.0		40.0	40.0		40.0	
Base Capacity (vph)	227	713	441	715	656	432	1512	243	1495
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.32	0.02	0.66	0.36	0.03	0.53	0.12	0.23

Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis 2021 Background PM - Remedial Measures

## 16: Ninth Line & 5 Side Road

Premier Gateway Phase 1B Employment Area



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	210	15	10	470	235	15	790	10	30	325	25
Future Volume (vph)	30	210	15	10	470	235	15	790	10	30	325	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1752	1881		1805	1900	1615	1805	3602		1805	3538	
Flt Permitted	0.33	1.00		0.62	1.00	1.00	0.54	1.00		0.31	1.00	
Satd. Flow (perm)	603	1881		1174	1900	1615	1030	3602		582	3538	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	210	15	10	470	235	15	790	10	30	325	25
RTOR Reduction (vph)	0	5	0	0	0	53	0	2	0	0	11	0
Lane Group Flow (vph)	30	220	0	10	470	182	15	798	0	30	339	0
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	0%	0%	3%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	15.8	15.8		15.8	15.8	15.8	20.1	20.1		20.1	20.1	
Effective Green, g (s)	15.8	15.8		15.8	15.8	15.8	20.1	20.1		20.1	20.1	
Actuated g/C Ratio	0.33	0.33		0.33	0.33	0.33	0.42	0.42		0.42	0.42	
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.5	3.5		3.5	3.5	3.5	5.5	5.5		5.5	5.5	
Lane Grp Cap (vph)	198	620		387	626	532	432	1511		244	1484	
v/s Ratio Prot		0.12			c0.25			c0.22			0.10	
v/s Ratio Perm	0.05			0.01		0.11	0.01			0.05		
v/c Ratio	0.15	0.35		0.03	0.75	0.34	0.03	0.53		0.12	0.23	
Uniform Delay, d1	11.3	12.2		10.8	14.3	12.1	8.2	10.4		8.5	8.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.4		0.0	5.2	0.5	0.1	1.3		1.0	0.4	
Delay (s)	11.7	12.6		10.9	19.5	12.6	8.3	11.7		9.5	9.3	
Level of Service	B	B		B	B	B	A	B		A	A	
Approach Delay (s)		12.5			17.1			11.6			9.3	
Approach LOS		B			B			B			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			13.1				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			47.9				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			59.9%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												