

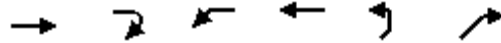
# Appendix

- A        2050 CTDOT Forecast Intersection Capacity Analysis Worksheets
- B        2050 No-Build Intersection Capacity Analysis Worksheets

# A 2050 CTDOT Forecast Intersection Capacity Analysis Worksheets

Queues  
1: Canton Village Shopping Mall & Route 44

2050 AM  
01/16/2024

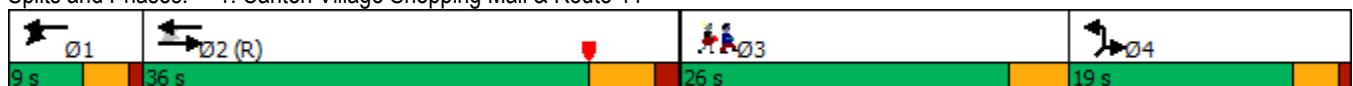


Lane Group	EBT	EBR	WBL	WBT	NEL	NER	Ø3
Lane Configurations	↑↑		↙	↑↑	↙	↗	
Traffic Volume (vph)	1100	30	40	580	20	50	
Future Volume (vph)	1100	30	40	580	20	50	
Peak Hour Factor	0.93	0.93	0.97	0.97	0.79	0.79	
Heavy Vehicles (%)	3%	3%	6%	6%	6%	6%	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1215	0	41	598	25	63	
Turn Type	NA		D.P+P	NA	Prot	Prot	
Protected Phases	2		1	12	4	4	3
Permitted Phases			2				
Detector Phase	2		1	12	4	4	
Switch Phase							
Minimum Initial (s)	15.0		5.0		8.0	8.0	5.0
Minimum Split (s)	21.2		9.0		12.0	12.0	26.0
Total Split (s)	36.0		9.0		19.0	19.0	26.0
Total Split (%)	40.0%		10.0%		21.1%	21.1%	29%
Yellow Time (s)	4.4		3.0		3.0	3.0	4.0
All-Red Time (s)	1.8		1.0		1.0	1.0	0.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.2		4.0		4.0	4.0	
Lead/Lag	Lag		Lead		Lag	Lag	Lead
Lead-Lag Optimize?	Yes		Yes		Yes	Yes	Yes
Recall Mode	C-Max		None		None	None	None
v/c Ratio	0.51		0.11	0.21	0.16	0.31	
Control Delay	7.9		1.7	1.3	40.4	15.0	
Queue Delay	0.0		0.0	0.0	0.0	0.0	
Total Delay	7.9		1.7	1.3	40.4	15.0	
Queue Length 50th (ft)	160		2	25	13	0	
Queue Length 95th (ft)	223		m4	26	33	28	
Internal Link Dist (ft)	340			1313	474		
Turn Bay Length (ft)			160				
Base Capacity (vph)	2372		362	2823	301	322	
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	0.51		0.11	0.21	0.08	0.20	

Intersection Summary

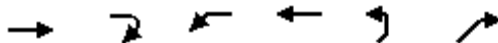
Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 76 (84%), Referenced to phase 2:EBWB, Start of Yellow  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Canton Village Shopping Mall & Route 44



HCM Signalized Intersection Capacity Analysis  
1: Canton Village Shopping Mall & Route 44

2050 AM  
01/16/2024



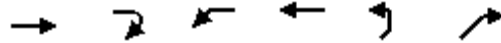
Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑↑		↵	↑↑	↵	↵
Traffic Volume (vph)	1100	30	40	580	20	50
Future Volume (vph)	1100	30	40	580	20	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	10	11	14	14
Grade (%)	0%			0%	1%	
Total Lost time (s)	6.2		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3375		1589	3292	1807	1617
Flt Permitted	1.00		0.20	1.00	0.95	1.00
Satd. Flow (perm)	3375		331	3292	1807	1617
Peak-hour factor, PHF	0.93	0.93	0.97	0.97	0.79	0.79
Adj. Flow (vph)	1183	32	41	598	25	63
RTOR Reduction (vph)	1	0	0	0	0	59
Lane Group Flow (vph)	1214	0	41	598	25	4
Heavy Vehicles (%)	3%	3%	6%	6%	6%	6%
Turn Type	NA		D.P+P	NA	Prot	Prot
Protected Phases	2		1	1 2	4	4
Permitted Phases			2			
Actuated Green, G (s)	62.5		69.4	73.4	6.4	6.4
Effective Green, g (s)	62.5		69.4	73.4	6.4	6.4
Actuated g/C Ratio	0.69		0.77	0.82	0.07	0.07
Clearance Time (s)	6.2		4.0		4.0	4.0
Vehicle Extension (s)	0.2		1.0		2.0	2.0
Lane Grp Cap (vph)	2343		351	2684	128	114
v/s Ratio Prot	c0.36		0.01	c0.18	c0.01	0.00
v/s Ratio Perm			0.08			
v/c Ratio	0.52		0.12	0.22	0.20	0.04
Uniform Delay, d1	6.6		2.9	1.9	39.4	38.9
Progression Factor	1.00		0.70	0.75	1.00	1.00
Incremental Delay, d2	0.8		0.0	0.0	0.3	0.1
Delay (s)	7.4		2.1	1.4	39.6	39.0
Level of Service	A		A	A	D	D
Approach Delay (s)	7.4			1.5	39.2	
Approach LOS	A			A	D	

Intersection Summary

HCM 2000 Control Delay	6.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	46.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Queues  
2: Dowd Ave & Route 44

2050 AM  
01/16/2024

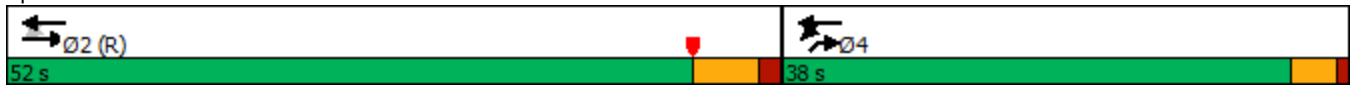


Lane Group	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑↑			↑↑		↑
Traffic Volume (vph)	1160	0	270	630	0	510
Future Volume (vph)	1160	0	270	630	0	510
Peak Hour Factor	0.91	0.91	0.93	0.93	0.82	0.82
Heavy Vehicles (%)	3%	3%	5%	5%	3%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1275	0	0	967	0	622
Turn Type	NA		D.P+P	NA		Over
Protected Phases	2		4	2 4		4
Permitted Phases			2			
Detector Phase	2		4	2 4		4
Switch Phase						
Minimum Initial (s)	15.0		7.0			7.0
Minimum Split (s)	21.1		11.0			11.0
Total Split (s)	52.0		38.0			38.0
Total Split (%)	57.8%		42.2%			42.2%
Yellow Time (s)	4.4		3.0			3.0
All-Red Time (s)	1.7		1.0			1.0
Lost Time Adjust (s)	0.0					0.0
Total Lost Time (s)	6.1					4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max		None			None
v/c Ratio	0.74			0.48		1.04
Control Delay	14.0			1.6		78.3
Queue Delay	0.0			0.0		0.0
Total Delay	14.0			1.6		78.3
Queue Length 50th (ft)	284			1		~387
Queue Length 95th (ft)	372			1		#506
Internal Link Dist (ft)	1313			1683	869	
Turn Bay Length (ft)						
Base Capacity (vph)	1727			2035		596
Starvation Cap Reductn	0			0		0
Spillback Cap Reductn	0			0		0
Storage Cap Reductn	0			0		0
Reduced v/c Ratio	0.74			0.48		1.04

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 16 (18%), Referenced to phase 2:EBWB, Start of Yellow  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated  
 ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

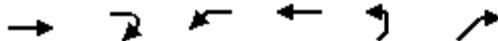
Splits and Phases: 2: Dowd Ave & Route 44



# HCM Signalized Intersection Capacity Analysis

## 2: Dowd Ave & Route 44

2050 AM  
01/16/2024



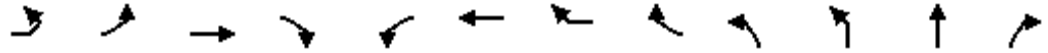
Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑↑			↑↑		↑
Traffic Volume (vph)	1160	0	270	630	0	510
Future Volume (vph)	1160	0	270	630	0	510
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	12	12
Grade (%)	0%			0%	2%	
Total Lost time (s)	6.1			6.1		4.0
Lane Util. Factor	0.95			0.95		1.00
Frt	1.00			1.00		0.86
Flt Protected	1.00			0.99		1.00
Satd. Flow (prot)	3388			3274		1580
Flt Permitted	1.00			0.52		1.00
Satd. Flow (perm)	3388			1714		1580
Peak-hour factor, PHF	0.91	0.91	0.93	0.93	0.82	0.82
Adj. Flow (vph)	1275	0	290	677	0	622
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1275	0	0	967	0	622
Heavy Vehicles (%)	3%	3%	5%	5%	3%	3%
Turn Type	NA		D.P+P	NA		Over
Protected Phases	2		4	2 4		4
Permitted Phases			2			
Actuated Green, G (s)	45.9			79.9		34.0
Effective Green, g (s)	45.9			79.9		34.0
Actuated g/C Ratio	0.51			0.89		0.38
Clearance Time (s)	6.1					4.0
Vehicle Extension (s)	0.2					3.0
Lane Grp Cap (vph)	1727			2110		596
v/s Ratio Prot	c0.38			0.17		c0.39
v/s Ratio Perm				0.23		
v/c Ratio	0.74			0.46		1.04
Uniform Delay, d1	17.3			1.0		28.0
Progression Factor	0.65			1.00		1.00
Incremental Delay, d2	2.6			0.2		48.7
Delay (s)	13.8			1.1		76.7
Level of Service	B			A		E
Approach Delay (s)	13.8			1.1	76.7	
Approach LOS	B			A	E	

### Intersection Summary

HCM 2000 Control Delay	23.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.1
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Queues  
3: Lovely St/Lawton Rd & Route 44 & Tarilsend Dr

2050 AM  
01/16/2024



Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations		↔	↕	↗	↖	↕		↗		↖	↕	↗
Traffic Volume (vph)	10	220	1260	110	110	670	10	30	150	0	110	190
Future Volume (vph)	10	220	1260	110	110	670	10	30	150	0	110	190
Peak Hour Factor	0.98	0.98	0.98	0.98	0.88	0.88	0.88	0.88	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	3%	3%	3%	3%	6%	6%	6%	6%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	234	1286	112	125	772	0	34	0	169	124	213
Turn Type	Prot	Prot	NA	Free	Prot	NA		Free	Split	Split	NA	pm+ov
Protected Phases	1	1	6		5	2			7	7	7	5
Permitted Phases				Free				Free				7
Detector Phase	1	1	6		5	2			7	7	7	5
Switch Phase												
Minimum Initial (s)	5.0	5.0	15.0		5.0	15.0			9.0	9.0	9.0	5.0
Minimum Split (s)	11.6	11.6	21.8		11.6	21.8			15.0	15.0	15.0	11.6
Total Split (s)	22.6	22.6	54.8		25.6	57.8			24.0	24.0	24.0	25.6
Total Split (%)	13.0%	13.0%	31.5%		14.7%	33.2%			13.8%	13.8%	13.8%	14.7%
Yellow Time (s)	3.0	3.0	4.5		3.0	4.5			4.0	4.0	4.0	3.0
All-Red Time (s)	3.6	3.6	2.3		3.6	2.3			2.0	2.0	2.0	3.6
Lost Time Adjust (s)		0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0
Total Lost Time (s)		6.6	6.8		6.6	6.8			6.0	6.0	6.0	6.6
Lead/Lag	Lead	Lead	Lag		Lead	Lag			Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes			Yes	Yes	Yes	Yes
Recall Mode	None	None	Min		None	Min			None	None	None	None
v/c Ratio		1.21	1.03	0.07	0.71	0.67		0.02		0.74	0.47	0.45
Control Delay		179.0	74.8	0.1	78.9	39.9		0.0		76.6	60.9	12.8
Queue Delay		0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Delay		179.0	74.8	0.1	78.9	39.9		0.0		76.6	60.9	12.8
Queue Length 50th (ft)		~250	~636	0	107	299		0		144	101	39
Queue Length 95th (ft)		#433	#810	0	173	358		0		#248	169	90
Internal Link Dist (ft)			1683			692						428
Turn Bay Length (ft)		380		220	340			450		145		50
Base Capacity (vph)		194	1251	1656	226	1259		1422		237	274	518
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		1.21	1.03	0.07	0.55	0.61		0.02		0.71	0.45	0.41

Intersection Summary

Cycle Length: 174.2

Actuated Cycle Length: 133.3

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

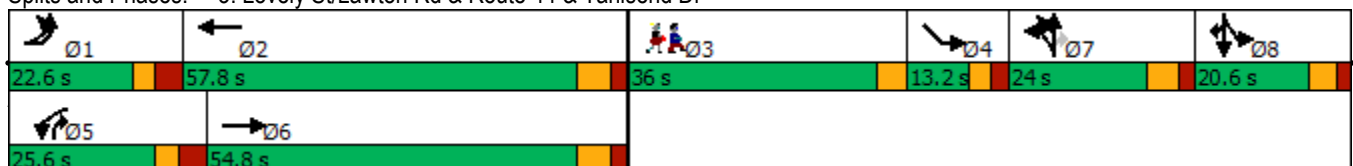
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: Lovely St/Lawton Rd & Route 44 & Tarilsend Dr





Queues  
3: Lovely St/Lawton Rd & Route 44 & Tarilsend Dr

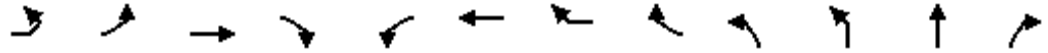
2050 AM  
01/16/2024



Lane Group	SBL	SBT	SBR	SBR2	SEL	SER	SER2	Ø3
Lane Configurations		↕	↗		↘			
Traffic Volume (vph)	60	70	180	10	10	10	20	
Future Volume (vph)	60	70	180	10	10	10	20	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.69	0.69	0.69	
Heavy Vehicles (%)	1%	1%	1%	1%	7%	7%	7%	
Shared Lane Traffic (%)								
Lane Group Flow (vph)	0	156	229	0	57	0	0	
Turn Type	Split	NA	Prot		Prot			
Protected Phases	8	8	8		4			3
Permitted Phases								
Detector Phase	8	8	8		4			
Switch Phase								
Minimum Initial (s)	9.0	9.0	9.0		6.0			1.0
Minimum Split (s)	14.6	14.6	14.6		11.2			36.0
Total Split (s)	20.6	20.6	20.6		13.2			36.0
Total Split (%)	11.8%	11.8%	11.8%		7.6%			21%
Yellow Time (s)	3.6	3.6	3.6		3.0			4.0
All-Red Time (s)	2.0	2.0	2.0		2.2			0.0
Lost Time Adjust (s)		0.0	0.0		0.0			
Total Lost Time (s)		5.6	5.6		5.2			
Lead/Lag	Lag	Lag	Lag		Lag			Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes			Yes
Recall Mode	None	None	None		None			None
v/c Ratio		0.81	0.78		0.65			
Control Delay		88.9	76.7		94.3			
Queue Delay		0.0	0.0		0.0			
Total Delay		88.9	76.7		94.3			
Queue Length 50th (ft)		135	112		50			
Queue Length 95th (ft)		#232	#162		76			
Internal Link Dist (ft)		713			445			
Turn Bay Length (ft)			330					
Base Capacity (vph)		192	294		90			
Starvation Cap Reductn		0	0		0			
Spillback Cap Reductn		0	0		0			
Storage Cap Reductn		0	0		0			
Reduced v/c Ratio		0.81	0.78		0.63			
Intersection Summary								

HCM Signalized Intersection Capacity Analysis  
 3: Lovely St/Lawton Rd & Route 44 & Tarilsend Dr

2050 AM  
 01/16/2024



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations		↔	↕	↗	↖	↕		↗		↖	↕	↗
Traffic Volume (vph)	10	220	1260	110	110	670	10	30	150	0	110	190
Future Volume (vph)	10	220	1260	110	110	670	10	30	150	0	110	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	14	10	11	12	10	10	12	15	12
Grade (%)			2%			0%					2%	
Total Lost time (s)		6.6	6.8	4.0	6.6	6.8		4.0		6.0	6.0	6.6
Lane Util. Factor		1.00	0.95	1.00	1.00	0.95		1.00		1.00	1.00	1.00
Frt		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
Satd. Flow (prot)		1619	3470	1656	1589	3285		1422		1752	2029	1567
Flt Permitted		0.95	1.00	1.00	0.95	1.00		1.00		0.95	1.00	1.00
Satd. Flow (perm)		1619	3470	1656	1589	3285		1422		1752	2029	1567
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.88	0.88	0.88	0.88	0.89	0.89	0.89	0.89
Adj. Flow (vph)	10	224	1286	112	125	761	11	34	169	0	124	213
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	102
Lane Group Flow (vph)	0	234	1286	112	125	772	0	34	0	169	124	111
Heavy Vehicles (%)	3%	3%	3%	3%	6%	6%	6%	6%	2%	2%	2%	2%
Turn Type	Prot	Prot	NA	Free	Prot	NA		Free	Split	Split	NA	pm+ov
Protected Phases	1	1	6		5	2			7	7	7	5
Permitted Phases				Free				Free				7
Actuated Green, G (s)		16.0	48.1	133.2	14.8	46.9		133.2		17.3	17.3	32.1
Effective Green, g (s)		16.0	48.1	133.2	14.8	46.9		133.2		17.3	17.3	32.1
Actuated g/C Ratio		0.12	0.36	1.00	0.11	0.35		1.00		0.13	0.13	0.24
Clearance Time (s)		6.6	6.8		6.6	6.8				6.0	6.0	6.6
Vehicle Extension (s)		2.0	3.0		2.0	3.0				2.0	2.0	2.0
Lane Grp Cap (vph)		194	1253	1656	176	1156		1422		227	263	377
v/s Ratio Prot		c0.14	c0.37		0.08	0.24				c0.10	0.06	0.03
v/s Ratio Perm				c0.07				0.02				0.04
v/c Ratio		1.21	1.03	0.07	0.71	0.67		0.02		0.74	0.47	0.29
Uniform Delay, d1		58.6	42.5	0.0	57.1	36.6		0.0		55.8	53.7	41.3
Progression Factor		1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2		131.2	32.4	0.1	10.7	1.5		0.0		11.0	0.5	0.2
Delay (s)		189.8	74.9	0.1	67.8	38.0		0.0		66.8	54.2	41.4
Level of Service		F	E	A	E	D		A		E	D	D
Approach Delay (s)			86.2			40.6					53.0	
Approach LOS			F			D					D	

Intersection Summary		
HCM 2000 Control Delay	67.7	HCM 2000 Level of Service E
HCM 2000 Volume to Capacity ratio	1.00	
Actuated Cycle Length (s)	133.2	Sum of lost time (s) 34.2
Intersection Capacity Utilization	81.4%	ICU Level of Service D
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis  
 3: Lovely St/Lawton Rd & Route 44 & Tarilsend Dr

2050 AM  
 01/16/2024



Movement	SBL	SBT	SBR	SBR2	SEL	SER	SER2
Lane Configurations		↶	↶↷		↷		
Traffic Volume (vph)	60	70	180	10	10	10	20
Future Volume (vph)	60	70	180	10	10	10	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	12	16	12
Grade (%)		8%			8%		
Total Lost time (s)		5.6	5.6		5.2		
Lane Util. Factor		1.00	0.88		1.00		
Frt		1.00	0.85		0.90		
Flt Protected		0.98	1.00		0.99		
Satd. Flow (prot)		1706	2612		1512		
Flt Permitted		0.98	1.00		0.99		
Satd. Flow (perm)		1706	2612		1512		
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.69	0.69	0.69
Adj. Flow (vph)	72	84	217	12	14	14	29
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	156	229	0	57	0	0
Heavy Vehicles (%)	1%	1%	1%	1%	7%	7%	7%
Turn Type	Split	NA	Prot		Prot		
Protected Phases	8	8	8		4		
Permitted Phases							
Actuated Green, G (s)		15.0	15.0		7.8		
Effective Green, g (s)		15.0	15.0		7.8		
Actuated g/C Ratio		0.11	0.11		0.06		
Clearance Time (s)		5.6	5.6		5.2		
Vehicle Extension (s)		2.0	2.0		2.0		
Lane Grp Cap (vph)		192	294		88		
v/s Ratio Prot		c0.09	0.09		c0.04		
v/s Ratio Perm							
v/c Ratio		0.81	0.78		0.65		
Uniform Delay, d1		57.7	57.5		61.4		
Progression Factor		1.00	1.00		1.00		
Incremental Delay, d2		21.3	11.2		11.6		
Delay (s)		79.1	68.7		73.0		
Level of Service		E	E		E		
Approach Delay (s)		72.9			73.0		
Approach LOS		E			E		
<b>Intersection Summary</b>							

Queues  
4: Route 44 & CVS Drive

2050 AM  
01/16/2024

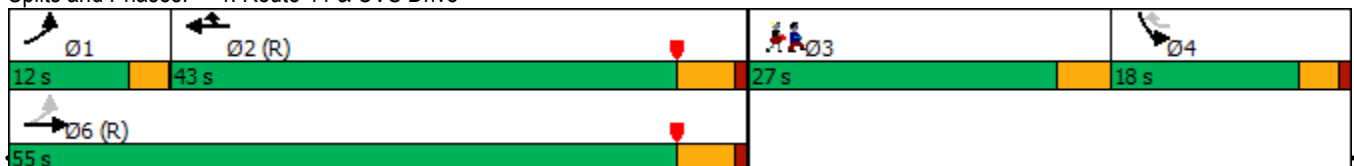


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	20	1500	810	30	20	10	
Future Volume (vph)	20	1500	810	30	20	10	
Peak Hour Factor	0.95	0.95	0.88	0.88	0.64	0.64	
Heavy Vehicles (%)	4%	4%	5%	5%	6%	6%	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	21	1579	920	34	47	0	
Turn Type	pm+pt	NA	NA	custom	Prot		
Protected Phases	1	6	2	2	4		3
Permitted Phases	6			4			
Detector Phase	1	6	2	2	4		
Switch Phase							
Minimum Initial (s)	5.0	25.0	25.0	25.0	7.0		1.0
Minimum Split (s)	8.1	30.3	30.3	30.3	11.0		27.0
Total Split (s)	12.0	55.0	43.0	43.0	18.0		27.0
Total Split (%)	12.0%	55.0%	43.0%	43.0%	18.0%		27%
Yellow Time (s)	3.0	4.3	4.3	4.3	3.0		4.0
All-Red Time (s)	0.1	1.0	1.0	1.0	1.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	3.1	5.3	5.3	5.3	4.0		
Lead/Lag	Lead		Lag	Lag	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes		Yes
Recall Mode	None	C-Max	C-Max	C-Max	None		None
v/c Ratio	0.05	0.55	0.34	0.03	0.20		
Control Delay	4.8	7.0	9.2	2.7	34.2		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	4.8	7.0	9.2	2.7	34.2		
Queue Length 50th (ft)	1	112	90	0	9		
Queue Length 95th (ft)	15	512	391	10	18		
Internal Link Dist (ft)		692	628		200		
Turn Bay Length (ft)	155			140			
Base Capacity (vph)	489	2855	2744	1243	456		
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	0.04	0.55	0.34	0.03	0.10		

Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 40 (40%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated

Splits and Phases: 4: Route 44 & CVS Drive



# HCM Signalized Intersection Capacity Analysis

## 4: Route 44 & CVS Drive

2050 AM  
01/16/2024



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗↗	↗↗	↖	↖↖↖	
Traffic Volume (vph)	20	1500	810	30	20	10
Future Volume (vph)	20	1500	810	30	20	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	10	12	12
Grade (%)		6%	4%		2%	
Total Lost time (s)	3.1	5.3	5.3	5.3	4.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	
Frt	1.00	1.00	1.00	0.85	0.95	
Flt Protected	0.95	1.00	1.00	1.00	0.97	
Satd. Flow (prot)	1571	3367	3369	1407	3162	
Flt Permitted	0.28	1.00	1.00	1.00	0.97	
Satd. Flow (perm)	460	3367	3369	1407	3162	
Peak-hour factor, PHF	0.95	0.95	0.88	0.88	0.64	0.64
Adj. Flow (vph)	21	1579	920	34	31	16
RTOR Reduction (vph)	0	0	0	8	15	0
Lane Group Flow (vph)	21	1579	920	26	32	0
Heavy Vehicles (%)	4%	4%	5%	5%	6%	6%
Turn Type	pm+pt	NA	NA	custom	Prot	
Protected Phases	1	6	2	2	4	
Permitted Phases	6			4		
Actuated Green, G (s)	77.9	77.9	72.7	76.9	4.2	
Effective Green, g (s)	77.9	77.9	72.7	76.9	4.2	
Actuated g/C Ratio	0.78	0.78	0.73	0.77	0.04	
Clearance Time (s)	3.1	5.3	5.3	5.3	4.0	
Vehicle Extension (s)	1.5	0.2	0.2	0.2	2.0	
Lane Grp Cap (vph)	381	2622	2449	1081	132	
v/s Ratio Prot	0.00	c0.47	0.27	0.02	c0.01	
v/s Ratio Perm	0.04			0.00		
v/c Ratio	0.06	0.60	0.38	0.02	0.24	
Uniform Delay, d1	2.8	4.6	5.1	2.7	46.4	
Progression Factor	1.00	1.00	1.37	1.61	1.00	
Incremental Delay, d2	0.0	1.0	0.4	0.0	0.3	
Delay (s)	2.8	5.6	7.5	4.4	46.7	
Level of Service	A	A	A	A	D	
Approach Delay (s)		5.6	7.3		46.7	
Approach LOS		A	A		D	

Intersection Summary			
HCM 2000 Control Delay	7.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.4
Intersection Capacity Utilization	55.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Queues

2050 AM

5: Shops at Farmington Valley/Private Driveway & Route 44

01/16/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1370	130	90	760	15	70	0	40	10	5	5
Future Volume (vph)	10	1370	130	90	760	15	70	0	40	10	5	5
Peak Hour Factor	0.97	0.97	0.97	0.87	0.87	0.87	0.64	0.64	0.64	0.63	0.63	0.63
Heavy Vehicles (%)	3%	3%	3%	6%	6%	6%	2%	2%	2%	0%	0%	0%
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	10	1412	134	103	891	0	54	55	63	16	16	0
Turn Type	Prot	NA	Prot	Prot	NA		Split	NA	pt+ov	Split	NA	
Protected Phases	5	2	2	1	6		7	7	17	8	8	
Permitted Phases												
Detector Phase	5	2	2	1	6		7	7	17	8	8	
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0		5.0	5.0		7.0	7.0	
Minimum Split (s)	11.8	20.5	20.5	11.8	23.0		10.0	10.0		13.8	13.8	
Total Split (s)	13.0	53.0	53.0	13.0	53.0		20.0	20.0		14.0	14.0	
Total Split (%)	13.0%	53.0%	53.0%	13.0%	53.0%		20.0%	20.0%		14.0%	14.0%	
Yellow Time (s)	3.2	4.4	4.4	3.2	4.4		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.6	1.1	1.1	3.6	1.1		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)	6.8	5.5	5.5	6.8	5.5		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min	C-Min	None	Min		None	None		None	None	
v/c Ratio	0.11	0.67	0.13	0.45	0.36		0.42	0.42	0.21	0.13	0.12	
Control Delay	47.9	19.6	3.8	56.9	5.1		52.7	53.1	5.0	46.1	33.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	47.9	19.6	3.8	56.9	5.1		52.7	53.1	5.0	46.1	33.4	
Queue Length 50th (ft)	6	361	0	36	52		34	35	0	10	5	
Queue Length 95th (ft)	m11	586	59	62	97		51	52	3	22	17	
Internal Link Dist (ft)		628			773			306			149	
Turn Bay Length (ft)	50		220	370								
Base Capacity (vph)	104	2108	999	236	2464		250	250	375	162	165	
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	0.10	0.67	0.13	0.44	0.36		0.22	0.22	0.17	0.10	0.10	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

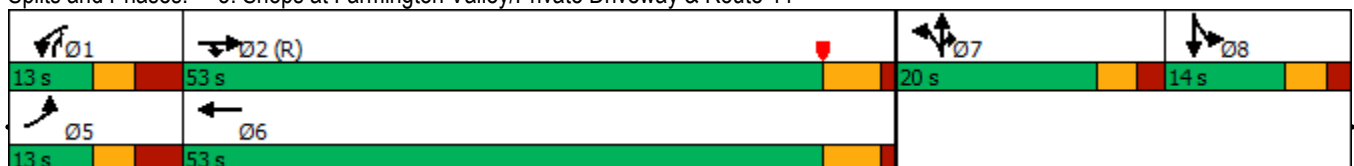
Offset: 85 (85%), Referenced to phase 2:EBT, Start of Yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Shops at Farmington Valley/Private Driveway & Route 44



HCM Signalized Intersection Capacity Analysis  
 5: Shops at Farmington Valley/Private Driveway & Route 44

2050 AM  
 01/16/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘↗	↑↑		↘	↗	↗	↘	↗	
Traffic Volume (vph)	10	1370	130	90	760	15	70	0	40	10	5	5
Future Volume (vph)	10	1370	130	90	760	15	70	0	40	10	5	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	12	12	12	13	12	12	12
Grade (%)		1%			0%			1%			0%	
Total Lost time (s)	6.8	5.5	5.5	6.8	5.5		5.0	5.0	6.8	5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		0.95	0.95	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (prot)	1686	3371	1508	3193	3283		1673	1673	1628	1805	1758	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (perm)	1686	3371	1508	3193	3283		1673	1673	1628	1805	1758	
Peak-hour factor, PHF	0.97	0.97	0.97	0.87	0.87	0.87	0.64	0.64	0.64	0.63	0.63	0.63
Adj. Flow (vph)	10	1412	134	103	874	17	109	0	62	16	8	8
RTOR Reduction (vph)	0	0	54	0	1	0	0	0	54	0	8	0
Lane Group Flow (vph)	10	1412	80	103	890	0	54	55	9	16	8	0
Heavy Vehicles (%)	3%	3%	3%	6%	6%	6%	2%	2%	2%	0%	0%	0%
Turn Type	Prot	NA	Prot	Prot	NA		Split	NA	pt+ov	Split	NA	
Protected Phases	5	2	2	1	6		7	7	17	8	8	
Permitted Phases												
Actuated Green, G (s)	1.2	59.5	59.5	7.2	65.5		6.8	6.8	14.0	4.2	4.2	
Effective Green, g (s)	1.2	59.5	59.5	7.2	65.5		6.8	6.8	14.0	4.2	4.2	
Actuated g/C Ratio	0.01	0.60	0.60	0.07	0.66		0.07	0.07	0.14	0.04	0.04	
Clearance Time (s)	6.8	5.5	5.5	6.8	5.5		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	1.5	2.0	2.0	1.5	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	20	2005	897	229	2150		113	113	227	75	73	
v/s Ratio Prot	0.01	c0.42	0.05	c0.03	c0.27		0.03	c0.03	0.01	c0.01	0.00	
v/s Ratio Perm												
v/c Ratio	0.50	0.70	0.09	0.45	0.41		0.48	0.49	0.04	0.21	0.11	
Uniform Delay, d1	49.1	14.1	8.7	44.5	8.2		44.9	44.9	37.2	46.3	46.1	
Progression Factor	1.01	1.18	2.06	1.15	0.65		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.9	1.8	0.2	0.5	0.0		1.2	1.2	0.0	0.5	0.3	
Delay (s)	55.4	18.5	18.0	51.8	5.4		46.1	46.1	37.2	46.8	46.4	
Level of Service	E	B	B	D	A		D	D	D	D	D	
Approach Delay (s)		18.7			10.2			42.8			46.6	
Approach LOS		B			B			D			D	

Intersection Summary		
HCM 2000 Control Delay	17.5	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.64	B
Actuated Cycle Length (s)	100.0	Sum of lost time (s)
Intersection Capacity Utilization	62.3%	22.3
Analysis Period (min)	15	ICU Level of Service
c Critical Lane Group		B

Queues

2050 AM

12: Secret Lake Road/Acura of Avon & Route 44

01/16/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1390	10	30	840	20	30	0	30	10	0	10
Future Volume (vph)	10	1390	10	30	840	20	30	0	30	10	0	10
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.63	0.63	0.63	0.75	0.75	0.75
Heavy Vehicles (%)	4%	4%	4%	5%	5%	5%	2%	2%	2%	11%	11%	11%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	1506	0	32	925	0	0	96	0	13	0	13
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		Prot		Prot
Protected Phases	1	6		5	2		7	7		8		8
Permitted Phases	6			2								
Detector Phase	1	6		5	2		7	7		8		8
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		9.0	9.0		7.0		7.0
Minimum Split (s)	9.0	25.0		9.5	25.0		15.2	15.2		13.2		13.2
Total Split (s)	10.0	58.0		10.0	58.0		17.0	17.0		15.0		15.0
Total Split (%)	10.0%	58.0%		10.0%	58.0%		17.0%	17.0%		15.0%		15.0%
Yellow Time (s)	3.0	4.4		3.0	4.4		3.0	3.0		3.0		3.0
All-Red Time (s)	1.0	2.6		1.0	2.6		3.2	3.2		3.2		3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	4.0	7.0		4.0	7.0		6.2	6.2		6.2		6.2
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead		Lag		Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes		Yes
Recall Mode	None	C-Min		None	C-Min		None	None		None		None
v/c Ratio	0.02	0.64		0.14	0.38		0.31	0.31		0.12		0.05
Control Delay	4.3	8.1		5.9	7.5		3.9	3.9		46.2		0.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Delay	4.3	8.1		5.9	7.5		3.9	3.9		46.2		0.4
Queue Length 50th (ft)	1	134		3	76		0	0		8		0
Queue Length 95th (ft)	m2	151		15	232		0	0		23		0
Internal Link Dist (ft)		773			254			313				450
Turn Bay Length (ft)	50			105								
Base Capacity (vph)	460	2346		227	2464		345	345		141		268
Starvation Cap Reductn	0	0		0	0		0	0		0		0
Spillback Cap Reductn	0	0		0	0		0	0		0		0
Storage Cap Reductn	0	0		0	0		0	0		0		0
Reduced v/c Ratio	0.02	0.64		0.14	0.38		0.28	0.28		0.09		0.05

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 89 (89%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Secret Lake Road/Acura of Avon & Route 44





HCM Signalized Intersection Capacity Analysis  
 12: Secret Lake Road/Acura of Avon & Route 44

2050 AM  
 01/16/2024

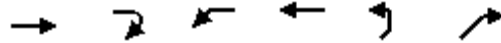


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1390	10	30	840	20	30	0	30	10	0	10
Future Volume (vph)	10	1390	10	30	840	20	30	0	30	10	0	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	10	11	12	12	16	12	12	16	12
Grade (%)		2%			2%			0%			2%	
Total Lost time (s)	4.0	7.0		4.0	7.0			6.2		6.2		6.2
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00		1.00
Frt	1.00	1.00		1.00	1.00			0.93		1.00		0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98		0.95		1.00
Satd. Flow (prot)	1661	3318		1588	3279			1921		1610		1440
Flt Permitted	0.29	1.00		0.11	1.00			0.98		0.95		1.00
Satd. Flow (perm)	515	3318		177	3279			1921		1610		1440
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.63	0.63	0.63	0.75	0.75	0.75
Adj. Flow (vph)	11	1495	11	32	903	22	48	0	48	13	0	13
RTOR Reduction (vph)	0	0	0	0	1	0	0	89	0	0	0	13
Lane Group Flow (vph)	11	1506	0	32	924	0	0	7	0	13	0	0
Heavy Vehicles (%)	4%	4%	4%	5%	5%	5%	2%	2%	2%	11%	11%	11%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		Prot		Prot
Protected Phases	1	6		5	2		7	7		8		8
Permitted Phases	6			2								
Actuated Green, G (s)	63.7	62.7		69.5	65.6			7.2		2.8		2.8
Effective Green, g (s)	63.7	62.7		69.5	65.6			7.2		2.8		2.8
Actuated g/C Ratio	0.64	0.63		0.70	0.66			0.07		0.03		0.03
Clearance Time (s)	4.0	7.0		4.0	7.0			6.2		6.2		6.2
Vehicle Extension (s)	1.5	2.5		3.0	2.5			1.5		1.5		1.5
Lane Grp Cap (vph)	339	2080		178	2151			138		45		40
v/s Ratio Prot	0.00	c0.45		c0.01	0.28			c0.00		c0.01		0.00
v/s Ratio Perm	0.02			0.12								
v/c Ratio	0.03	0.72		0.18	0.43			0.05		0.29		0.01
Uniform Delay, d1	6.7	12.7		8.3	8.2			43.2		47.6		47.3
Progression Factor	0.85	0.54		1.00	1.00			1.00		1.00		1.00
Incremental Delay, d2	0.0	1.7		0.5	0.6			0.1		1.3		0.0
Delay (s)	5.7	8.7		8.8	8.9			43.3		48.9		47.3
Level of Service	A	A		A	A			D		D		D
Approach Delay (s)		8.6			8.9			43.3			48.1	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	23.4
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Queues  
1: Canton Village Shopping Mall & Route 44

2050 Mid  
01/16/2024

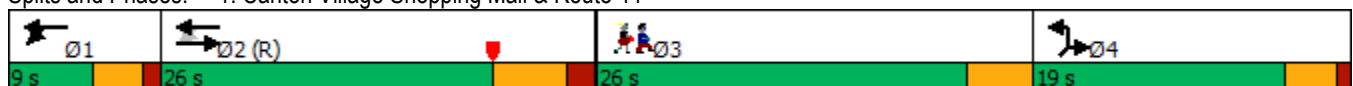


Lane Group	EBT	EBR	WBL	WBT	NEL	NER	Ø3
Lane Configurations	↑↑		↙	↑↑	↙	↗	
Traffic Volume (vph)	880	60	130	920	60	110	
Future Volume (vph)	880	60	130	920	60	110	
Peak Hour Factor	0.89	0.89	0.90	0.90	0.86	0.86	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1056	0	144	1022	70	128	
Turn Type	NA		D.P+P	NA	Prot	Prot	
Protected Phases	2		1	12	4	4	3
Permitted Phases			2				
Detector Phase	2		1	12	4	4	
Switch Phase							
Minimum Initial (s)	15.0		5.0		8.0	8.0	1.0
Minimum Split (s)	21.2		9.0		12.0	12.0	26.0
Total Split (s)	26.0		9.0		19.0	19.0	26.0
Total Split (%)	32.5%		11.3%		23.8%	23.8%	33%
Yellow Time (s)	4.4		3.0		3.0	3.0	4.0
All-Red Time (s)	1.8		1.0		1.0	1.0	0.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.2		4.0		4.0	4.0	
Lead/Lag	Lag		Lead		Lag	Lag	Lead
Lead-Lag Optimize?	Yes		Yes		Yes	Yes	Yes
Recall Mode	C-Max		None		None	None	None
v/c Ratio	0.51		0.30	0.36	0.35	0.43	
Control Delay	11.8		3.9	3.4	37.9	11.5	
Queue Delay	0.0		0.0	0.0	0.0	0.0	
Total Delay	11.8		3.9	3.4	37.9	11.5	
Queue Length 50th (ft)	152		13	61	33	0	
Queue Length 95th (ft)	252		m29	m133	66	42	
Internal Link Dist (ft)	340			1313	474		
Turn Bay Length (ft)			160				
Base Capacity (vph)	2072		483	2878	355	422	
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	0.51		0.30	0.36	0.20	0.30	

Intersection Summary

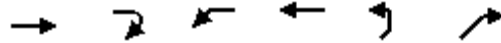
Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 74 (93%), Referenced to phase 2:EBWB, Start of Yellow  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Canton Village Shopping Mall & Route 44



HCM Signalized Intersection Capacity Analysis  
 1: Canton Village Shopping Mall & Route 44

2050 Mid  
 01/16/2024



Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑↑		↵	↑↑	↵	↵
Traffic Volume (vph)	880	60	130	920	60	110
Future Volume (vph)	880	60	130	920	60	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	10	11	14	14
Grade (%)	0%			0%	1%	
Total Lost time (s)	6.2		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3422		1668	3455	1897	1697
Flt Permitted	1.00		0.22	1.00	0.95	1.00
Satd. Flow (perm)	3422		393	3455	1897	1697
Peak-hour factor, PHF	0.89	0.89	0.90	0.90	0.86	0.86
Adj. Flow (vph)	989	67	144	1022	70	128
RTOR Reduction (vph)	3	0	0	0	0	117
Lane Group Flow (vph)	1053	0	144	1022	70	11
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	NA		D.P+P	NA	Prot	Prot
Protected Phases	2		1	1 2	4	4
Permitted Phases			2			
Actuated Green, G (s)	47.5		58.8	62.8	7.0	7.0
Effective Green, g (s)	47.5		58.8	62.8	7.0	7.0
Actuated g/C Ratio	0.59		0.73	0.78	0.09	0.09
Clearance Time (s)	6.2		4.0		4.0	4.0
Vehicle Extension (s)	0.2		1.0		2.0	2.0
Lane Grp Cap (vph)	2031		468	2712	165	148
v/s Ratio Prot	c0.31		0.04	c0.30	c0.04	0.01
v/s Ratio Perm			0.18			
v/c Ratio	0.52		0.31	0.38	0.42	0.08
Uniform Delay, d1	9.5		3.7	2.6	34.6	33.5
Progression Factor	1.00		1.46	1.43	1.00	1.00
Incremental Delay, d2	0.9		0.1	0.0	0.6	0.1
Delay (s)	10.5		5.5	3.8	35.2	33.6
Level of Service	B		A	A	D	C
Approach Delay (s)	10.5			4.0	34.2	
Approach LOS	B			A	C	

Intersection Summary			
HCM 2000 Control Delay	9.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Queues  
2: Dowd Ave & Route 44

2050 Mid  
01/16/2024

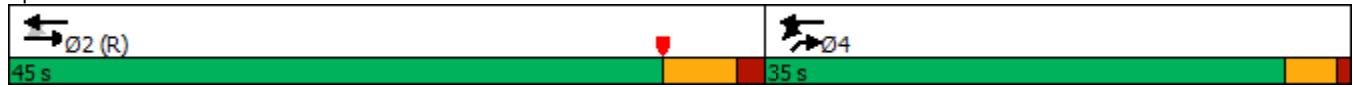


Lane Group	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑↑			↑↑		↑
Traffic Volume (vph)	980	10	480	1050	0	470
Future Volume (vph)	980	10	480	1050	0	470
Peak Hour Factor	0.90	0.90	0.87	0.87	0.81	0.81
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1100	0	0	1759	0	580
Turn Type	NA		D.P+P	NA		Over
Protected Phases	2		4	2 4		4
Permitted Phases			2			
Detector Phase	2		4	2 4		4
Switch Phase						
Minimum Initial (s)	15.0		7.0			7.0
Minimum Split (s)	21.1		11.0			11.0
Total Split (s)	45.0		35.0			35.0
Total Split (%)	56.3%		43.8%			43.8%
Yellow Time (s)	4.4		3.0			3.0
All-Red Time (s)	1.7		1.0			1.0
Lost Time Adjust (s)	0.0					0.0
Total Lost Time (s)	6.1					4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max		None			None
v/c Ratio	0.66			0.84		0.93
Control Delay	15.3			9.4		48.0
Queue Delay	0.0			0.0		0.0
Total Delay	15.3			9.4		48.0
Queue Length 50th (ft)	260			3		271
Queue Length 95th (ft)	325			146		#394
Internal Link Dist (ft)	1313			1683	869	
Turn Bay Length (ft)						
Base Capacity (vph)	1677			2103		624
Starvation Cap Reductn	0			0		0
Spillback Cap Reductn	0			0		0
Storage Cap Reductn	0			0		0
Reduced v/c Ratio	0.66			0.84		0.93

Intersection Summary

Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 36 (45%), Referenced to phase 2:EBWB, Start of Yellow  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 2: Dowd Ave & Route 44



# HCM Signalized Intersection Capacity Analysis

## 2: Dowd Ave & Route 44

2050 Mid  
01/16/2024



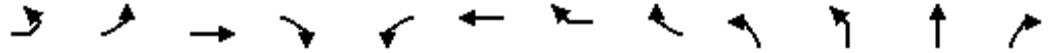
Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑↑			↑↑		↑
Traffic Volume (vph)	980	10	480	1050	0	470
Future Volume (vph)	980	10	480	1050	0	470
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	12	12
Grade (%)	0%			0%	2%	
Total Lost time (s)	6.1			6.1		4.0
Lane Util. Factor	0.95			0.95		1.00
Frt	1.00			1.00		0.86
Flt Protected	1.00			0.98		1.00
Satd. Flow (prot)	3450			3402		1611
Flt Permitted	1.00			0.52		1.00
Satd. Flow (perm)	3450			1796		1611
Peak-hour factor, PHF	0.90	0.90	0.87	0.87	0.81	0.81
Adj. Flow (vph)	1089	11	552	1207	0	580
RTOR Reduction (vph)	1	0	0	0	0	0
Lane Group Flow (vph)	1099	0	0	1759	0	580
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	NA		D.P+P	NA		Over
Protected Phases	2		4	2 4		4
Permitted Phases			2			
Actuated Green, G (s)	38.9			69.9		31.0
Effective Green, g (s)	38.9			69.9		31.0
Actuated g/C Ratio	0.49			0.87		0.39
Clearance Time (s)	6.1					4.0
Vehicle Extension (s)	0.2					3.0
Lane Grp Cap (vph)	1677			2191		624
v/s Ratio Prot	0.32			0.31		c0.36
v/s Ratio Perm				c0.39		
v/c Ratio	0.66			0.80		0.93
Uniform Delay, d1	15.5			2.1		23.5
Progression Factor	0.86			1.00		1.00
Incremental Delay, d2	1.8			2.2		20.2
Delay (s)	15.1			4.4		43.7
Level of Service	B			A		D
Approach Delay (s)	15.1			4.4	43.7	
Approach LOS	B			A	D	

### Intersection Summary

HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.1
Intersection Capacity Utilization	80.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Queues  
3: Lovely St/Lawton Rd & Route 44 & Tarilsend Dr

2050 Mid  
01/16/2024



Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations		↔	↕	↗	↖	↕		↗		↖	↕	↗
Traffic Volume (vph)	10	160	1170	90	220	1220	10	120	160	0	90	220
Future Volume (vph)	10	160	1170	90	220	1220	10	120	160	0	90	220
Peak Hour Factor	0.94	0.94	0.94	0.94	0.96	0.96	0.96	0.96	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	181	1245	96	229	1281	0	125	0	170	96	234
Turn Type	Prot	Prot	NA	Free	Prot	NA		Free	Split	Split	NA	pm+ov
Protected Phases	1	1	6		5	2			7	7	7	5
Permitted Phases				Free				Free				7
Detector Phase	1	1	6		5	2			7	7	7	5
Switch Phase												
Minimum Initial (s)	5.0	5.0	15.0		5.0	15.0			9.0	9.0	9.0	5.0
Minimum Split (s)	11.6	11.6	21.8		11.6	21.8			15.0	15.0	15.0	11.6
Total Split (s)	22.6	22.6	54.8		25.6	57.8			24.0	24.0	24.0	25.6
Total Split (%)	13.0%	13.0%	31.5%		14.7%	33.2%			13.8%	13.8%	13.8%	14.7%
Yellow Time (s)	3.0	3.0	4.5		3.0	4.5			4.0	4.0	4.0	3.0
All-Red Time (s)	3.6	3.6	2.3		3.6	2.3			2.0	2.0	2.0	3.6
Lost Time Adjust (s)		0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0
Total Lost Time (s)		6.6	6.8		6.6	6.8			6.0	6.0	6.0	6.6
Lead/Lag	Lead	Lead	Lag		Lead	Lag			Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes			Yes	Yes	Yes	Yes
Recall Mode	None	None	Min		None	Min			None	None	None	None
v/c Ratio		1.03	1.09	0.06	1.07	1.08		0.08		0.83	0.40	0.44
Control Delay		139.0	103.3	0.1	141.8	95.6		0.1		96.7	71.4	11.1
Queue Delay		0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Delay		139.0	103.3	0.1	141.8	95.6		0.1		96.7	71.4	11.1
Queue Length 50th (ft)		164	~603	0	208	601		0		149	80	21
Queue Length 95th (ft)		#421	#1083	0	#511	#1100		0		#352	171	100
Internal Link Dist (ft)			1683			692					428	
Turn Bay Length (ft)		380		220	340			450		145		50
Base Capacity (vph)		176	1137	1689	214	1190		1507		215	249	526
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		1.03	1.09	0.06	1.07	1.08		0.08		0.79	0.39	0.44

Intersection Summary

Cycle Length: 174.2

Actuated Cycle Length: 151.5

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: Lovely St/Lawton Rd & Route 44 & Tarilsend Dr

01	02	03	04	07	08
22.6 s	57.8 s	36 s	13.2 s	24 s	20.6 s
05	06				
25.6 s	54.8 s				

Queues  
3: Lovely St/Lawton Rd & Route 44 & Tarilsend Dr

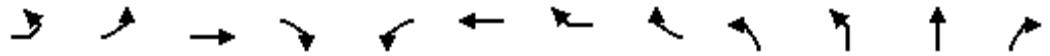
2050 Mid  
01/16/2024



Lane Group	SBL	SBT	SBR	SBR2	SEL	SER	SER2	Ø3
Lane Configurations		↕	↗		↘			
Traffic Volume (vph)	120	90	230	10	10	10	10	
Future Volume (vph)	120	90	230	10	10	10	10	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.56	0.56	0.56	
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%	0%	
Shared Lane Traffic (%)								
Lane Group Flow (vph)	0	226	258	0	54	0	0	
Turn Type	Split	NA	Prot		Prot			
Protected Phases	8	8	8		4			3
Permitted Phases								
Detector Phase	8	8	8		4			
Switch Phase								
Minimum Initial (s)	9.0	9.0	9.0		6.0			1.0
Minimum Split (s)	14.6	14.6	14.6		11.2			36.0
Total Split (s)	20.6	20.6	20.6		13.2			36.0
Total Split (%)	11.8%	11.8%	11.8%		7.6%			21%
Yellow Time (s)	3.6	3.6	3.6		3.0			4.0
All-Red Time (s)	2.0	2.0	2.0		2.2			0.0
Lost Time Adjust (s)		0.0	0.0		0.0			
Total Lost Time (s)		5.6	5.6		5.2			
Lead/Lag	Lag	Lag	Lag		Lag			Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes			Yes
Recall Mode	None	None	None		None			None
v/c Ratio		1.33	0.98		0.66			
Control Delay		231.3	118.6		108.2			
Queue Delay		0.0	0.0		0.0			
Total Delay		231.3	118.6		108.2			
Queue Length 50th (ft)		~250	132		48			
Queue Length 95th (ft)		#546	#305		71			
Internal Link Dist (ft)		713			445			
Turn Bay Length (ft)			330					
Base Capacity (vph)		170	262		87			
Starvation Cap Reductn		0	0		0			
Spillback Cap Reductn		0	0		0			
Storage Cap Reductn		0	0		0			
Reduced v/c Ratio		1.33	0.98		0.62			
Intersection Summary								

HCM Signalized Intersection Capacity Analysis  
 3: Lovely St/Lawton Rd & Route 44 & Tarilsend Dr

2050 Mid  
 01/16/2024



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR		
Lane Configurations		↔	↕	↗	↖	↕		↗		↖	↕	↗		
Traffic Volume (vph)	10	160	1170	90	220	1220	10	120	160	0	90	220		
Future Volume (vph)	10	160	1170	90	220	1220	10	120	160	0	90	220		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width	12	10	12	14	10	11	12	10	10	12	15	12		
Grade (%)			2%			0%					2%			
Total Lost time (s)		6.6	6.8	4.0	6.6	6.8		4.0		6.0	6.0	6.6		
Lane Util. Factor		1.00	0.95	1.00	1.00	0.95		1.00		1.00	1.00	1.00		
Frt		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		
Satd. Flow (prot)		1651	3539	1689	1685	3486		1507		1787	2069	1599		
Flt Permitted		0.95	1.00	1.00	0.95	1.00		1.00		0.95	1.00	1.00		
Satd. Flow (perm)		1651	3539	1689	1685	3486		1507		1787	2069	1599		
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.96	0.96	0.96	0.96	0.94	0.94	0.94	0.94		
Adj. Flow (vph)	11	170	1245	96	229	1271	10	125	170	0	96	234		
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	145		
Lane Group Flow (vph)	0	181	1245	96	229	1281	0	125	0	170	96	89		
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%		
Turn Type	Prot	Prot	NA	Free	Prot	NA		Free	Split	Split	NA	pm+ov		
Protected Phases	1	1	6		5	2			7	7	7	5		
Permitted Phases				Free				Free				7		
Actuated Green, G (s)		16.2	48.7	153.7	19.3	51.8		153.7		17.5	17.5	36.8		
Effective Green, g (s)		16.2	48.7	153.7	19.3	51.8		153.7		17.5	17.5	36.8		
Actuated g/C Ratio		0.11	0.32	1.00	0.13	0.34		1.00		0.11	0.11	0.24		
Clearance Time (s)		6.6	6.8		6.6	6.8				6.0	6.0	6.6		
Vehicle Extension (s)		2.0	3.0		2.0	3.0				2.0	2.0	2.0		
Lane Grp Cap (vph)		174	1121	1689	211	1174		1507		203	235	382		
v/s Ratio Prot		0.11	0.35		c0.14	c0.37				c0.10	0.05	0.03		
v/s Ratio Perm				0.06				c0.08				0.03		
v/c Ratio		1.04	1.11	0.06	1.09	1.09		0.08		0.84	0.41	0.23		
Uniform Delay, d1		68.8	52.5	0.0	67.2	50.9		0.0		66.7	63.3	47.1		
Progression Factor		1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00		
Incremental Delay, d2		79.2	62.6	0.1	86.5	54.8		0.1		23.9	0.4	0.1		
Delay (s)		148.0	115.1	0.1	153.7	105.7		0.1		90.6	63.7	47.2		
Level of Service		F	F	A	F	F		A		F	E	D		
Approach Delay (s)			111.8			104.4					65.1			
Approach LOS			F			F					E			
<b>Intersection Summary</b>														
HCM 2000 Control Delay			111.9									HCM 2000 Level of Service	F	
HCM 2000 Volume to Capacity ratio			0.99											
Actuated Cycle Length (s)			153.7								34.2		Sum of lost time (s)	
Intersection Capacity Utilization			87.7%										ICU Level of Service	E
Analysis Period (min)			15											
c Critical Lane Group														



HCM Signalized Intersection Capacity Analysis  
 3: Lovely St/Lawton Rd & Route 44 & Tarilsend Dr

2050 Mid  
 01/16/2024



Movement	SBL	SBT	SBR	SBR2	SEL	SER	SER2
Lane Configurations		↕	↗		↘		
Traffic Volume (vph)	120	90	230	10	10	10	10
Future Volume (vph)	120	90	230	10	10	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	12	16	12
Grade (%)		8%			8%		
Total Lost time (s)		5.6	5.6		5.2		
Lane Util. Factor		1.00	0.88		1.00		
Frt		1.00	0.85		0.91		
Flt Protected		0.97	1.00		0.98		
Satd. Flow (prot)		1697	2612		1633		
Flt Permitted		0.97	1.00		0.98		
Satd. Flow (perm)		1697	2612		1633		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.56	0.56	0.56
Adj. Flow (vph)	129	97	247	11	18	18	18
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	226	258	0	54	0	0
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%	0%
Turn Type	Split	NA	Prot		Prot		
Protected Phases	8	8	8		4		
Permitted Phases							
Actuated Green, G (s)		15.2	15.2		7.7		
Effective Green, g (s)		15.2	15.2		7.7		
Actuated g/C Ratio		0.10	0.10		0.05		
Clearance Time (s)		5.6	5.6		5.2		
Vehicle Extension (s)		2.0	2.0		2.0		
Lane Grp Cap (vph)		167	258		81		
v/s Ratio Prot		c0.13	0.10		c0.03		
v/s Ratio Perm							
v/c Ratio		1.35	1.00		0.67		
Uniform Delay, d1		69.2	69.2		71.7		
Progression Factor		1.00	1.00		1.00		
Incremental Delay, d2		193.0	56.0		14.9		
Delay (s)		262.2	125.3		86.6		
Level of Service		F	F		F		
Approach Delay (s)		189.2			86.6		
Approach LOS		F			F		
<b>Intersection Summary</b>							

Queues  
4: Route 44 & CVS Drive

2050 Mid  
01/16/2024

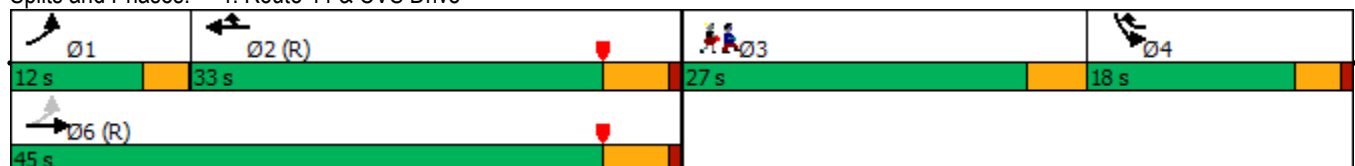


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	50	1470	1520	100	50	50	
Future Volume (vph)	50	1470	1520	100	50	50	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.75	0.75	
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	53	1547	1600	105	134	0	
Turn Type	pm+pt	NA	NA	pt+ov	Prot		
Protected Phases	1	6	2	2 4	4		3
Permitted Phases	6						
Detector Phase	1	6	2	2 4	4		
Switch Phase							
Minimum Initial (s)	5.0	25.0	25.0		7.0		1.0
Minimum Split (s)	8.1	30.3	30.3		11.0		27.0
Total Split (s)	12.0	45.0	33.0		18.0		27.0
Total Split (%)	13.3%	50.0%	36.7%		20.0%		30%
Yellow Time (s)	3.0	4.3	4.3		3.0		4.0
All-Red Time (s)	0.1	1.0	1.0		1.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		
Total Lost Time (s)	3.1	5.3	5.3		4.0		
Lead/Lag	Lead		Lag		Lag		Lead
Lead-Lag Optimize?	Yes		Yes		Yes		Yes
Recall Mode	None	C-Max	C-Max		None		None
v/c Ratio	0.25	0.59	0.66	0.09	0.40		
Control Delay	8.2	9.1	10.9	1.8	24.6		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	8.2	9.1	10.9	1.8	24.6		
Queue Length 50th (ft)	3	105	124	0	19		
Queue Length 95th (ft)	32	#533	#707	m11	34		
Internal Link Dist (ft)		692	628		200		
Turn Bay Length (ft)	155			140			
Base Capacity (vph)	265	2614	2435	1289	568		
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	0.59	0.66	0.08	0.24		

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 10 (11%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Route 44 & CVS Drive



# HCM Signalized Intersection Capacity Analysis

## 4: Route 44 & CVS Drive

2050 Mid  
01/16/2024



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↵	↑↑	↑↑	↵	↵↵	
Traffic Volume (vph)	50	1470	1520	100	50	50
Future Volume (vph)	50	1470	1520	100	50	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	10	12	12
Grade (%)		6%	4%		2%	
Total Lost time (s)	3.1	5.3	5.3	5.3	4.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	
Frt	1.00	1.00	1.00	0.85	0.93	
Flt Protected	0.95	1.00	1.00	1.00	0.98	
Satd. Flow (prot)	1618	3467	3503	1463	3293	
Flt Permitted	0.09	1.00	1.00	1.00	0.98	
Satd. Flow (perm)	155	3467	3503	1463	3293	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.75	0.75
Adj. Flow (vph)	53	1547	1600	105	67	67
RTOR Reduction (vph)	0	0	0	16	61	0
Lane Group Flow (vph)	53	1547	1600	89	73	0
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%
Turn Type	pm+pt	NA	NA	pt+ov	Prot	
Protected Phases	1	6	2	2 4	4	
Permitted Phases	6					
Actuated Green, G (s)	64.7	64.7	58.2	65.6	7.4	
Effective Green, g (s)	64.7	64.7	58.2	65.6	7.4	
Actuated g/C Ratio	0.72	0.72	0.65	0.73	0.08	
Clearance Time (s)	3.1	5.3	5.3		4.0	
Vehicle Extension (s)	1.5	0.2	0.2		2.0	
Lane Grp Cap (vph)	166	2492	2265	1066	270	
v/s Ratio Prot	0.01	c0.45	c0.46	0.06	c0.02	
v/s Ratio Perm	0.22					
v/c Ratio	0.32	0.62	0.71	0.08	0.27	
Uniform Delay, d1	8.3	6.4	10.3	3.5	38.8	
Progression Factor	1.00	1.00	0.67	0.76	1.00	
Incremental Delay, d2	0.4	1.2	1.4	0.0	0.2	
Delay (s)	8.7	7.6	8.4	2.7	39.0	
Level of Service	A	A	A	A	D	
Approach Delay (s)		7.6	8.0		39.0	
Approach LOS		A	A		D	

### Intersection Summary

HCM 2000 Control Delay	9.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.4
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Queues

2050 Mid

5: Shops at Farmington Valley/Private Driveway & Route 44

01/16/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1120	400	320	1250	10	360	0	360	5	5	10
Future Volume (vph)	5	1120	400	320	1250	10	360	0	360	5	5	10
Peak Hour Factor	0.89	0.89	0.89	0.91	0.91	0.91	0.87	0.87	0.87	0.50	0.50	0.50
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	6	1258	449	352	1385	0	207	207	414	10	30	0
Turn Type	Prot	NA	Prot	Prot	NA		Split	NA	pt+ov	Split	NA	
Protected Phases	5	2	2	1	6		7	7	17	8	8	
Permitted Phases												
Detector Phase	5	2	2	1	6		7	7	17	8	8	
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0		5.0	5.0		7.0	7.0	
Minimum Split (s)	11.8	20.5	20.5	11.8	20.5		10.0	10.0		12.0	12.0	
Total Split (s)	20.0	36.0	36.0	20.0	36.0		20.0	20.0		14.0	14.0	
Total Split (%)	22.2%	40.0%	40.0%	22.2%	40.0%		22.2%	22.2%		15.6%	15.6%	
Yellow Time (s)	3.2	4.4	4.4	3.2	4.4		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.6	1.1	1.1	3.6	1.1		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)	6.8	5.5	5.5	6.8	5.5		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min	C-Min	None	Min		None	None		None	None	
v/c Ratio	0.06	0.85	0.50	0.74	0.64		0.80	0.80	0.63	0.07	0.20	
Control Delay	38.8	32.1	7.8	52.3	14.1		59.3	59.3	12.1	39.6	24.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	38.8	32.1	7.8	52.3	14.1		59.3	59.3	12.1	39.6	24.8	
Queue Length 50th (ft)	3	~386	19	112	140		118	118	58	5	5	
Queue Length 95th (ft)	m8	#531	162	156	#326		#212	#212	108	12	13	
Internal Link Dist (ft)		628			773			306			149	
Turn Bay Length (ft)	50		220	370								
Base Capacity (vph)	252	1485	892	517	2151		284	284	656	180	189	
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	0.02	0.85	0.50	0.68	0.64		0.73	0.73	0.63	0.06	0.16	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 84 (93%), Referenced to phase 2:EBT, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Shops at Farmington Valley/Private Driveway & Route 44

Ø1	Ø2 (R)	Ø7	Ø8
20 s	36 s	20 s	14 s
Ø5	Ø6		
20 s	36 s		

# HCM Signalized Intersection Capacity Analysis

## 5: Shops at Farmington Valley/Private Driveway & Route 44

2050 Mid  
01/16/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑	↗	↙↗	↑↑		↙	↖	↗	↙	↗	
Traffic Volume (vph)	5	1120	400	320	1250	10	360	0	360	5	5	10
Future Volume (vph)	5	1120	400	320	1250	10	360	0	360	5	5	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	12	12	12	13	12	12	12
Grade (%)		1%			0%			1%			0%	
Total Lost time (s)	6.8	5.5	5.5	6.8	5.5		5.0	5.0	6.8	5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		0.95	0.95	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (prot)	1719	3438	1538	3351	3451		1706	1706	1660	1805	1710	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (perm)	1719	3438	1538	3351	3451		1706	1706	1660	1805	1710	
Peak-hour factor, PHF	0.89	0.89	0.89	0.91	0.91	0.91	0.87	0.87	0.87	0.50	0.50	0.50
Adj. Flow (vph)	6	1258	449	352	1374	11	414	0	414	10	10	20
RTOR Reduction (vph)	0	0	237	0	0	0	0	0	158	0	19	0
Lane Group Flow (vph)	6	1258	212	352	1385	0	207	207	256	10	11	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Prot	Prot	NA		Split	NA	pt+ov	Split	NA	
Protected Phases	5	2	2	1	6		7	7	17	8	8	
Permitted Phases												
Actuated Green, G (s)	1.1	36.9	36.9	12.8	48.6		13.7	13.7	26.5	4.3	4.3	
Effective Green, g (s)	1.1	36.9	36.9	12.8	48.6		13.7	13.7	26.5	4.3	4.3	
Actuated g/C Ratio	0.01	0.41	0.41	0.14	0.54		0.15	0.15	0.29	0.05	0.05	
Clearance Time (s)	6.8	5.5	5.5	6.8	5.5		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	1.5	2.0	2.0	1.5	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	21	1409	630	476	1863		259	259	488	86	81	
v/s Ratio Prot	0.00	c0.37	0.14	c0.11	c0.40		c0.12	0.12	0.15	0.01	c0.01	
v/s Ratio Perm												
v/c Ratio	0.29	0.89	0.34	0.74	0.74		0.80	0.80	0.52	0.12	0.14	
Uniform Delay, d1	44.1	24.7	18.2	37.0	15.9		36.8	36.8	26.5	41.0	41.1	
Progression Factor	0.93	1.00	1.54	1.22	0.92		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.3	7.8	1.2	3.9	1.1		14.7	14.7	0.5	0.2	0.3	
Delay (s)	43.5	32.5	29.2	49.0	15.7		51.6	51.6	27.0	41.3	41.3	
Level of Service	D	C	C	D	B		D	D	C	D	D	
Approach Delay (s)		31.7			22.5			39.3			41.3	
Approach LOS		C			C			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			29.5			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			22.3			
Intersection Capacity Utilization			73.5%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
12: Secret Lake Road/Acura of Avon & Route 44

2050 Mid  
01/16/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1430	40	30	1500	10	60	0	30	10	0	20
Future Volume (vph)	10	1430	40	30	1500	10	60	0	30	10	0	20
Peak Hour Factor	0.95	0.95	0.95	0.97	0.97	0.97	0.69	0.69	0.69	0.70	0.70	0.70
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	1547	0	31	1556	0	0	130	0	14	0	29
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		Prot		Prot
Protected Phases	1	6		5	2		7	7		8		8
Permitted Phases	6			2								
Detector Phase	1	6		5	2		7	7		8		8
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		9.0	9.0		7.0		7.0
Minimum Split (s)	9.5	25.0		9.5	25.0		15.2	15.2		13.2		13.2
Total Split (s)	10.0	48.0		10.0	48.0		17.0	17.0		15.0		15.0
Total Split (%)	11.1%	53.3%		11.1%	53.3%		18.9%	18.9%		16.7%		16.7%
Yellow Time (s)	3.0	4.4		3.0	4.4		3.0	3.0		3.0		3.0
All-Red Time (s)	1.0	2.6		1.0	2.6		3.2	3.2		3.2		3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	4.0	7.0		4.0	7.0		6.2	6.2		6.2		6.2
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead		Lag		Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes		Yes
Recall Mode	None	C-Min		None	C-Min		None	None		None		None
v/c Ratio	0.06	0.75		0.17	0.71		0.37	0.37		0.10		0.10
Control Delay	6.4	15.8		7.9	15.0		5.8	5.8		40.4		0.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Delay	6.4	15.8		7.9	15.0		5.8	5.8		40.4		0.8
Queue Length 50th (ft)	2	198		6	306		0	0		8		0
Queue Length 95th (ft)	m2	#317		15	#540		0	0		20		0
Internal Link Dist (ft)		773			254			313				450
Turn Bay Length (ft)	50			105								
Base Capacity (vph)	214	2060		193	2205		390	390		174		311
Starvation Cap Reductn	0	0		0	0		0	0		0		0
Spillback Cap Reductn	0	0		0	0		0	0		0		0
Storage Cap Reductn	0	0		0	0		0	0		0		0
Reduced v/c Ratio	0.05	0.75		0.16	0.71		0.33	0.33		0.08		0.09

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 90

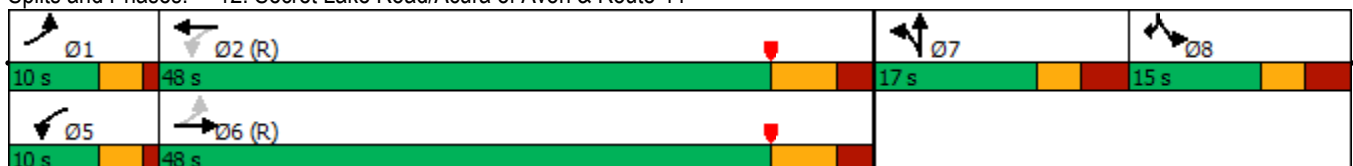
Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.




















m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Secret Lake Road/Acura of Avon & Route 44



HCM Signalized Intersection Capacity Analysis  
 12: Secret Lake Road/Acura of Avon & Route 44

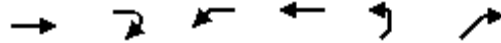
2050 Mid  
 01/16/2024

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	10	1430	40	30	1500	10	60	0	30	10	0	20	
Future Volume (vph)	10	1430	40	30	1500	10	60	0	30	10	0	20	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	11	11	12	10	11	12	12	16	12	12	16	12	
Grade (%)		2%			2%			0%			2%		
Total Lost time (s)	4.0	7.0		4.0	7.0			6.2		6.2		6.2	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00		1.00	
Frt	1.00	1.00		1.00	1.00			0.96		1.00		0.85	
Flt Protected	0.95	1.00		0.95	1.00			0.97		0.95		1.00	
Satd. Flow (prot)	1710	3407		1651	3417			1991		1787		1599	
Flt Permitted	0.09	1.00		0.08	1.00			0.97		0.95		1.00	
Satd. Flow (perm)	164	3407		134	3417			1991		1787		1599	
Peak-hour factor, PHF	0.95	0.95	0.95	0.97	0.97	0.97	0.69	0.69	0.69	0.70	0.70	0.70	
Adj. Flow (vph)	11	1505	42	31	1546	10	87	0	43	14	0	29	
RTOR Reduction (vph)	0	2	0	0	0	0	0	117	0	0	0	28	
Lane Group Flow (vph)	11	1545	0	31	1556	0	0	13	0	14	0	1	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%	
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		Prot		Prot	
Protected Phases	1	6		5	2		7	7		8		8	
Permitted Phases	6			2									
Actuated Green, G (s)	51.3	50.3		55.5	52.4			9.0		4.2		4.2	
Effective Green, g (s)	51.3	50.3		55.5	52.4			9.0		4.2		4.2	
Actuated g/C Ratio	0.57	0.56		0.62	0.58			0.10		0.05		0.05	
Clearance Time (s)	4.0	7.0		4.0	7.0			6.2		6.2		6.2	
Vehicle Extension (s)	1.5	2.5		1.5	2.5			1.5		1.5		1.5	
Lane Grp Cap (vph)	110	1904		134	1989			199		83		74	
v/s Ratio Prot	0.00	0.45		c0.01	c0.46			c0.01		c0.01		0.00	
v/s Ratio Perm	0.06			0.13									
v/c Ratio	0.10	0.81		0.23	0.78			0.07		0.17		0.02	
Uniform Delay, d1	11.2	16.0		11.6	14.4			36.7		41.2		40.9	
Progression Factor	1.00	0.86		1.00	1.00			1.00		1.00		1.00	
Incremental Delay, d2	0.1	2.3		0.3	3.1			0.1		0.4		0.0	
Delay (s)	11.3	16.1		11.9	17.6			36.7		41.6		41.0	
Level of Service	B	B		B	B			D		D		D	
Approach Delay (s)		16.1			17.5			36.7			41.2		
Approach LOS		B			B			D			D		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			17.9									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.65										
Actuated Cycle Length (s)			90.0									Sum of lost time (s)	23.4
Intersection Capacity Utilization			71.3%									ICU Level of Service	C
Analysis Period (min)			15										
c Critical Lane Group													



Queues  
1: Canton Village Shopping Mall & Route 44

2050 PM  
01/16/2024

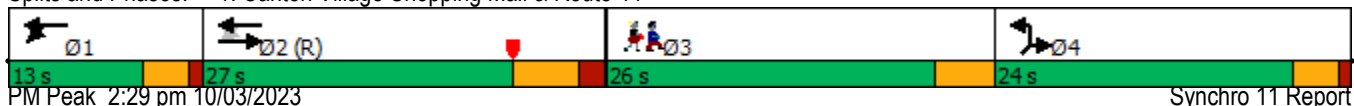


Lane Group	EBT	EBR	WBL	WBT	NEL	NER	Ø3
Lane Configurations	↑↑		↙	↑↑	↙	↗	
Traffic Volume (vph)	800	60	100	1000	70	80	
Future Volume (vph)	800	60	100	1000	70	80	
Peak Hour Factor	0.91	0.91	0.94	0.94	0.80	0.80	
Heavy Vehicles (%)	2%	2%	1%	1%	1%	1%	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	945	0	106	1064	88	100	
Turn Type	NA		D.P+P	NA	Prot	Prot	
Protected Phases	2		1	12	4	4	3
Permitted Phases			2				
Detector Phase	2		1	12	4	4	
Switch Phase							
Minimum Initial (s)	15.0		5.0		8.0	8.0	1.0
Minimum Split (s)	21.2		9.0		12.0	12.0	26.0
Total Split (s)	27.0		13.0		24.0	24.0	26.0
Total Split (%)	30.0%		14.4%		26.7%	26.7%	29%
Yellow Time (s)	4.4		3.0		3.0	3.0	4.0
All-Red Time (s)	1.8		1.0		1.0	1.0	0.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.2		4.0		4.0	4.0	
Lead/Lag	Lag		Lead		Lag	Lag	Lead
Lead-Lag Optimize?	Yes		Yes		Yes	Yes	Yes
Recall Mode	C-Max		None		None	None	None
v/c Ratio	0.48		0.25	0.41	0.45	0.38	
Control Delay	14.9		6.6	5.9	45.0	12.2	
Queue Delay	0.0		0.0	0.0	0.0	0.0	
Total Delay	14.9		6.6	5.9	45.0	12.2	
Queue Length 50th (ft)	122		8	59	48	0	
Queue Length 95th (ft)	#374		m34	232	81	33	
Internal Link Dist (ft)	340			1313	474		
Turn Bay Length (ft)			160				
Base Capacity (vph)	1975		427	2564	421	454	
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	0.48		0.25	0.41	0.21	0.22	

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 75 (83%), Referenced to phase 2:EBWB, Start of Yellow  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

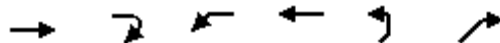
Splits and Phases: 1: Canton Village Shopping Mall & Route 44



PM Peak 2:29 pm 10/03/2023

HCM Signalized Intersection Capacity Analysis  
1: Canton Village Shopping Mall & Route 44

2050 PM  
01/16/2024



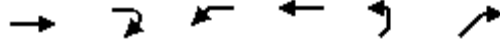
Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑↑		↵	↑↑	↵	↵
Traffic Volume (vph)	800	60	100	1000	70	80
Future Volume (vph)	800	60	100	1000	70	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	10	11	14	14
Grade (%)	0%			0%	1%	
Total Lost time (s)	6.2		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3385		1668	3455	1897	1697
Flt Permitted	1.00		0.24	1.00	0.95	1.00
Satd. Flow (perm)	3385		430	3455	1897	1697
Peak-hour factor, PHF	0.91	0.91	0.94	0.94	0.80	0.80
Adj. Flow (vph)	879	66	106	1064	88	100
RTOR Reduction (vph)	4	0	0	0	0	90
Lane Group Flow (vph)	941	0	106	1064	88	10
Heavy Vehicles (%)	2%	2%	1%	1%	1%	1%
Turn Type	NA		D.P+P	NA	Prot	Prot
Protected Phases	2		1	1 2	4	4
Permitted Phases			2			
Actuated Green, G (s)	49.2		58.1	62.1	9.3	9.3
Effective Green, g (s)	49.2		58.1	62.1	9.3	9.3
Actuated g/C Ratio	0.55		0.65	0.69	0.10	0.10
Clearance Time (s)	6.2		4.0		4.0	4.0
Vehicle Extension (s)	0.2		1.0		2.0	2.0
Lane Grp Cap (vph)	1850		400	2383	196	175
v/s Ratio Prot	c0.28		0.03	c0.31	c0.05	0.01
v/s Ratio Perm			0.14			
v/c Ratio	0.51		0.27	0.45	0.45	0.06
Uniform Delay, d1	12.8		6.6	6.3	37.9	36.4
Progression Factor	1.00		0.98	0.87	1.00	1.00
Incremental Delay, d2	1.0		0.1	0.0	0.6	0.1
Delay (s)	13.8		6.6	5.5	38.5	36.5
Level of Service	B		A	A	D	D
Approach Delay (s)	13.8			5.6	37.4	
Approach LOS	B			A	D	

Intersection Summary

HCM 2000 Control Delay	11.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Queues  
2: Dowd Ave & Route 44

2050 PM  
01/16/2024

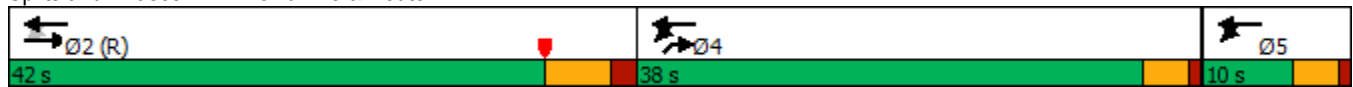


Lane Group	EBT	EBR	WBL	WBT	NEL	NER	Ø5
Lane Configurations	↑↑			↑↑		↑	
Traffic Volume (vph)	880	10	630	1100	0	450	
Future Volume (vph)	880	10	630	1100	0	450	
Peak Hour Factor	0.90	0.90	0.91	0.91	0.95	0.95	
Heavy Vehicles (%)	1%	1%	1%	1%	2%	2%	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	989	0	0	1901	0	474	
Turn Type	NA		D.P+P	NA		Over	
Protected Phases	2		4 5	2 4 5		4	5
Permitted Phases			2				
Detector Phase	2		4 5	2 4 5		4	
Switch Phase							
Minimum Initial (s)	15.0					7.0	6.0
Minimum Split (s)	21.1					11.0	10.0
Total Split (s)	42.0					38.0	10.0
Total Split (%)	46.7%					42.2%	11%
Yellow Time (s)	4.4					3.0	3.0
All-Red Time (s)	1.7					1.0	1.0
Lost Time Adjust (s)	0.0					0.0	
Total Lost Time (s)	6.1					4.0	
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	C-Max					None	None
v/c Ratio	0.72			0.82		0.79	
Control Delay	18.0			8.8		36.0	
Queue Delay	0.0			0.0		0.0	
Total Delay	18.0			8.8		36.0	
Queue Length 50th (ft)	263			117		234	
Queue Length 95th (ft)	33			227		#394	
Internal Link Dist (ft)	1313			1683	869		
Turn Bay Length (ft)							
Base Capacity (vph)	1375			2312		602	
Starvation Cap Reductn	0			0		0	
Spillback Cap Reductn	0			0		0	
Storage Cap Reductn	0			0		0	
Reduced v/c Ratio	0.72			0.82		0.79	

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 21 (23%), Referenced to phase 2:EBWB, Start of Yellow  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

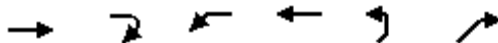
Splits and Phases: 2: Dowd Ave & Route 44



# HCM Signalized Intersection Capacity Analysis

## 2: Dowd Ave & Route 44

2050 PM  
01/16/2024



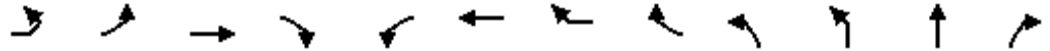
Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑↑			↑↑		↑
Traffic Volume (vph)	880	10	630	1100	0	450
Future Volume (vph)	880	10	630	1100	0	450
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	12	12
Grade (%)	0%			0%	2%	
Total Lost time (s)	6.1			6.1		4.0
Lane Util. Factor	0.95			0.95		1.00
Frt	1.00			1.00		0.86
Flt Protected	1.00			0.98		1.00
Satd. Flow (prot)	3449			3393		1595
Flt Permitted	1.00			0.53		1.00
Satd. Flow (perm)	3449			1837		1595
Peak-hour factor, PHF	0.90	0.90	0.91	0.91	0.95	0.95
Adj. Flow (vph)	978	11	692	1209	0	474
RTOR Reduction (vph)	1	0	0	0	0	0
Lane Group Flow (vph)	988	0	0	1901	0	474
Heavy Vehicles (%)	1%	1%	1%	1%	2%	2%
Turn Type	NA		D.P+P	NA		Over
Protected Phases	2		4 5	2 4 5		4
Permitted Phases			2			
Actuated Green, G (s)	35.9			79.9		34.0
Effective Green, g (s)	35.9			75.9		34.0
Actuated g/C Ratio	0.40			0.84		0.38
Clearance Time (s)	6.1					4.0
Vehicle Extension (s)	0.2					3.0
Lane Grp Cap (vph)	1375			2240		602
v/s Ratio Prot	0.29			c0.38		0.30
v/s Ratio Perm				c0.34		
v/c Ratio	0.72			0.85		0.79
Uniform Delay, d1	22.8			3.9		24.8
Progression Factor	0.65			1.00		1.00
Incremental Delay, d2	3.0			3.2		6.7
Delay (s)	17.8			7.1		31.5
Level of Service	B			A		C
Approach Delay (s)	17.8			7.1	31.5	
Approach LOS	B			A	C	

### Intersection Summary

HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	14.1
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Queues  
3: Lovely St/Lawton Rd & Route 44 & Tarilsend Dr

2050 PM  
01/16/2024



Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations		↔	↕	↗	↖	↕		↗		↖	↕	↗
Traffic Volume (vph)	10	220	1030	70	200	1390	10	120	210	0	110	250
Future Volume (vph)	10	220	1030	70	200	1390	10	120	210	0	110	250
Peak Hour Factor	0.96	0.96	0.96	0.96	0.94	0.94	0.94	0.94	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	2%	2%	2%	2%	1%	1%	1%	1%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	239	1073	73	213	1490	0	128	0	247	129	294
Turn Type	Prot	Prot	NA	Free	Prot	NA		Free	Split	Split	NA	pm+ov
Protected Phases	1	1	6		5	2			7	7	7	5
Permitted Phases				Free				Free				7
Detector Phase	1	1	6		5	2			7	7	7	5
Switch Phase												
Minimum Initial (s)	5.0	5.0	15.0		5.0	15.0			9.0	9.0	9.0	5.0
Minimum Split (s)	11.6	11.6	21.8		11.6	21.8			15.0	15.0	15.0	11.6
Total Split (s)	18.6	18.6	49.8		30.6	61.4			21.0	21.0	21.0	30.6
Total Split (%)	10.6%	10.6%	28.3%		17.4%	34.8%			11.9%	11.9%	11.9%	17.4%
Yellow Time (s)	3.0	3.0	4.5		3.0	4.5			4.0	4.0	4.0	3.0
All-Red Time (s)	3.6	3.6	2.3		3.6	2.3			2.0	2.0	2.0	3.6
Lost Time Adjust (s)		0.0	0.0		0.0	0.0				0.0	0.0	0.0
Total Lost Time (s)		6.6	6.8		6.6	6.8				6.0	6.0	6.6
Lead/Lag	Lead	Lead	Lag		Lead	Lag			Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes			Yes	Yes	Yes	Yes
Recall Mode	None	None	Min		None	Min			None	None	None	None
v/c Ratio		1.68	0.95	0.04	0.78	1.08		0.09		1.27	0.57	0.53
Control Delay		371.5	62.9	0.0	75.2	88.3		0.1		201.6	69.7	12.8
Queue Delay		0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Delay		371.5	62.9	0.0	75.2	88.3		0.1		201.6	69.7	12.8
Queue Length 50th (ft)		~320	515	0	187	~809		0		~287	114	55
Queue Length 95th (ft)		#494	#671	0	#301	#950		0		#427	173	101
Internal Link Dist (ft)			1683			692					428	
Turn Bay Length (ft)		380		220	340			450		145		50
Base Capacity (vph)		142	1132	1672	291	1384		1492		195	226	576
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		1.68	0.95	0.04	0.73	1.08		0.09		1.27	0.57	0.51

Intersection Summary

Cycle Length: 176.2

Actuated Cycle Length: 137.4

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

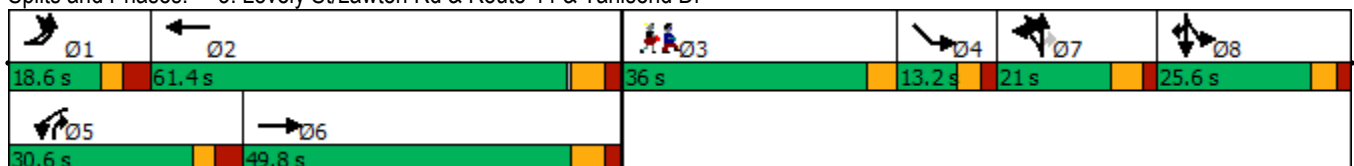
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: Lovely St/Lawton Rd & Route 44 & Tarilsend Dr



Queues  
3: Lovely St/Lawton Rd & Route 44 & Tarilsend Dr

2050 PM  
01/16/2024

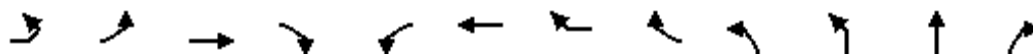


Lane Group	SBL	SBT	SBR	SBR2	SEL	SER	SER2	Ø3
Lane Configurations		↕	↗		↘			
Traffic Volume (vph)	90	140	380	10	10	10	10	
Future Volume (vph)	90	140	380	10	10	10	10	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.58	0.58	0.58	
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%	0%	
Shared Lane Traffic (%)								
Lane Group Flow (vph)	0	242	411	0	51	0	0	
Turn Type	Split	NA	Prot		Prot			
Protected Phases	8	8	8		4			3
Permitted Phases								
Detector Phase	8	8	8		4			
Switch Phase								
Minimum Initial (s)	9.0	9.0	9.0		6.0			1.0
Minimum Split (s)	14.6	14.6	14.6		11.2			36.0
Total Split (s)	25.6	25.6	25.6		13.2			36.0
Total Split (%)	14.5%	14.5%	14.5%		7.5%			20%
Yellow Time (s)	3.6	3.6	3.6		3.0			4.0
All-Red Time (s)	2.0	2.0	2.0		2.2			0.0
Lost Time Adjust (s)		0.0	0.0		0.0			
Total Lost Time (s)		5.6	5.6		5.2			
Lead/Lag	Lag	Lag	Lag		Lag			Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes			Yes
Recall Mode	None	None	None		None			None
v/c Ratio		0.97	1.08		0.57			
Control Delay		108.3	123.6		88.8			
Queue Delay		0.0	0.0		0.0			
Total Delay		108.3	123.6		88.8			
Queue Length 50th (ft)		223	~241		46			
Queue Length 95th (ft)		#403	#360		58			
Internal Link Dist (ft)		713			445			
Turn Bay Length (ft)			330					
Base Capacity (vph)		249	380		95			
Starvation Cap Reductn		0	0		0			
Spillback Cap Reductn		0	0		0			
Storage Cap Reductn		0	0		0			
Reduced v/c Ratio		0.97	1.08		0.54			
Intersection Summary								

# HCM Signalized Intersection Capacity Analysis

## 3: Lovely St/Lawton Rd & Route 44 & Tarilsend Dr

2050 PM  
01/16/2024



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations		↔	↕	↗	↖	↕		↗		↖	↕	↗
Traffic Volume (vph)	10	220	1030	70	200	1390	10	120	210	0	110	250
Future Volume (vph)	10	220	1030	70	200	1390	10	120	210	0	110	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	14	10	11	12	10	10	12	15	12
Grade (%)			2%			0%					2%	
Total Lost time (s)		6.6	6.8	4.0	6.6	6.8		4.0		6.0	6.0	6.6
Lane Util. Factor		1.00	0.95	1.00	1.00	0.95		1.00		1.00	1.00	1.00
Frt		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
Satd. Flow (prot)		1635	3504	1672	1668	3451		1492		1787	2069	1599
Flt Permitted		0.95	1.00	1.00	0.95	1.00		1.00		0.95	1.00	1.00
Satd. Flow (perm)		1635	3504	1672	1668	3451		1492		1787	2069	1599
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.94	0.94	0.94	0.94	0.85	0.85	0.85	0.85
Adj. Flow (vph)	10	229	1073	73	213	1479	11	128	247	0	129	294
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	130
Lane Group Flow (vph)	0	239	1073	73	213	1490	0	128	0	247	129	164
Heavy Vehicles (%)	2%	2%	2%	2%	1%	1%	1%	1%	0%	0%	0%	0%
Turn Type	Prot	Prot	NA	Free	Prot	NA		Free	Split	Split	NA	pm+ov
Protected Phases	1	1	6		5	2			7	7	7	5
Permitted Phases				Free				Free				7
Actuated Green, G (s)		12.0	44.4	138.3	22.5	54.9		138.3		15.0	15.0	37.5
Effective Green, g (s)		12.0	44.4	138.3	22.5	54.9		138.3		15.0	15.0	37.5
Actuated g/C Ratio		0.09	0.32	1.00	0.16	0.40		1.00		0.11	0.11	0.27
Clearance Time (s)		6.6	6.8		6.6	6.8				6.0	6.0	6.6
Vehicle Extension (s)		2.0	3.0		2.0	3.0				2.0	2.0	2.0
Lane Grp Cap (vph)		141	1124	1672	271	1369		1492		193	224	433
v/s Ratio Prot		c0.15	0.31		0.13	c0.43				c0.14	0.06	0.06
v/s Ratio Perm				0.04				0.09				0.04
v/c Ratio		1.70	0.95	0.04	0.79	1.09		0.09		1.28	0.58	0.38
Uniform Delay, d1		63.2	46.0	0.0	55.6	41.7		0.0		61.7	58.6	40.9
Progression Factor		1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2		341.3	16.9	0.0	12.9	52.1		0.1		159.6	2.2	0.2
Delay (s)		404.4	62.9	0.0	68.5	93.8		0.1		221.2	60.8	41.1
Level of Service		F	E	A	E	F		A		F	E	D
Approach Delay (s)			118.5			84.3					111.3	
Approach LOS			F			F					F	

### Intersection Summary

HCM 2000 Control Delay	104.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	138.3	Sum of lost time (s)	34.2
Intersection Capacity Utilization	105.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
 3: Lovely St/Lawton Rd & Route 44 & Tarilsend Dr

2050 PM  
 01/16/2024



Movement	SBL	SBT	SBR	SBR2	SEL	SER	SER2
Lane Configurations		↕	↗		↘		↖
Traffic Volume (vph)	90	140	380	10	10	10	10
Future Volume (vph)	90	140	380	10	10	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	12	16	12
Grade (%)		8%			8%		
Total Lost time (s)		5.6	5.6		5.2		
Lane Util. Factor		1.00	0.88		1.00		
Frt		1.00	0.85		0.91		
Flt Protected		0.98	1.00		0.98		
Satd. Flow (prot)		1712	2612		1633		
Flt Permitted		0.98	1.00		0.98		
Satd. Flow (perm)		1712	2612		1633		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.58	0.58	0.58
Adj. Flow (vph)	95	147	400	11	17	17	17
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	242	411	0	51	0	0
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%	0%
Turn Type	Split	NA	Prot		Prot		
Protected Phases	8	8	8		4		
Permitted Phases							
Actuated Green, G (s)		20.0	20.0		6.2		
Effective Green, g (s)		20.0	20.0		6.2		
Actuated g/C Ratio		0.14	0.14		0.04		
Clearance Time (s)		5.6	5.6		5.2		
Vehicle Extension (s)		2.0	2.0		2.0		
Lane Grp Cap (vph)		247	377		73		
v/s Ratio Prot		0.14	c0.16		c0.03		
v/s Ratio Perm							
v/c Ratio		0.98	1.09		0.70		
Uniform Delay, d1		58.9	59.2		65.1		
Progression Factor		1.00	1.00		1.00		
Incremental Delay, d2		50.8	72.8		20.9		
Delay (s)		109.7	131.9		86.0		
Level of Service		F	F		F		
Approach Delay (s)		123.7			86.0		
Approach LOS		F			F		
<b>Intersection Summary</b>							



Queues  
4: Route 44 & CVS Drive

2050 PM  
01/16/2024

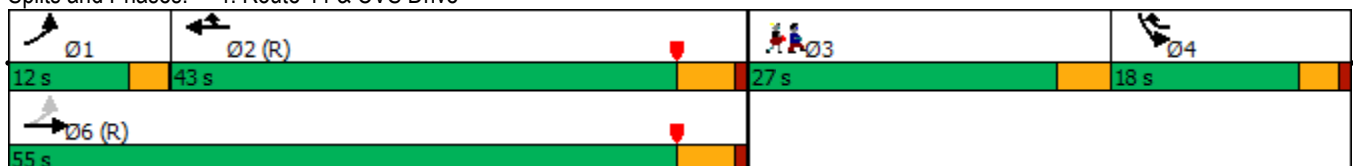


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	30	1350	1670	100	70	50	
Future Volume (vph)	30	1350	1670	100	70	50	
Peak Hour Factor	0.91	0.91	0.89	0.89	0.85	0.85	
Heavy Vehicles (%)	2%	2%	2%	2%	0%	0%	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	33	1484	1876	112	141	0	
Turn Type	pm+pt	NA	NA	pt+ov	Prot		
Protected Phases	1	6	2	2 4	4		3
Permitted Phases	6						
Detector Phase	1	6	2	2 4	4		
Switch Phase							
Minimum Initial (s)	5.0	25.0	25.0		7.0		1.0
Minimum Split (s)	8.1	30.3	30.3		11.0		27.0
Total Split (s)	12.0	55.0	43.0		18.0		27.0
Total Split (%)	12.0%	55.0%	43.0%		18.0%		27%
Yellow Time (s)	3.0	4.3	4.3		3.0		4.0
All-Red Time (s)	0.1	1.0	1.0		1.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		
Total Lost Time (s)	3.1	5.3	5.3		4.0		
Lead/Lag	Lead		Lag		Lag		Lead
Lead-Lag Optimize?	Yes		Yes		Yes		Yes
Recall Mode	None	C-Max	C-Max		None		None
v/c Ratio	0.21	0.56	0.75	0.09	0.45		
Control Delay	8.1	7.9	12.9	2.2	30.6		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	8.1	7.9	12.9	2.2	30.6		
Queue Length 50th (ft)	2	98	228	1	26		
Queue Length 95th (ft)	22	480	#885	m23	50		
Internal Link Dist (ft)		692	628		200		
Turn Bay Length (ft)	155			140			
Base Capacity (vph)	210	2662	2512	1290	516		
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	0.16	0.56	0.75	0.09	0.27		

Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 20 (20%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow  
 Natural Cycle: 110  
 Control Type: Actuated-Coordinated  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Route 44 & CVS Drive



# HCM Signalized Intersection Capacity Analysis

## 4: Route 44 & CVS Drive

2050 PM  
01/16/2024



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↙	↑↑	↑↑	↘	↙↘	
Traffic Volume (vph)	30	1350	1670	100	70	50
Future Volume (vph)	30	1350	1670	100	70	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	10	12	12
Grade (%)		6%	4%		2%	
Total Lost time (s)	3.1	5.3	5.3	5.3	4.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	
Frt	1.00	1.00	1.00	0.85	0.94	
Flt Protected	0.95	1.00	1.00	1.00	0.97	
Satd. Flow (prot)	1602	3433	3468	1448	3323	
Flt Permitted	0.06	1.00	1.00	1.00	0.97	
Satd. Flow (perm)	97	3433	3468	1448	3323	
Peak-hour factor, PHF	0.91	0.91	0.89	0.89	0.85	0.85
Adj. Flow (vph)	33	1484	1876	112	82	59
RTOR Reduction (vph)	0	0	0	13	54	0
Lane Group Flow (vph)	33	1484	1876	99	87	0
Heavy Vehicles (%)	2%	2%	2%	2%	0%	0%
Turn Type	pm+pt	NA	NA	pt+ov	Prot	
Protected Phases	1	6	2	2 4	4	
Permitted Phases	6					
Actuated Green, G (s)	74.4	74.4	68.1	75.8	7.7	
Effective Green, g (s)	74.4	74.4	68.1	75.8	7.7	
Actuated g/C Ratio	0.74	0.74	0.68	0.76	0.08	
Clearance Time (s)	3.1	5.3	5.3		4.0	
Vehicle Extension (s)	1.5	0.2	0.2		2.0	
Lane Grp Cap (vph)	120	2554	2361	1097	255	
v/s Ratio Prot	0.01	c0.43	c0.54	0.07	c0.03	
v/s Ratio Perm	0.20					
v/c Ratio	0.28	0.58	0.79	0.09	0.34	
Uniform Delay, d1	11.4	5.8	11.1	3.1	43.7	
Progression Factor	1.00	1.00	0.84	1.05	1.00	
Incremental Delay, d2	0.5	1.0	2.2	0.0	0.3	
Delay (s)	11.8	6.7	11.5	3.3	44.0	
Level of Service	B	A	B	A	D	
Approach Delay (s)		6.9	11.1		44.0	
Approach LOS		A	B		D	

### Intersection Summary

HCM 2000 Control Delay	10.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.4
Intersection Capacity Utilization	59.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Queues

2050 PM

5: Shops at Farmington Valley/Private Driveway & Route 44

01/16/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1150	270	230	1470	5	300	0	250	15	5	0
Future Volume (vph)	5	1150	270	230	1470	5	300	0	250	15	5	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.90	0.90	0.90	0.59	0.59	0.59
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	5	1223	287	245	1569	0	166	167	278	25	8	0
Turn Type	Prot	NA	Prot	Prot	NA		Split	NA	pt+ov	Split	NA	
Protected Phases	5	2	2	1	6		7	7	17	8	8	
Permitted Phases												
Detector Phase	5	2	2	1	6		7	7	17	8	8	
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0		5.0	5.0		7.0	7.0	
Minimum Split (s)	11.8	20.5	20.5	11.8	23.0		10.0	10.0		12.0	12.0	
Total Split (s)	30.0	36.0	36.0	30.0	36.0		20.0	20.0		14.0	14.0	
Total Split (%)	30.0%	36.0%	36.0%	30.0%	36.0%		20.0%	20.0%		14.0%	14.0%	
Yellow Time (s)	3.2	4.4	4.4	3.2	4.4		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.6	1.1	1.1	3.6	1.1		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)	6.8	5.5	5.5	6.8	5.5		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min	C-Min	None	Min		None	None		None	None	
v/c Ratio	0.06	0.70	0.32	0.65	0.68		0.74	0.75	0.50	0.19	0.06	
Control Delay	52.6	21.0	4.7	58.7	10.4		62.0	62.4	10.8	47.3	44.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	52.6	21.0	4.7	58.7	10.4		62.0	62.4	10.8	47.3	44.0	
Queue Length 50th (ft)	3	351	37	87	117		106	107	38	15	5	
Queue Length 95th (ft)	m7	#413	62	m110	#316		#191	#193	84	27	13	
Internal Link Dist (ft)		628			773			306			149	
Turn Bay Length (ft)	50		220	370								
Base Capacity (vph)	394	1735	887	777	2302		255	255	716	162	171	
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	0.01	0.70	0.32	0.32	0.68		0.65	0.65	0.39	0.15	0.05	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 16 (16%), Referenced to phase 2:EBT, Start of Yellow

Natural Cycle: 80

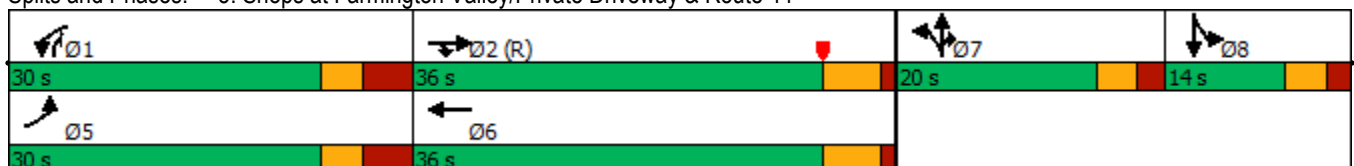
Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Shops at Farmington Valley/Private Driveway & Route 44



HCM Signalized Intersection Capacity Analysis  
 5: Shops at Farmington Valley/Private Driveway & Route 44

2050 PM  
 01/16/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘↗	↑↑		↘	↖	↗	↘	↗	
Traffic Volume (vph)	5	1150	270	230	1470	5	300	0	250	15	5	0
Future Volume (vph)	5	1150	270	230	1470	5	300	0	250	15	5	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	12	12	12	13	12	12	12
Grade (%)		1%			0%			1%				0%
Total Lost time (s)	6.8	5.5	5.5	6.8	5.5		5.0	5.0	6.8	5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		0.95	0.95	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (prot)	1702	3404	1523	3351	3453		1706	1706	1660	1805	1900	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (perm)	1702	3404	1523	3351	3453		1706	1706	1660	1805	1900	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.90	0.90	0.90	0.59	0.59	0.59
Adj. Flow (vph)	5	1223	287	245	1564	5	333	0	278	25	8	0
RTOR Reduction (vph)	0	0	115	0	0	0	0	0	134	0	0	0
Lane Group Flow (vph)	5	1223	172	245	1569	0	166	167	144	25	8	0
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Prot	Prot	NA		Split	NA	pt+ov	Split	NA	
Protected Phases	5	2	2	1	6		7	7	17	8	8	
Permitted Phases												
Actuated Green, G (s)	1.0	49.0	49.0	11.2	59.2		13.1	13.1	24.3	4.4	4.4	
Effective Green, g (s)	1.0	49.0	49.0	11.2	59.2		13.1	13.1	24.3	4.4	4.4	
Actuated g/C Ratio	0.01	0.49	0.49	0.11	0.59		0.13	0.13	0.24	0.04	0.04	
Clearance Time (s)	6.8	5.5	5.5	6.8	5.5		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	1.5	2.0	2.0	1.5	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	17	1667	746	375	2044		223	223	403	79	83	
v/s Ratio Prot	0.00	0.36	0.11	c0.07	c0.45		0.10	c0.10	0.09	c0.01	0.00	
v/s Ratio Perm												
v/c Ratio	0.29	0.73	0.23	0.65	0.77		0.74	0.75	0.36	0.32	0.10	
Uniform Delay, d1	49.1	20.3	14.7	42.5	15.3		41.8	41.9	31.4	46.3	45.9	
Progression Factor	1.13	0.86	0.78	1.27	0.66		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.0	2.5	0.6	1.9	1.0		11.1	11.4	0.2	0.8	0.2	
Delay (s)	58.8	19.9	12.0	55.9	11.0		53.0	53.2	31.6	47.2	46.1	
Level of Service	E	B	B	E	B		D	D	C	D	D	
Approach Delay (s)		18.5			17.1			43.3			46.9	
Approach LOS		B			B			D			D	

Intersection Summary		
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.77	
Actuated Cycle Length (s)	100.0	Sum of lost time (s) 22.3
Intersection Capacity Utilization	74.4%	ICU Level of Service D
Analysis Period (min)	15	
c Critical Lane Group		

Queues  
12: Secret Lake Road/Acura of Avon & Route 44

2050 PM  
01/16/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1370	30	40	1650	10	40	0	40	20	0	20
Future Volume (vph)	10	1370	30	40	1650	10	40	0	40	20	0	20
Peak Hour Factor	0.94	0.94	0.94	0.90	0.90	0.90	0.63	0.63	0.63	0.73	0.73	0.73
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	1489	0	44	1844	0	0	126	0	27	0	27
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		Prot		Prot
Protected Phases	1	6		5	2		7	7		8		8
Permitted Phases	6			2								
Detector Phase	1	6		5	2		7	7		8		8
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		9.0	9.0		7.0		7.0
Minimum Split (s)	9.5	25.0		9.5	25.0		15.2	15.2		13.2		13.2
Total Split (s)	10.0	58.0		10.0	58.0		17.0	17.0		15.0		15.0
Total Split (%)	10.0%	58.0%		10.0%	58.0%		17.0%	17.0%		15.0%		15.0%
Yellow Time (s)	3.0	4.4		3.0	4.4		3.0	3.0		3.0		3.0
All-Red Time (s)	1.0	2.6		1.0	2.6		3.2	3.2		3.2		3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	4.0	7.0		4.0	7.0		6.2	6.2		6.2		6.2
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead		Lag		Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes		Yes
Recall Mode	None	C-Min		None	C-Min		None	None		None		None
v/c Ratio	0.07	0.69		0.21	0.79		0.40	0.40		0.21		0.10
Control Delay	7.2	13.2		7.7	16.9		8.0	8.0		48.0		0.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Delay	7.2	13.2		7.7	16.9		8.0	8.0		48.0		0.8
Queue Length 50th (ft)	1	151		8	430		0	0		17		0
Queue Length 95th (ft)	m4	292		20	#775		0	0		35		0
Internal Link Dist (ft)		773			254			313				450
Turn Bay Length (ft)	50			105								
Base Capacity (vph)	178	2165		216	2322		349	349		157		282
Starvation Cap Reductn	0	0		0	0		0	0		0		0
Spillback Cap Reductn	0	0		0	0		0	0		0		0
Storage Cap Reductn	0	0		0	0		0	0		0		0
Reduced v/c Ratio	0.06	0.69		0.20	0.79		0.36	0.36		0.17		0.10

Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 16 (16%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Secret Lake Road/Acura of Avon & Route 44



HCM Signalized Intersection Capacity Analysis  
 12: Secret Lake Road/Acura of Avon & Route 44

2050 PM  
 01/16/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↕		↖	↕			↕		↗		↖
Traffic Volume (vph)	10	1370	30	40	1650	10	40	0	40	20	0	20
Future Volume (vph)	10	1370	30	40	1650	10	40	0	40	20	0	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	10	11	12	12	16	12	12	16	12
Grade (%)		2%			2%			0%			2%	
Total Lost time (s)	4.0	7.0		4.0	7.0			6.2		6.2		6.2
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00		1.00
Frt	1.00	1.00		1.00	1.00			0.93		1.00		0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98		0.95		1.00
Satd. Flow (prot)	1694	3376		1651	3418			1959		1787		1599
Flt Permitted	0.07	1.00		0.10	1.00			0.98		0.95		1.00
Satd. Flow (perm)	119	3376		177	3418			1959		1787		1599
Peak-hour factor, PHF	0.94	0.94	0.94	0.90	0.90	0.90	0.63	0.63	0.63	0.73	0.73	0.73
Adj. Flow (vph)	11	1457	32	44	1833	11	63	0	63	27	0	27
RTOR Reduction (vph)	0	1	0	0	0	0	0	115	0	0	0	26
Lane Group Flow (vph)	11	1488	0	44	1844	0	0	11	0	27	0	1
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		Prot		Prot
Protected Phases	1	6		5	2		7	7		8		8
Permitted Phases	6			2								
Actuated Green, G (s)	61.0	60.0		65.6	62.3			9.0		4.3		4.3
Effective Green, g (s)	61.0	60.0		65.6	62.3			9.0		4.3		4.3
Actuated g/C Ratio	0.61	0.60		0.66	0.62			0.09		0.04		0.04
Clearance Time (s)	4.0	7.0		4.0	7.0			6.2		6.2		6.2
Vehicle Extension (s)	1.5	2.5		1.5	2.5			1.5		1.5		1.5
Lane Grp Cap (vph)	88	2025		164	2129			176		76		68
v/s Ratio Prot	0.00	0.44		c0.01	c0.54			c0.01		c0.02		0.00
v/s Ratio Perm	0.07			0.17								
v/c Ratio	0.12	0.73		0.27	0.87			0.06		0.36		0.02
Uniform Delay, d1	14.0	14.3		10.1	15.4			41.6		46.5		45.8
Progression Factor	1.19	0.82		1.00	1.00			1.00		1.00		1.00
Incremental Delay, d2	0.2	1.9		0.3	5.0			0.1		1.0		0.0
Delay (s)	16.8	13.6		10.4	20.5			41.7		47.5		45.9
Level of Service	B	B		B	C			D		D		D
Approach Delay (s)		13.6			20.2			41.7			46.7	
Approach LOS		B			C			D			D	

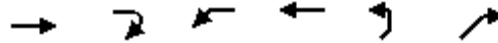
Intersection Summary

HCM 2000 Control Delay	18.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	23.4
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

## **B**      **2050 No-Build Intersection Capacity Analysis Worksheets**

Queues  
1: Canton Village Shopping Mall & Route 44

Build AM  
03/08/2024



Lane Group	EBT	EBR	WBL	WBT	NEL	NER	Ø3
Lane Configurations	↑↑		↙	↑↑	↙	↗	
Traffic Volume (vph)	1155	30	50	750	20	50	
Future Volume (vph)	1155	30	50	750	20	50	
Peak Hour Factor	0.93	0.93	0.97	0.97	0.79	0.79	
Heavy Vehicles (%)	3%	3%	6%	6%	6%	6%	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1274	0	52	773	25	63	
Turn Type	NA		D.P+P	NA	Prot	Prot	
Protected Phases	2		1	12	4	4	3
Permitted Phases			2				
Detector Phase	2		1	12	4	4	
Switch Phase							
Minimum Initial (s)	15.0		5.0		8.0	8.0	5.0
Minimum Split (s)	21.2		9.0		12.0	12.0	26.0
Total Split (s)	36.0		9.0		19.0	19.0	26.0
Total Split (%)	40.0%		10.0%		21.1%	21.1%	29%
Yellow Time (s)	4.4		3.0		3.0	3.0	4.0
All-Red Time (s)	1.8		1.0		1.0	1.0	0.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.2		4.0		4.0	4.0	
Lead/Lag	Lag		Lead		Lag	Lag	Lead
Lead-Lag Optimize?	Yes		Yes		Yes	Yes	Yes
Recall Mode	C-Max		None		None	None	None
v/c Ratio	0.55		0.14	0.27	0.16	0.31	
Control Delay	9.3		1.6	1.2	40.4	15.0	
Queue Delay	0.0		0.0	0.0	0.0	0.0	
Total Delay	9.3		1.6	1.2	40.4	15.0	
Queue Length 50th (ft)	183		2	26	13	0	
Queue Length 95th (ft)	267		m3	27	33	28	
Internal Link Dist (ft)	340			1313	474		
Turn Bay Length (ft)			160				
Base Capacity (vph)	2311		362	2823	301	322	
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	0.55		0.14	0.27	0.08	0.20	

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 76 (84%), Referenced to phase 2:EBWB, Start of Yellow  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 m Volume for 95th percentile queue is metered by upstream signal.

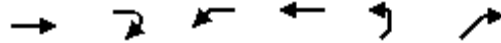
Splits and Phases: 1: Canton Village Shopping Mall & Route 44





HCM Signalized Intersection Capacity Analysis  
1: Canton Village Shopping Mall & Route 44

Build AM  
03/08/2024



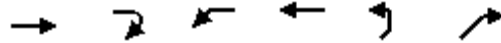
Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑↑		↵	↑↑	↵	↵
Traffic Volume (vph)	1155	30	50	750	20	50
Future Volume (vph)	1155	30	50	750	20	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	10	11	14	14
Grade (%)	0%			0%	1%	
Total Lost time (s)	6.2		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3375		1589	3292	1807	1617
Flt Permitted	1.00		0.18	1.00	0.95	1.00
Satd. Flow (perm)	3375		298	3292	1807	1617
Peak-hour factor, PHF	0.93	0.93	0.97	0.97	0.79	0.79
Adj. Flow (vph)	1242	32	52	773	25	63
RTOR Reduction (vph)	1	0	0	0	0	59
Lane Group Flow (vph)	1273	0	52	773	25	4
Heavy Vehicles (%)	3%	3%	6%	6%	6%	6%
Turn Type	NA		D.P+P	NA	Prot	Prot
Protected Phases	2		1	1 2	4	4
Permitted Phases			2			
Actuated Green, G (s)	60.9		69.4	73.4	6.4	6.4
Effective Green, g (s)	60.9		69.4	73.4	6.4	6.4
Actuated g/C Ratio	0.68		0.77	0.82	0.07	0.07
Clearance Time (s)	6.2		4.0		4.0	4.0
Vehicle Extension (s)	0.2		1.0		2.0	2.0
Lane Grp Cap (vph)	2283		351	2684	128	114
v/s Ratio Prot	c0.38		0.01	c0.23	c0.01	0.00
v/s Ratio Perm			0.10			
v/c Ratio	0.56		0.15	0.29	0.20	0.04
Uniform Delay, d1	7.6		3.2	2.0	39.4	38.9
Progression Factor	1.00		0.60	0.62	1.00	1.00
Incremental Delay, d2	1.0		0.1	0.0	0.3	0.1
Delay (s)	8.5		2.0	1.3	39.6	39.0
Level of Service	A		A	A	D	D
Approach Delay (s)	8.5			1.3	39.2	
Approach LOS	A			A	D	

Intersection Summary

HCM 2000 Control Delay	7.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Queues  
2: Dowd Ave & Route 44

Build AM  
03/08/2024



Lane Group	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑↑			↑↑		↑
Traffic Volume (vph)	1205	0	340	800	0	540
Future Volume (vph)	1205	0	340	800	0	540
Peak Hour Factor	0.91	0.91	0.93	0.93	0.82	0.82
Heavy Vehicles (%)	3%	3%	5%	5%	3%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1324	0	0	1226	0	659
Turn Type	NA		D.P+P	NA		Over
Protected Phases	2		4	2 4		4
Permitted Phases			2			
Detector Phase	2		4	2 4		4
Switch Phase						
Minimum Initial (s)	15.0		7.0			7.0
Minimum Split (s)	21.1		11.0			11.0
Total Split (s)	52.0		38.0			38.0
Total Split (%)	57.8%		42.2%			42.2%
Yellow Time (s)	4.4		3.0			3.0
All-Red Time (s)	1.7		1.0			1.0
Lost Time Adjust (s)	0.0					0.0
Total Lost Time (s)	6.1					4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max		None			None
v/c Ratio	0.77			0.60		1.11
Control Delay	13.5			2.6		98.2
Queue Delay	0.0			0.0		0.0
Total Delay	13.5			2.6		98.2
Queue Length 50th (ft)	303			1		~431
Queue Length 95th (ft)	395			1		#550
Internal Link Dist (ft)	1313			1683	869	
Turn Bay Length (ft)						
Base Capacity (vph)	1727			2038		596
Starvation Cap Reductn	0			0		0
Spillback Cap Reductn	0			0		0
Storage Cap Reductn	0			0		0
Reduced v/c Ratio	0.77			0.60		1.11

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 16 (18%), Referenced to phase 2:EBWB, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

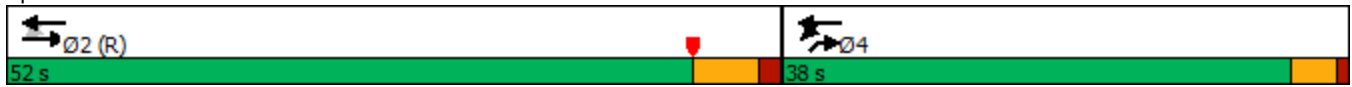
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

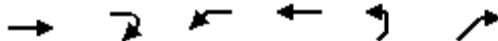
Splits and Phases: 2: Dowd Ave & Route 44



# HCM Signalized Intersection Capacity Analysis

## 2: Dowd Ave & Route 44

Build AM  
03/08/2024



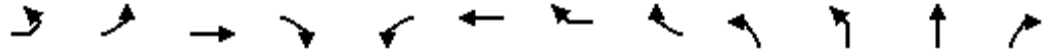
Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑↑			↑↑		↑
Traffic Volume (vph)	1205	0	340	800	0	540
Future Volume (vph)	1205	0	340	800	0	540
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	12	12
Grade (%)	0%			0%	2%	
Total Lost time (s)	6.1			6.1		4.0
Lane Util. Factor	0.95			0.95		1.00
Frt	1.00			1.00		0.86
Flt Protected	1.00			0.99		1.00
Satd. Flow (prot)	3388			3275		1580
Flt Permitted	1.00			0.52		1.00
Satd. Flow (perm)	3388			1720		1580
Peak-hour factor, PHF	0.91	0.91	0.93	0.93	0.82	0.82
Adj. Flow (vph)	1324	0	366	860	0	659
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1324	0	0	1226	0	659
Heavy Vehicles (%)	3%	3%	5%	5%	3%	3%
Turn Type	NA		D.P+P	NA		Over
Protected Phases	2		4	2 4		4
Permitted Phases			2			
Actuated Green, G (s)	45.9			79.9		34.0
Effective Green, g (s)	45.9			79.9		34.0
Actuated g/C Ratio	0.51			0.89		0.38
Clearance Time (s)	6.1					4.0
Vehicle Extension (s)	0.2					3.0
Lane Grp Cap (vph)	1727			2114		596
v/s Ratio Prot	c0.39			0.22		c0.42
v/s Ratio Perm				0.30		
v/c Ratio	0.77			0.58		1.11
Uniform Delay, d1	17.7			1.2		28.0
Progression Factor	0.59			1.00		1.00
Incremental Delay, d2	2.9			0.4		69.3
Delay (s)	13.3			1.6		97.3
Level of Service	B			A		F
Approach Delay (s)	13.3			1.6	97.3	
Approach LOS	B			A	F	

### Intersection Summary

HCM 2000 Control Delay	26.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.1
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Queues  
3: Lovely St/Lawton Rd & Route 44 & Tarilsend Dr

Build AM  
03/08/2024



Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations		↔	↕	↗	↖	↕		↗		↖	↕	↗
Traffic Volume (vph)	10	240	1375	120	120	750	10	35	150	0	110	190
Future Volume (vph)	10	240	1375	120	120	750	10	35	150	0	110	190
Peak Hour Factor	0.98	0.98	0.98	0.98	0.88	0.88	0.88	0.88	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	3%	3%	3%	3%	6%	6%	6%	6%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	255	1403	122	136	863	0	40	0	169	124	213
Turn Type	Prot	Prot	NA	Free	Prot	NA		Free	Split	Split	NA	pm+ov
Protected Phases	1	1	6		5	2			7	7	7	5
Permitted Phases				Free				Free				7
Detector Phase	1	1	6		5	2			7	7	7	5
Switch Phase												
Minimum Initial (s)	5.0	5.0	15.0		5.0	15.0			9.0	9.0	9.0	5.0
Minimum Split (s)	11.6	11.6	21.8		11.6	21.8			15.0	15.0	15.0	11.6
Total Split (s)	22.6	22.6	54.8		25.6	57.8			24.0	24.0	24.0	25.6
Total Split (%)	13.0%	13.0%	31.5%		14.7%	33.2%			13.8%	13.8%	13.8%	14.7%
Yellow Time (s)	3.0	3.0	4.5		3.0	4.5			4.0	4.0	4.0	3.0
All-Red Time (s)	3.6	3.6	2.3		3.6	2.3			2.0	2.0	2.0	3.6
Lost Time Adjust (s)		0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0
Total Lost Time (s)		6.6	6.8		6.6	6.8			6.0	6.0	6.0	6.6
Lead/Lag	Lead	Lead	Lag		Lead	Lag			Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes			Yes	Yes	Yes	Yes
Recall Mode	None	None	Min		None	Min			None	None	None	None
v/c Ratio		1.32	1.13	0.07	0.73	0.74		0.03		0.75	0.48	0.44
Control Delay		221.4	109.1	0.1	79.2	42.2		0.0		77.6	61.5	12.6
Queue Delay		0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Delay		221.4	109.1	0.1	79.2	42.2		0.0		77.6	61.5	12.6
Queue Length 50th (ft)		~293	~763	0	117	347		0		146	103	39
Queue Length 95th (ft)		#478	#924	0	186	412		0		#248	169	90
Internal Link Dist (ft)			1683			692						428
Turn Bay Length (ft)		380		220	340			450		145		50
Base Capacity (vph)		193	1241	1656	225	1249		1422		235	272	516
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		1.32	1.13	0.07	0.60	0.69		0.03		0.72	0.46	0.41

Intersection Summary

Cycle Length: 174.2

Actuated Cycle Length: 134.3

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

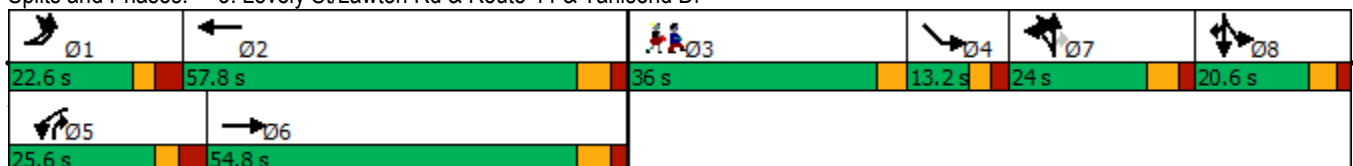
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: Lovely St/Lawton Rd & Route 44 & Tarilsend Dr



Queues  
3: Lovely St/Lawton Rd & Route 44 & Tarilsend Dr

Build AM  
03/08/2024

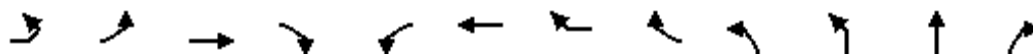


Lane Group	SBL	SBT	SBR	SBR2	SEL	SER	SER2	Ø3
Lane Configurations		↕	↗		↖			
Traffic Volume (vph)	70	85	220	10	10	10	20	
Future Volume (vph)	70	85	220	10	10	10	20	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.69	0.69	0.69	
Heavy Vehicles (%)	1%	1%	1%	1%	7%	7%	7%	
Shared Lane Traffic (%)								
Lane Group Flow (vph)	0	186	277	0	57	0	0	
Turn Type	Split	NA	Prot		Prot			
Protected Phases	8	8	8		4			3
Permitted Phases								
Detector Phase	8	8	8		4			
Switch Phase								
Minimum Initial (s)	9.0	9.0	9.0		6.0			1.0
Minimum Split (s)	14.6	14.6	14.6		11.2			36.0
Total Split (s)	20.6	20.6	20.6		13.2			36.0
Total Split (%)	11.8%	11.8%	11.8%		7.6%			21%
Yellow Time (s)	3.6	3.6	3.6		3.0			4.0
All-Red Time (s)	2.0	2.0	2.0		2.2			0.0
Lost Time Adjust (s)		0.0	0.0		0.0			
Total Lost Time (s)		5.6	5.6		5.2			
Lead/Lag	Lag	Lag	Lag		Lag			Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes			Yes
Recall Mode	None	None	None		None			None
v/c Ratio		0.98	0.95		0.66			
Control Delay		118.9	100.7		95.6			
Queue Delay		0.0	0.0		0.0			
Total Delay		118.9	100.7		95.6			
Queue Length 50th (ft)		167	140		50			
Queue Length 95th (ft)		#293	#216		76			
Internal Link Dist (ft)		713			445			
Turn Bay Length (ft)			330					
Base Capacity (vph)		190	292		90			
Starvation Cap Reductn		0	0		0			
Spillback Cap Reductn		0	0		0			
Storage Cap Reductn		0	0		0			
Reduced v/c Ratio		0.98	0.95		0.63			
Intersection Summary								

# HCM Signalized Intersection Capacity Analysis

## 3: Lovely St/Lawton Rd & Route 44 & Tarilsend Dr

Build AM  
03/08/2024



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations		↔	↕	↗	↖	↕		↗		↖	↕	↗
Traffic Volume (vph)	10	240	1375	120	120	750	10	35	150	0	110	190
Future Volume (vph)	10	240	1375	120	120	750	10	35	150	0	110	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	14	10	11	12	10	10	12	15	12
Grade (%)			2%			0%					2%	
Total Lost time (s)		6.6	6.8	4.0	6.6	6.8		4.0		6.0	6.0	6.6
Lane Util. Factor		1.00	0.95	1.00	1.00	0.95		1.00		1.00	1.00	1.00
Frt		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
Satd. Flow (prot)		1619	3470	1656	1589	3286		1422		1752	2029	1567
Flt Permitted		0.95	1.00	1.00	0.95	1.00		1.00		0.95	1.00	1.00
Satd. Flow (perm)		1619	3470	1656	1589	3286		1422		1752	2029	1567
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.88	0.88	0.88	0.88	0.89	0.89	0.89	0.89
Adj. Flow (vph)	10	245	1403	122	136	852	11	40	169	0	124	213
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	102
Lane Group Flow (vph)	0	255	1403	122	136	863	0	40	0	169	124	111
Heavy Vehicles (%)	3%	3%	3%	3%	6%	6%	6%	6%	2%	2%	2%	2%
Turn Type	Prot	Prot	NA	Free	Prot	NA		Free	Split	Split	NA	pm+ov
Protected Phases	1	1	6		5	2			7	7	7	5
Permitted Phases				Free				Free				7
Actuated Green, G (s)		16.0	48.1	134.3	15.9	48.0		134.3		17.3	17.3	33.2
Effective Green, g (s)		16.0	48.1	134.3	15.9	48.0		134.3		17.3	17.3	33.2
Actuated g/C Ratio		0.12	0.36	1.00	0.12	0.36		1.00		0.13	0.13	0.25
Clearance Time (s)		6.6	6.8		6.6	6.8				6.0	6.0	6.6
Vehicle Extension (s)		2.0	3.0		2.0	3.0				2.0	2.0	2.0
Lane Grp Cap (vph)		192	1242	1656	188	1174		1422		225	261	387
v/s Ratio Prot		c0.16	c0.40		0.09	0.26				c0.10	0.06	0.03
v/s Ratio Perm				c0.07				0.03				0.04
v/c Ratio		1.33	1.13	0.07	0.72	0.74		0.03		0.75	0.48	0.29
Uniform Delay, d1		59.2	43.1	0.0	57.1	37.6		0.0		56.4	54.3	41.0
Progression Factor		1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2		179.0	69.0	0.1	11.0	2.4		0.0		11.8	0.5	0.2
Delay (s)		238.1	112.1	0.1	68.1	40.0		0.0		68.2	54.8	41.1
Level of Service		F	F	A	E	D		A		E	D	D
Approach Delay (s)			122.5			42.2					53.5	
Approach LOS			F			D					D	

### Intersection Summary

HCM 2000 Control Delay	89.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	134.3	Sum of lost time (s)	34.2
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
 3: Lovely St/Lawton Rd & Route 44 & Tarilsend Dr

Build AM  
 03/08/2024



Movement	SBL	SBT	SBR	SBR2	SEL	SER	SER2
Lane Configurations		↕	↗		↘		
Traffic Volume (vph)	70	85	220	10	10	10	20
Future Volume (vph)	70	85	220	10	10	10	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	12	16	12
Grade (%)		8%			8%		
Total Lost time (s)		5.6	5.6		5.2		
Lane Util. Factor		1.00	0.88		1.00		
Frt		1.00	0.85		0.90		
Flt Protected		0.98	1.00		0.99		
Satd. Flow (prot)		1707	2612		1512		
Flt Permitted		0.98	1.00		0.99		
Satd. Flow (perm)		1707	2612		1512		
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.69	0.69	0.69
Adj. Flow (vph)	84	102	265	12	14	14	29
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	186	277	0	57	0	0
Heavy Vehicles (%)	1%	1%	1%	1%	7%	7%	7%
Turn Type	Split	NA	Prot		Prot		
Protected Phases	8	8	8		4		
Permitted Phases							
Actuated Green, G (s)		15.0	15.0		7.8		
Effective Green, g (s)		15.0	15.0		7.8		
Actuated g/C Ratio		0.11	0.11		0.06		
Clearance Time (s)		5.6	5.6		5.2		
Vehicle Extension (s)		2.0	2.0		2.0		
Lane Grp Cap (vph)		190	291		87		
v/s Ratio Prot		c0.11	0.11		c0.04		
v/s Ratio Perm							
v/c Ratio		0.98	0.95		0.66		
Uniform Delay, d1		59.5	59.3		61.9		
Progression Factor		1.00	1.00		1.00		
Incremental Delay, d2		58.3	39.5		12.7		
Delay (s)		117.8	98.7		74.6		
Level of Service		F	F		E		
Approach Delay (s)		106.4			74.6		
Approach LOS		F			E		
<b>Intersection Summary</b>							



Queues  
4: Route 44 & CVS Drive

Build AM  
03/08/2024

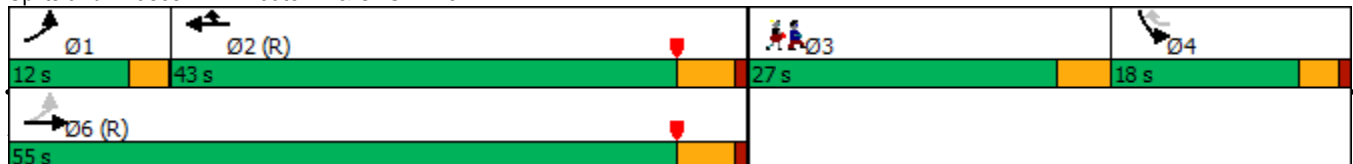


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	20	1625	905	35	20	10	
Future Volume (vph)	20	1625	905	35	20	10	
Peak Hour Factor	0.95	0.95	0.88	0.88	0.64	0.64	
Heavy Vehicles (%)	4%	4%	5%	5%	6%	6%	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	21	1711	1028	40	47	0	
Turn Type	pm+pt	NA	NA	custom	Prot		
Protected Phases	1	6	2	2	4		3
Permitted Phases	6			4			
Detector Phase	1	6	2	2	4		
Switch Phase							
Minimum Initial (s)	5.0	25.0	25.0	25.0	7.0		1.0
Minimum Split (s)	8.1	30.3	30.3	30.3	11.0		27.0
Total Split (s)	12.0	55.0	43.0	43.0	18.0		27.0
Total Split (%)	12.0%	55.0%	43.0%	43.0%	18.0%		27%
Yellow Time (s)	3.0	4.3	4.3	4.3	3.0		4.0
All-Red Time (s)	0.1	1.0	1.0	1.0	1.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	3.1	5.3	5.3	5.3	4.0		
Lead/Lag	Lead		Lag	Lag	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes		Yes
Recall Mode	None	C-Max	C-Max	C-Max	None		None
v/c Ratio	0.05	0.60	0.37	0.03	0.20		
Control Delay	4.8	7.8	10.2	2.9	34.2		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	4.8	7.8	10.2	2.9	34.2		
Queue Length 50th (ft)	1	131	114	0	9		
Queue Length 95th (ft)	15	#603	432	10	18		
Internal Link Dist (ft)		692	628		200		
Turn Bay Length (ft)	155			140			
Base Capacity (vph)	446	2855	2744	1243	456		
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	0.05	0.60	0.37	0.03	0.10		

Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 40 (40%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 4: Route 44 & CVS Drive



# HCM Signalized Intersection Capacity Analysis

## 4: Route 44 & CVS Drive

Build AM  
03/08/2024



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↙	↑↑	↑↑	↘	↙↘	
Traffic Volume (vph)	20	1625	905	35	20	10
Future Volume (vph)	20	1625	905	35	20	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	10	12	12
Grade (%)		6%	4%		2%	
Total Lost time (s)	3.1	5.3	5.3	5.3	4.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	
Frt	1.00	1.00	1.00	0.85	0.95	
Flt Protected	0.95	1.00	1.00	1.00	0.97	
Satd. Flow (prot)	1571	3367	3369	1407	3162	
Flt Permitted	0.24	1.00	1.00	1.00	0.97	
Satd. Flow (perm)	403	3367	3369	1407	3162	
Peak-hour factor, PHF	0.95	0.95	0.88	0.88	0.64	0.64
Adj. Flow (vph)	21	1711	1028	40	31	16
RTOR Reduction (vph)	0	0	0	8	15	0
Lane Group Flow (vph)	21	1711	1028	32	32	0
Heavy Vehicles (%)	4%	4%	5%	5%	6%	6%
Turn Type	pm+pt	NA	NA	custom	Prot	
Protected Phases	1	6	2	2	4	
Permitted Phases	6			4		
Actuated Green, G (s)	77.9	77.9	72.7	76.9	4.2	
Effective Green, g (s)	77.9	77.9	72.7	76.9	4.2	
Actuated g/C Ratio	0.78	0.78	0.73	0.77	0.04	
Clearance Time (s)	3.1	5.3	5.3	5.3	4.0	
Vehicle Extension (s)	1.5	0.2	0.2	0.2	2.0	
Lane Grp Cap (vph)	338	2622	2449	1081	132	
v/s Ratio Prot	0.00	c0.51	0.31	0.02	c0.01	
v/s Ratio Perm	0.05			0.00		
v/c Ratio	0.06	0.65	0.42	0.03	0.24	
Uniform Delay, d1	3.0	5.0	5.4	2.7	46.4	
Progression Factor	1.00	1.00	1.46	1.63	1.00	
Incremental Delay, d2	0.0	1.3	0.5	0.0	0.3	
Delay (s)	3.0	6.2	8.3	4.4	46.7	
Level of Service	A	A	A	A	D	
Approach Delay (s)		6.2	8.2		46.7	
Approach LOS		A	A		D	

Intersection Summary			
HCM 2000 Control Delay	7.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.4
Intersection Capacity Utilization	58.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Queues

Build AM

5: Shops at Farmington Valley/Private Driveway & Route 44

03/08/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1495	140	105	865	15	70	0	40	10	5	5
Future Volume (vph)	10	1495	140	105	865	15	70	0	40	10	5	5
Peak Hour Factor	0.97	0.97	0.97	0.87	0.87	0.87	0.64	0.64	0.64	0.63	0.63	0.63
Heavy Vehicles (%)	3%	3%	3%	6%	6%	6%	2%	2%	2%	0%	0%	0%
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	10	1541	144	121	1011	0	54	55	63	16	16	0
Turn Type	Prot	NA	Prot	Prot	NA		Split	NA	pt+ov	Split	NA	
Protected Phases	5	2	2	1	6		7	7	17	8	8	
Permitted Phases												
Detector Phase	5	2	2	1	6		7	7	17	8	8	
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0		5.0	5.0		7.0	7.0	
Minimum Split (s)	11.8	20.5	20.5	11.8	23.0		10.0	10.0		13.8	13.8	
Total Split (s)	13.0	53.0	53.0	13.0	53.0		20.0	20.0		14.0	14.0	
Total Split (%)	13.0%	53.0%	53.0%	13.0%	53.0%		20.0%	20.0%		14.0%	14.0%	
Yellow Time (s)	3.2	4.4	4.4	3.2	4.4		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.6	1.1	1.1	3.6	1.1		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)	6.8	5.5	5.5	6.8	5.5		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min	C-Min	None	Min		None	None		None	None	
v/c Ratio	0.11	0.74	0.15	0.49	0.41		0.42	0.42	0.21	0.13	0.12	
Control Delay	49.0	21.9	4.5	51.1	5.6		52.7	53.1	4.8	46.1	33.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	49.0	21.9	4.5	51.1	5.6		52.7	53.1	4.8	46.1	33.4	
Queue Length 50th (ft)	6	418	0	39	83		34	35	0	10	5	
Queue Length 95th (ft)	m10	#660	66	m62	m139		51	52	3	22	17	
Internal Link Dist (ft)		628			773			306			149	
Turn Bay Length (ft)	50		220	370								
Base Capacity (vph)	104	2088	991	253	2463		250	250	384	162	165	
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	0.10	0.74	0.15	0.48	0.41		0.22	0.22	0.16	0.10	0.10	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 85 (85%), Referenced to phase 2:EBT, Start of Yellow

Natural Cycle: 80

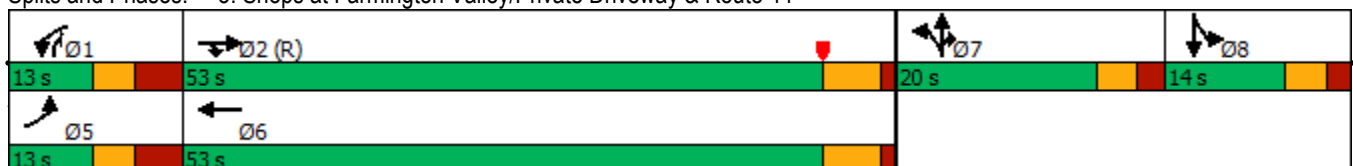
Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Shops at Farmington Valley/Private Driveway & Route 44



# HCM Signalized Intersection Capacity Analysis

## 5: Shops at Farmington Valley/Private Driveway & Route 44

Build AM  
03/08/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1495	140	105	865	15	70	0	40	10	5	5
Future Volume (vph)	10	1495	140	105	865	15	70	0	40	10	5	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	12	12	12	13	12	12	12
Grade (%)		1%			0%			1%			0%	
Total Lost time (s)	6.8	5.5	5.5	6.8	5.5		5.0	5.0	6.8	5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		0.95	0.95	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (prot)	1686	3371	1508	3193	3284		1673	1673	1628	1805	1758	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (perm)	1686	3371	1508	3193	3284		1673	1673	1628	1805	1758	
Peak-hour factor, PHF	0.97	0.97	0.97	0.87	0.87	0.87	0.64	0.64	0.64	0.63	0.63	0.63
Adj. Flow (vph)	10	1541	144	121	994	17	109	0	62	16	8	8
RTOR Reduction (vph)	0	0	59	0	1	0	0	0	54	0	8	0
Lane Group Flow (vph)	10	1541	85	121	1010	0	54	55	9	16	8	0
Heavy Vehicles (%)	3%	3%	3%	6%	6%	6%	2%	2%	2%	0%	0%	0%
Turn Type	Prot	NA	Prot	Prot	NA		Split	NA	pt+ov	Split	NA	
Protected Phases	5	2	2	1	6		7	7	17	8	8	
Permitted Phases												
Actuated Green, G (s)	1.2	59.0	59.0	7.7	65.5		6.8	6.8	14.5	4.2	4.2	
Effective Green, g (s)	1.2	59.0	59.0	7.7	65.5		6.8	6.8	14.5	4.2	4.2	
Actuated g/C Ratio	0.01	0.59	0.59	0.08	0.66		0.07	0.07	0.14	0.04	0.04	
Clearance Time (s)	6.8	5.5	5.5	6.8	5.5		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	1.5	2.0	2.0	1.5	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	20	1988	889	245	2151		113	113	236	75	73	
v/s Ratio Prot	0.01	c0.46	0.06	c0.04	c0.31		0.03	c0.03	0.01	c0.01	0.00	
v/s Ratio Perm												
v/c Ratio	0.50	0.78	0.10	0.49	0.47		0.48	0.49	0.04	0.21	0.11	
Uniform Delay, d1	49.1	15.5	8.9	44.3	8.6		44.9	44.9	36.8	46.3	46.1	
Progression Factor	1.03	1.18	2.02	1.03	0.68		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.7	2.5	0.2	0.5	0.1		1.2	1.2	0.0	0.5	0.3	
Delay (s)	56.4	20.7	18.2	46.1	5.9		46.1	46.1	36.8	46.8	46.4	
Level of Service	E	C	B	D	A		D	D	D	D	D	
Approach Delay (s)		20.7			10.2			42.7			46.6	
Approach LOS		C			B			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			18.3			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			22.3			
Intersection Capacity Utilization			65.7%			ICU Level of Service			C			
Analysis Period (min)			15									
c	Critical Lane Group											

Queues  
12: Secret Lake Road/Acura of Avon & Route 44

Build AM  
03/08/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1525	10	30	855	20	120	0	120	10	0	10
Future Volume (vph)	10	1525	10	30	855	20	120	0	120	10	0	10
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.63	0.63	0.63	0.75	0.75	0.75
Heavy Vehicles (%)	4%	4%	4%	5%	5%	5%	2%	2%	2%	11%	11%	11%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	1651	0	32	941	0	0	380	0	13	0	13
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		Prot		Prot
Protected Phases	1	6		5	2		7	7		8		8
Permitted Phases	6			2								
Detector Phase	1	6		5	2		7	7		8		8
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		9.0	9.0		7.0		7.0
Minimum Split (s)	9.0	25.0		9.5	25.0		15.2	15.2		13.2		13.2
Total Split (s)	10.0	58.0		10.0	58.0		17.0	17.0		15.0		15.0
Total Split (%)	10.0%	58.0%		10.0%	58.0%		17.0%	17.0%		15.0%		15.0%
Yellow Time (s)	3.0	4.4		3.0	4.4		3.0	3.0		3.0		3.0
All-Red Time (s)	1.0	2.6		1.0	2.6		3.2	3.2		3.2		3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0		0.0
Total Lost Time (s)	4.0	7.0		4.0	7.0			6.2		6.2		6.2
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead		Lag		Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes		Yes
Recall Mode	None	C-Min		None	C-Min		None	None		None		None
v/c Ratio	0.03	0.83		0.19	0.45			0.90		0.12		0.05
Control Delay	4.6	13.7		7.7	10.5			52.0		46.2		0.4
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0		0.0
Total Delay	4.6	13.7		7.7	10.5			52.0		46.2		0.4
Queue Length 50th (ft)	1	131		3	86			~181		8		0
Queue Length 95th (ft)	m2	#675		16	249			#154		23		0
Internal Link Dist (ft)		773			254			313				450
Turn Bay Length (ft)	50			105								
Base Capacity (vph)	384	1989		172	2114			423		141		268
Starvation Cap Reductn	0	0		0	0			0		0		0
Spillback Cap Reductn	0	0		0	0			0		0		0
Storage Cap Reductn	0	0		0	0			0		0		0
Reduced v/c Ratio	0.03	0.83		0.19	0.45			0.90		0.09		0.05

Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 89 (89%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Secret Lake Road/Acura of Avon & Route 44

 Ø1 10 s	 Ø2 (R) 58 s	 Ø7 17 s	 Ø8 15 s
 Ø5 10 s	 Ø6 (R) 58 s		

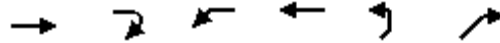
HCM Signalized Intersection Capacity Analysis  
 12: Secret Lake Road/Acura of Avon & Route 44

Build AM  
 03/08/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1525	10	30	855	20	120	0	120	10	0	10
Future Volume (vph)	10	1525	10	30	855	20	120	0	120	10	0	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	10	11	12	12	16	12	12	16	12
Grade (%)		2%			2%			0%			2%	
Total Lost time (s)	4.0	7.0		4.0	7.0			6.2		6.2		6.2
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00		1.00
Frt	1.00	1.00		1.00	1.00			0.93		1.00		0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98		0.95		1.00
Satd. Flow (prot)	1661	3319		1588	3279			1921		1610		1440
Flt Permitted	0.27	1.00		0.07	1.00			0.98		0.95		1.00
Satd. Flow (perm)	471	3319		116	3279			1921		1610		1440
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.63	0.63	0.63	0.75	0.75	0.75
Adj. Flow (vph)	11	1640	11	32	919	22	190	0	190	13	0	13
RTOR Reduction (vph)	0	0	0	0	1	0	0	131	0	0	0	13
Lane Group Flow (vph)	11	1651	0	32	940	0	0	249	0	13	0	0
Heavy Vehicles (%)	4%	4%	4%	5%	5%	5%	2%	2%	2%	11%	11%	11%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		Prot		Prot
Protected Phases	1	6		5	2		7	7		8		8
Permitted Phases	6			2								
Actuated Green, G (s)	55.7	54.7		61.5	57.6			15.2		2.8		2.8
Effective Green, g (s)	55.7	54.7		61.5	57.6			15.2		2.8		2.8
Actuated g/C Ratio	0.56	0.55		0.62	0.58			0.15		0.03		0.03
Clearance Time (s)	4.0	7.0		4.0	7.0			6.2		6.2		6.2
Vehicle Extension (s)	1.5	2.5		3.0	2.5			1.5		1.5		1.5
Lane Grp Cap (vph)	274	1815		128	1888			291		45		40
v/s Ratio Prot	0.00	c0.50		c0.01	0.29			c0.13		c0.01		0.00
v/s Ratio Perm	0.02			0.14								
v/c Ratio	0.04	0.91		0.25	0.50			0.85		0.29		0.01
Uniform Delay, d1	10.1	20.4		15.6	12.6			41.3		47.6		47.3
Progression Factor	0.81	0.53		1.00	1.00			1.00		1.00		1.00
Incremental Delay, d2	0.0	6.2		1.0	0.9			20.2		1.3		0.0
Delay (s)	8.1	17.0		16.6	13.5			61.5		48.9		47.3
Level of Service	A	B		B	B			E		D		D
Approach Delay (s)		16.9			13.6			61.5			48.1	
Approach LOS		B			B			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			21.7				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			23.4			
Intersection Capacity Utilization			74.1%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

Queues

1: Canton Village Shopping Mall & Route 44



Lane Group	EBT	EBR	WBL	WBT	NEL	NER	Ø3
Lane Configurations	↑↑		↙	↑↑	↙	↗	
Traffic Volume (vph)	905	60	155	1110	60	110	
Future Volume (vph)	905	60	155	1110	60	110	
Peak Hour Factor	0.89	0.89	0.90	0.90	0.86	0.86	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1084	0	172	1233	70	128	
Turn Type	NA		D.P+P	NA	Prot	Prot	
Protected Phases	2		1	12	4	4	3
Permitted Phases			2				
Detector Phase	2		1	12	4	4	
Switch Phase							
Minimum Initial (s)	15.0		5.0		8.0	8.0	1.0
Minimum Split (s)	21.2		9.0		12.0	12.0	26.0
Total Split (s)	26.0		9.0		19.0	19.0	26.0
Total Split (%)	32.5%		11.3%		23.8%	23.8%	33%
Yellow Time (s)	4.4		3.0		3.0	3.0	4.0
All-Red Time (s)	1.8		1.0		1.0	1.0	0.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.2		4.0		4.0	4.0	
Lead/Lag	Lag		Lead		Lag	Lag	Lead
Lead-Lag Optimize?	Yes		Yes		Yes	Yes	Yes
Recall Mode	C-Max		None		None	None	None
v/c Ratio	0.58		0.33	0.43	0.35	0.43	
Control Delay	15.4		4.3	4.3	37.9	11.5	
Queue Delay	0.0		0.0	0.0	0.0	0.0	
Total Delay	15.4		4.3	4.3	37.9	11.5	
Queue Length 50th (ft)	190		23	134	33	0	
Queue Length 95th (ft)	296		m28	m133	66	42	
Internal Link Dist (ft)	340			1313	474		
Turn Bay Length (ft)			160				
Base Capacity (vph)	1882		527	2878	355	422	
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	0.58		0.33	0.43	0.20	0.30	

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

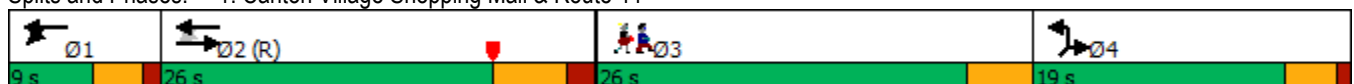
Offset: 74 (93%), Referenced to phase 2:EBWB, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

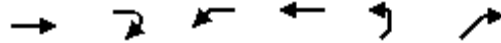
Splits and Phases: 1: Canton Village Shopping Mall & Route 44





HCM Signalized Intersection Capacity Analysis  
1: Canton Village Shopping Mall & Route 44

Build Midday  
03/08/2024



Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑↑		↵	↑↑	↵	↵
Traffic Volume (vph)	905	60	155	1110	60	110
Future Volume (vph)	905	60	155	1110	60	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	10	11	14	14
Grade (%)	0%			0%	1%	
Total Lost time (s)	6.2		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3423		1668	3455	1897	1697
Flt Permitted	1.00		0.20	1.00	0.95	1.00
Satd. Flow (perm)	3423		346	3455	1897	1697
Peak-hour factor, PHF	0.89	0.89	0.90	0.90	0.86	0.86
Adj. Flow (vph)	1017	67	172	1233	70	128
RTOR Reduction (vph)	4	0	0	0	0	117
Lane Group Flow (vph)	1080	0	172	1233	70	11
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	NA		D.P+P	NA	Prot	Prot
Protected Phases	2		1	1 2	4	4
Permitted Phases			2			
Actuated Green, G (s)	43.1		58.8	62.8	7.0	7.0
Effective Green, g (s)	43.1		58.8	62.8	7.0	7.0
Actuated g/C Ratio	0.54		0.73	0.78	0.09	0.09
Clearance Time (s)	6.2		4.0		4.0	4.0
Vehicle Extension (s)	0.2		1.0		2.0	2.0
Lane Grp Cap (vph)	1844		513	2712	165	148
v/s Ratio Prot	c0.32		0.07	c0.36	c0.04	0.01
v/s Ratio Perm			0.18			
v/c Ratio	0.59		0.34	0.45	0.42	0.08
Uniform Delay, d1	12.4		4.3	2.9	34.6	33.5
Progression Factor	1.00		1.81	1.74	1.00	1.00
Incremental Delay, d2	1.4		0.0	0.0	0.6	0.1
Delay (s)	13.8		7.8	5.0	35.2	33.6
Level of Service	B		A	A	D	C
Approach Delay (s)	13.8			5.3	34.2	
Approach LOS	B			A	C	

Intersection Summary

HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Queues  
2: Dowd Ave & Route 44

Build Midday  
03/08/2024



Lane Group	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑↑			↑↑		↑
Traffic Volume (vph)	1005	10	580	1265	0	530
Future Volume (vph)	1005	10	580	1265	0	530
Peak Hour Factor	0.90	0.90	0.87	0.87	0.81	0.81
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1128	0	0	2121	0	654
Turn Type	NA		D.P+P	NA		Over
Protected Phases	2		4	2 4		4
Permitted Phases			2			
Detector Phase	2		4	2 4		4
Switch Phase						
Minimum Initial (s)	15.0		7.0			7.0
Minimum Split (s)	21.1		11.0			11.0
Total Split (s)	45.0		35.0			35.0
Total Split (%)	56.3%		43.8%			43.8%
Yellow Time (s)	4.4		3.0			3.0
All-Red Time (s)	1.7		1.0			1.0
Lost Time Adjust (s)	0.0					0.0
Total Lost Time (s)	6.1					4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max		None			None
v/c Ratio	0.67			1.01		1.05
Control Delay	12.8			32.2		76.0
Queue Delay	0.0			0.0		0.0
Total Delay	12.8			32.2		76.0
Queue Length 50th (ft)	270			~262		~361
Queue Length 95th (ft)	124			#433		#471
Internal Link Dist (ft)	1313			1683	869	
Turn Bay Length (ft)						
Base Capacity (vph)	1679			2104		624
Starvation Cap Reductn	0			0		0
Spillback Cap Reductn	0			0		0
Storage Cap Reductn	0			0		0
Reduced v/c Ratio	0.67			1.01		1.05

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 36 (45%), Referenced to phase 2:EBWB, Start of Yellow

Natural Cycle: 140

Control Type: Actuated-Coordinated

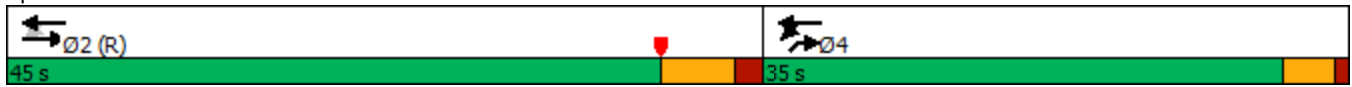
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

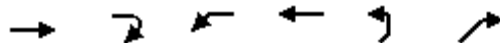
Splits and Phases: 2: Dowd Ave & Route 44



# HCM Signalized Intersection Capacity Analysis

## 2: Dowd Ave & Route 44

Build Midday  
03/08/2024



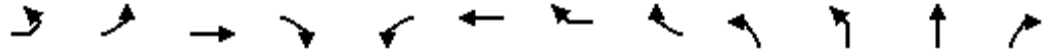
Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑↑			↑↑		↑
Traffic Volume (vph)	1005	10	580	1265	0	530
Future Volume (vph)	1005	10	580	1265	0	530
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	12	12
Grade (%)	0%			0%	2%	
Total Lost time (s)	6.1			6.1		4.0
Lane Util. Factor	0.95			0.95		1.00
Frt	1.00			1.00		0.86
Flt Protected	1.00			0.98		1.00
Satd. Flow (prot)	3450			3402		1611
Flt Permitted	1.00			0.52		1.00
Satd. Flow (perm)	3450			1800		1611
Peak-hour factor, PHF	0.90	0.90	0.87	0.87	0.81	0.81
Adj. Flow (vph)	1117	11	667	1454	0	654
RTOR Reduction (vph)	1	0	0	0	0	0
Lane Group Flow (vph)	1127	0	0	2121	0	654
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	NA		D.P+P	NA		Over
Protected Phases	2		4	2 4		4
Permitted Phases			2			
Actuated Green, G (s)	38.9			69.9		31.0
Effective Green, g (s)	38.9			69.9		31.0
Actuated g/C Ratio	0.49			0.87		0.39
Clearance Time (s)	6.1					4.0
Vehicle Extension (s)	0.2					3.0
Lane Grp Cap (vph)	1677			2193		624
v/s Ratio Prot	0.33			0.37		c0.41
v/s Ratio Perm				c0.47		
v/c Ratio	0.67			0.97		1.05
Uniform Delay, d1	15.7			4.1		24.5
Progression Factor	0.68			1.00		1.00
Incremental Delay, d2	1.8			12.3		49.3
Delay (s)	12.6			16.4		73.8
Level of Service	B			B		E
Approach Delay (s)	12.6			16.4	73.8	
Approach LOS	B			B	E	

### Intersection Summary

HCM 2000 Control Delay	24.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.1
Intersection Capacity Utilization	90.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Queues  
3: Lovely St/Lawton Rd & Route 44 & Tarilsend Dr

Build Midday  
03/08/2024



Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations		↔	↕	↗	↖	↕		↗		↖	↕	↗
Traffic Volume (vph)	10	170	1255	100	250	1400	10	160	160	0	90	220
Future Volume (vph)	10	170	1255	100	250	1400	10	160	160	0	90	220
Peak Hour Factor	0.94	0.94	0.94	0.94	0.96	0.96	0.96	0.96	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	192	1335	106	260	1468	0	167	0	170	96	234
Turn Type	Prot	Prot	NA	Free	Prot	NA		Free	Split	Split	NA	pm+ov
Protected Phases	1	1	6		5	2			7	7	7	5
Permitted Phases				Free				Free				7
Detector Phase	1	1	6		5	2			7	7	7	5
Switch Phase												
Minimum Initial (s)	5.0	5.0	15.0		5.0	15.0			9.0	9.0	9.0	5.0
Minimum Split (s)	11.6	11.6	21.8		11.6	21.8			15.0	15.0	15.0	11.6
Total Split (s)	22.6	22.6	54.8		25.6	57.8			24.0	24.0	24.0	25.6
Total Split (%)	13.0%	13.0%	31.5%		14.7%	33.2%			13.8%	13.8%	13.8%	14.7%
Yellow Time (s)	3.0	3.0	4.5		3.0	4.5			4.0	4.0	4.0	3.0
All-Red Time (s)	3.6	3.6	2.3		3.6	2.3			2.0	2.0	2.0	3.6
Lost Time Adjust (s)		0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0
Total Lost Time (s)		6.6	6.8		6.6	6.8			6.0	6.0	6.0	6.6
Lead/Lag	Lead	Lead	Lag		Lead	Lag			Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes			Yes	Yes	Yes	Yes
Recall Mode	None	None	Min		None	Min			None	None	None	None
v/c Ratio		1.09	1.17	0.06	1.21	1.23		0.11		0.83	0.40	0.44
Control Delay		153.7	132.0	0.1	184.7	154.0		0.1		96.7	71.4	11.1
Queue Delay		0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Delay		153.7	132.0	0.1	184.7	154.0		0.1		96.7	71.4	11.1
Queue Length 50th (ft)		~176	~706	0	~269	~809		0		149	80	21
Queue Length 95th (ft)		#450	#1194	0	#594	#1331		0		#352	171	100
Internal Link Dist (ft)			1683			692					428	
Turn Bay Length (ft)		380		220	340			450		145		50
Base Capacity (vph)		176	1137	1689	214	1190		1507		215	249	526
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		1.09	1.17	0.06	1.21	1.23		0.11		0.79	0.39	0.44

Intersection Summary

Cycle Length: 174.2

Actuated Cycle Length: 151.5

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

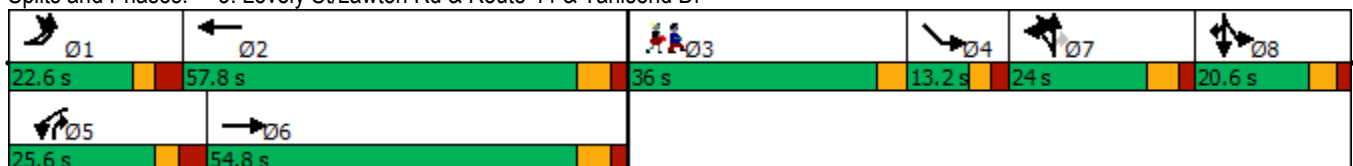
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: Lovely St/Lawton Rd & Route 44 & Tarilsend Dr



Queues  
3: Lovely St/Lawton Rd & Route 44 & Tarilsend Dr

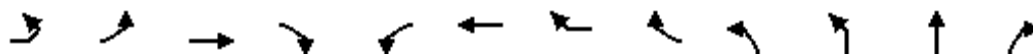
Build Middy  
03/08/2024



Lane Group	SBL	SBT	SBR	SBR2	SEL	SER	SER2	Ø3
Lane Configurations		↕	↗		↘			
Traffic Volume (vph)	145	110	275	10	10	10	10	
Future Volume (vph)	145	110	275	10	10	10	10	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.56	0.56	0.56	
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%	0%	
Shared Lane Traffic (%)								
Lane Group Flow (vph)	0	274	307	0	54	0	0	
Turn Type	Split	NA	Prot		Prot			
Protected Phases	8	8	8		4			3
Permitted Phases								
Detector Phase	8	8	8		4			
Switch Phase								
Minimum Initial (s)	9.0	9.0	9.0		6.0			1.0
Minimum Split (s)	14.6	14.6	14.6		11.2			36.0
Total Split (s)	20.6	20.6	20.6		13.2			36.0
Total Split (%)	11.8%	11.8%	11.8%		7.6%			21%
Yellow Time (s)	3.6	3.6	3.6		3.0			4.0
All-Red Time (s)	2.0	2.0	2.0		2.2			0.0
Lost Time Adjust (s)		0.0	0.0		0.0			
Total Lost Time (s)		5.6	5.6		5.2			
Lead/Lag	Lag	Lag	Lag		Lag			Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes			Yes
Recall Mode	None	None	None		None			None
v/c Ratio		1.61	1.17		0.66			
Control Delay		340.0	166.6		108.2			
Queue Delay		0.0	0.0		0.0			
Total Delay		340.0	166.6		108.2			
Queue Length 50th (ft)		~339	~175		48			
Queue Length 95th (ft)		#674	#378		71			
Internal Link Dist (ft)		713			445			
Turn Bay Length (ft)			330					
Base Capacity (vph)		170	262		87			
Starvation Cap Reductn		0	0		0			
Spillback Cap Reductn		0	0		0			
Storage Cap Reductn		0	0		0			
Reduced v/c Ratio		1.61	1.17		0.62			
Intersection Summary								

HCM Signalized Intersection Capacity Analysis  
 3: Lovely St/Lawton Rd & Route 44 & Tarilsend Dr

Build Midday  
 03/08/2024



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations		↔	↕	↗	↖	↕		↗		↖	↕	↗
Traffic Volume (vph)	10	170	1255	100	250	1400	10	160	160	0	90	220
Future Volume (vph)	10	170	1255	100	250	1400	10	160	160	0	90	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	14	10	11	12	10	10	12	15	12
Grade (%)			2%			0%					2%	
Total Lost time (s)		6.6	6.8	4.0	6.6	6.8		4.0		6.0	6.0	6.6
Lane Util. Factor		1.00	0.95	1.00	1.00	0.95		1.00		1.00	1.00	1.00
Frt		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
Satd. Flow (prot)		1651	3539	1689	1685	3486		1507		1787	2069	1599
Flt Permitted		0.95	1.00	1.00	0.95	1.00		1.00		0.95	1.00	1.00
Satd. Flow (perm)		1651	3539	1689	1685	3486		1507		1787	2069	1599
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.96	0.96	0.96	0.96	0.94	0.94	0.94	0.94
Adj. Flow (vph)	11	181	1335	106	260	1458	10	167	170	0	96	234
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	145
Lane Group Flow (vph)	0	192	1335	106	260	1468	0	167	0	170	96	89
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	Prot	NA	Free	Prot	NA		Free	Split	Split	NA	pm+ov
Protected Phases	1	1	6		5	2			7	7	7	5
Permitted Phases				Free				Free				7
Actuated Green, G (s)		16.2	48.7	153.7	19.3	51.8		153.7		17.5	17.5	36.8
Effective Green, g (s)		16.2	48.7	153.7	19.3	51.8		153.7		17.5	17.5	36.8
Actuated g/C Ratio		0.11	0.32	1.00	0.13	0.34		1.00		0.11	0.11	0.24
Clearance Time (s)		6.6	6.8		6.6	6.8				6.0	6.0	6.6
Vehicle Extension (s)		2.0	3.0		2.0	3.0				2.0	2.0	2.0
Lane Grp Cap (vph)		174	1121	1689	211	1174		1507		203	235	382
v/s Ratio Prot		0.12	0.38		c0.15	c0.42				c0.10	0.05	0.03
v/s Ratio Perm				0.06				c0.11				0.03
v/c Ratio		1.10	1.19	0.06	1.23	1.25		0.11		0.84	0.41	0.23
Uniform Delay, d1		68.8	52.5	0.0	67.2	50.9		0.0		66.7	63.3	47.1
Progression Factor		1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2		98.6	95.0	0.1	138.6	119.9		0.1		23.9	0.4	0.1
Delay (s)		167.4	147.5	0.1	205.8	170.8		0.1		90.6	63.7	47.2
Level of Service		F	F	A	F	F		A		F	E	D
Approach Delay (s)			140.2			160.6					65.1	
Approach LOS			F			F					E	

Intersection Summary

HCM 2000 Control Delay	157.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	153.7	Sum of lost time (s)	34.2
Intersection Capacity Utilization	94.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
 3: Lovely St/Lawton Rd & Route 44 & Tarilsend Dr

Build MIDDAY  
 03/08/2024



Movement	SBL	SBT	SBR	SBR2	SEL	SER	SER2
Lane Configurations		↕	↗		↘		
Traffic Volume (vph)	145	110	275	10	10	10	10
Future Volume (vph)	145	110	275	10	10	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	12	16	12
Grade (%)		8%			8%		
Total Lost time (s)		5.6	5.6		5.2		
Lane Util. Factor		1.00	0.88		1.00		
Frt		1.00	0.85		0.91		
Flt Protected		0.97	1.00		0.98		
Satd. Flow (prot)		1697	2612		1633		
Flt Permitted		0.97	1.00		0.98		
Satd. Flow (perm)		1697	2612		1633		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.56	0.56	0.56
Adj. Flow (vph)	156	118	296	11	18	18	18
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	274	307	0	54	0	0
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%	0%
Turn Type	Split	NA	Prot		Prot		
Protected Phases	8	8	8		4		
Permitted Phases							
Actuated Green, G (s)		15.2	15.2		7.7		
Effective Green, g (s)		15.2	15.2		7.7		
Actuated g/C Ratio		0.10	0.10		0.05		
Clearance Time (s)		5.6	5.6		5.2		
Vehicle Extension (s)		2.0	2.0		2.0		
Lane Grp Cap (vph)		167	258		81		
v/s Ratio Prot		c0.16	0.12		c0.03		
v/s Ratio Perm							
v/c Ratio		1.64	1.19		0.67		
Uniform Delay, d1		69.2	69.2		71.7		
Progression Factor		1.00	1.00		1.00		
Incremental Delay, d2		313.7	117.3		14.9		
Delay (s)		382.9	186.6		86.6		
Level of Service		F	F		F		
Approach Delay (s)		279.2			86.6		
Approach LOS		F			F		
<b>Intersection Summary</b>							



Queues  
4: Route 44 & CVS Drive

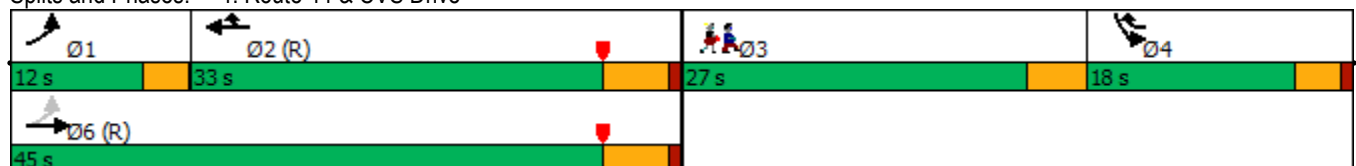


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	55	1575	1770	115	50	50	
Future Volume (vph)	55	1575	1770	115	50	50	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.75	0.75	
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	58	1658	1863	121	134	0	
Turn Type	pm+pt	NA	NA	pt+ov	Prot		
Protected Phases	1	6	2	2 4	4		3
Permitted Phases	6						
Detector Phase	1	6	2	2 4	4		
Switch Phase							
Minimum Initial (s)	5.0	25.0	25.0		7.0		1.0
Minimum Split (s)	8.1	30.3	30.3		11.0		27.0
Total Split (s)	12.0	45.0	33.0		18.0		27.0
Total Split (%)	13.3%	50.0%	36.7%		20.0%		30%
Yellow Time (s)	3.0	4.3	4.3		3.0		4.0
All-Red Time (s)	0.1	1.0	1.0		1.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		
Total Lost Time (s)	3.1	5.3	5.3		4.0		
Lead/Lag	Lead		Lag		Lag		Lead
Lead-Lag Optimize?	Yes		Yes		Yes		Yes
Recall Mode	None	C-Max	C-Max		None		None
v/c Ratio	0.32	0.63	0.79	0.10	0.40		
Control Delay	10.8	9.9	12.6	1.5	24.6		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	10.8	9.9	12.6	1.5	24.6		
Queue Length 50th (ft)	3	120	123	0	19		
Queue Length 95th (ft)	38	#635	#876	m9	34		
Internal Link Dist (ft)		692	628		200		
Turn Bay Length (ft)	155			140			
Base Capacity (vph)	236	2614	2370	1268	568		
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	0.25	0.63	0.79	0.10	0.24		

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 10 (11%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow  
 Natural Cycle: 110  
 Control Type: Actuated-Coordinated  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Route 44 & CVS Drive



# HCM Signalized Intersection Capacity Analysis

## 4: Route 44 & CVS Drive

Build Midday  
03/08/2024



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↙	↑↑	↑↑	↘	↙↘	
Traffic Volume (vph)	55	1575	1770	115	50	50
Future Volume (vph)	55	1575	1770	115	50	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	10	12	12
Grade (%)		6%	4%		2%	
Total Lost time (s)	3.1	5.3	5.3	5.3	4.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	
Frt	1.00	1.00	1.00	0.85	0.93	
Flt Protected	0.95	1.00	1.00	1.00	0.98	
Satd. Flow (prot)	1618	3467	3503	1463	3293	
Flt Permitted	0.07	1.00	1.00	1.00	0.98	
Satd. Flow (perm)	113	3467	3503	1463	3293	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.75	0.75
Adj. Flow (vph)	58	1658	1863	121	67	67
RTOR Reduction (vph)	0	0	0	17	61	0
Lane Group Flow (vph)	58	1658	1863	104	73	0
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%
Turn Type	pm+pt	NA	NA	pt+ov	Prot	
Protected Phases	1	6	2	2 4	4	
Permitted Phases	6					
Actuated Green, G (s)	64.7	64.7	57.1	64.5	7.4	
Effective Green, g (s)	64.7	64.7	57.1	64.5	7.4	
Actuated g/C Ratio	0.72	0.72	0.63	0.72	0.08	
Clearance Time (s)	3.1	5.3	5.3		4.0	
Vehicle Extension (s)	1.5	0.2	0.2		2.0	
Lane Grp Cap (vph)	156	2492	2222	1048	270	
v/s Ratio Prot	0.02	c0.48	c0.53	0.07	c0.02	
v/s Ratio Perm	0.25					
v/c Ratio	0.37	0.67	0.84	0.10	0.27	
Uniform Delay, d1	13.2	6.8	12.8	3.9	38.8	
Progression Factor	1.00	1.00	0.60	0.61	1.00	
Incremental Delay, d2	0.5	1.4	2.5	0.0	0.2	
Delay (s)	13.8	8.2	10.2	2.4	39.0	
Level of Service	B	A	B	A	D	
Approach Delay (s)		8.4	9.8		39.0	
Approach LOS		A	A		D	

Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.4
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Queues

Build Midday

5: Shops at Farmington Valley/Private Driveway & Route 44

03/08/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1195	425	390	1515	10	360	0	360	5	5	10
Future Volume (vph)	5	1195	425	390	1515	10	360	0	360	5	5	10
Peak Hour Factor	0.89	0.89	0.89	0.91	0.91	0.91	0.87	0.87	0.87	0.50	0.50	0.50
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	6	1343	478	429	1676	0	207	207	414	10	30	0
Turn Type	Prot	NA	Prot	Prot	NA		Split	NA	pt+ov	Split	NA	
Protected Phases	5	2	2	1	6		7	7	17	8	8	
Permitted Phases												
Detector Phase	5	2	2	1	6		7	7	17	8	8	
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0		5.0	5.0		7.0	7.0	
Minimum Split (s)	11.8	20.5	20.5	11.8	20.5		10.0	10.0		12.0	12.0	
Total Split (s)	20.0	36.0	36.0	20.0	36.0		20.0	20.0		14.0	14.0	
Total Split (%)	22.2%	40.0%	40.0%	22.2%	40.0%		22.2%	22.2%		15.6%	15.6%	
Yellow Time (s)	3.2	4.4	4.4	3.2	4.4		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.6	1.1	1.1	3.6	1.1		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)	6.8	5.5	5.5	6.8	5.5		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min	C-Min	None	Min		None	None		None	None	
v/c Ratio	0.06	0.94	0.55	0.80	0.78		0.80	0.80	0.60	0.07	0.20	
Control Delay	38.8	40.5	8.6	41.6	15.7		59.3	59.3	11.5	39.6	24.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	38.8	40.5	8.6	41.6	15.7		59.3	59.3	11.5	39.6	24.8	
Queue Length 50th (ft)	3	~481	30	135	255		118	118	56	5	5	
Queue Length 95th (ft)	m8	#585	178	m156	m#530		#212	#212	109	12	13	
Internal Link Dist (ft)		628			773			306			149	
Turn Bay Length (ft)	50		220	370								
Base Capacity (vph)	252	1427	873	543	2151		284	284	665	180	189	
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	0.02	0.94	0.55	0.79	0.78		0.73	0.73	0.62	0.06	0.16	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 84 (93%), Referenced to phase 2:EBT, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.







Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Shops at Farmington Valley/Private Driveway & Route 44

 Ø1	 Ø2 (R)	 Ø7	 Ø8
20 s	36 s	20 s	14 s
 Ø5	 Ø6		
20 s	36 s		

HCM Signalized Intersection Capacity Analysis  
 5: Shops at Farmington Valley/Private Driveway & Route 44

Build Midday  
 03/08/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (vph)	5	1195	425	390	1515	10	360	0	360	5	5	10
Future Volume (vph)	5	1195	425	390	1515	10	360	0	360	5	5	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	12	12	12	13	12	12	12
Grade (%)		1%			0%			1%			0%	
Total Lost time (s)	6.8	5.5	5.5	6.8	5.5		5.0	5.0	6.8	5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		0.95	0.95	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (prot)	1719	3438	1538	3351	3452		1706	1706	1660	1805	1710	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (perm)	1719	3438	1538	3351	3452		1706	1706	1660	1805	1710	
Peak-hour factor, PHF	0.89	0.89	0.89	0.91	0.91	0.91	0.87	0.87	0.87	0.50	0.50	0.50
Adj. Flow (vph)	6	1343	478	429	1665	11	414	0	414	10	10	20
RTOR Reduction (vph)	0	0	243	0	0	0	0	0	153	0	19	0
Lane Group Flow (vph)	6	1343	235	429	1676	0	207	207	261	10	11	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Prot	Prot	NA		Split	NA	pt+ov	Split	NA	
Protected Phases	5	2	2	1	6		7	7	17	8	8	
Permitted Phases												
Actuated Green, G (s)	1.1	35.4	35.4	14.3	48.6		13.7	13.7	28.0	4.3	4.3	
Effective Green, g (s)	1.1	35.4	35.4	14.3	48.6		13.7	13.7	28.0	4.3	4.3	
Actuated g/C Ratio	0.01	0.39	0.39	0.16	0.54		0.15	0.15	0.31	0.05	0.05	
Clearance Time (s)	6.8	5.5	5.5	6.8	5.5		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	1.5	2.0	2.0	1.5	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	21	1352	604	532	1864		259	259	516	86	81	
v/s Ratio Prot	0.00	c0.39	0.15	c0.13	c0.49		c0.12	0.12	0.16	0.01	c0.01	
v/s Ratio Perm												
v/c Ratio	0.29	0.99	0.39	0.81	0.90		0.80	0.80	0.51	0.12	0.14	
Uniform Delay, d1	44.1	27.2	19.6	36.5	18.5		36.8	36.8	25.3	41.0	41.1	
Progression Factor	0.93	0.99	1.37	1.10	0.94		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.2	20.6	1.5	0.8	0.6		14.7	14.7	0.3	0.2	0.3	
Delay (s)	43.4	47.6	28.4	40.9	18.0		51.6	51.6	25.6	41.3	41.3	
Level of Service	D	D	C	D	B		D	D	C	D	D	
Approach Delay (s)		42.5			22.6			38.6			41.3	
Approach LOS		D			C			D			D	

Intersection Summary		
HCM 2000 Control Delay	33.1	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.90	
Actuated Cycle Length (s)	90.0	Sum of lost time (s) 22.3
Intersection Capacity Utilization	77.4%	ICU Level of Service D
Analysis Period (min)	15	
c Critical Lane Group		

Queues  
12: Secret Lake Road/Acura of Avon & Route 44

Build Middy  
03/08/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1505	45	30	1525	10	370	0	154	10	0	20
Future Volume (vph)	10	1505	45	30	1525	10	370	0	154	10	0	20
Peak Hour Factor	0.95	0.95	0.95	0.97	0.97	0.97	0.69	0.69	0.69	0.70	0.70	0.70
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	1631	0	31	1582	0	0	759	0	14	0	29
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		Prot		Prot
Protected Phases	1	6		5	2		7	7		8		8
Permitted Phases	6			2								
Detector Phase	1	6		5	2		7	7		8		8
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		9.0	9.0		7.0		7.0
Minimum Split (s)	9.5	25.0		9.5	25.0		15.2	15.2		13.2		13.2
Total Split (s)	10.0	48.0		10.0	48.0		17.0	17.0		15.0		15.0
Total Split (%)	11.1%	53.3%		11.1%	53.3%		18.9%	18.9%		16.7%		16.7%
Yellow Time (s)	3.0	4.4		3.0	4.4		3.0	3.0		3.0		3.0
All-Red Time (s)	1.0	2.6		1.0	2.6		3.2	3.2		3.2		3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0		0.0
Total Lost Time (s)	4.0	7.0		4.0	7.0			6.2		6.2		6.2
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead		Lag		Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes		Yes
Recall Mode	None	C-Min		None	C-Min		None	None		None		None
v/c Ratio	0.06	0.82		0.17	0.74			1.94		0.10		0.10
Control Delay	6.9	18.8		8.6	17.0			453.7		40.4		0.8
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0		0.0
Total Delay	6.9	18.8		8.6	17.0			453.7		40.4		0.8
Queue Length 50th (ft)	2	255		6	336			~589		8		0
Queue Length 95th (ft)	m2	m#560		16	#608			#544		20		0
Internal Link Dist (ft)		773			254			313				450
Turn Bay Length (ft)	50			105								
Base Capacity (vph)	201	1991		192	2137			391		174		311
Starvation Cap Reductn	0	0		0	0			0		0		0
Spillback Cap Reductn	0	0		0	0			0		0		0
Storage Cap Reductn	0	0		0	0			0		0		0
Reduced v/c Ratio	0.05	0.82		0.16	0.74			1.94		0.08		0.09

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 150

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Secret Lake Road/Acura of Avon & Route 44

 Ø1 10 s	 Ø2 (R) 48 s	 Ø7 17 s	 Ø8 15 s
 Ø5 10 s	 Ø6 (R) 48 s		

HCM Signalized Intersection Capacity Analysis  
 12: Secret Lake Road/Acura of Avon & Route 44

Build Midday  
 03/08/2024



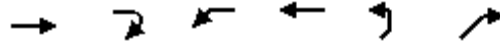
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗			↕		↖		↖
Traffic Volume (vph)	10	1505	45	30	1525	10	370	0	154	10	0	20
Future Volume (vph)	10	1505	45	30	1525	10	370	0	154	10	0	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	10	11	12	12	16	12	12	16	12
Grade (%)		2%			2%			0%			2%	
Total Lost time (s)	4.0	7.0		4.0	7.0			6.2		6.2		6.2
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00		1.00
Frt	1.00	1.00		1.00	1.00			0.96		1.00		0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97		0.95		1.00
Satd. Flow (prot)	1710	3406		1651	3417			1997		1787		1599
Flt Permitted	0.08	1.00		0.08	1.00			0.97		0.95		1.00
Satd. Flow (perm)	148	3406		137	3417			1997		1787		1599
Peak-hour factor, PHF	0.95	0.95	0.95	0.97	0.97	0.97	0.69	0.69	0.69	0.70	0.70	0.70
Adj. Flow (vph)	11	1584	47	31	1572	10	536	0	223	14	0	29
RTOR Reduction (vph)	0	2	0	0	0	0	0	151	0	0	0	28
Lane Group Flow (vph)	11	1629	0	31	1582	0	0	608	0	14	0	1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		Prot		Prot
Protected Phases	1	6		5	2		7	7		8		8
Permitted Phases	6			2								
Actuated Green, G (s)	49.5	48.5		53.7	50.6			10.8		4.2		4.2
Effective Green, g (s)	49.5	48.5		53.7	50.6			10.8		4.2		4.2
Actuated g/C Ratio	0.55	0.54		0.60	0.56			0.12		0.05		0.05
Clearance Time (s)	4.0	7.0		4.0	7.0			6.2		6.2		6.2
Vehicle Extension (s)	1.5	2.5		1.5	2.5			1.5		1.5		1.5
Lane Grp Cap (vph)	98	1835		133	1921			239		83		74
v/s Ratio Prot	0.00	c0.48		c0.01	0.46			c0.30		c0.01		0.00
v/s Ratio Perm	0.06			0.13								
v/c Ratio	0.11	0.89		0.23	0.82			2.54		0.17		0.02
Uniform Delay, d1	12.7	18.3		14.0	16.1			39.6		41.2		40.9
Progression Factor	0.98	0.87		1.00	1.00			1.00		1.00		1.00
Incremental Delay, d2	0.1	3.5		0.3	4.1			706.3		0.4		0.0
Delay (s)	12.6	19.5		14.3	20.2			745.9		41.6		41.0
Level of Service	B	B		B	C			F		D		D
Approach Delay (s)		19.4			20.1			745.9			41.2	
Approach LOS		B			C			F			D	

Intersection Summary			
HCM 2000 Control Delay	155.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	23.4
Intersection Capacity Utilization	94.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Queues  
1: Canton Village Shopping Mall & Route 44

Build PM  
03/08/2024



Lane Group	EBT	EBR	WBL	WBT	NEL	NER	Ø3
Lane Configurations	↑↑		↘	↑↑	↘	↗	
Traffic Volume (vph)	825	60	130	1295	70	80	
Future Volume (vph)	825	60	130	1295	70	80	
Peak Hour Factor	0.91	0.91	0.94	0.94	0.80	0.80	
Heavy Vehicles (%)	2%	2%	1%	1%	1%	1%	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	973	0	138	1378	88	100	
Turn Type	NA		D.P+P	NA	Prot	Prot	
Protected Phases	2		1	12	4	4	3
Permitted Phases			2				
Detector Phase	2		1	12	4	4	
Switch Phase							
Minimum Initial (s)	15.0		5.0		8.0	8.0	1.0
Minimum Split (s)	21.2		9.0		12.0	12.0	26.0
Total Split (s)	27.0		13.0		24.0	24.0	26.0
Total Split (%)	30.0%		14.4%		26.7%	26.7%	29%
Yellow Time (s)	4.4		3.0		3.0	3.0	4.0
All-Red Time (s)	1.8		1.0		1.0	1.0	0.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.2		4.0		4.0	4.0	
Lead/Lag	Lag		Lead		Lag	Lag	Lead
Lead-Lag Optimize?	Yes		Yes		Yes	Yes	Yes
Recall Mode	C-Max		None		None	None	None
v/c Ratio	0.49		0.33	0.53	0.45	0.38	
Control Delay	15.2		6.6	7.5	45.0	12.2	
Queue Delay	0.0		0.0	0.0	0.0	0.0	
Total Delay	15.2		6.6	7.5	45.0	12.2	
Queue Length 50th (ft)	127		17	114	48	0	
Queue Length 95th (ft)	#392		m36	m243	81	33	
Internal Link Dist (ft)	340			1313	474		
Turn Bay Length (ft)			160				
Base Capacity (vph)	1970		415	2589	421	454	
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	0.49		0.33	0.53	0.21	0.22	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 75 (83%), Referenced to phase 2:EBWB, Start of Yellow

Natural Cycle: 90

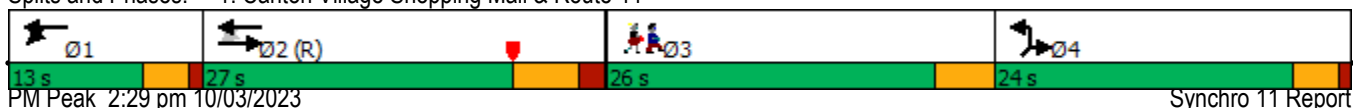
Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Canton Village Shopping Mall & Route 44

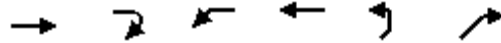


PM Peak 2:29 pm 10/03/2023

Synchro 11 Report

HCM Signalized Intersection Capacity Analysis  
1: Canton Village Shopping Mall & Route 44

Build PM  
03/08/2024



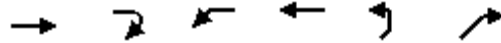
Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑↑		↵	↑↑	↵	↵
Traffic Volume (vph)	825	60	130	1295	70	80
Future Volume (vph)	825	60	130	1295	70	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	10	11	14	14
Grade (%)	0%			0%	1%	
Total Lost time (s)	6.2		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3386		1668	3455	1897	1697
Flt Permitted	1.00		0.23	1.00	0.95	1.00
Satd. Flow (perm)	3386		411	3455	1897	1697
Peak-hour factor, PHF	0.91	0.91	0.94	0.94	0.80	0.80
Adj. Flow (vph)	907	66	138	1378	88	100
RTOR Reduction (vph)	4	0	0	0	0	90
Lane Group Flow (vph)	969	0	138	1378	88	10
Heavy Vehicles (%)	2%	2%	1%	1%	1%	1%
Turn Type	NA		D.P+P	NA	Prot	Prot
Protected Phases	2		1	1 2	4	4
Permitted Phases			2			
Actuated Green, G (s)	49.1		58.1	62.1	9.3	9.3
Effective Green, g (s)	49.1		58.1	62.1	9.3	9.3
Actuated g/C Ratio	0.55		0.65	0.69	0.10	0.10
Clearance Time (s)	6.2		4.0		4.0	4.0
Vehicle Extension (s)	0.2		1.0		2.0	2.0
Lane Grp Cap (vph)	1847		391	2383	196	175
v/s Ratio Prot	0.29		0.04	c0.40	c0.05	0.01
v/s Ratio Perm			0.19			
v/c Ratio	0.52		0.35	0.58	0.45	0.06
Uniform Delay, d1	13.0		6.9	7.2	37.9	36.4
Progression Factor	1.00		1.08	0.99	1.00	1.00
Incremental Delay, d2	1.1		0.0	0.0	0.6	0.1
Delay (s)	14.1		7.5	7.1	38.5	36.5
Level of Service	B		A	A	D	D
Approach Delay (s)	14.1			7.2	37.4	
Approach LOS	B			A	D	

Intersection Summary

HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Queues  
2: Dowd Ave & Route 44

Build PM  
03/08/2024



Lane Group	EBT	EBR	WBL	WBT	NEL	NER	Ø5
Lane Configurations	↑↑			↑↑		↑	
Traffic Volume (vph)	895	10	805	1425	0	525	
Future Volume (vph)	895	10	805	1425	0	525	
Peak Hour Factor	0.90	0.90	0.91	0.91	0.95	0.95	
Heavy Vehicles (%)	1%	1%	1%	1%	2%	2%	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1005	0	0	2451	0	553	
Turn Type	NA		D.P+P	NA		Over	
Protected Phases	2		4 5	2 4 5		4	5
Permitted Phases			2				
Detector Phase	2		4 5	2 4 5		4	
Switch Phase							
Minimum Initial (s)	15.0					7.0	6.0
Minimum Split (s)	21.1					11.0	10.0
Total Split (s)	42.0					38.0	10.0
Total Split (%)	46.7%					42.2%	11%
Yellow Time (s)	4.4					3.0	3.0
All-Red Time (s)	1.7					1.0	1.0
Lost Time Adjust (s)	0.0					0.0	
Total Lost Time (s)	6.1					4.0	
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	C-Max					None	None
v/c Ratio	0.73			1.06		0.92	
Control Delay	18.2			49.5		49.8	
Queue Delay	0.0			0.0		0.0	
Total Delay	18.2			49.5		49.8	
Queue Length 50th (ft)	269			~575		294	
Queue Length 95th (ft)	31			#692		#498	
Internal Link Dist (ft)	1313			1683	869		
Turn Bay Length (ft)							
Base Capacity (vph)	1375			2312		602	
Starvation Cap Reductn	0			0		0	
Spillback Cap Reductn	0			0		0	
Storage Cap Reductn	0			0		0	
Reduced v/c Ratio	0.73			1.06		0.92	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 21 (23%), Referenced to phase 2:EBWB, Start of Yellow

Natural Cycle: 140

Control Type: Actuated-Coordinated

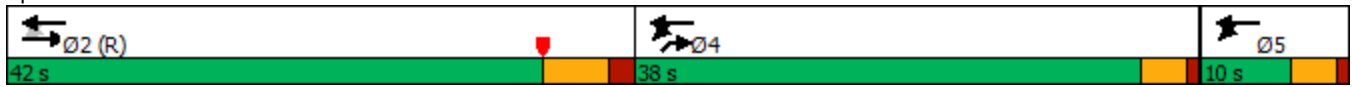
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

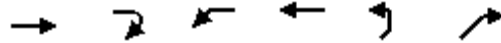
Splits and Phases: 2: Dowd Ave & Route 44



# HCM Signalized Intersection Capacity Analysis

## 2: Dowd Ave & Route 44

Build PM  
03/08/2024



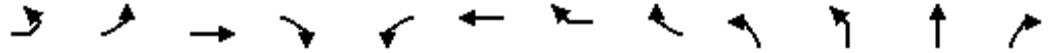
Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑↑			↑↑		↑
Traffic Volume (vph)	895	10	805	1425	0	525
Future Volume (vph)	895	10	805	1425	0	525
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	12	12
Grade (%)	0%			0%	2%	
Total Lost time (s)	6.1			6.1		4.0
Lane Util. Factor	0.95			0.95		1.00
Frt	1.00			1.00		0.86
Flt Protected	1.00			0.98		1.00
Satd. Flow (prot)	3449			3394		1595
Flt Permitted	1.00			0.53		1.00
Satd. Flow (perm)	3449			1839		1595
Peak-hour factor, PHF	0.90	0.90	0.91	0.91	0.95	0.95
Adj. Flow (vph)	994	11	885	1566	0	553
RTOR Reduction (vph)	1	0	0	0	0	0
Lane Group Flow (vph)	1004	0	0	2451	0	553
Heavy Vehicles (%)	1%	1%	1%	1%	2%	2%
Turn Type	NA		D.P+P	NA		Over
Protected Phases	2		4 5	2 4 5		4
Permitted Phases			2			
Actuated Green, G (s)	35.9			79.9		34.0
Effective Green, g (s)	35.9			75.9		34.0
Actuated g/C Ratio	0.40			0.84		0.38
Clearance Time (s)	6.1					4.0
Vehicle Extension (s)	0.2					3.0
Lane Grp Cap (vph)	1375			2242		602
v/s Ratio Prot	0.29			c0.49		0.35
v/s Ratio Perm				c0.44		
v/c Ratio	0.73			1.09		0.92
Uniform Delay, d1	22.9			7.0		26.7
Progression Factor	0.65			1.00		1.00
Incremental Delay, d2	3.1			49.9		19.0
Delay (s)	17.9			56.9		45.7
Level of Service	B			E		D
Approach Delay (s)	17.9			56.9	45.7	
Approach LOS	B			E	D	

### Intersection Summary

HCM 2000 Control Delay	45.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	14.1
Intersection Capacity Utilization	98.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Queues  
3: Lovely St/Lawton Rd & Route 44 & Tarilsend Dr

Build PM  
03/08/2024



Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations		↔	↕	↗	↖	↕		↗		↖	↕	↗
Traffic Volume (vph)	10	235	1100	75	225	1575	10	140	210	0	110	250
Future Volume (vph)	10	235	1100	75	225	1575	10	140	210	0	110	250
Peak Hour Factor	0.96	0.96	0.96	0.96	0.94	0.94	0.94	0.94	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	2%	2%	2%	2%	1%	1%	1%	1%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	255	1146	78	239	1687	0	149	0	247	129	294
Turn Type	Prot	Prot	NA	Free	Prot	NA		Free	Split	Split	NA	pm+ov
Protected Phases	1	1	6		5	2			7	7	7	5
Permitted Phases				Free				Free				7
Detector Phase	1	1	6		5	2			7	7	7	5
Switch Phase												
Minimum Initial (s)	5.0	5.0	15.0		5.0	15.0			9.0	9.0	9.0	5.0
Minimum Split (s)	11.6	11.6	21.8		11.6	21.8			15.0	15.0	15.0	11.6
Total Split (s)	18.6	18.6	49.8		30.6	61.4			21.0	21.0	21.0	30.6
Total Split (%)	10.6%	10.6%	28.3%		17.4%	34.8%			11.9%	11.9%	11.9%	17.4%
Yellow Time (s)	3.0	3.0	4.5		3.0	4.5			4.0	4.0	4.0	3.0
All-Red Time (s)	3.6	3.6	2.3		3.6	2.3			2.0	2.0	2.0	3.6
Lost Time Adjust (s)		0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0
Total Lost Time (s)		6.6	6.8		6.6	6.8			6.0	6.0	6.0	6.6
Lead/Lag	Lead	Lead	Lag		Lead	Lag			Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes			Yes	Yes	Yes	Yes
Recall Mode	None	None	Min		None	Min			None	None	None	None
v/c Ratio		1.80	1.04	0.05	0.82	1.22		0.10		1.27	0.57	0.51
Control Delay		417.9	85.4	0.1	78.0	142.4		0.1		202.2	69.8	12.5
Queue Delay		0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Delay		417.9	85.4	0.1	78.0	142.4		0.1		202.2	69.8	12.5
Queue Length 50th (ft)		~350	~606	0	214	~1005		0		~287	114	55
Queue Length 95th (ft)		#528	#744	0	#356	#1144		0		#427	173	101
Internal Link Dist (ft)			1683			692					428	
Turn Bay Length (ft)		380		220	340			450		145		50
Base Capacity (vph)		142	1097	1672	291	1382		1492		195	226	575
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		1.80	1.04	0.05	0.82	1.22		0.10		1.27	0.57	0.51

Intersection Summary

Cycle Length: 176.2

Actuated Cycle Length: 137.5

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

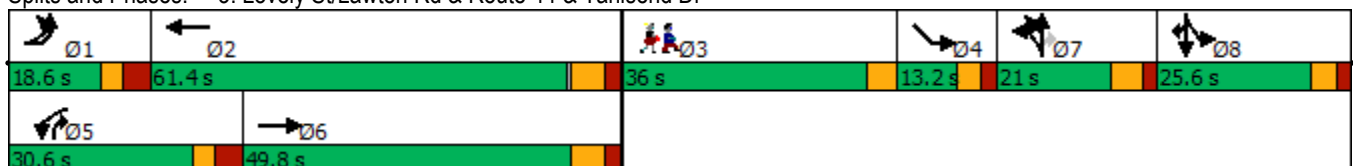
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: Lovely St/Lawton Rd & Route 44 & Tarilsend Dr



Queues  
3: Lovely St/Lawton Rd & Route 44 & Tarilsend Dr

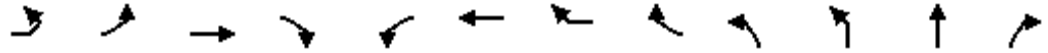
Build PM  
03/08/2024



Lane Group	SBL	SBT	SBR	SBR2	SEL	SER	SER2	Ø3
Lane Configurations		↕	↗		↘			
Traffic Volume (vph)	95	165	435	10	10	10	10	
Future Volume (vph)	95	165	435	10	10	10	10	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.58	0.58	0.58	
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%	0%	
Shared Lane Traffic (%)								
Lane Group Flow (vph)	0	274	469	0	51	0	0	
Turn Type	Split	NA	Prot		Prot			
Protected Phases	8	8	8		4			3
Permitted Phases								
Detector Phase	8	8	8		4			
Switch Phase								
Minimum Initial (s)	9.0	9.0	9.0		6.0			1.0
Minimum Split (s)	14.6	14.6	14.6		11.2			36.0
Total Split (s)	25.6	25.6	25.6		13.2			36.0
Total Split (%)	14.5%	14.5%	14.5%		7.5%			20%
Yellow Time (s)	3.6	3.6	3.6		3.0			4.0
All-Red Time (s)	2.0	2.0	2.0		2.2			0.0
Lost Time Adjust (s)		0.0	0.0		0.0			
Total Lost Time (s)		5.6	5.6		5.2			
Lead/Lag	Lag	Lag	Lag		Lag			Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes			Yes
Recall Mode	None	None	None		None			None
v/c Ratio		1.10	1.23		0.57			
Control Delay		139.9	173.9		88.9			
Queue Delay		0.0	0.0		0.0			
Total Delay		139.9	173.9		88.9			
Queue Length 50th (ft)		~287	~303		46			
Queue Length 95th (ft)		#471	#428		58			
Internal Link Dist (ft)		713			445			
Turn Bay Length (ft)			330					
Base Capacity (vph)		249	380		95			
Starvation Cap Reductn		0	0		0			
Spillback Cap Reductn		0	0		0			
Storage Cap Reductn		0	0		0			
Reduced v/c Ratio		1.10	1.23		0.54			
Intersection Summary								

HCM Signalized Intersection Capacity Analysis  
 3: Lovely St/Lawton Rd & Route 44 & Tarilsend Dr

Build PM  
 03/08/2024



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations		↔	↕	↗	↖	↕		↗		↖	↕	↗
Traffic Volume (vph)	10	235	1100	75	225	1575	10	140	210	0	110	250
Future Volume (vph)	10	235	1100	75	225	1575	10	140	210	0	110	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	14	10	11	12	10	10	12	15	12
Grade (%)			2%			0%					2%	
Total Lost time (s)		6.6	6.8	4.0	6.6	6.8		4.0		6.0	6.0	6.6
Lane Util. Factor		1.00	0.95	1.00	1.00	0.95		1.00		1.00	1.00	1.00
Frt		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
Satd. Flow (prot)		1635	3504	1672	1668	3452		1492		1787	2069	1599
Flt Permitted		0.95	1.00	1.00	0.95	1.00		1.00		0.95	1.00	1.00
Satd. Flow (perm)		1635	3504	1672	1668	3452		1492		1787	2069	1599
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.94	0.94	0.94	0.94	0.85	0.85	0.85	0.85
Adj. Flow (vph)	10	245	1146	78	239	1676	11	149	247	0	129	294
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	129
Lane Group Flow (vph)	0	255	1146	78	239	1687	0	149	0	247	129	165
Heavy Vehicles (%)	2%	2%	2%	2%	1%	1%	1%	1%	0%	0%	0%	0%
Turn Type	Prot	Prot	NA	Free	Prot	NA		Free	Split	Split	NA	pm+ov
Protected Phases	1	1	6		5	2			7	7	7	5
Permitted Phases				Free				Free				7
Actuated Green, G (s)		12.0	43.1	138.5	24.0	55.1		138.5		15.0	15.0	39.0
Effective Green, g (s)		12.0	43.1	138.5	24.0	55.1		138.5		15.0	15.0	39.0
Actuated g/C Ratio		0.09	0.31	1.00	0.17	0.40		1.00		0.11	0.11	0.28
Clearance Time (s)		6.6	6.8		6.6	6.8				6.0	6.0	6.6
Vehicle Extension (s)		2.0	3.0		2.0	3.0				2.0	2.0	2.0
Lane Grp Cap (vph)		141	1090	1672	289	1373		1492		193	224	450
v/s Ratio Prot		c0.16	0.33		0.14	c0.49				c0.14	0.06	0.06
v/s Ratio Perm				0.05				0.10				0.04
v/c Ratio		1.81	1.05	0.05	0.83	1.23		0.10		1.28	0.58	0.37
Uniform Delay, d1		63.2	47.7	0.0	55.2	41.7		0.0		61.8	58.7	39.9
Progression Factor		1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2		390.4	41.8	0.1	16.6	109.5		0.1		159.6	2.2	0.2
Delay (s)		453.7	89.5	0.1	71.8	151.2		0.1		221.3	60.9	40.1
Level of Service		F	F	A	E	F		A		F	E	D
Approach Delay (s)			147.6			131.2					110.9	
Approach LOS			F			F					F	

Intersection Summary		
HCM 2000 Control Delay	139.3	HCM 2000 Level of Service F
HCM 2000 Volume to Capacity ratio	1.32	
Actuated Cycle Length (s)	138.5	Sum of lost time (s) 34.2
Intersection Capacity Utilization	113.2%	ICU Level of Service H
Analysis Period (min)	15	
c Critical Lane Group		



HCM Signalized Intersection Capacity Analysis  
 3: Lovely St/Lawton Rd & Route 44 & Tarilsend Dr

Build PM  
 03/08/2024



Movement	SBL	SBT	SBR	SBR2	SEL	SER	SER2
Lane Configurations		↕	↗		↘		
Traffic Volume (vph)	95	165	435	10	10	10	10
Future Volume (vph)	95	165	435	10	10	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	12	16	12
Grade (%)		8%			8%		
Total Lost time (s)		5.6	5.6		5.2		
Lane Util. Factor		1.00	0.88		1.00		
Frt		1.00	0.85		0.91		
Flt Protected		0.98	1.00		0.98		
Satd. Flow (prot)		1714	2612		1633		
Flt Permitted		0.98	1.00		0.98		
Satd. Flow (perm)		1714	2612		1633		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.58	0.58	0.58
Adj. Flow (vph)	100	174	458	11	17	17	17
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	274	469	0	51	0	0
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%	0%
Turn Type	Split	NA	Prot		Prot		
Protected Phases	8	8	8		4		
Permitted Phases							
Actuated Green, G (s)		20.0	20.0		6.2		
Effective Green, g (s)		20.0	20.0		6.2		
Actuated g/C Ratio		0.14	0.14		0.04		
Clearance Time (s)		5.6	5.6		5.2		
Vehicle Extension (s)		2.0	2.0		2.0		
Lane Grp Cap (vph)		247	377		73		
v/s Ratio Prot		0.16	c0.18		c0.03		
v/s Ratio Perm							
v/c Ratio		1.11	1.24		0.70		
Uniform Delay, d1		59.2	59.2		65.2		
Progression Factor		1.00	1.00		1.00		
Incremental Delay, d2		89.7	130.3		20.9		
Delay (s)		149.0	189.6		86.1		
Level of Service		F	F		F		
Approach Delay (s)		174.6			86.1		
Approach LOS		F			F		
<b>Intersection Summary</b>							

Queues  
4: Route 44 & CVS Drive

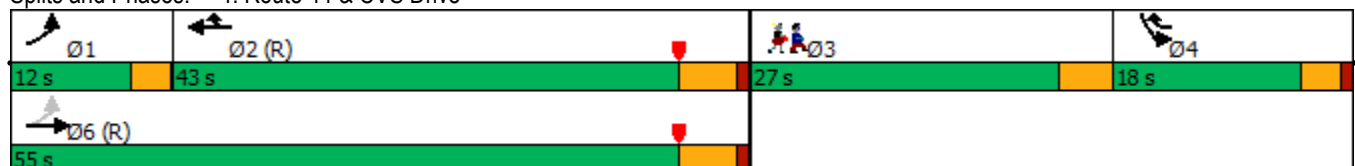


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	30	1425	1900	115	70	50	
Future Volume (vph)	30	1425	1900	115	70	50	
Peak Hour Factor	0.91	0.91	0.89	0.89	0.85	0.85	
Heavy Vehicles (%)	2%	2%	2%	2%	0%	0%	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	33	1566	2135	129	141	0	
Turn Type	pm+pt	NA	NA	pt+ov	Prot		
Protected Phases	1	6	2	2 4	4		3
Permitted Phases	6						
Detector Phase	1	6	2	2 4	4		
Switch Phase							
Minimum Initial (s)	5.0	25.0	25.0		7.0		1.0
Minimum Split (s)	8.1	30.3	30.3		11.0		27.0
Total Split (s)	12.0	55.0	43.0		18.0		27.0
Total Split (%)	12.0%	55.0%	43.0%		18.0%		27%
Yellow Time (s)	3.0	4.3	4.3		3.0		4.0
All-Red Time (s)	0.1	1.0	1.0		1.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		
Total Lost Time (s)	3.1	5.3	5.3		4.0		
Lead/Lag	Lead		Lag		Lag		Lead
Lead-Lag Optimize?	Yes		Yes		Yes		Yes
Recall Mode	None	C-Max	C-Max		None		None
v/c Ratio	0.21	0.59	0.85	0.10	0.45		
Control Delay	8.2	8.4	14.2	2.2	30.6		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	8.2	8.4	14.2	2.2	30.6		
Queue Length 50th (ft)	2	108	246	1	26		
Queue Length 95th (ft)	22	529	#1064	m22	50		
Internal Link Dist (ft)		692	628		200		
Turn Bay Length (ft)	155			140			
Base Capacity (vph)	209	2662	2512	1290	516		
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	0.16	0.59	0.85	0.10	0.27		

Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 20 (20%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow  
 Natural Cycle: 130  
 Control Type: Actuated-Coordinated  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Route 44 & CVS Drive



# HCM Signalized Intersection Capacity Analysis

## 4: Route 44 & CVS Drive

Build PM  
03/08/2024



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↙	↑↑	↑↑	↘	↙↘	
Traffic Volume (vph)	30	1425	1900	115	70	50
Future Volume (vph)	30	1425	1900	115	70	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	10	12	12
Grade (%)		6%	4%		2%	
Total Lost time (s)	3.1	5.3	5.3	5.3	4.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	
Frt	1.00	1.00	1.00	0.85	0.94	
Flt Protected	0.95	1.00	1.00	1.00	0.97	
Satd. Flow (prot)	1602	3433	3468	1448	3323	
Flt Permitted	0.06	1.00	1.00	1.00	0.97	
Satd. Flow (perm)	95	3433	3468	1448	3323	
Peak-hour factor, PHF	0.91	0.91	0.89	0.89	0.85	0.85
Adj. Flow (vph)	33	1566	2135	129	82	59
RTOR Reduction (vph)	0	0	0	13	54	0
Lane Group Flow (vph)	33	1566	2135	116	87	0
Heavy Vehicles (%)	2%	2%	2%	2%	0%	0%
Turn Type	pm+pt	NA	NA	pt+ov	Prot	
Protected Phases	1	6	2	2 4	4	
Permitted Phases	6					
Actuated Green, G (s)	74.4	74.4	68.1	75.8	7.7	
Effective Green, g (s)	74.4	74.4	68.1	75.8	7.7	
Actuated g/C Ratio	0.74	0.74	0.68	0.76	0.08	
Clearance Time (s)	3.1	5.3	5.3		4.0	
Vehicle Extension (s)	1.5	0.2	0.2		2.0	
Lane Grp Cap (vph)	118	2554	2361	1097	255	
v/s Ratio Prot	0.01	c0.46	c0.62	0.08	c0.03	
v/s Ratio Perm	0.20					
v/c Ratio	0.28	0.61	0.90	0.11	0.34	
Uniform Delay, d1	17.7	6.0	13.2	3.2	43.7	
Progression Factor	1.00	1.00	0.73	1.01	1.00	
Incremental Delay, d2	0.5	1.1	4.3	0.0	0.3	
Delay (s)	18.2	7.1	14.0	3.2	44.0	
Level of Service	B	A	B	A	D	
Approach Delay (s)		7.4	13.4		44.0	
Approach LOS		A	B		D	
<b>Intersection Summary</b>						
HCM 2000 Control Delay			12.1		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.80			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	16.4
Intersection Capacity Utilization			66.1%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

Queues

Build PM

5: Shops at Farmington Valley/Private Driveway & Route 44

03/08/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1205	285	270	1715	5	300	0	250	15	5	0
Future Volume (vph)	5	1205	285	270	1715	5	300	0	250	15	5	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.90	0.90	0.90	0.59	0.59	0.59
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	5	1282	303	287	1829	0	166	167	278	25	8	0
Turn Type	Prot	NA	Prot	Prot	NA		Split	NA	pt+ov	Split	NA	
Protected Phases	5	2	2	1	6		7	7	17	8	8	
Permitted Phases												
Detector Phase	5	2	2	1	6		7	7	17	8	8	
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0		5.0	5.0		7.0	7.0	
Minimum Split (s)	11.8	20.5	20.5	11.8	23.0		10.0	10.0		12.0	12.0	
Total Split (s)	30.0	36.0	36.0	30.0	36.0		20.0	20.0		14.0	14.0	
Total Split (%)	30.0%	36.0%	36.0%	30.0%	36.0%		20.0%	20.0%		14.0%	14.0%	
Yellow Time (s)	3.2	4.4	4.4	3.2	4.4		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.6	1.1	1.1	3.6	1.1		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)	6.8	5.5	5.5	6.8	5.5		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min	C-Min	None	Min		None	None		None	None	
v/c Ratio	0.06	0.76	0.35	0.69	0.79		0.74	0.75	0.49	0.19	0.06	
Control Delay	52.6	23.7	5.4	49.5	12.5		62.0	62.4	10.1	47.3	44.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	52.6	23.7	5.4	49.5	12.5		62.0	62.4	10.1	47.3	44.0	
Queue Length 50th (ft)	3	386	41	101	215		106	107	37	15	5	
Queue Length 95th (ft)	m6	#561	74	m105	m#488		#191	#193	81	27	13	
Internal Link Dist (ft)		628			773			306			149	
Turn Bay Length (ft)	50		220	370								
Base Capacity (vph)	394	1693	872	777	2302		255	255	716	162	171	
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	0.01	0.76	0.35	0.37	0.79		0.65	0.65	0.39	0.15	0.05	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 16 (16%), Referenced to phase 2:EBT, Start of Yellow

Natural Cycle: 90

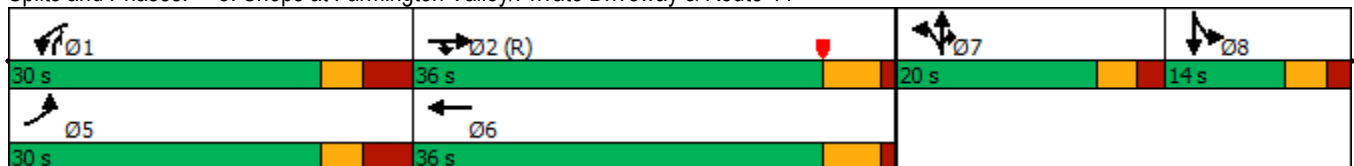
Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Shops at Farmington Valley/Private Driveway & Route 44



HCM Signalized Intersection Capacity Analysis  
 5: Shops at Farmington Valley/Private Driveway & Route 44

Build PM  
 03/08/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1205	285	270	1715	5	300	0	250	15	5	0
Future Volume (vph)	5	1205	285	270	1715	5	300	0	250	15	5	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	12	12	12	13	12	12	12
Grade (%)		1%			0%			1%			0%	
Total Lost time (s)	6.8	5.5	5.5	6.8	5.5		5.0	5.0	6.8	5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		0.95	0.95	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (prot)	1702	3404	1523	3351	3454		1706	1706	1660	1805	1900	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (perm)	1702	3404	1523	3351	3454		1706	1706	1660	1805	1900	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.90	0.90	0.90	0.59	0.59	0.59
Adj. Flow (vph)	5	1282	303	287	1824	5	333	0	278	25	8	0
RTOR Reduction (vph)	0	0	119	0	0	0	0	0	132	0	0	0
Lane Group Flow (vph)	5	1282	184	287	1829	0	166	167	146	25	8	0
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Prot	Prot	NA		Split	NA	pt+ov	Split	NA	
Protected Phases	5	2	2	1	6		7	7	17	8	8	
Permitted Phases												
Actuated Green, G (s)	1.0	47.7	47.7	12.5	59.2		13.1	13.1	25.6	4.4	4.4	
Effective Green, g (s)	1.0	47.7	47.7	12.5	59.2		13.1	13.1	25.6	4.4	4.4	
Actuated g/C Ratio	0.01	0.48	0.48	0.12	0.59		0.13	0.13	0.26	0.04	0.04	
Clearance Time (s)	6.8	5.5	5.5	6.8	5.5		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	1.5	2.0	2.0	1.5	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	17	1623	726	418	2044		223	223	424	79	83	
v/s Ratio Prot	0.00	0.38	0.12	c0.09	c0.53		0.10	c0.10	0.09	c0.01	0.00	
v/s Ratio Perm												
v/c Ratio	0.29	0.79	0.25	0.69	0.89		0.74	0.75	0.35	0.32	0.10	
Uniform Delay, d1	49.1	21.9	15.6	41.9	17.7		41.8	41.9	30.4	46.3	45.9	
Progression Factor	1.13	0.88	0.79	1.17	0.74		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.9	3.3	0.7	0.3	0.5		11.1	11.4	0.2	0.8	0.2	
Delay (s)	58.5	22.6	13.0	49.5	13.6		53.0	53.2	30.5	47.2	46.1	
Level of Service	E	C	B	D	B		D	D	C	D	D	
Approach Delay (s)		20.9			18.4			42.8			46.9	
Approach LOS		C			B			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			23.0			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			22.3			
Intersection Capacity Utilization			81.1%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
12: Secret Lake Road/Acura of Avon & Route 44

Build PM  
03/08/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1430	30	40	1675	10	295	0	295	20	0	20
Future Volume (vph)	10	1430	30	40	1675	10	295	0	295	20	0	20
Peak Hour Factor	0.94	0.94	0.94	0.90	0.90	0.90	0.63	0.63	0.63	0.73	0.73	0.73
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	1553	0	44	1872	0	0	936	0	27	0	27
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		Prot		Prot
Protected Phases	1	6		5	2		7	7		8		8
Permitted Phases	6			2								
Detector Phase	1	6		5	2		7	7		8		8
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		9.0	9.0		7.0		7.0
Minimum Split (s)	9.5	25.0		9.5	25.0		15.2	15.2		13.2		13.2
Total Split (s)	10.0	58.0		10.0	58.0		17.0	17.0		15.0		15.0
Total Split (%)	10.0%	58.0%		10.0%	58.0%		17.0%	17.0%		15.0%		15.0%
Yellow Time (s)	3.0	4.4		3.0	4.4		3.0	3.0		3.0		3.0
All-Red Time (s)	1.0	2.6		1.0	2.6		3.2	3.2		3.2		3.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0		0.0
Total Lost Time (s)	4.0	7.0		4.0	7.0			6.2		6.2		6.2
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead		Lag		Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes		Yes
Recall Mode	None	C-Min		None	C-Min		None	None		None		None
v/c Ratio	0.07	0.74		0.24	0.83			2.68		0.21		0.10
Control Delay	8.3	16.3		9.0	19.3			782.5		48.0		0.8
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0		0.0
Total Delay	8.3	16.3		9.0	19.3			782.5		48.0		0.8
Queue Length 50th (ft)	2	201		9	471			~935		17		0
Queue Length 95th (ft)	m4	340		21	#817			#723		35		0
Internal Link Dist (ft)		773			254			313				450
Turn Bay Length (ft)	50			105								
Base Capacity (vph)	179	2103		192	2261			349		157		282
Starvation Cap Reductn	0	0		0	0			0		0		0
Spillback Cap Reductn	0	0		0	0			0		0		0
Storage Cap Reductn	0	0		0	0			0		0		0
Reduced v/c Ratio	0.06	0.74		0.23	0.83			2.68		0.17		0.10

Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 16 (16%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated  
 ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Secret Lake Road/Acura of Avon & Route 44

 Ø1	 Ø2 (R)	 Ø7	 Ø8
10 s	58 s	17 s	15 s
 Ø5	 Ø6 (R)		
10 s	58 s		

HCM Signalized Intersection Capacity Analysis  
 12: Secret Lake Road/Acura of Avon & Route 44

Build PM  
 03/08/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↗↘		↗	↗↘			↕		↗		↗
Traffic Volume (vph)	10	1430	30	40	1675	10	295	0	295	20	0	20
Future Volume (vph)	10	1430	30	40	1675	10	295	0	295	20	0	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	10	11	12	12	16	12	12	16	12
Grade (%)		2%			2%			0%			2%	
Total Lost time (s)	4.0	7.0		4.0	7.0			6.2		6.2		6.2
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00		1.00
Frt	1.00	1.00		1.00	1.00			0.93		1.00		0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98		0.95		1.00
Satd. Flow (prot)	1694	3377		1651	3418			1959		1787		1599
Flt Permitted	0.07	1.00		0.08	1.00			0.98		0.95		1.00
Satd. Flow (perm)	123	3377		144	3418			1959		1787		1599
Peak-hour factor, PHF	0.94	0.94	0.94	0.90	0.90	0.90	0.63	0.63	0.63	0.73	0.73	0.73
Adj. Flow (vph)	11	1521	32	44	1861	11	468	0	468	27	0	27
RTOR Reduction (vph)	0	1	0	0	0	0	0	138	0	0	0	26
Lane Group Flow (vph)	11	1552	0	44	1872	0	0	798	0	27	0	1
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		Prot		Prot
Protected Phases	1	6		5	2		7	7		8		8
Permitted Phases	6			2								
Actuated Green, G (s)	59.2	58.2		63.8	60.5			10.8		4.3		4.3
Effective Green, g (s)	59.2	58.2		63.8	60.5			10.8		4.3		4.3
Actuated g/C Ratio	0.59	0.58		0.64	0.60			0.11		0.04		0.04
Clearance Time (s)	4.0	7.0		4.0	7.0			6.2		6.2		6.2
Vehicle Extension (s)	1.5	2.5		1.5	2.5			1.5		1.5		1.5
Lane Grp Cap (vph)	88	1965		141	2067			211		76		68
v/s Ratio Prot	0.00	0.46		c0.01	c0.55			c0.41		c0.02		0.00
v/s Ratio Perm	0.07			0.19								
v/c Ratio	0.12	0.79		0.31	0.91			3.78		0.36		0.02
Uniform Delay, d1	16.0	16.2		12.1	17.3			44.6		46.5		45.8
Progression Factor	1.26	0.89		1.00	1.00			1.00		1.00		1.00
Incremental Delay, d2	0.2	2.4		0.5	7.1			1262.8		1.0		0.0
Delay (s)	20.3	16.8		12.5	24.4			1307.4		47.5		45.9
Level of Service	C	B		B	C			F		D		D
Approach Delay (s)		16.8			24.1			1307.4			46.7	
Approach LOS		B			C			F			D	

Intersection Summary			
HCM 2000 Control Delay	290.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.28		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	23.4
Intersection Capacity Utilization	103.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			