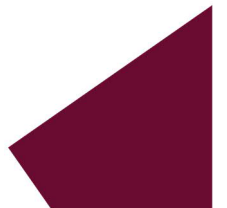




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# EXISTING CAPACITY ANALYSIS



Lanes, Volumes, Timings  
1: Front St & Route 0039

Existing Route 0039 (Front to Patton) AM.syn  
04/29/2020

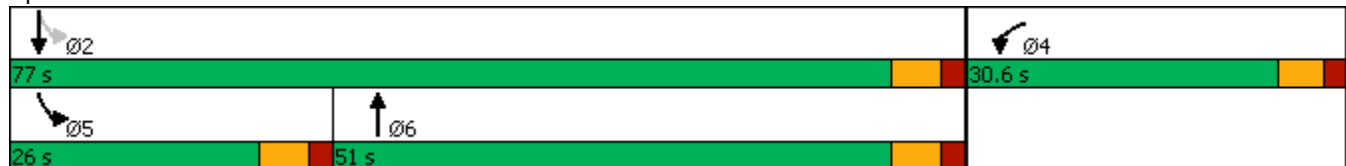


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	←←←		↑↑		←	↑↑
Traffic Volume (vph)	643	38	237	359	88	981
Future Volume (vph)	643	38	237	359	88	981
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	12	13	12	12
Storage Length (ft)	0	0		0	300	
Storage Lanes	2	0		0	1	
Taper Length (ft)	25				100	
Right Turn on Red		Yes		Yes		
Link Speed (mph)	35		40			40
Link Distance (ft)	510		827			982
Travel Time (s)	9.9		14.1			16.7
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	16%	3%	1%	7%	1%
Shared Lane Traffic (%)						
Turn Type	Prot		NA		pm+pt	NA
Protected Phases	4		6		5	2
Permitted Phases					2	
Detector Phase	4		6		5	2
Switch Phase						
Minimum Initial (s)	2.0		12.0		2.0	12.0
Minimum Split (s)	14.6		18.0		16.0	18.0
Total Split (s)	30.6		51.0		26.0	77.0
Total Split (%)	28.4%		47.4%		24.2%	71.6%
Yellow Time (s)	3.6		4.0		4.0	4.0
All-Red Time (s)	2.0		2.0		2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0		-1.0	-1.0
Total Lost Time (s)	4.6		5.0		5.0	5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		Min		None	Min

Intersection Summary

Area Type: Other  
 Cycle Length: 107.6  
 Actuated Cycle Length: 65.4  
 Natural Cycle: 55  
 Control Type: Actuated-Uncoordinated

Splits and Phases: 1: Front St & Route 0039



HCM 2010 Signalized Intersection Summary  
1: Front St & Route 0039

Existing Route 0039 (Front to Patton) AM.syn  
04/29/2020

Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations	YY		↑↑		↘	↑↑		
Traffic Volume (veh/h)	643	38	237	359	88	981		
Future Volume (veh/h)	643	38	237	359	88	981		
Number	7	14	6	16	5	2		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1751	1872	1768	1872	1682	1782		
Adj Flow Rate, veh/h	699	0	244	370	91	1011		
Adj No. of Lanes	2	1	2	0	1	2		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97		
Percent Heavy Veh, %	2	0	3	3	7	1		
Cap, veh/h	926	442	732	655	418	1964		
Arrive On Green	0.28	0.00	0.44	0.44	0.07	0.58		
Sat Flow, veh/h	3336	1591	1768	1503	1602	3475		
Grp Volume(v), veh/h	699	0	244	370	91	1011		
Grp Sat Flow(s),veh/h/ln	1668	1591	1680	1503	1602	1693		
Q Serve(g_s), s	12.9	0.0	6.5	12.4	1.9	12.1		
Cycle Q Clear(g_c), s	12.9	0.0	6.5	12.4	1.9	12.1		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	926	442	732	655	418	1964		
V/C Ratio(X)	0.75	0.00	0.33	0.56	0.22	0.51		
Avail Cap(c_a), veh/h	1287	614	1146	1026	805	3617		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(l)	1.00	0.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	22.3	0.0	12.6	14.2	9.2	8.5		
Incr Delay (d2), s/veh	1.7	0.0	0.6	1.6	0.3	0.4		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/ln	10.2	0.0	5.6	9.3	1.5	9.7		
LnGrp Delay(d),s/veh	23.9	0.0	13.1	15.9	9.5	8.9		
LnGrp LOS	C		B	B	A	A		
Approach Vol, veh/h	699		614			1102		
Approach Delay, s/veh	23.9		14.8			9.0		
Approach LOS	C		B			A		
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		44.1		23.3	9.7	34.4		
Change Period (Y+Rc), s		6.0		5.6	6.0	6.0		
Max Green Setting (Gmax), s		71.0		25.0	20.0	45.0		
Max Q Clear Time (g_c+I1), s		14.6		15.4	4.4	14.4		
Green Ext Time (p_c), s		23.5		2.3	0.2	9.8		

Intersection Summary

HCM 2010 Ctrl Delay	14.8
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings  
2: 6th St & Route 0039

Existing Route 0039 (Front to Patton) AM.syn  
04/29/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	462	45	276	697	13	14	0	122	7	0	5
Future Volume (vph)	2	462	45	276	697	13	14	0	122	7	0	5
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	14	14	12	12	12	11	11	12	16	16	16
Grade (%)		1%			-4%			2%			1%	
Link Speed (mph)		35			35			35			15	
Link Distance (ft)		410			516			883			598	
Travel Time (s)		8.0			10.1			17.2			27.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	5%	13%	3%	2%	15%	36%	0%	8%	0%	0%	0%
Shared Lane Traffic (%)												
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection												
Int Delay, s/veh	11.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	
Traffic Vol, veh/h	2	462	45	276	697	13	14	0	122	7	0	5
Future Vol, veh/h	2	462	45	276	697	13	14	0	122	7	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	1	-	-	-4	-	-	2	-	-	1	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	5	13	3	2	15	36	0	8	0	0	0
Mvmt Flow	2	513	50	307	774	14	16	0	136	8	0	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	788	0	0	563	0	0	1543	1944	538	2005	1962	394
Stage 1	-	-	-	-	-	-	542	542	-	1395	1395	-
Stage 2	-	-	-	-	-	-	1001	1402	-	610	567	-
Critical Hdwy	3.9	-	-	4.3	-	-	7.9	6.9	6.5	8.6	6.7	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	7.04	5.9	-	6.7	5.7	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.44	5.9	-	6.3	5.7	-
Follow-up Hdwy	2.4	-	-	3	-	-	3.3	4	3.2	2.8	4	3.1
Pot Cap-1 Maneuver	821	-	-	767	-	-	69	53	536	21	57	687
Stage 1	-	-	-	-	-	-	480	493	-	157	195	-
Stage 2	-	-	-	-	-	-	211	178	-	555	494	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	821	-	-	767	-	-	29	15	536	~7	16	687
Mov Cap-2 Maneuver	-	-	-	-	-	-	29	15	-	~7	16	-
Stage 1	-	-	-	-	-	-	478	491	-	156	56	-
Stage 2	-	-	-	-	-	-	60	51	-	413	492	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	5.4	35.9	\$ 718.1
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	29	536	821	-	-	767	-	-	12
HCM Lane V/C Ratio	0.536	0.253	0.003	-	-	0.4	-	-	1.111
HCM Control Delay (s)	226.9	14	9.4	0	-	12.8	2.6	\$ 718.1	
HCM Lane LOS	F	B	A	A	-	B	A	-	F
HCM 95th %tile Q(veh)	1.7	1	0	-	-	1.9	-	-	2.3

**Notes**  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

Lanes, Volumes, Timings  
3: Industrial Dr/322 EB Ramp & Route 0039

Existing Route 0039 (Front to Patton) AM.syn  
04/29/2020

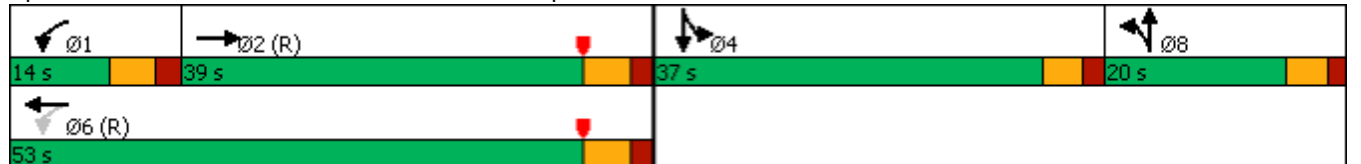


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↖	↑↑			↑			↕	
Traffic Volume (vph)	0	478	105	102	779	0	34	0	69	275	69	150
Future Volume (vph)	0	478	105	102	779	0	34	0	69	275	69	150
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	12	12	15	15	15
Grade (%)		2%			-2%			3%			4%	
Storage Length (ft)	0		0	350		0	0		0	0		0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (ft)	25			100			25			25		
Right Turn on Red			Yes			No			No			Yes
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		536			746			1213			1063	
Travel Time (s)		10.4			14.5			23.6			20.7	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	5%	4%	9%	2%	0%	38%	0%	52%	1%	3%	5%
Shared Lane Traffic (%)												
Turn Type		NA		pm+pt	NA		Split	NA		Split	NA	
Protected Phases		2		1	6		8	8		4	4	
Permitted Phases				6								
Detector Phase		2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Split (s)		15.8		12.8	15.8		15.1	15.1		15.1	15.1	
Total Split (s)		39.0		14.0	53.0		20.0	20.0		37.0	37.0	
Total Split (%)		35.5%		12.7%	48.2%		18.2%	18.2%		33.6%	33.6%	
Yellow Time (s)		3.8		3.8	3.8		3.4	3.4		3.3	3.3	
All-Red Time (s)		2.0		2.0	2.0		1.6	1.6		1.8	1.8	
Lost Time Adjust (s)		-1.0		-1.0	-1.0			-1.0			-1.0	
Total Lost Time (s)		4.8		4.8	4.8			4.0			4.1	
Lead/Lag		Lag		Lead								
Lead-Lag Optimize?		Yes		Yes								
Recall Mode		C-Max		None	C-Max		None	None		None	None	

Intersection Summary













Area Type: Other  
 Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 39 (35%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated

Splits and Phases: 3: Industrial Dr/322 EB Ramp & Route 0039



HCM 2010 Signalized Intersection Summary  
 3: Industrial Dr/322 EB Ramp & Route 0039

Existing Route 0039 (Front to Patton) AM.syn  
 04/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↓		↖	↑↑			↑↓			↑↓	
Traffic Volume (veh/h)	0	478	105	102	779	0	34	0	69	275	69	150
Future Volume (veh/h)	0	478	105	102	779	0	34	0	69	275	69	150
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1700	1782	1668	1782	0	1773	1203	1773	1835	1790	1835
Adj Flow Rate, veh/h	0	543	119	116	885	0	39	0	78	312	78	0
Adj No. of Lanes	0	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	5	5	9	2	0	0	0	0	3	3	3
Cap, veh/h	0	1009	220	341	1685	0	47	0	93	348	87	0
Arrive On Green	0.00	0.38	0.38	0.14	1.00	0.00	0.13	0.00	0.13	0.25	0.25	0.00
Sat Flow, veh/h	0	2723	576	1588	3476	0	353	0	706	1377	344	0
Grp Volume(v), veh/h	0	332	330	116	885	0	117	0	0	390	0	0
Grp Sat Flow(s),veh/h/ln	0	1615	1598	1588	1693	0	1059	0	0	1721	0	0
Q Serve(g_s), s	0.0	17.6	17.7	4.5	0.3	0.0	11.9	0.0	0.0	24.1	0.0	0.0
Cycle Q Clear(g_c), s	0.0	17.6	17.7	4.5	0.3	0.0	11.9	0.0	0.0	24.1	0.0	0.0
Prop In Lane	0.00		0.36	1.00		0.00	0.33		0.67	0.80		0.00
Lane Grp Cap(c), veh/h	0	618	611	341	1685	0	140	0	0	436	0	0
V/C Ratio(X)	0.00	0.54	0.54	0.34	0.53	0.00	0.84	0.00	0.00	0.90	0.00	0.00
Avail Cap(c_a), veh/h	0	618	611	360	1685	0	154	0	0	515	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.81	0.81	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	26.4	26.4	17.0	0.1	0.0	46.6	0.0	0.0	39.7	0.0	0.0
Incr Delay (d2), s/veh	0.0	3.3	3.4	0.5	1.0	0.0	31.0	0.0	0.0	16.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	13.2	13.1	3.6	0.5	0.0	8.2	0.0	0.0	19.3	0.0	0.0
LnGrp Delay(d),s/veh	0.0	29.7	29.8	17.4	1.1	0.0	77.6	0.0	0.0	56.0	0.0	0.0
LnGrp LOS		C	C	B	A		E			E		
Approach Vol, veh/h		662			1001			117			390	
Approach Delay, s/veh		29.8			3.0			77.6			56.0	
Approach LOS		C			A			E			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	12.7	46.9		31.9		59.5		18.5				
Change Period (Y+Rc), s	* 5.8	* 5.8		5.1		* 5.8		5.0				
Max Green Setting (Gmax), s	8.2	* 33		31.9		* 47		15.0				
Max Q Clear Time (g_c+I1), s	7.0	20.1		26.1		2.8		13.9				
Green Ext Time (p_c), s	0.0	3.3		0.8		7.4		0.1				

Intersection Summary		
HCM 2010 Ctrl Delay		24.7
HCM 2010 LOS		C

Notes  
 User approved pedestrian interval to be less than phase max green.  
 \* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings

Existing Route 0039 (Front to Patton) AM.syn

4: 322 WB Ramp/Mountain View Rd & Route 0039

04/29/2020

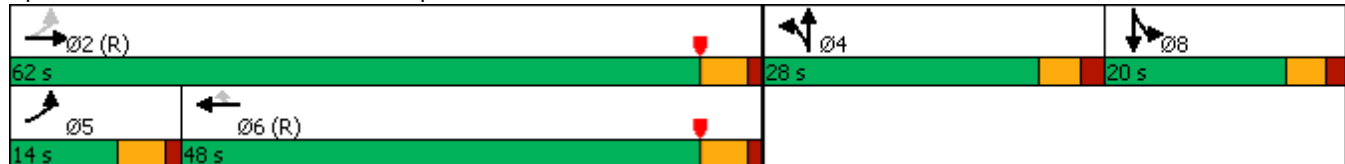


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕↕			↕↕	↔		↕			↕↕	
Traffic Volume (vph)	35	726	0	0	956	90	79	4	313	4	0	7
Future Volume (vph)	35	726	0	0	956	90	79	4	313	4	0	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	15	15	15	15	15	15
Grade (%)		5%			-4%			5%			4%	
Storage Length (ft)	190		0	0		175	0		0	0		0
Storage Lanes	1		0	0		1	0		0	0		0
Taper Length (ft)	100			25			25			25		
Right Turn on Red			No			Yes			Yes			Yes
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		746			1059			774			1069	
Travel Time (s)		14.5			20.6			15.1			20.8	
Confl. Peds. (#/hr)	1		3	3		1			1	1		
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	20%	2%	0%	0%	3%	2%	25%	25%	4%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA			NA	Perm	Split	NA		Split	NA	
Protected Phases	5	2			6		4	4		8	8	
Permitted Phases	2					6						
Detector Phase	5	2			6	6	4	4		8	8	
Switch Phase												
Minimum Initial (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	12.2	15.2			15.2	15.2	15.2	15.2		15.2	15.2	
Total Split (s)	14.0	62.0			48.0	48.0	28.0	28.0		20.0	20.0	
Total Split (%)	12.7%	56.4%			43.6%	43.6%	25.5%	25.5%		18.2%	18.2%	
Yellow Time (s)	4.0	4.0			4.0	4.0	3.3	3.3		3.3	3.3	
All-Red Time (s)	1.2	1.2			1.2	1.2	2.0	2.0		1.8	1.8	
Lost Time Adjust (s)	-1.0	-1.0			-1.0	-1.0		-1.0			-1.0	
Total Lost Time (s)	4.2	4.2			4.2	4.2		4.3			4.1	
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Recall Mode	None	C-Max			C-Max	C-Max	None	None		None	None	

Intersection Summary

Area Type: Other  
 Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 29 (26%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated

Splits and Phases: 4: 322 WB Ramp/Mountain View Rd & Route 0039





HCM 2010 Signalized Intersection Summary Existing Route 0039 (Front to Patton) AM.syn  
 4: 322 WB Ramp/Mountain View Rd & Route 0039 04/29/2020

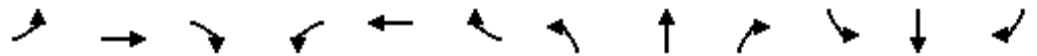
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	726	0	0	956	90	79	4	313	4	0	7
Future Volume (veh/h)	35	726	0	0	956	90	79	4	313	4	0	7
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1462	1721	0	0	1783	1800	1825	1684	1825	1835	1835	1835
Adj Flow Rate, veh/h	41	854	0	0	1125	0	93	5	0	5	0	0
Adj No. of Lanes	1	2	0	0	2	1	0	1	0	0	1	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	20	2	0	0	3	2	25	25	25	0	0	0
Cap, veh/h	347	2575	0	0	2436	1100	129	7	0	23	0	0
Arrive On Green	0.06	1.00	0.00	0.00	0.72	0.00	0.08	0.08	0.00	0.01	0.00	0.00
Sat Flow, veh/h	1393	3355	0	0	3476	1530	1525	82	0	1747	0	0
Grp Volume(v), veh/h	41	854	0	0	1125	0	98	0	0	5	0	0
Grp Sat Flow(s),veh/h/ln	1393	1635	0	0	1693	1530	1607	0	0	1747	0	0
Q Serve(g_s), s	0.8	0.0	0.0	0.0	15.4	0.0	6.5	0.0	0.0	0.3	0.0	0.0
Cycle Q Clear(g_c), s	0.8	0.0	0.0	0.0	15.4	0.0	6.5	0.0	0.0	0.3	0.0	0.0
Prop In Lane	1.00		0.00	0.00		1.00	0.95		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	347	2575	0	0	2436	1100	136	0	0	23	0	0
V/C Ratio(X)	0.12	0.33	0.00	0.00	0.46	0.00	0.72	0.00	0.00	0.22	0.00	0.00
Avail Cap(c_a), veh/h	429	2575	0	0	2436	1100	346	0	0	253	0	0
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.72	0.72	0.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.4	0.0	0.0	0.0	6.5	0.0	49.1	0.0	0.0	53.7	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.2	0.0	0.0	0.6	0.0	7.0	0.0	0.0	4.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.5	0.2	0.0	0.0	11.7	0.0	5.7	0.0	0.0	0.3	0.0	0.0
LnGrp Delay(d),s/veh	4.5	0.2	0.0	0.0	7.1	0.0	56.0	0.0	0.0	58.5	0.0	0.0
LnGrp LOS	A	A			A		E			E		
Approach Vol, veh/h		895			1125			98				5
Approach Delay, s/veh		0.4			7.1			56.0				58.5
Approach LOS		A			A			E				E
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		90.9		13.6	7.5	83.3		5.5				
Change Period (Y+Rc), s		* 5.2		* 5.3	* 5.2	* 5.2		5.1				
Max Green Setting (Gmax), s		* 57		* 23	* 8.8	* 43		14.9				
Max Q Clear Time (g_c+I1), s		2.5		8.5	3.3	17.9		2.5				
Green Ext Time (p_c), s		7.1		0.2	0.0	8.9		0.0				

Intersection Summary		
HCM 2010 Ctrl Delay		6.7
HCM 2010 LOS		A

Notes  
 \* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings  
5: Fargreen Rd & Route 0039

Existing Route 0039 (Front to Patton) AM.syn  
04/29/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	944	22	4	915	12	59	0	8	21	5	36
Future Volume (vph)	21	944	22	4	915	12	59	0	8	21	5	36
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	12	12	14	14	14
Grade (%)		-2%			3%			4%			-6%	
Storage Length (ft)	125		0	125		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	50			50			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		1858			1350			1002			1162	
Travel Time (s)		28.2			20.5			27.3			31.7	
Confl. Peds. (#/hr)	1					1			1	1		
Confl. Bikes (#/hr)	1					1						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	14%	2%	32%	0%	1%	17%	3%	0%	50%	5%	0%	6%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	13.0	13.0		13.0	13.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	19.2	19.2		19.2	19.2		15.6	15.6		15.6	15.6	
Total Split (s)	86.0	86.0		86.0	86.0		24.0	24.0		24.0	24.0	
Total Split (%)	78.2%	78.2%		78.2%	78.2%		21.8%	21.8%		21.8%	21.8%	
Yellow Time (s)	4.6	4.6		4.6	4.6		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.6	1.6		1.6	1.6		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			-1.0			-1.0	
Total Lost Time (s)	5.2	5.2		5.2	5.2			4.6			4.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary




















Area Type: Other  
 Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 57 (52%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated

Splits and Phases: 5: Fargreen Rd & Route 0039



HCM 2010 Signalized Intersection Summary  
5: Fargreen Rd & Route 0039

Existing Route 0039 (Front to Patton) AM.syn  
04/29/2020

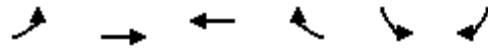
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	944	22	4	915	12	59	0	8	21	5	36
Future Volume (veh/h)	21	944	22	4	915	12	59	0	8	21	5	36
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1595	1770	1818	1773	1752	1773	1764	1627	1764	1928	1833	1928
Adj Flow Rate, veh/h	22	973	23	4	943	12	61	0	8	22	5	37
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	14	2	2	0	1	1	0	0	0	0	0	0
Cap, veh/h	509	1443	34	423	1446	18	151	0	12	78	18	70
Arrive On Green	0.84	0.84	0.84	1.00	1.00	1.00	0.07	0.00	0.07	0.07	0.07	0.07
Sat Flow, veh/h	529	1721	41	566	1726	22	1231	0	161	461	243	966
Grp Volume(v), veh/h	22	0	996	4	0	955	69	0	0	64	0	0
Grp Sat Flow(s),veh/h/ln	529	0	1762	566	0	1748	1392	0	0	1670	0	0
Q Serve(g_s), s	0.8	0.0	23.2	0.2	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.8	0.0	23.2	22.9	0.0	0.0	5.0	0.0	0.0	3.9	0.0	0.0
Prop In Lane	1.00		0.02	1.00		0.01	0.88		0.12	0.34		0.58
Lane Grp Cap(c), veh/h	509	0	1477	423	0	1465	163	0	0	166	0	0
V/C Ratio(X)	0.04	0.00	0.67	0.01	0.00	0.65	0.42	0.00	0.00	0.39	0.00	0.00
Avail Cap(c_a), veh/h	509	0	1477	423	0	1465	294	0	0	324	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.74	0.00	0.74	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	1.5	0.0	3.3	2.8	0.0	0.0	49.5	0.0	0.0	49.1	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	2.5	0.0	0.0	1.7	1.7	0.0	0.0	1.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.2	0.0	17.4	0.1	0.0	1.2	3.8	0.0	0.0	3.5	0.0	0.0
LnGrp Delay(d),s/veh	1.7	0.0	5.8	2.8	0.0	1.7	51.3	0.0	0.0	50.6	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		1018			959			69				64
Approach Delay, s/veh		5.7			1.7			51.3				50.6
Approach LOS		A			A			D				D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		97.4		12.6		97.4		12.6				
Change Period (Y+Rc), s		* 6.2		5.6		* 6.2		5.6				
Max Green Setting (Gmax), s		* 80		18.4		* 80		18.4				
Max Q Clear Time (g_c+I1), s		25.2		5.9		25.4		7.0				
Green Ext Time (p_c), s		45.4		0.1		43.0		0.1				

Intersection Summary		
HCM 2010 Ctrl Delay		6.7
HCM 2010 LOS		A

Notes  
\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings  
6: Route 0039 & Deer Path Rd

Existing Route 0039 (Front to Patton) AM.syn  
04/29/2020

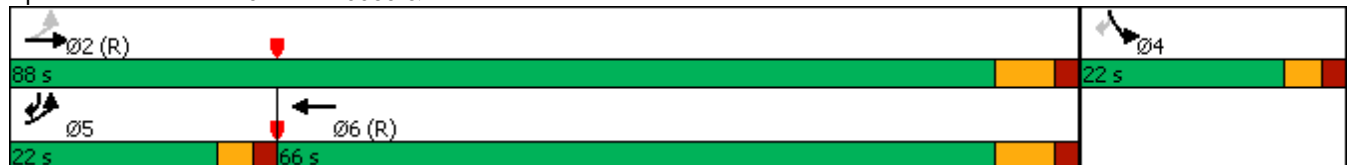


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗	↘		↖	↗
Traffic Volume (vph)	238	722	778	68	16	146
Future Volume (vph)	238	722	778	68	16	146
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	13	12	12	12	14	14
Grade (%)		5%	-5%		5%	
Storage Length (ft)	75			0	160	160
Storage Lanes	1			0	0	0
Taper Length (ft)	50				25	
Right Turn on Red				Yes		Yes
Link Speed (mph)		45	45		25	
Link Distance (ft)		1350	893		841	
Travel Time (s)		20.5	13.5		22.9	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	3%	2%	0%	0%	0%
Shared Lane Traffic (%)						
Turn Type	pm+pt	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases	2					4
Detector Phase	5	2	6		4	5
Switch Phase						
Minimum Initial (s)	3.0	13.0	13.0		3.0	3.0
Minimum Split (s)	12.2	20.0	20.0		12.2	12.2
Total Split (s)	22.0	88.0	66.0		22.0	22.0
Total Split (%)	20.0%	80.0%	60.0%		20.0%	20.0%
Yellow Time (s)	3.0	5.0	5.0		3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		2.2	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0	-1.0
Total Lost Time (s)	4.0	6.0	6.0		4.2	4.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	None	C-Max	C-Max		None	None

Intersection Summary

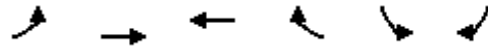
Area Type: Other  
 Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 44 (40%), Referenced to phase 2:EBTL and 6:WBT, Start of Green  
 Natural Cycle: 70  
 Control Type: Actuated-Coordinated

Splits and Phases: 6: Route 0039 & Deer Path Rd



HCM 2010 Signalized Intersection Summary  
6: Route 0039 & Deer Path Rd

Existing Route 0039 (Front to Patton) AM.syn  
04/29/2020



Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations	↖	↑	↗		↖	↗		
Traffic Volume (veh/h)	238	722	778	68	16	146		
Future Volume (veh/h)	238	722	778	68	16	146		
Number	5	2	6	16	7	14		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1825	1704	1812	1845	1825	1825		
Adj Flow Rate, veh/h	248	752	810	71	17	152		
Adj No. of Lanes	1	1	1	0	1	1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh, %	0	3	2	2	0	0		
Cap, veh/h	434	1341	1103	97	209	309		
Arrive On Green	0.16	1.00	0.67	0.67	0.12	0.12		
Sat Flow, veh/h	1738	1704	1642	144	1738	1551		
Grp Volume(v), veh/h	248	752	0	881	17	152		
Grp Sat Flow(s),veh/h/ln	1738	1704	0	1786	1738	1551		
Q Serve(g_s), s	4.6	0.0	0.0	35.1	1.0	9.6		
Cycle Q Clear(g_c), s	4.6	0.0	0.0	35.1	1.0	9.6		
Prop In Lane	1.00			0.08	1.00	1.00		
Lane Grp Cap(c), veh/h	434	1341	0	1200	209	309		
V/C Ratio(X)	0.57	0.56	0.00	0.73	0.08	0.49		
Avail Cap(c_a), veh/h	582	1341	0	1200	281	373		
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00		
Upstream Filter(l)	0.69	0.69	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	11.9	0.0	0.0	11.7	43.0	39.1		
Incr Delay (d2), s/veh	0.8	1.2	0.0	4.0	0.2	1.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/ln	6.2	0.8	0.0	25.5	0.8	13.2		
LnGrp Delay(d),s/veh	12.7	1.2	0.0	15.7	43.1	40.3		
LnGrp LOS	B	A		B	D	D		
Approach Vol, veh/h		1000	881		169			
Approach Delay, s/veh		4.0	15.7		40.6			
Approach LOS		A	B		D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		92.5		17.5	12.6	79.9		
Change Period (Y+Rc), s		7.0		* 5.2	5.0	7.0		
Max Green Setting (Gmax), s		81.0		* 17	17.0	59.0		
Max Q Clear Time (g_c+I1), s		2.5		12.1	7.1	37.1		
Green Ext Time (p_c), s		40.2		0.3	0.6	18.5		

Intersection Summary

HCM 2010 Ctrl Delay	12.1
HCM 2010 LOS	B

Notes

\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings  
7: Crooked Hill Rd & Route 0039

Existing Route 0039 (Front to Patton) AM.syn  
04/29/2020

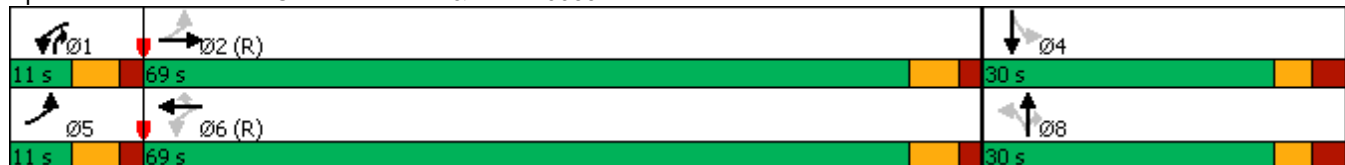


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	680	24	48	707	94	58	51	65	125	30	56
Future Volume (vph)	90	680	24	48	707	94	58	51	65	125	30	56
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	13	11	11	11	11	11	13	11	11	11
Grade (%)		-2%			1%			1%			-3%	
Storage Length (ft)	200		200	160		670	85		140	230		0
Storage Lanes	1		1	1		0	1		1	0		0
Taper Length (ft)	100			75			75			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			25				25
Link Distance (ft)		773			1659			716				762
Travel Time (s)		11.7			25.1			19.5				20.8
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	4%	4%	13%	2%	6%	0%	8%	5%	3%	0%	7%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA	pm+ov	Perm	NA	
Protected Phases	5	2		1	6			8	1			4
Permitted Phases	2			6		6	8		8	4		
Detector Phase	5	2		1	6	6	8	8	1	4		4
Switch Phase												
Minimum Initial (s)	3.0	13.0		3.0	13.0	13.0	3.0	3.0	3.0	3.0		3.0
Minimum Split (s)	11.0	19.0		11.0	19.0	19.0	13.0	13.0	11.0	13.0		13.0
Total Split (s)	11.0	69.0		11.0	69.0	69.0	30.0	30.0	11.0	30.0		30.0
Total Split (%)	10.0%	62.7%		10.0%	62.7%	62.7%	27.3%	27.3%	10.0%	27.3%		27.3%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	3.0	4.0	3.0		3.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	3.0	3.0	2.0	3.0		3.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag			Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes			Yes			
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None		None

Intersection Summary
























Area Type: Other  
 Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 15 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated

Splits and Phases: 7: Crooked Hill Rd & Route 0039



HCM 2010 Signalized Intersection Summary  
7: Crooked Hill Rd & Route 0039

Existing Route 0039 (Front to Patton) AM.syn  
04/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	680	24	48	707	94	58	51	65	125	30	56
Future Volume (veh/h)	90	680	24	48	707	94	58	51	65	125	30	56
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1800	1748	1891	1585	1756	1690	1791	1658	1774	1774	1747	1827
Adj Flow Rate, veh/h	94	708	25	50	736	98	60	53	68	130	31	58
Adj No. of Lanes	1	2	0	1	1	1	1	1	1	1	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	4	4	13	2	6	0	8	5	3	0	0
Cap, veh/h	502	2180	77	490	1149	940	219	269	298	237	89	166
Arrive On Green	0.05	0.67	0.67	0.05	0.87	0.87	0.16	0.16	0.16	0.16	0.16	0.16
Sat Flow, veh/h	1714	3273	116	1509	1756	1436	1322	1658	1508	1272	546	1021
Grp Volume(v), veh/h	94	359	374	50	736	98	60	53	68	130	0	89
Grp Sat Flow(s),veh/h/ln	1714	1661	1728	1509	1756	1436	1322	1658	1508	1272	0	1567
Q Serve(g_s), s	1.9	10.1	10.1	1.2	13.5	1.1	4.6	3.0	4.2	10.8	0.0	5.5
Cycle Q Clear(g_c), s	1.9	10.1	10.1	1.2	13.5	1.1	9.7	3.0	4.2	13.9	0.0	5.5
Prop In Lane	1.00		0.07	1.00		1.00	1.00		1.00	1.00		0.65
Lane Grp Cap(c), veh/h	502	1106	1151	490	1149	940	219	269	298	237	0	254
V/C Ratio(X)	0.19	0.32	0.32	0.10	0.64	0.10	0.27	0.20	0.23	0.55	0.00	0.35
Avail Cap(c_a), veh/h	515	1106	1151	519	1149	940	305	377	396	319	0	356
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.85	0.85	0.85	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.2	7.8	7.8	5.8	3.3	2.5	45.0	39.9	37.1	45.9	0.0	40.9
Incr Delay (d2), s/veh	0.2	0.8	0.8	0.1	2.3	0.2	0.7	0.4	0.4	2.0	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.6	8.4	8.7	0.9	10.9	0.8	3.1	2.6	3.2	7.1	0.0	4.4
LnGrp Delay(d),s/veh	6.3	8.6	8.6	5.9	5.7	2.7	45.7	40.2	37.5	47.9	0.0	41.8
LnGrp LOS	A	A	A	A	A	A	D	D	D	D		D
Approach Vol, veh/h		827			884			181				219
Approach Delay, s/veh		8.3			5.4			41.0				45.4
Approach LOS		A			A			D				D
<b>Timer</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.9	78.3		22.8	10.2	77.0		22.8				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	5.0	63.0		24.0	5.0	63.0		24.0				
Max Q Clear Time (g_c+I1), s	3.7	12.6		16.4	4.4	16.0		12.2				
Green Ext Time (p_c), s	0.0	26.3		0.5	0.0	31.6		0.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				13.7								
HCM 2010 LOS				B								

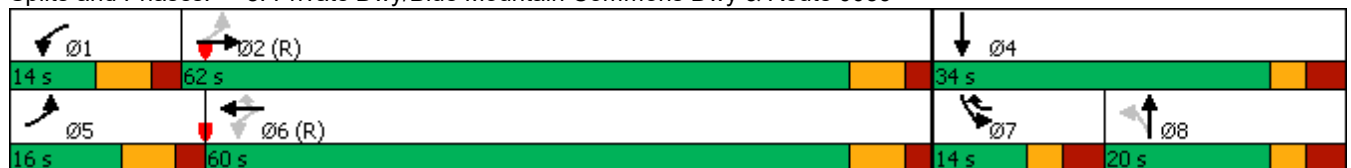


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	108	753	34	44	874	13	37	1	21	76	2	94
Future Volume (vph)	108	753	34	44	874	13	37	1	21	76	2	94
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	13	13	13	13	12	12	12
Grade (%)		-2%			3%			3%			-2%	
Storage Length (ft)	200		0	110		200	0		75	250		300
Storage Lanes	1		0	1		1	1		1	0		2
Taper Length (ft)	50			50			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		1659			1606			416			814	
Travel Time (s)		25.1			24.3			11.3			22.2	
Confl. Peds. (#/hr)	3		1	1		3						
Confl. Bikes (#/hr)			1	1								
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	3%	9%	0%	3%	15%	0%	0%	5%	7%	0%	1%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA	pm+ov	Perm	NA		Prot	NA	
Protected Phases	5	2		1	6	7		8		7	4	
Permitted Phases	2			6		6	8					
Detector Phase	5	2		1	6	7	8	8		7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0	3.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	13.9	22.9		13.9	22.9	13.4	13.4	13.4		13.4	13.4	
Total Split (s)	16.0	62.0		14.0	60.0	14.0	20.0	20.0		14.0	34.0	
Total Split (%)	14.5%	56.4%		12.7%	54.5%	12.7%	18.2%	18.2%		12.7%	30.9%	
Yellow Time (s)	4.5	4.5		4.5	4.5	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.4	2.4		2.4	2.4	3.4	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.9	5.9		5.9	5.9	5.4	5.4	5.4		5.4	5.4	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes		
Recall Mode	None	C-Max		None	C-Max	None	None	None		None	None	

Intersection Summary























Area Type: Other  
 Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 101 (92%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 70  
 Control Type: Actuated-Coordinated

Splits and Phases: 8: Private Dwy/Blue Mountain Commons Dwy & Route 0039





HCM 2010 Signalized Intersection Summary Existing Route 0039 (Front to Patton) AM.syn  
 8: Private Dwy/Blue Mountain Commons Dwy & Route 0039 04/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	108	753	34	44	874	13	37	1	21	76	2	94
Future Volume (veh/h)	108	753	34	44	874	13	37	1	21	76	2	94
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1818	1761	1818	1773	1721	1603	1844	1760	1844	1699	1800	1818
Adj Flow Rate, veh/h	114	793	36	46	920	14	39	1	22	80	2	99
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	2	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	3	3	0	3	15	0	0	0	7	0	0
Cap, veh/h	544	2109	96	442	2053	916	147	4	87	166	5	244
Arrive On Green	0.04	0.43	0.43	0.07	1.00	1.00	0.06	0.06	0.06	0.05	0.16	0.16
Sat Flow, veh/h	1731	3255	148	1689	3271	1344	1346	65	1440	3139	30	1504
Grp Volume(v), veh/h	114	407	422	46	920	14	39	0	23	80	0	101
Grp Sat Flow(s),veh/h/ln	1731	1673	1730	1689	1635	1344	1346	0	1506	1570	0	1535
Q Serve(g_s), s	2.5	18.1	18.1	1.0	0.0	0.0	3.1	0.0	1.6	2.7	0.0	6.5
Cycle Q Clear(g_c), s	2.5	18.1	18.1	1.0	0.0	0.0	3.1	0.0	1.6	2.7	0.0	6.5
Prop In Lane	1.00		0.09	1.00		1.00	1.00		0.96	1.00		0.98
Lane Grp Cap(c), veh/h	544	1084	1121	442	2053	916	147	0	91	166	0	249
V/C Ratio(X)	0.21	0.38	0.38	0.10	0.45	0.02	0.27	0.00	0.25	0.48	0.00	0.41
Avail Cap(c_a), veh/h	610	1084	1121	509	2053	916	244	0	200	245	0	399
HCM Platoon Ratio	0.67	0.67	0.67	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.93	0.93	0.93	0.83	0.83	0.83	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.1	16.1	16.1	7.4	0.0	0.0	50.0	0.0	49.3	50.6	0.0	41.3
Incr Delay (d2), s/veh	0.2	0.9	0.9	0.1	0.6	0.0	1.0	0.0	1.5	2.2	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.1	13.3	13.7	0.9	0.3	0.0	2.1	0.0	1.3	2.2	0.0	5.1
LnGrp Delay(d),s/veh	6.3	17.0	17.0	7.5	0.6	0.0	51.0	0.0	50.8	52.8	0.0	42.4
LnGrp LOS	A	B	B	A	A	A	D		D	D		D
Approach Vol, veh/h		943			980			62				181
Approach Delay, s/veh		15.7			0.9			50.9				47.0
Approach LOS		B			A			D				D
<b>Timer</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>				
Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.6	77.2		23.2	11.8	75.0	11.2	12.0				
Change Period (Y+Rc), s	6.9	6.9		6.4	6.9	6.9	6.4	6.4				
Max Green Setting (Gmax), s	7.1	55.1		27.6	9.1	53.1	7.6	13.6				
Max Q Clear Time (g_c+I1), s	3.5	20.6		8.5	5.0	2.5	5.2	5.6				
Green Ext Time (p_c), s	0.0	23.3		0.3	0.1	34.6	0.0	0.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				12.6								
HCM 2010 LOS				B								

Lanes, Volumes, Timings  
9: Progress Ave & Route 0039

Existing Route 0039 (Front to Patton) AM.syn  
04/29/2020

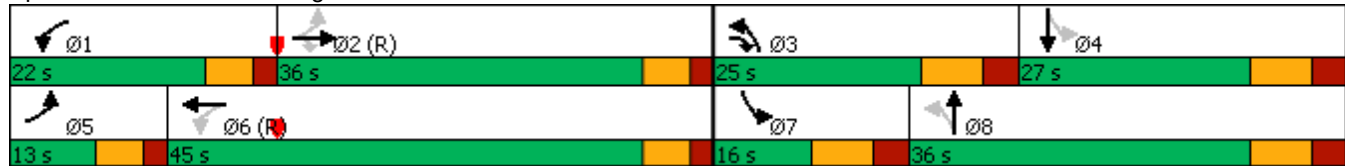


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗↗	↖	↖	↗↗		↖	↗		↖	↗	
Traffic Volume (vph)	31	488	262	162	707	12	213	40	194	39	131	63
Future Volume (vph)	31	488	262	162	707	12	213	40	194	39	131	63
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	13	11	11	13	12	12	12	12	13	13
Grade (%)		3%			2%			-4%			4%	
Storage Length (ft)	210		250	290		250	385		0	140		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	100			50			50			90		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			45			25	
Link Distance (ft)		1606			631			987			941	
Travel Time (s)		24.3			9.6			15.0			25.7	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	2%	3%	2%	2%	17%	6%	3%	5%	5%	2%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases	2		2	6			8			4		
Detector Phase	5	2	3	1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	3.0	13.0	3.0	3.0	13.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	13.0	19.0	15.0	13.0	19.0		15.0	15.0		15.0	15.0	
Total Split (s)	13.0	36.0	25.0	22.0	45.0		25.0	36.0		16.0	27.0	
Total Split (%)	11.8%	32.7%	22.7%	20.0%	40.9%		22.7%	32.7%		14.5%	24.5%	
Yellow Time (s)	4.0	4.0	5.0	4.0	4.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0	3.0	2.0	2.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	7.0	5.0	5.0		7.0	7.0		7.0	7.0	
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	None	None	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other  
 Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 86 (78%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated

Splits and Phases: 9: Progress Ave & Route 0039

























Done By: JBL  
 Checked By:

P:\0065\006524\_0426\Admin\Traffic\Synchro\Existing Route 0039 (Front to Patton) AM.syn  
 Synchro 10 Report

HCM 2010 Signalized Intersection Summary  
 9: Progress Ave & Route 0039

Existing Route 0039 (Front to Patton) AM.syn  
 04/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	488	262	162	707	12	213	40	194	39	131	63
Future Volume (veh/h)	31	488	262	162	707	12	213	40	194	39	131	63
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1773	1738	1790	1747	1743	1853	1732	1754	1836	1680	1799	1835
Adj Flow Rate, veh/h	33	514	276	171	744	13	224	42	204	41	138	66
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	2	3	2	2	2	6	3	3	5	2	2
Cap, veh/h	336	1338	831	413	1543	27	339	65	313	246	168	80
Arrive On Green	0.03	0.41	0.41	0.09	0.46	0.46	0.14	0.25	0.25	0.04	0.15	0.15
Sat Flow, veh/h	1689	3303	1520	1664	3330	58	1650	261	1269	1600	1151	550
Grp Volume(v), veh/h	33	514	276	171	370	387	224	0	246	41	0	204
Grp Sat Flow(s),veh/h/ln	1689	1651	1520	1664	1656	1732	1650	0	1530	1600	0	1701
Q Serve(g_s), s	1.2	12.1	11.1	6.1	17.0	17.0	11.9	0.0	15.9	2.4	0.0	12.8
Cycle Q Clear(g_c), s	1.2	12.1	11.1	6.1	17.0	17.0	11.9	0.0	15.9	2.4	0.0	12.8
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.83	1.00		0.32
Lane Grp Cap(c), veh/h	336	1338	831	413	767	803	339	0	378	246	0	248
V/C Ratio(X)	0.10	0.38	0.33	0.41	0.48	0.48	0.66	0.00	0.65	0.17	0.00	0.82
Avail Cap(c_a), veh/h	407	1338	831	522	767	803	375	0	403	312	0	309
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.4	23.1	13.8	15.6	20.4	20.4	31.5	0.0	37.2	37.4	0.0	45.6
Incr Delay (d2), s/veh	0.1	0.8	1.0	0.7	2.2	2.1	3.7	0.0	3.4	0.3	0.0	13.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.0	9.4	8.2	5.1	12.9	13.3	9.7	0.0	11.4	1.9	0.0	11.2
LnGrp Delay(d),s/veh	18.5	23.8	14.8	16.3	22.6	22.5	35.2	0.0	40.5	37.7	0.0	58.9
LnGrp LOS	B	C	B	B	C	C	D		D	D		E
Approach Vol, veh/h	823			928			470			245		
Approach Delay, s/veh	20.6			21.4			38.0			55.3		
Approach LOS	C			C			D			E		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.8	49.6	22.6	23.1	8.4	56.0	11.5	34.2				
Change Period (Y+Rc), s	6.0	6.0	8.0	8.0	6.0	6.0	8.0	8.0				
Max Green Setting (Gmax), s	6.0	30.0	17.0	19.0	7.0	39.0	8.0	28.0				
Max Q Clear Time (g_c+I1), s	8.6	14.6	14.4	14.8	3.7	19.5	4.9	17.9				
Green Ext Time (p_c), s	0.3	11.8	0.2	0.3	0.0	13.9	0.0	0.6				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay	27.6											
HCM 2010 LOS	C											

Lanes, Volumes, Timings  
10: Sturbridge Dr/Private Dwy & Route 0039

Existing Route 0039 (Front to Patton) AM.syn  
04/29/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↗	↖		↕	↗		↕	
Traffic Volume (vph)	0	580	185	117	754	0	74	0	37	0	0	0
Future Volume (vph)	0	580	185	117	754	0	74	0	37	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	13	12	12	12	14	14	14	10	10	10
Grade (%)		0%			1%			-1%			0%	
Storage Length (ft)	0		250	80		0	250		250	0		0
Storage Lanes	0		1	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		862			1072			870			145	
Travel Time (s)		13.1			16.2			23.7			4.0	
Confl. Peds. (#/hr)			3	3			1					1
Confl. Bikes (#/hr)			1	1								
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	4%	1%	0%	3%	0%	3%	0%	3%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type		NA	Perm	Perm	NA		Perm	NA	Perm			
Protected Phases		6			2			4				8
Permitted Phases	6		6	2			4		4	8		
Detector Phase	6	6	6	2	2		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		3.0	3.0	3.0	3.0	3.0	
Minimum Split (s)	16.5	16.5	16.5	16.5	16.5		12.5	12.5	12.5	12.5	12.5	
Total Split (s)	87.0	87.0	87.0	87.0	87.0		23.0	23.0	23.0	23.0	23.0	
Total Split (%)	79.1%	79.1%	79.1%	79.1%	79.1%		20.9%	20.9%	20.9%	20.9%	20.9%	
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.5	2.5	2.5	2.5	2.5	
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0			-1.0	-1.0		-1.0	
Total Lost Time (s)		5.5	5.5	5.5	5.5			4.5	4.5		4.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None	None	None	None	

Intersection Summary




















Area Type: Other  
 Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 2 (2%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green  
 Natural Cycle: 55  
 Control Type: Actuated-Coordinated

Splits and Phases: 10: Sturbridge Dr/Private Dwy & Route 0039



HCM 2010 Signalized Intersection Summary  
 10: Sturbridge Dr/Private Dwy & Route 0039

Existing Route 0039 (Front to Patton) AM.syn  
 04/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	580	185	117	754	0	74	0	37	0	0	0
Future Volume (veh/h)	0	580	185	117	754	0	74	0	37	0	0	0
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	0.99		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1800	1731	1853	1791	1739	1791	1881	1827	1827	1800	1800	1800
Adj Flow Rate, veh/h	0	604	193	122	785	0	77	0	39	0	0	0
Adj No. of Lanes	0	1	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	4	4	1	0	3	3	0	0	3	0	0	0
Cap, veh/h	0	1430	1272	570	1436	0	186	0	128	0	150	0
Arrive On Green	0.00	0.83	0.83	1.00	1.00	0.00	0.08	0.00	0.08	0.00	0.00	0.00
Sat Flow, veh/h	0	1731	1540	689	1739	0	1446	0	1543	0	1800	0
Grp Volume(v), veh/h	0	604	193	122	785	0	77	0	39	0	0	0
Grp Sat Flow(s),veh/h/ln	0	1731	1540	689	1739	0	1446	0	1543	0	1800	0
Q Serve(g_s), s	0.0	10.3	2.7	2.8	0.0	0.0	5.7	0.0	2.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	10.3	2.7	13.1	0.0	0.0	5.7	0.0	2.6	0.0	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	0	1430	1272	570	1436	0	186	0	128	0	150	0
V/C Ratio(X)	0.00	0.42	0.15	0.21	0.55	0.00	0.41	0.00	0.30	0.00	0.00	0.00
Avail Cap(c_a), veh/h	0	1430	1272	570	1436	0	309	0	260	0	303	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.64	0.64	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	2.6	1.9	0.7	0.0	0.0	48.8	0.0	47.4	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.9	0.3	0.6	1.0	0.0	1.5	0.0	1.3	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	8.8	2.2	1.0	0.7	0.0	4.2	0.0	2.1	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	3.5	2.2	1.3	1.0	0.0	50.3	0.0	48.8	0.0	0.0	0.0
LnGrp LOS		A	A	A	A		D		D			
Approach Vol, veh/h		797			907			116				0
Approach Delay, s/veh		3.2			1.0			49.8				0.0
Approach LOS		A			A			D				
<b>Timer</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		96.4		13.6		96.4		13.6				
Change Period (Y+Rc), s		6.5		5.5		6.5		5.5				
Max Green Setting (Gmax), s		80.5		17.5		80.5		17.5				
Max Q Clear Time (g_c+I1), s		15.6		8.2		12.8		0.0				
Green Ext Time (p_c), s		42.1		0.2		36.1		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				5.1								
HCM 2010 LOS				A								

Lanes, Volumes, Timings  
 11: Private Dwy/Oakhurst Blvd & Route 0039

Existing Route 0039 (Front to Patton) AM.syn  
 04/29/2020

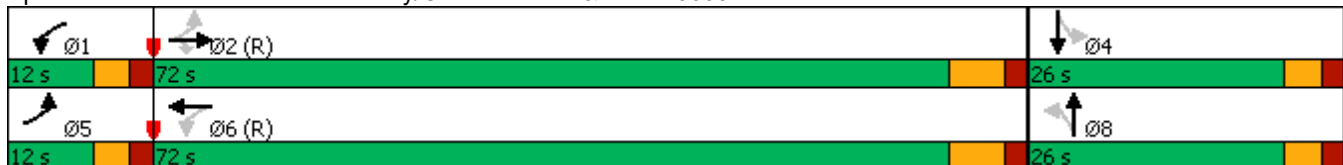


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	524	0	0	817	55	0	0	0	35	0	29
Future Volume (vph)	46	524	0	0	817	55	0	0	0	35	0	29
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	11	12	12	12	12	15	15	15	15	15
Grade (%)		-2%			1%			-1%			-1%	
Storage Length (ft)	180		150	150		0	40		40	0		60
Storage Lanes	1		1	1		0	0		1	1		1
Taper Length (ft)	50			75			3			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		1072			1119			285			941	
Travel Time (s)		16.2			17.0			7.8			25.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	2%	0%	0%	1%	4%	0%	0%	0%	11%	0%	3%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm			Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	5	2	2	1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	12.0	12.0	7.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	12.0	18.6	18.6	12.0	18.6		12.0	12.0		12.0	12.0	
Total Split (s)	12.0	72.0	72.0	12.0	72.0		26.0	26.0		26.0	26.0	
Total Split (%)	10.9%	65.5%	65.5%	10.9%	65.5%		23.6%	23.6%		23.6%	23.6%	
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	4.0	5.6	5.6	4.0	5.6		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Recall Mode	None	C-Max	C-Max	None	C-Max		None	None		None	None	

Intersection Summary






















Area Type: Other  
 Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green, Master Intersection  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated

Splits and Phases: 11: Private Dwy/Oakhurst Blvd & Route 0039



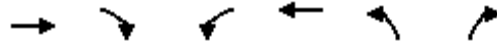
HCM 2010 Signalized Intersection Summary  
 11: Private Dwy/Oakhurst Blvd & Route 0039

Existing Route 0039 (Front to Patton) AM.syn  
 04/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	524	0	0	817	55	0	0	0	35	0	29
Future Volume (veh/h)	46	524	0	0	817	55	0	0	0	35	0	29
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1699	1782	1818	1791	1770	1791	1809	1881	1881	1695	1827	1881
Adj Flow Rate, veh/h	50	570	0	0	888	60	0	0	0	38	0	32
Adj No. of Lanes	1	1	1	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	7	2	0	0	1	1	0	0	0	11	0	0
Cap, veh/h	424	1511	1310	707	1233	83	65	123	0	171	0	101
Arrive On Green	0.12	1.00	0.00	0.00	0.75	0.75	0.00	0.00	0.00	0.07	0.00	0.07
Sat Flow, veh/h	1618	1782	1545	1706	1640	111	1406	1881	0	1614	0	1553
Grp Volume(v), veh/h	50	570	0	0	0	948	0	0	0	38	0	32
Grp Sat Flow(s),veh/h/ln	1618	1782	1545	1706	0	1750	1406	1881	0	1614	0	1553
Q Serve(g_s), s	0.6	0.0	0.0	0.0	0.0	32.2	0.0	0.0	0.0	2.5	0.0	2.2
Cycle Q Clear(g_c), s	0.6	0.0	0.0	0.0	0.0	32.2	0.0	0.0	0.0	2.5	0.0	2.2
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	424	1511	1310	707	0	1317	65	123	0	171	0	101
V/C Ratio(X)	0.12	0.38	0.00	0.00	0.00	0.72	0.00	0.00	0.00	0.22	0.00	0.32
Avail Cap(c_a), veh/h	446	1511	1310	830	0	1317	255	376	0	388	0	311
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.9	0.0	0.0	0.0	0.0	7.4	0.0	0.0	0.0	49.2	0.0	49.1
Incr Delay (d2), s/veh	0.1	0.7	0.0	0.0	0.0	3.4	0.0	0.0	0.0	0.7	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.9	0.5	0.0	0.0	0.0	23.2	0.0	0.0	0.0	2.1	0.0	1.8
LnGrp Delay(d),s/veh	7.0	0.7	0.0	0.0	0.0	10.8	0.0	0.0	0.0	49.9	0.0	50.8
LnGrp LOS	A	A				B				D		D
Approach Vol, veh/h		620			948			0				70
Approach Delay, s/veh		1.2			10.8			0.0				50.3
Approach LOS		A			B							D
<b>Timer</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	98.8		11.2	10.5	88.3		11.2				
Change Period (Y+Rc), s	5.0	6.6		5.0	5.0	6.6		5.0				
Max Green Setting (Gmax), s	7.0	65.4		21.0	7.0	65.4		21.0				
Max Q Clear Time (g_c+I1), s	0.0	2.5		5.0	3.1	34.2		0.0				
Green Ext Time (p_c), s	0.0	24.0		0.2	0.0	26.6		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			8.8									
HCM 2010 LOS			A									

Lanes, Volumes, Timings  
 12: Crums Mill Rd & Route 0039

Existing Route 0039 (Front to Patton) AM.syn  
 04/29/2020



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	514	33	72	837	32	53
Future Volume (vph)	514	33	72	837	32	53
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	14	12	11	11	11
Grade (%)	0%			0%	7%	
Storage Length (ft)		150	80		0	0
Storage Lanes		1	1		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	45			45	25	
Link Distance (ft)	1073			1023	1149	
Travel Time (s)	16.3			15.5	31.3	
Confl. Peds. (#/hr)		2	2			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	3%	0%	1%	1%	3%	4%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other  
 Control Type: Unsignalized



**Intersection**

Int Delay, s/veh 1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Vol, veh/h	514	33	72	837	32	53
Future Vol, veh/h	514	33	72	837	32	53
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	80	-	0	-
Veh in Median Storage, #	-	-	-	0	0	-
Grade, %	0	-	-	0	7	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	0	1	1	3	4
Mvmt Flow	541	35	76	881	34	56

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	578
Stage 1	-	-	543
Stage 2	-	-	1033
Critical Hdwy	-	4.3	7.8
Critical Hdwy Stg 1	-	-	6.83
Critical Hdwy Stg 2	-	-	6.83
Follow-up Hdwy	-	3	3
Pot Cap-1 Maneuver	-	758	71
Stage 1	-	-	533
Stage 2	-	-	252
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	757	64
Mov Cap-2 Maneuver	-	-	169
Stage 1	-	-	532
Stage 2	-	-	227

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	22.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	290	-	-	757	-
HCM Lane V/C Ratio	0.309	-	-	0.1	-
HCM Control Delay (s)	22.9	-	-	10.3	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	1.3	-	-	0.3	-

Lanes, Volumes, Timings  
 13: Versailles Dr/Dover Rd & Route 0039

Existing Route 0039 (Front to Patton) AM.syn  
 04/29/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	511	3	5	790	20	10	0	7	28	0	132
Future Volume (vph)	33	511	3	5	790	20	10	0	7	28	0	132
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	13	12	12	12	11	13	13
Grade (%)		3%			-2%			0%			0%	
Storage Length (ft)	105		0	105		210	0		0	0		90
Storage Lanes	1		0	1		1	0		0	1		1
Taper Length (ft)	50			80			25			115		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		1023			1167			634			962	
Travel Time (s)		15.5			17.7			17.3			26.2	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	3%	33%	0%	2%	0%	10%	0%	0%	0%	0%	4%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	10.0		10.0	10.0	10.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	12.8	15.8		15.8	15.8	15.8	12.5	12.5		12.5	12.5	
Total Split (s)	16.0	76.0		60.0	60.0	60.0	24.0	24.0		24.0	24.0	
Total Split (%)	16.0%	76.0%		60.0%	60.0%	60.0%	24.0%	24.0%		24.0%	24.0%	
Yellow Time (s)	4.6	4.6		4.6	4.6	4.6	3.0	3.0		3.0	3.0	
All-Red Time (s)	1.2	1.2		1.2	1.2	1.2	2.5	2.5		2.5	2.5	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	
Total Lost Time (s)	4.8	4.8		4.8	4.8	4.8		4.5		4.5	4.5	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	

Intersection Summary

Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 8 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated

Splits and Phases: 13: Versailles Dr/Dover Rd & Route 0039



HCM 2010 Signalized Intersection Summary  
 13: Versailles Dr/Dover Rd & Route 0039

Existing Route 0039 (Front to Patton) AM.syn  
 04/29/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	511	3	5	790	20	10	0	7	28	0	132
Future Volume (veh/h)	33	511	3	5	790	20	10	0	7	28	0	132
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1773	1719	1773	1818	1782	1891	1800	1700	1800	1800	1800	1872
Adj Flow Rate, veh/h	34	532	3	5	823	21	10	0	7	29	0	138
Adj No. of Lanes	1	1	0	1	1	1	0	1	0	1	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	3	3	0	2	0	0	0	0	0	0	0
Cap, veh/h	584	1343	8	692	1266	1142	82	13	26	225	0	183
Arrive On Green	0.03	0.79	0.79	1.00	1.00	1.00	0.12	0.00	0.12	0.12	0.00	0.12
Sat Flow, veh/h	1689	1707	10	892	1782	1607	204	108	219	1427	0	1524
Grp Volume(v), veh/h	34	0	535	5	823	21	17	0	0	29	0	138
Grp Sat Flow(s),veh/h/ln	1689	0	1717	892	1782	1607	531	0	0	1427	0	1524
Q Serve(g_s), s	0.5	0.0	9.6	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	8.8
Cycle Q Clear(g_c), s	0.5	0.0	9.6	1.5	0.0	0.0	8.9	0.0	0.0	2.2	0.0	8.8
Prop In Lane	1.00		0.01	1.00		1.00	0.59		0.41	1.00		1.00
Lane Grp Cap(c), veh/h	584	0	1351	692	1266	1142	121	0	0	225	0	183
V/C Ratio(X)	0.06	0.00	0.40	0.01	0.65	0.02	0.14	0.00	0.00	0.13	0.00	0.75
Avail Cap(c_a), veh/h	725	0	1351	692	1266	1142	217	0	0	332	0	297
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.81	0.81	0.81	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	2.9	0.0	3.3	0.0	0.0	0.0	39.4	0.0	0.0	39.7	0.0	42.6
Incr Delay (d2), s/veh	0.0	0.0	0.9	0.0	2.1	0.0	0.5	0.0	0.0	0.3	0.0	6.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.4	0.0	8.4	0.0	1.3	0.0	0.8	0.0	0.0	1.3	0.0	7.2
LnGrp Delay(d),s/veh	2.9	0.0	4.2	0.0	2.1	0.0	39.9	0.0	0.0	39.9	0.0	48.7
LnGrp LOS	A		A	A	A	A	D			D		D
Approach Vol, veh/h		569			849			17				167
Approach Delay, s/veh		4.1			2.0			39.9				47.2
Approach LOS		A			A			D				D
<b>Timer</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>				
Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		83.5		16.5	7.6	75.9		16.5				
Change Period (Y+Rc), s		* 5.8		5.5	* 5.8	* 5.8		5.5				
Max Green Setting (Gmax), s		* 70		18.5	* 10	* 54		18.5				
Max Q Clear Time (g_c+I1), s		11.6		10.8	3.0	4.0		10.9				
Green Ext Time (p_c), s		21.4		0.3	0.0	35.0		0.0				

Intersection Summary		
HCM 2010 Ctrl Delay		7.9
HCM 2010 LOS		A

Notes  
 \* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings  
 14: Ringneck Dr/Forest Hills Dr & Route 0039

Existing Route 0039 (Front to Patton) AM.syn  
 04/29/2020

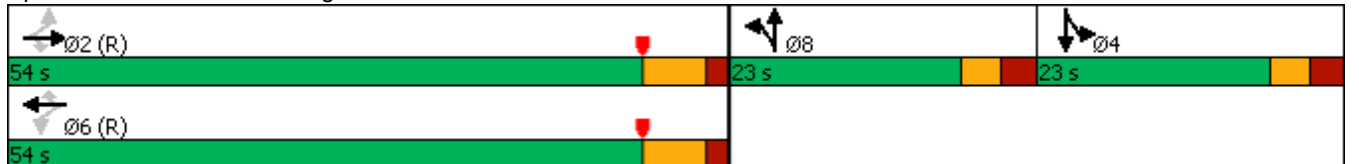


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	504	8	18	696	56	37	1	28	45	1	43
Future Volume (vph)	40	504	8	18	696	56	37	1	28	45	1	43
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	12	12	14	12	12	12	12	12	12
Grade (%)		-3%			4%			0%			0%	
Storage Length (ft)	110		120	105		160	170		0	90		90
Storage Lanes	1		1	1		1	0		0	0		1
Taper Length (ft)	60			60			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		1167			2161			627			730	
Travel Time (s)		17.7			32.7			17.1			19.9	
Confl. Peds. (#/hr)	1					1	24		22	22		24
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	3%	13%	11%	2%	0%	3%	0%	7%	2%	0%	2%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Split	NA		Split	NA	
Protected Phases		2			6		8	8		4	4	
Permitted Phases	2		2	6		6						
Detector Phase	2	2	2	6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	16.5	16.5	16.5	16.5	16.5	16.5	12.7	12.7		12.7	12.7	
Total Split (s)	54.0	54.0	54.0	54.0	54.0	54.0	23.0	23.0		23.0	23.0	
Total Split (%)	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	23.0%	23.0%		23.0%	23.0%	
Yellow Time (s)	4.7	4.7	4.7	4.7	4.7	4.7	3.0	3.0		3.0	3.0	
All-Red Time (s)	1.8	1.8	1.8	1.8	1.8	1.8	2.7	2.7		2.7	2.7	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	4.7	4.7		4.7	4.7	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None		None	None	

Intersection Summary

























Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 12 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated

Splits and Phases: 14: Ringneck Dr/Forest Hills Dr & Route 0039



HCM 2010 Signalized Intersection Summary  
 14: Ringneck Dr/Forest Hills Dr & Route 0039

Existing Route 0039 (Front to Patton) AM.syn  
 04/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	504	8	18	696	56	37	1	28	45	1	43
Future Volume (veh/h)	40	504	8	18	696	56	37	1	28	45	1	43
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.77	1.00		0.81
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1774	1774	1681	1589	1729	1835	1748	1686	1800	1765	1765	1800
Adj Flow Rate, veh/h	41	520	8	19	718	58	38	1	29	46	1	44
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	13	11	2	0	3	0	0	2	0	0
Cap, veh/h	584	1307	1052	650	1274	1148	85	2	55	106	2	76
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.05	0.05	0.05	0.06	0.06	0.06
Sat Flow, veh/h	696	1774	1428	785	1729	1558	1664	37	1073	1681	27	1197
Grp Volume(v), veh/h	41	520	8	19	718	58	38	0	30	46	0	45
Grp Sat Flow(s),veh/h/ln	696	1774	1428	785	1729	1558	1664	0	1110	1681	0	1224
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.0	2.6	2.6	0.0	3.6
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.0	2.6	2.6	0.0	3.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.97	1.00		0.98
Lane Grp Cap(c), veh/h	584	1307	1052	650	1274	1148	85	0	57	106	0	77
V/C Ratio(X)	0.07	0.40	0.01	0.03	0.56	0.05	0.45	0.00	0.53	0.43	0.00	0.58
Avail Cap(c_a), veh/h	584	1307	1052	650	1274	1148	305	0	203	308	0	224
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.93	0.64	0.64	0.64	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	46.1	0.0	46.3	45.1	0.0	45.6
Incr Delay (d2), s/veh	0.2	0.8	0.0	0.1	1.2	0.1	3.6	0.0	7.4	2.8	0.0	6.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.1	0.6	0.0	0.0	0.7	0.0	2.0	0.0	1.7	2.4	0.0	2.4
LnGrp Delay(d),s/veh	0.2	0.8	0.0	0.1	1.2	0.1	49.7	0.0	53.6	47.9	0.0	52.3
LnGrp LOS	A	A	A	A	A	A	D		D	D		D
Approach Vol, veh/h		569			795			68				91
Approach Delay, s/veh		0.8			1.1			51.4				50.1
Approach LOS		A			A			D				D
<b>Timer</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		79.2		11.0		79.2		9.8				
Change Period (Y+Rc), s		* 6.5		* 5.7		* 6.5		5.7				
Max Green Setting (Gmax), s		* 48		* 17		* 48		17.3				
Max Q Clear Time (g_c+I1), s		2.5		5.6		2.5		4.7				
Green Ext Time (p_c), s		19.6		0.2		29.2		0.1				

**Intersection Summary**

HCM 2010 Ctrl Delay	6.1
HCM 2010 LOS	A

**Notes**

\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings  
15: Colonial Rd & Route 0039

Existing Route 0039 (Front to Patton) AM.syn  
04/29/2020

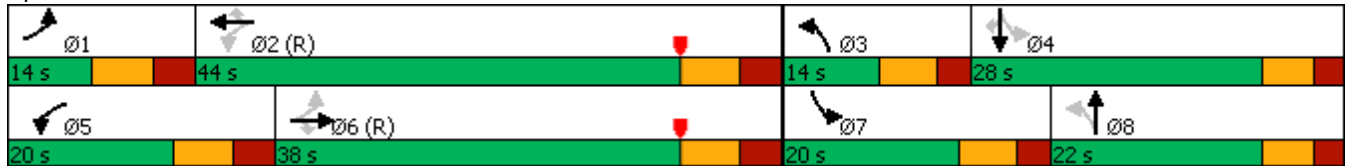


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (vph)	31	346	102	164	607	62	156	59	114	133	139	95
Future Volume (vph)	31	346	102	164	607	62	156	59	114	133	139	95
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	12	12	14	12	14	14	11	11	14
Grade (%)		1%			-1%			-2%			1%	
Storage Length (ft)	330		420	135		445	225		0	205		175
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	100			50			50			65		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		2161			1595			636			810	
Travel Time (s)		32.7			24.2			12.4			15.8	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	6%	3%	4%	3%	2%	8%	3%	3%	4%	3%	1%	1%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6		6	2		2	8			4		4
Detector Phase	1	6	6	5	2	2	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	3.0	10.0	10.0	3.0	10.0	10.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	14.0	17.7	17.7	14.7	17.7	17.7	13.8	13.2		13.8	13.2	13.2
Total Split (s)	14.0	38.0	38.0	20.0	44.0	44.0	14.0	22.0		20.0	28.0	28.0
Total Split (%)	14.0%	38.0%	38.0%	20.0%	44.0%	44.0%	14.0%	22.0%		20.0%	28.0%	28.0%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.3	3.8		4.3	3.8	3.8
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2	3.2	2.5	2.4		2.5	2.4	2.4
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	5.8	5.2		5.8	5.2	5.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	None

Intersection Summary

























Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 58 (58%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated

Splits and Phases: 15: Colonial Rd & Route 0039



HCM 2010 Signalized Intersection Summary  
 15: Colonial Rd & Route 0039

Existing Route 0039 (Front to Patton) AM.syn  
 04/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	346	102	164	607	62	156	59	114	133	139	95
Future Volume (veh/h)	31	346	102	164	607	62	156	59	114	133	139	95
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1690	1739	1791	1756	1774	1742	1765	1824	1891	1739	1773	1844
Adj Flow Rate, veh/h	35	389	115	184	682	70	175	66	128	149	156	107
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	6	3	4	3	2	8	3	3	3	3	1	1
Cap, veh/h	217	704	616	405	828	691	314	82	158	295	308	271
Arrive On Green	0.01	0.13	0.13	0.10	0.47	0.47	0.08	0.15	0.15	0.11	0.17	0.17
Sat Flow, veh/h	1609	1739	1522	1673	1774	1481	1681	554	1075	1656	1773	1563
Grp Volume(v), veh/h	35	389	115	184	682	70	175	0	194	149	156	107
Grp Sat Flow(s),veh/h/ln	1609	1739	1522	1673	1774	1481	1681	0	1630	1656	1773	1563
Q Serve(g_s), s	1.3	20.9	6.7	5.9	33.3	2.6	8.2	0.0	11.5	7.4	8.0	6.1
Cycle Q Clear(g_c), s	1.3	20.9	6.7	5.9	33.3	2.6	8.2	0.0	11.5	7.4	8.0	6.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.66	1.00		1.00
Lane Grp Cap(c), veh/h	217	704	616	405	828	691	314	0	240	295	308	271
V/C Ratio(X)	0.16	0.55	0.19	0.45	0.82	0.10	0.56	0.00	0.81	0.51	0.51	0.39
Avail Cap(c_a), veh/h	280	704	616	468	828	691	314	0	274	350	404	356
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.92	0.68	0.68	0.68	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.5	34.9	28.7	16.2	23.1	14.9	33.8	0.0	41.3	31.1	37.4	36.7
Incr Delay (d2), s/veh	0.3	2.9	0.6	0.5	6.4	0.2	2.2	0.0	14.8	1.3	1.3	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.0	15.8	5.3	5.0	23.5	2.0	7.7	0.0	10.2	6.2	7.2	4.8
LnGrp Delay(d),s/veh	20.8	37.7	29.3	16.8	29.5	15.1	35.9	0.0	56.0	32.5	38.7	37.6
LnGrp LOS	C	D	C	B	C	B	D		E	C	D	D
Approach Vol, veh/h		539			936			369			412	
Approach Delay, s/veh		34.8			25.9			46.5			36.2	
Approach LOS		C			C			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	53.4	14.0	22.6	16.3	47.2	16.7	19.9				
Change Period (Y+Rc), s	* 7.7	* 7.7	6.8	* 6.2	* 7.7	* 7.7	6.8	* 6.2				
Max Green Setting (Gmax), s	6.3	* 36	7.2	* 22	* 12	* 30	13.2	* 16				
Max Q Clear Time (g_c+I1), s	3.8	35.8	10.7	10.5	8.4	23.4	9.9	13.5				
Green Ext Time (p_c), s	0.0	0.4	0.0	0.9	0.2	4.2	0.2	0.2				

Intersection Summary		
HCM 2010 Ctrl Delay		33.3
HCM 2010 LOS		C

Notes  
 \* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings  
16: Woodview Rd/Patton Rd & Route 0039

Existing Route 0039 (Front to Patton) AM.syn  
04/29/2020

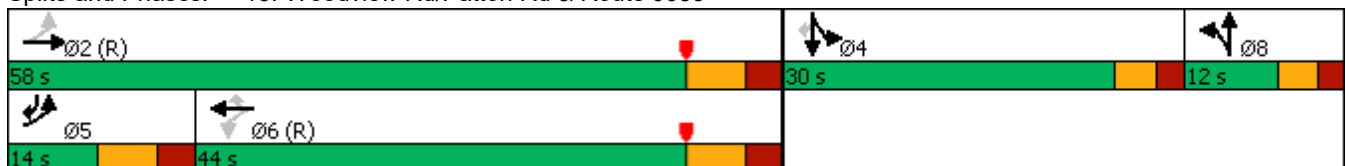


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	463	12	4	678	21	7	1	2	71	2	106
Future Volume (vph)	37	463	12	4	678	21	7	1	2	71	2	106
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	14	14	14	14	12	12	14
Grade (%)		1%			-1%			5%			7%	
Storage Length (ft)	135		200	100		115	0		0	0		285
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (ft)	50			50			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1595			1628			695			1038	
Travel Time (s)		24.2			24.7			15.8			23.6	
Confl. Peds. (#/hr)			2	2					2	2		
Confl. Bikes (#/hr)			1	1								
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	5%	3%	8%	0%	2%	14%	14%	0%	0%	0%	0%	6%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		Perm	NA	Perm	Split	NA		Split	NA	pm+ov
Protected Phases	5	2			6		8	8		4	4	5
Permitted Phases	2			6		6						4
Detector Phase	5	2		6	6	6	8	8		4	4	5
Switch Phase												
Minimum Initial (s)	3.0	10.0		10.0	10.0	10.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	14.0	23.3		17.3	17.3	17.3	12.0	12.0		12.2	12.2	14.0
Total Split (s)	14.0	58.0		44.0	44.0	44.0	12.0	12.0		30.0	30.0	14.0
Total Split (%)	14.0%	58.0%		44.0%	44.0%	44.0%	12.0%	12.0%		30.0%	30.0%	14.0%
Yellow Time (s)	4.5	4.5		4.5	4.5	4.5	3.0	3.0		3.0	3.0	4.5
All-Red Time (s)	2.8	2.8		2.8	2.8	2.8	2.1	2.1		2.2	2.2	2.8
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)	6.3	6.3		6.3	6.3	6.3		4.1			4.2	6.3
Lead/Lag	Lead			Lag	Lag	Lag						Lead
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						Yes
Recall Mode	None	C-Min		C-Min	C-Min	C-Min	None	None		None	None	None

Intersection Summary

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

Splits and Phases: 16: Woodview Rd/Patton Rd & Route 0039























Done By: JBL  
Checked By:

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Synchro 10 Report



HCM 2010 Signalized Intersection Summary  
 16: Woodview Rd/Patton Rd & Route 0039

Existing Route 0039 (Front to Patton) AM.syn  
 04/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	463	12	4	678	21	7	1	2	71	2	106
Future Volume (veh/h)	37	463	12	4	678	21	7	1	2	71	2	106
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1706	1737	1791	1809	1774	1650	1825	1652	1825	1737	1737	1704
Adj Flow Rate, veh/h	45	565	15	5	827	26	9	1	2	87	2	129
Adj No. of Lanes	1	1	0	1	1	1	0	1	0	0	1	1
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	5	3	3	0	2	14	0	0	0	0	0	6
Cap, veh/h	300	1196	32	594	1088	841	21	2	5	202	5	229
Arrive On Green	0.07	1.00	1.00	0.61	0.61	0.61	0.02	0.02	0.02	0.12	0.12	0.12
Sat Flow, veh/h	1624	1683	45	851	1774	1372	1154	128	256	1619	37	1437
Grp Volume(v), veh/h	45	0	580	5	827	26	12	0	0	89	0	129
Grp Sat Flow(s),veh/h/ln	1624	0	1728	851	1774	1372	1538	0	0	1656	0	1437
Q Serve(g_s), s	0.9	0.0	0.0	0.2	33.8	0.7	0.8	0.0	0.0	5.0	0.0	8.3
Cycle Q Clear(g_c), s	0.9	0.0	0.0	0.2	33.8	0.7	0.8	0.0	0.0	5.0	0.0	8.3
Prop In Lane	1.00		0.03	1.00		1.00	0.75		0.17	0.98		1.00
Lane Grp Cap(c), veh/h	300	0	1228	594	1088	841	28	0	0	206	0	229
V/C Ratio(X)	0.15	0.00	0.47	0.01	0.76	0.03	0.42	0.00	0.00	0.43	0.00	0.56
Avail Cap(c_a), veh/h	369	0	1228	594	1088	841	122	0	0	427	0	421
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.80	0.00	0.80	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.1	0.0	0.0	7.5	14.0	7.6	48.5	0.0	0.0	40.5	0.0	38.8
Incr Delay (d2), s/veh	0.2	0.0	1.0	0.0	5.0	0.1	9.6	0.0	0.0	1.4	0.0	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.9	0.0	0.6	0.1	24.7	0.5	0.7	0.0	0.0	4.2	0.0	6.2
LnGrp Delay(d),s/veh	12.3	0.0	1.0	7.5	19.0	7.7	58.1	0.0	0.0	41.9	0.0	41.0
LnGrp LOS	B		A	A	B	A	E			D		D
Approach Vol, veh/h		625			858			12			218	
Approach Delay, s/veh		1.9			18.6			58.1			41.4	
Approach LOS		A			B			E			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		77.4		16.7	9.8	67.6		6.0				
Change Period (Y+Rc), s		* 7.3		* 5.2	* 7.3	* 7.3		5.1				
Max Green Setting (Gmax), s		* 51		* 25	* 6.7	* 37		6.9				
Max Q Clear Time (g_c+I1), s		2.5		10.8	3.4	36.3		2.8				
Green Ext Time (p_c), s		18.6		0.7	0.0	0.4		0.0				

Intersection Summary

HCM 2010 Ctrl Delay 15.7  
 HCM 2010 LOS B

Notes

\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

17: Pennsylvania Ave/Blue Mountain Pkwy & Route 0039 Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.3	0.0
Total Del/Veh (s)	4.5	2.8	3.4	5.0	3.8

18: Mountain Rd & Route 0039 Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.2	0.1	0.1
Total Del/Veh (s)	5.0	8.4	5.5	5.0	6.3

19: Balthaser St & Route 0039 Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.1	0.0	0.1	0.1
Total Del/Veh (s)	0.9	2.3	12.8	2.4

20: Piketown Rd & Route 0039 Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.1	0.3	2.7	2.1	1.0
Total Del/Veh (s)	10.2	14.8	16.3	20.4	14.3

21: Manor Dr & Route 0039 Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.0
Total Del/Veh (s)	2.0	0.7	4.2	1.7

22: Route 0039 & Manor Dr Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	0.1	0.0	0.4	0.2
Total Del/Veh (s)	3.9	4.2	1.0	2.7

23: Route 0039 & Green Hill Rd Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	0.2	0.0	0.2	0.1
Total Del/Veh (s)	8.6	5.0	2.4	3.8

24: Route 0039 & Devonshire Heights Rd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.2	0.2	0.0	0.0	0.0
Total Del/Veh (s)	5.9	9.1	1.8	2.1	2.3

25: Route 0039 & Red Top Rd Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	0.1	0.0	0.1	0.1
Total Del/Veh (s)	9.4	4.3	1.9	3.2

26: Route 0039 & Grandview Dr Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	0.3	0.0	0.3	0.2
Total Del/Veh (s)	40.5	5.3	12.6	14.6

27: Route 0039 & N. Hanover St Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	0.3	0.0	0.0	0.0
Total Del/Veh (s)	39.8	3.4	5.9	6.8

28: Route 0039 & E Canal St Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.1	0.1	0.3	0.0	0.1
Total Del/Veh (s)	8.9	12.4	1.0	3.4	3.0

Total Network Performance

Denied Del/Veh (s)	0.6
Total Del/Veh (s)	29.9



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	526	20	2	493	9	5	1	3	134	4	78
Future Volume (vph)	17	526	20	2	493	9	5	1	3	134	4	78
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	14	14	14	14	14	11	11	11	14	14	14
Grade (%)		4%			-1%			5%			1%	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		664			685			574			808	
Travel Time (s)		18.1			18.7			15.7			22.0	
Confl. Peds. (#/hr)	2					2						
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	3%	0%	0%	2%	0%	0%	0%	0%	2%	0%	1%
Shared Lane Traffic (%)												
Sign Control		Yield			Yield			Yield			Yield	

**Intersection Summary**

Area Type: Other

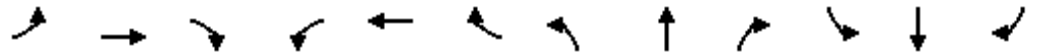
Control Type: Roundabout

Intersection				
Intersection Delay, s/veh	13.2			
Intersection LOS	B			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	663	593	11	255
Demand Flow Rate, veh/h	682	605	11	259
Vehicles Circulating, veh/h	168	27	819	600
Vehicles Exiting, veh/h	691	803	31	32
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	2
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	16.5	10.1	7.5	12.2
Approach LOS	C	B	A	B
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	682	605	11	259
Cap Entry Lane, veh/h	955	1100	498	620
Entry HV Adj Factor	0.973	0.981	1.000	0.985
Flow Entry, veh/h	663	593	11	255
Cap Entry, veh/h	929	1079	498	610
V/C Ratio	0.714	0.550	0.022	0.418
Control Delay, s/veh	16.5	10.1	7.5	12.2
LOS	C	B	A	B
95th %tile Queue, veh	6	3	0	2

Intersection				
Intersection Delay, s/veh	0			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	663	593	11	255
Demand Flow Rate, veh/h	682	605	11	259
Vehicles Circulating, veh/h	168	27	819	600
Vehicles Exiting, veh/h	691	803	31	32
Ped Vol Crossing Leg, #/h	0	0	0	2
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	10.5	7.2	6.2	9.2
Approach LOS	B	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	682	605	11	259
Cap Entry Lane, veh/h	1163	1342	599	748
Entry HV Adj Factor	0.973	0.981	1.000	0.985
Flow Entry, veh/h	663	593	11	255
Cap Entry, veh/h	1131	1317	599	737
V/C Ratio	0.587	0.451	0.018	0.346
Control Delay, s/veh	10.5	7.2	6.2	9.2
LOS	B	A	A	A
95th %tile Queue, veh	4	2	0	2

Lanes, Volumes, Timings  
18: Mountain Rd & Route 0039

Existing Route 0039 ( Blue Mountain to Canal) AM.syn  
04/29/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	244	271	156	405	11	211	8	67	18	41	9
Future Volume (vph)	6	244	271	156	405	11	211	8	67	18	41	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	14	14	14	14	14	14	14	14	12	12	12
Grade (%)		1%			0%			1%			-2%	
Link Speed (mph)		25			25			35			25	
Link Distance (ft)		762			689			1245			522	
Travel Time (s)		20.8			18.8			24.3			14.2	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	0%	2%	4%	2%	2%	0%	6%	13%	4%	0%	0%	0%
Shared Lane Traffic (%)												
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

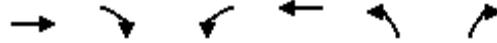
Area Type: Other  
Control Type: Roundabout

Intersection				
Intersection Delay, s/veh	19.7			
Intersection LOS	C			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	628	689	345	82
Demand Flow Rate, veh/h	647	703	364	82
Vehicles Circulating, veh/h	263	287	329	959
Vehicles Exiting, veh/h	778	406	581	31
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	1	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	19.3	25.6	10.6	11.2
Approach LOS	C	D	B	B
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	647	703	364	82
Cap Entry Lane, veh/h	869	848	813	433
Entry HV Adj Factor	0.971	0.980	0.947	1.000
Flow Entry, veh/h	628	689	345	82
Cap Entry, veh/h	843	831	770	433
V/C Ratio	0.745	0.829	0.448	0.189
Control Delay, s/veh	19.3	25.6	10.6	11.2
LOS	C	D	B	B
95th %tile Queue, veh	7	9	2	1



Intersection				
Intersection Delay, s/veh	12.0			
Intersection LOS	B			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	628	689	345	82
Demand Flow Rate, veh/h	647	703	364	82
Vehicles Circulating, veh/h	263	287	329	959
Vehicles Exiting, veh/h	778	406	581	31
Ped Vol Crossing Leg, #/h	0	1	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	12.0	14.3	7.9	9.0
Approach LOS	B	B	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	647	703	364	82
Cap Entry Lane, veh/h	1055	1030	987	519
Entry HV Adj Factor	0.971	0.980	0.947	1.000
Flow Entry, veh/h	628	689	345	82
Cap Entry, veh/h	1024	1009	934	519
V/C Ratio	0.613	0.683	0.369	0.158
Control Delay, s/veh	12.0	14.3	7.9	9.0
LOS	B	B	A	A
95th %tile Queue, veh	4	6	2	1

Lanes, Volumes, Timings  
 19: Balthaser St & Route 0039



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	374	11	25	523	42	21
Future Volume (vph)	374	11	25	523	42	21
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	14	14	14	12	12
Grade (%)	-1%			1%	-1%	
Link Speed (mph)	25			25	25	
Link Distance (ft)	823			664	1680	
Travel Time (s)	22.4			18.1	45.8	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	3%	9%	0%	3%	5%	0%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					

**Intersection**

Int Delay, s/veh 1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶			↷	↶	↷
Traffic Vol, veh/h	374	11	25	523	42	21
Future Vol, veh/h	374	11	25	523	42	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	-	-	0	0	-
Grade, %	-1	-	-	1	-1	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	3	9	0	3	5	0
Mvmt Flow	468	14	31	654	53	26

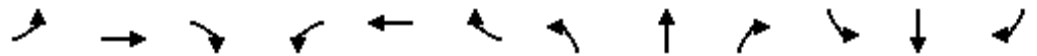
Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	482	0	1191
Stage 1	-	-	-	-	475
Stage 2	-	-	-	-	716
Critical Hdwy	-	-	4.3	-	6.3
Critical Hdwy Stg 1	-	-	-	-	5.25
Critical Hdwy Stg 2	-	-	-	-	5.25
Follow-up Hdwy	-	-	3	-	3.1
Pot Cap-1 Maneuver	-	-	819	-	231
Stage 1	-	-	-	-	708
Stage 2	-	-	-	-	548
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	819	-	217
Mov Cap-2 Maneuver	-	-	-	-	217
Stage 1	-	-	-	-	708
Stage 2	-	-	-	-	516

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	23
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	278	-	-	819	-
HCM Lane V/C Ratio	0.283	-	-	0.038	-
HCM Control Delay (s)	23	-	-	9.6	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.1	-	-	0.1	-

Lanes, Volumes, Timings  
20: Piketown Rd & Route 0039

Existing Route 0039 ( Blue Mountain to Canal) AM.syn  
04/29/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	159	225	60	288	3	159	25	47	6	80	82
Future Volume (vph)	21	159	225	60	288	3	159	25	47	6	80	82
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	11	12	14	14	12	12	12
Grade (%)		1%			-4%			0%			-1%	
Storage Length (ft)	220		105	190		0	240		0	130		130
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	50			50			75			100		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		1919			828			913			1214	
Travel Time (s)		32.7			14.1			17.8			23.6	
Confl. Peds. (#/hr)	1					1	1					1
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles (%)	5%	1%	4%	2%	3%	0%	4%	24%	13%	0%	1%	5%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA		Perm	NA	pm+ov
Protected Phases	5	2	3	1	6		3	8			4	5
Permitted Phases	2		2	6			8			4		4
Detector Phase	5	2	3	1	6		3	8		4	4	5
Switch Phase												
Minimum Initial (s)	3.0	15.0	3.0	3.0	15.0		3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	9.3	21.3	9.3	9.3	21.3		9.3	20.0		20.0	20.0	9.3
Total Split (s)	26.3	56.3	25.4	26.3	56.3		25.4	58.8		33.4	33.4	26.3
Total Split (%)	18.6%	39.8%	18.0%	18.6%	39.8%		18.0%	41.6%		23.6%	23.6%	18.6%
Yellow Time (s)	4.4	4.4	3.7	4.4	4.4		3.7	3.7		3.7	3.7	4.4
All-Red Time (s)	1.9	1.9	1.7	1.9	1.9		1.7	1.7		1.7	1.7	1.9
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.3	5.3	4.4	5.3	5.3		4.4	4.4		4.4	4.4	5.3
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead			Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes			Yes	Yes	Yes
Recall Mode	None	Min	None	None	Min		None	None		None	None	None

Intersection Summary

Area Type: Other

Cycle Length: 141.4

Actuated Cycle Length: 82.1























Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Splits and Phases: 20: Piketown Rd & Route 0039

26.3 s	56.3 s	25.4 s	33.4 s
26.3 s	56.3 s	58.8 s	

HCM 2010 Signalized Intersection Summary - Existing Route 0039 ( Blue Mountain to Canal) AM.syn  
 20: Piketown Rd & Route 0039 04/29/2020

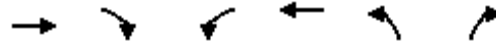
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	159	225	60	288	3	159	25	47	6	80	82
Future Volume (veh/h)	21	159	225	60	288	3	159	25	47	6	80	82
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1706	1773	1722	1800	1783	1836	1731	1602	1872	1809	1791	1723
Adj Flow Rate, veh/h	27	204	288	77	369	4	204	32	60	8	103	105
Adj No. of Lanes	1	1	1	1	1	0	1	1	0	1	1	1
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Percent Heavy Veh, %	5	1	4	2	3	3	4	24	24	0	1	5
Cap, veh/h	404	658	765	483	708	8	441	172	322	274	227	234
Arrive On Green	0.03	0.37	0.37	0.06	0.40	0.40	0.15	0.34	0.34	0.13	0.13	0.13
Sat Flow, veh/h	1624	1773	1462	1714	1761	19	1648	499	936	1327	1791	1459
Grp Volume(v), veh/h	27	204	288	77	0	373	204	0	92	8	103	105
Grp Sat Flow(s),veh/h/ln	1624	1773	1462	1714	0	1780	1648	0	1436	1327	1791	1459
Q Serve(g_s), s	0.7	5.6	8.0	1.8	0.0	10.8	6.6	0.0	3.1	0.4	3.6	4.4
Cycle Q Clear(g_c), s	0.7	5.6	8.0	1.8	0.0	10.8	6.6	0.0	3.1	0.4	3.6	4.4
Prop In Lane	1.00		1.00	1.00		0.01	1.00		0.65	1.00		1.00
Lane Grp Cap(c), veh/h	404	658	765	483	0	716	441	0	493	274	227	234
V/C Ratio(X)	0.07	0.31	0.38	0.16	0.00	0.52	0.46	0.00	0.19	0.03	0.45	0.45
Avail Cap(c_a), veh/h	851	1329	1318	901	0	1334	698	0	1148	671	763	671
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.8	15.2	9.6	11.6	0.0	15.4	18.5	0.0	15.7	26.1	27.5	25.9
Incr Delay (d2), s/veh	0.1	1.0	1.1	0.2	0.0	2.1	0.8	0.0	0.2	0.0	1.4	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.6	5.2	6.1	1.5	0.0	9.6	5.5	0.0	2.2	0.2	3.4	3.4
LnGrp Delay(d),s/veh	12.8	16.2	10.7	11.7	0.0	17.5	19.3	0.0	15.8	26.2	29.0	27.2
LnGrp LOS	B	B	B	B		B	B		B	C	C	C
Approach Vol, veh/h	519				450				296			
Approach Delay, s/veh	13.0				16.5				18.2			
Approach LOS	B				B				C			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	8					
Phs Duration (G+Y+Rc), s	9.7	30.6	14.8	13.0	7.6	32.7	27.8					
Change Period (Y+Rc), s	* 6.3	* 6.3	5.4	5.4	* 6.3	* 6.3	5.4					
Max Green Setting (Gmax), s	* 20	* 50	20.0	28.0	* 20	* 50	53.4					
Max Q Clear Time (g_c+I1), s	4.3	10.5	9.1	6.9	3.2	12.8	5.1					
Green Ext Time (p_c), s	0.2	13.8	0.5	0.7	0.0	10.1	0.3					

Intersection Summary		
HCM 2010 Ctrl Delay	17.3	
HCM 2010 LOS	B	

Notes  
 \* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings  
21: Manor Dr & Route 0039

Existing Route 0039 ( Blue Mountain to Canal) AM.syn  
04/29/2020



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (vph)	183	14	7	227	29	25
Future Volume (vph)	183	14	7	227	29	25
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	11	11
Grade (%)	5%			-4%	0%	
Link Speed (mph)	40			40	35	
Link Distance (ft)	1564			1176	778	
Travel Time (s)	26.7			20.0	15.2	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	5%	0%	0%	3%	0%	0%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					

**Intersection**

Int Delay, s/veh 1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	183	14	7	227	29	25
Future Vol, veh/h	183	14	7	227	29	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	-	-	0	0	-
Grade, %	5	-	-	-4	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	5	0	0	3	0	0
Mvmt Flow	208	16	8	258	33	28

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	224	0	490
Stage 1	-	-	-	-	216
Stage 2	-	-	-	-	274
Critical Hdwy	-	-	4.3	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	3	-	3
Pot Cap-1 Maneuver	-	-	1007	-	612
Stage 1	-	-	-	-	948
Stage 2	-	-	-	-	890
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1007	-	606
Mov Cap-2 Maneuver	-	-	-	-	606
Stage 1	-	-	-	-	948
Stage 2	-	-	-	-	882

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	10.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	707	-	-	1007	-
HCM Lane V/C Ratio	0.087	-	-	0.008	-
HCM Control Delay (s)	10.6	-	-	8.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Lanes, Volumes, Timings  
22: Route 0039 & Manor Dr

Existing Route 0039 ( Blue Mountain to Canal) AM.syn  
04/29/2020



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	1	68	66	343	431	2
Future Volume (vph)	1	68	66	343	431	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	11	11	11	11
Grade (%)	-4%			-1%	2%	
Link Speed (mph)	35			45	45	
Link Distance (ft)	794			2283	1182	
Travel Time (s)	15.5			34.6	17.9	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	1%	2%	5%	3%	0%
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					



Intersection						
Int Delay, s/veh	1.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	1	68	66	343	431	2
Future Vol, veh/h	1	68	66	343	431	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-4	-	-	-1	2	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	1	2	5	3	0
Mvmt Flow	1	75	73	377	474	2

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	998	475	476	0	-	0
Stage 1	475	-	-	-	-	-
Stage 2	523	-	-	-	-	-
Critical Hdwy	5.6	5.8	4.3	-	-	-
Critical Hdwy Stg 1	4.6	-	-	-	-	-
Critical Hdwy Stg 2	4.6	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	374	658	823	-	-	-
Stage 1	792	-	-	-	-	-
Stage 2	759	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	332	658	823	-	-	-
Mov Cap-2 Maneuver	332	-	-	-	-	-
Stage 1	703	-	-	-	-	-
Stage 2	759	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.3	1.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBTEBLn1	SBT	SBR
Capacity (veh/h)	823	-	649	-
HCM Lane V/C Ratio	0.088	-	0.117	-
HCM Control Delay (s)	9.8	0	11.3	-
HCM Lane LOS	A	A	B	-
HCM 95th %tile Q(veh)	0.3	-	0.4	-

Lanes, Volumes, Timings  
 23: Route 0039 & Green Hill Rd

Existing Route 0039 ( Blue Mountain to Canal) AM.syn  
 04/29/2020



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	6	66	56	419	669	10
Future Volume (vph)	6	66	56	419	669	10
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	11	11	11	11
Grade (%)	3%			-1%	7%	
Link Speed (mph)	35			45	45	
Link Distance (ft)	1359			708	713	
Travel Time (s)	26.5			10.7	10.8	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	5%	5%	6%	7%	0%
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	6	66	56	419	669	10
Future Vol, veh/h	6	66	56	419	669	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	3	-	-	-1	7	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	5	5	6	7	0
Mvmt Flow	7	77	65	487	778	12

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1401	784	790	0	-	0
Stage 1	784	-	-	-	-	-
Stage 2	617	-	-	-	-	-
Critical Hdwy	7	6.6	4.4	-	-	-
Critical Hdwy Stg 1	6	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	133	379	624	-	-	-
Stage 1	442	-	-	-	-	-
Stage 2	549	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	114	379	624	-	-	-
Mov Cap-2 Maneuver	114	-	-	-	-	-
Stage 1	379	-	-	-	-	-
Stage 2	549	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s20.4		1.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBTEBLn1	SBT	SBR
Capacity (veh/h)	624	-	317	-
HCM Lane V/C Ratio	0.104	-	0.264	-
HCM Control Delay (s)	11.4	0	20.4	-
HCM Lane LOS	B	A	C	-
HCM 95th %tile Q(veh)	0.3	-	1	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	2	23	16	3	13	7	455	11	7	604	5
Future Volume (vph)	3	2	23	16	3	13	7	455	11	7	604	5
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	9	9	9	12	12	12	12	12	12	11	11	11
Grade (%)		5%			1%			-2%			-2%	
Storage Length (ft)	0		0	0		0	0		80	0		0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		35			30			40				40
Link Distance (ft)		669			529			925				1474
Travel Time (s)		13.0			12.0			15.8				25.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	33%	0%	4%	19%	0%	8%	14%	7%	9%	14%	10%	40%
Shared Lane Traffic (%)												
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

**Intersection**

Int Delay, s/veh 1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	
Traffic Vol, veh/h	3	2	23	16	3	13	7	455	11	7	604	5
Future Vol, veh/h	3	2	23	16	3	13	7	455	11	7	604	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	80	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	5	-	-	1	-	-	-2	-	-	-2	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	33	0	4	19	0	8	14	7	9	14	10	40
Mvmt Flow	3	2	25	17	3	14	8	495	12	8	657	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1202	1199	660	1200	1189	495	662	0	0	507	0	0
Stage 1	676	676	-	511	511	-	-	-	-	-	-	-
Stage 2	526	523	-	689	678	-	-	-	-	-	-	-
Critical Hdwy	8.4	7.5	6.7	7.5	6.7	6.4	4.4	-	-	4.4	-	-
Critical Hdwy Stg 1	7.43	6.5	-	6.49	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	7.43	6.5	-	6.49	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3.3	4	3.1	3.2	4	3.2	3.1	-	-	3.1	-	-
Pot Cap-1 Maneuver	109	134	446	150	177	577	678	-	-	771	-	-
Stage 1	363	378	-	557	525	-	-	-	-	-	-	-
Stage 2	464	462	-	434	438	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	102	130	446	136	171	577	678	-	-	771	-	-
Mov Cap-2 Maneuver	102	130	-	136	171	-	-	-	-	-	-	-
Stage 1	357	372	-	548	517	-	-	-	-	-	-	-
Stage 2	443	455	-	401	431	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	18.8		26.4		0.2		0.1	
HCM LOS	C		D					

Minor Lane/Major Mvmt	NBL	NBT	NBREBLn	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	678	-	-	291	203	771	-
HCM Lane V/C Ratio	0.011	-	-	0.105	0.171	0.01	-
HCM Control Delay (s)	10.4	0	-	18.8	26.4	9.7	0
HCM Lane LOS	B	A	-	C	D	A	A
HCM 95th %tile Q(veh)	0	-	-	0.3	0.6	0	-

Lanes, Volumes, Timings  
 25: Route 0039 & Red Top Rd

Existing Route 0039 ( Blue Mountain to Canal) AM.syn  
 04/29/2020



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	25	23	26	443	701	29
Future Volume (vph)	25	23	26	443	701	29
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	11	11	11	11
Grade (%)	2%			-2%	0%	
Link Speed (mph)	35			40	40	
Link Distance (ft)	932			1834	925	
Travel Time (s)	18.2			31.3	15.8	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	8%	4%	4%	4%	7%	10%
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			A		B
Traffic Vol, veh/h	25	23	26	443	701	29
Future Vol, veh/h	25	23	26	443	701	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	-	-	-	0	0	-
Grade, %	2	-	-	-2	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	8	4	4	4	7	10
Mvmt Flow	29	27	31	521	825	34

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1425	842	859	0	-	0
Stage 1	842	-	-	-	-	-
Stage 2	583	-	-	-	-	-
Critical Hdwy	6.9	6.4	4.3	-	-	-
Critical Hdwy Stg 1	5.88	-	-	-	-	-
Critical Hdwy Stg 2	5.88	-	-	-	-	-
Follow-up Hdwy	3.1	3.1	3	-	-	-
Pot Cap-1 Maneuver	131	365	602	-	-	-
Stage 1	413	-	-	-	-	-
Stage 2	570	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	122	365	602	-	-	-
Mov Cap-2 Maneuver	122	-	-	-	-	-
Stage 1	383	-	-	-	-	-
Stage 2	570	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	34.1	0.6	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBTEBLn1	SBT	SBR
Capacity (veh/h)	602	-	179	-
HCM Lane V/C Ratio	0.051	-	0.315	-
HCM Control Delay (s)	11.3	0	34.1	-
HCM Lane LOS	B	A	D	-
HCM 95th %tile Q(veh)	0.2	-	1.3	-

Lanes, Volumes, Timings  
26: Route 0039 & Grandview Dr

Existing Route 0039 ( Blue Mountain to Canal) AM.syn  
04/29/2020



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	113	112	30	363	768	106
Future Volume (vph)	113	112	30	363	768	106
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	13	13	12	11	11	11
Grade (%)	-2%			2%	-2%	
Storage Length (ft)	0	0	100			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		50			
Right Turn on Red		Yes				Yes
Link Speed (mph)	35			45	45	
Link Distance (ft)	853			1505	929	
Travel Time (s)	16.6			22.8	14.1	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	3%	6%	5%	0%
Shared Lane Traffic (%)						
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	4		1	6	2	
Permitted Phases			6			
Detector Phase	4		1	6	2	
Switch Phase						
Minimum Initial (s)	3.0		3.0	10.0	10.0	
Minimum Split (s)	20.0		10.6	20.0	20.0	
Total Split (s)	20.0		12.0	66.0	54.0	
Total Split (%)	23.3%		14.0%	76.7%	62.8%	
Yellow Time (s)	3.8		4.6	4.6	4.6	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	
Total Lost Time (s)	4.8		5.6	5.6	5.6	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	C-Max	C-Max	

Intersection Summary

Area Type: Other  
 Cycle Length: 86  
 Actuated Cycle Length: 86  
 Offset: 52 (60%), Referenced to phase 2:SBT and 6:NBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated

Splits and Phases: 26: Route 0039 & Grandview Dr





HCM 2010 Signalized Intersection Summary Existing Route 0039 ( Blue Mountain to Canal) AM.syn  
 26: Route 0039 & Grandview Dr 04/29/2020



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations	Y		Y	↑	↑			
Traffic Volume (veh/h)	113	112	30	363	768	106		
Future Volume (veh/h)	113	112	30	363	768	106		
Number	7	14	1	6	2	12		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1891	1891	1730	1681	1741	1818		
Adj Flow Rate, veh/h	130	129	34	417	883	122		
Adj No. of Lanes	0	0	1	1	1	0		
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87		
Percent Heavy Veh, %	0	0	3	6	5	5		
Cap, veh/h	150	149	157	1181	908	125		
Arrive On Green	0.18	0.18	0.03	0.70	0.61	0.61		
Sat Flow, veh/h	850	843	1648	1681	1498	207		
Grp Volume(v), veh/h	260	0	34	417	0	1005		
Grp Sat Flow(s),veh/h/ln	1699	0	1648	1681	0	1705		
Q Serve(g_s), s	12.8	0.0	0.6	8.4	0.0	48.6		
Cycle Q Clear(g_c), s	12.8	0.0	0.6	8.4	0.0	48.6		
Prop In Lane	0.50	0.50	1.00			0.12		
Lane Grp Cap(c), veh/h	300	0	157	1181	0	1034		
V/C Ratio(X)	0.87	0.00	0.22	0.35	0.00	0.97		
Avail Cap(c_a), veh/h	300	0	229	1181	0	1034		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	34.4	0.0	21.0	5.1	0.0	16.2		
Incr Delay (d2), s/veh	22.3	0.0	0.7	0.8	0.0	22.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/ln	12.4	0.0	1.0	7.4	0.0	37.8		
LnGrp Delay(d),s/veh	56.7	0.0	21.6	5.9	0.0	38.3		
LnGrp LOS	E		C	A		D		
Approach Vol, veh/h	260			451	1005			
Approach Delay, s/veh	56.7			7.1	38.3			
Approach LOS	E			A	D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	8.3	57.7		20.0		66.0		
Change Period (Y+Rc), s	6.6	6.6		* 5.8		6.6		
Max Green Setting (Gmax), s	5.4	47.4		* 14		59.4		
Max Q Clear Time (g_c+I1), s	2.6	50.6		15.3		10.9		
Green Ext Time (p_c), s	0.0	0.0		0.0		14.4		

Intersection Summary		
HCM 2010 Ctrl Delay		32.9
HCM 2010 LOS		C

**Notes**  
 User approved volume balancing among the lanes for turning movement.  
 \* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings  
27: Route 0039 & N. Hanover St

Existing Route 0039 ( Blue Mountain to Canal) AM.syn  
04/29/2020

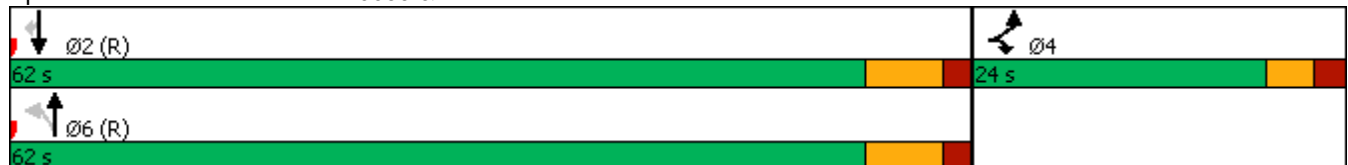


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	63	7	4	372	692	142
Future Volume (vph)	63	7	4	372	692	142
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	11	11	16
Grade (%)	1%			1%	-3%	
Storage Length (ft)	0	40	0			100
Storage Lanes	1	1	0			1
Taper Length (ft)	25		25			
Right Turn on Red		Yes				Yes
Link Speed (mph)	25			45	45	
Link Distance (ft)	930			1622	663	
Travel Time (s)	25.4			24.6	10.0	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	11%	0%	0%	8%	4%	1%
Shared Lane Traffic (%)						
Turn Type	Prot	Prot	Perm	NA	NA	Perm
Protected Phases	4	4		6	2	
Permitted Phases			6			2
Detector Phase	4	4	6	6	2	2
Switch Phase						
Minimum Initial (s)	3.0	3.0	10.0	10.0	10.0	10.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	24.0	24.0	62.0	62.0	62.0	62.0
Total Split (%)	27.9%	27.9%	72.1%	72.1%	72.1%	72.1%
Yellow Time (s)	3.0	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.2	2.2	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	4.2	4.2		6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max












Intersection Summary

Area Type: Other  
 Cycle Length: 86  
 Actuated Cycle Length: 86  
 Offset: 28 (33%), Referenced to phase 2:SBT and 6:NBTL, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated

Splits and Phases: 27: Route 0039 & N. Hanover St



HCM 2010 Signalized Intersection Summary - Existing Route 0039 ( Blue Mountain to Canal) AM.syn  
 27: Route 0039 & N. Hanover St 04/29/2020

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	63	7	4	372	692	142		
Future Volume (veh/h)	63	7	4	372	692	142		
Number	7	14	1	6	2	12		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1614	1863	1791	1659	1757	1881		
Adj Flow Rate, veh/h	71	8	4	418	778	0		
Adj No. of Lanes	1	1	0	1	1	1		
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89		
Percent Heavy Veh, %	11	0	8	8	4	1		
Cap, veh/h	116	120	45	1330	1415	1288		
Arrive On Green	0.08	0.08	0.81	0.81	0.81	0.00		
Sat Flow, veh/h	1537	1583	3	1651	1757	1599		
Grp Volume(v), veh/h	71	8	422	0	778	0		
Grp Sat Flow(s),veh/h/ln	1537	1583	1654	0	1757	1599		
Q Serve(g_s), s	3.9	0.4	0.0	0.0	13.3	0.0		
Cycle Q Clear(g_c), s	3.9	0.4	5.7	0.0	13.3	0.0		
Prop In Lane	1.00	1.00	0.01			1.00		
Lane Grp Cap(c), veh/h	116	120	1375	0	1415	1288		
V/C Ratio(X)	0.61	0.07	0.31	0.00	0.55	0.00		
Avail Cap(c_a), veh/h	354	365	1375	0	1415	1288		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	0.00		
Uniform Delay (d), s/veh	38.5	36.9	2.2	0.0	2.9	0.0		
Incr Delay (d2), s/veh	5.1	0.2	0.6	0.0	1.5	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/ln	3.2	0.3	5.0	0.0	11.2	0.0		
LnGrp Delay(d),s/veh	43.6	37.1	2.8	0.0	4.5	0.0		
LnGrp LOS	D	D	A		A			
Approach Vol, veh/h	79			422	778			
Approach Delay, s/veh	42.9			2.8	4.5			
Approach LOS	D			A	A			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		75.3		10.7		75.3		
Change Period (Y+Rc), s		7.0		* 5.2		7.0		
Max Green Setting (Gmax), s		55.0		* 19		55.0		
Max Q Clear Time (g_c+I1), s		15.8		6.4		7.7		
Green Ext Time (p_c), s		27.0		0.1		14.6		

Intersection Summary	
HCM 2010 Ctrl Delay	6.3
HCM 2010 LOS	A

Notes  
 \* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings  
28: Route 0039 & E Canal St

Existing Route 0039 ( Blue Mountain to Canal) AM.syn  
04/29/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↑		↕	↑	
Traffic Volume (vph)	2	5	12	16	15	6	10	362	16	11	638	1
Future Volume (vph)	2	5	12	16	15	6	10	362	16	11	638	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	11	11	11	11	12	12	11	12	12
Grade (%)		2%			-2%			5%			-5%	
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1049			869			1467			1622	
Travel Time (s)		20.4			16.9			22.2			24.6	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	0%	0%	17%	10%	8%	25%	0%	4%	0%
Shared Lane Traffic (%)												
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	2	5	12	16	15	6	10	362	16	11	638	1
Future Vol, veh/h	2	5	12	16	15	6	10	362	16	11	638	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	85	-	-	85	-	-
Veh in Median Storage, #-	0	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	-2	-	-	5	-	-	-5	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	17	10	8	25	0	4	0
Mvmt Flow	2	5	13	18	16	7	11	398	18	12	701	1

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1167	1164	702	1164	1155	407	702	0	0	416	0	0
Stage 1	726	726	-	429	429	-	-	-	-	-	-	-
Stage 2	441	438	-	735	726	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.9	6.4	6.7	6.1	6.2	4.4	-	-	4.3	-	-
Critical Hdwy Stg 1	6.5	5.9	-	5.7	5.1	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.9	-	5.7	5.1	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	4	3.3	3.1	-	-	3	-	-
Pot Cap-1 Maneuver	165	172	444	215	226	648	656	-	-	864	-	-
Stage 1	431	399	-	724	616	-	-	-	-	-	-	-
Stage 2	647	554	-	501	469	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	150	167	444	199	219	648	656	-	-	864	-	-
Mov Cap-2 Maneuver	150	167	-	199	219	-	-	-	-	-	-	-
Stage 1	424	393	-	712	606	-	-	-	-	-	-	-
Stage 2	613	545	-	473	462	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.4	23.6	0.3	0.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBREBLn	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	656	-	-	270	234	864	-
HCM Lane V/C Ratio	0.017	-	-	0.077	0.174	0.014	-
HCM Control Delay (s)	10.6	-	-	19.4	23.6	9.2	-
HCM Lane LOS	B	-	-	C	C	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.6	0	-

Lanes, Volumes, Timings  
29: Laudermilch Rd & Route 22

Existing AM Route 0743 (Rt 22 to Mountain Road).syn  
04/29/2020

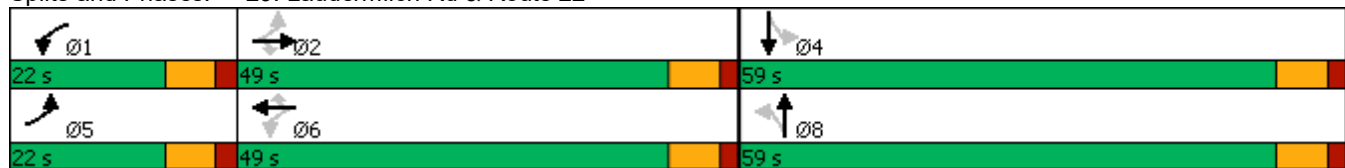


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	204	11	168	487	99	111	255	113	56	246	80
Future Volume (vph)	45	204	11	168	487	99	111	255	113	56	246	80
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	11	14	11	11	11	11	11	11	11	11
Grade (%)		2%			-2%			3%			-8%	
Storage Length (ft)	305		225	610		450	160		0	220		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	150			150			140			60		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		50			50			45				40
Link Distance (ft)		2250			2478			1283				624
Travel Time (s)		30.7			33.8			19.4				10.6
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	9%	4%	18%	4%	4%	10%	3%	7%	5%	7%	9%	4%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8				4
Permitted Phases	2		2	6		6	8			4		
Detector Phase	5	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	16.0	16.0	3.0	16.0	16.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	14.0	23.0	23.0	14.0	23.0	23.0	14.0	14.0		14.0	14.0	
Total Split (s)	22.0	49.0	49.0	22.0	49.0	49.0	59.0	59.0		59.0	59.0	
Total Split (%)	16.9%	37.7%	37.7%	16.9%	37.7%	37.7%	45.4%	45.4%		45.4%	45.4%	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	Min	Min	None	Min	Min	None	None		None	None	

























Intersection Summary

Area Type: Other  
 Cycle Length: 130  
 Actuated Cycle Length: 77.2  
 Natural Cycle: 60  
 Control Type: Actuated-Uncoordinated

Splits and Phases: 29: Laudermilch Rd & Route 22



HCM 2010 Signalized Intersection Summary Existing AM Route 0743 (Rt 22 to Mountain Road).syn  
 29: Laudermilch Rd & Route 22 04/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	204	11	168	487	99	111	255	113	56	246	80
Future Volume (veh/h)	45	204	11	168	487	99	111	255	113	56	246	80
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1635	1713	1510	1818	1748	1653	1721	1667	1773	1750	1737	1872
Adj Flow Rate, veh/h	49	224	0	185	535	0	122	280	0	62	270	88
Adj No. of Lanes	1	2	1	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	9	4	18	4	4	10	3	7	7	7	9	9
Cap, veh/h	337	806	318	548	1066	451	303	610	0	363	459	150
Arrive On Green	0.05	0.25	0.00	0.12	0.32	0.00	0.37	0.37	0.00	0.37	0.37	0.37
Sat Flow, veh/h	1557	3256	1284	1731	3321	1405	994	1667	0	1085	1256	409
Grp Volume(v), veh/h	49	224	0	185	535	0	122	280	0	62	0	358
Grp Sat Flow(s),veh/h/ln	1557	1628	1284	1731	1661	1405	994	1667	0	1085	0	1665
Q Serve(g_s), s	1.6	3.8	0.0	5.0	9.0	0.0	7.7	8.8	0.0	3.2	0.0	11.9
Cycle Q Clear(g_c), s	1.6	3.8	0.0	5.0	9.0	0.0	19.1	8.8	0.0	12.0	0.0	11.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		0.25
Lane Grp Cap(c), veh/h	337	806	318	548	1066	451	303	610	0	363	0	609
V/C Ratio(X)	0.15	0.28	0.00	0.34	0.50	0.00	0.40	0.46	0.00	0.17	0.00	0.59
Avail Cap(c_a), veh/h	621	2039	804	736	2080	880	707	1286	0	803	0	1285
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.6	20.9	0.0	14.3	18.9	0.0	25.1	16.6	0.0	21.2	0.0	17.6
Incr Delay (d2), s/veh	0.2	0.1	0.0	0.4	0.1	0.0	1.2	0.8	0.0	0.3	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.7	0.0	2.4	4.1	0.0	2.2	4.2	0.0	1.0	0.0	5.7
LnGrp Delay(d),s/veh	17.8	20.9	0.0	14.7	19.0	0.0	26.3	17.4	0.0	21.5	0.0	18.9
LnGrp LOS	B	C		B	B		C	B		C		B
Approach Vol, veh/h	273		720				402		420			
Approach Delay, s/veh	20.4		17.9				20.1		19.3			
Approach LOS	C		B				C		B			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	14.6	23.0	31.1		9.5	28.0	31.1					
Change Period (Y+Rc), s	7.0	7.0	7.0		7.0	7.0	7.0					
Max Green Setting (Gmax), s	5.0	42.0	52.0		15.0	42.0	52.0					
Max Q Clear Time (g_c+I1), s	7.5	6.3	14.5		4.1	11.5	21.6					
Green Ext Time (p_c), s	0.3	2.6	2.7		0.1	6.8	2.5					
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			19.1									
HCM 2010 LOS			B									

Lanes, Volumes, Timings

Existing AM Route 0743 (Rt 22 to Mountain Road).syn

30: Laudermilch Rd/Bow Creek Rd & Jonestown Rd

04/29/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	7	10	11	3	16	27	11	414	5	27	334	6
Future Volume (vph)	7	10	11	3	16	27	11	414	5	27	334	6
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	11	11	11	11	11	11
Grade (%)		2%			-1%			-3%			1%	
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			45			40	
Link Distance (ft)		1419			1831			963			1154	
Travel Time (s)		27.6			35.7			14.6			19.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	10%	0%	33%	6%	26%	9%	6%	20%	4%	9%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Detector Phase	8	8		4	4		6	6		2	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		22.0	22.0		22.0	22.0	
Total Split (s)	26.0	26.0		26.0	26.0		55.0	55.0		55.0	55.0	
Total Split (%)	32.1%	32.1%		32.1%	32.1%		67.9%	67.9%		67.9%	67.9%	
Yellow Time (s)	4.0	4.0		4.0	4.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	

Intersection Summary

Area Type: Other

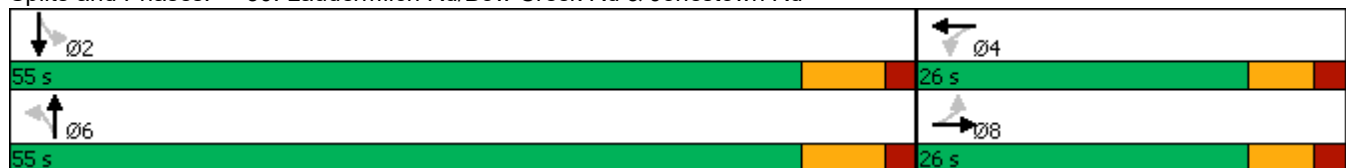
Cycle Length: 81

Actuated Cycle Length: 46.9

Natural Cycle: 40













Control Type: Actuated-Uncoordinated

Splits and Phases: 30: Laudermilch Rd/Bow Creek Rd & Jonestown Rd





HCM 2010 Signalized Intersection Summary Existing AM Route 0743 (Rt 22 to Mountain Road).syn  
 30: Lauderdale Rd/Bow Creek Rd & Jonestown Rd 04/29/2020

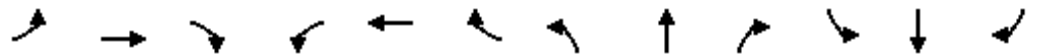
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	7	10	11	3	16	27	11	414	5	27	334	6
Future Volume (veh/h)	7	10	11	3	16	27	11	414	5	27	334	6
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1782	1721	1782	1809	1514	1809	1827	1720	1827	1791	1651	1791
Adj Flow Rate, veh/h	8	11	12	3	17	29	12	450	5	29	363	7
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	10	10	6	6	6	6	6	6	9	9	9
Cap, veh/h	144	42	46	102	36	62	102	1087	12	129	989	18
Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.08	0.65	0.65	0.65	0.65	0.65	0.65
Sat Flow, veh/h	410	563	614	85	481	821	14	1674	18	50	1523	28
Grp Volume(v), veh/h	31	0	0	49	0	0	467	0	0	399	0	0
Grp Sat Flow(s),veh/h/ln	1587	0	0	1387	0	0	1706	0	0	1601	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.7	0.0	0.0	1.3	0.0	0.0	5.2	0.0	0.0	4.5	0.0	0.0
Prop In Lane	0.26		0.39	0.06		0.59	0.03		0.01	0.07		0.02
Lane Grp Cap(c), veh/h	233	0	0	200	0	0	1200	0	0	1137	0	0
V/C Ratio(X)	0.13	0.00	0.00	0.25	0.00	0.00	0.39	0.00	0.00	0.35	0.00	0.00
Avail Cap(c_a), veh/h	910	0	0	809	0	0	2174	0	0	2030	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	17.4	0.0	0.0	17.7	0.0	0.0	3.4	0.0	0.0	3.2	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.6	0.0	0.0	1.0	0.0	0.0	0.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	0.6	0.0	0.0	2.7	0.0	0.0	2.3	0.0	0.0
LnGrp Delay(d),s/veh	17.6	0.0	0.0	18.3	0.0	0.0	4.3	0.0	0.0	4.1	0.0	0.0
LnGrp LOS	B			B			A			A		
Approach Vol, veh/h		31			49			467			399	
Approach Delay, s/veh		17.6			18.3			4.3			4.1	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		31.9		8.0		31.9		8.0				
Change Period (Y+Rc), s		7.0		6.0		7.0		6.0				
Max Green Setting (Gmax), s		48.0		20.0		48.0		20.0				
Max Q Clear Time (g_c+I1), s		6.5		3.3		7.2		2.7				
Green Ext Time (p_c), s		15.6		0.1		17.7		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			5.4									
HCM 2010 LOS			A									

Lanes, Volumes, Timings

Existing AM Route 0743 (Rt 22 to Mountain Road).syn

31: Bow Creek Rd & I-81 NB Off Ramp/I-81 NB On Ramp

04/29/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↖		↘	↕	↗
Traffic Volume (vph)	89	1	87	0	0	0	0	417	119	27	285	0
Future Volume (vph)	89	1	87	0	0	0	0	417	119	27	285	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	14	14	14	14	14	12	12	12	10	12	12
Grade (%)		4%			4%			0%			1%	
Storage Length (ft)	0		620	0		0	0		0	100		0
Storage Lanes	0		1	0		0	0		0	1		0
Taper Length (ft)	25			25			25			75		
Right Turn on Red			Yes			No			Yes			No
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		905			1063			1183			840	
Travel Time (s)		15.4			18.1			20.2			14.3	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	2%	100%	7%	0%	0%	0%	0%	5%	22%	15%	9%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm					NA		pm+pt	NA	
Protected Phases		8						6		5	2	
Permitted Phases	8		8							2		
Detector Phase	8	8	8					6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0					15.0		3.0	15.0	
Minimum Split (s)	11.5	11.5	11.5					21.0		13.0	21.0	
Total Split (s)	24.0	24.0	24.0					42.0		14.0	56.0	
Total Split (%)	30.0%	30.0%	30.0%					52.5%		17.5%	70.0%	
Yellow Time (s)	3.5	3.5	3.5					4.5		4.5	4.5	
All-Red Time (s)	2.0	2.0	2.0					1.5		1.5	1.5	
Lost Time Adjust (s)		-1.0	-1.0					-1.0		-1.0	-1.0	
Total Lost Time (s)		4.5	4.5					5.0		5.0	5.0	
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Recall Mode	None	None	None					C-Max		None	C-Max	

Intersection Summary

Area Type: Other

Cycle Length: 80

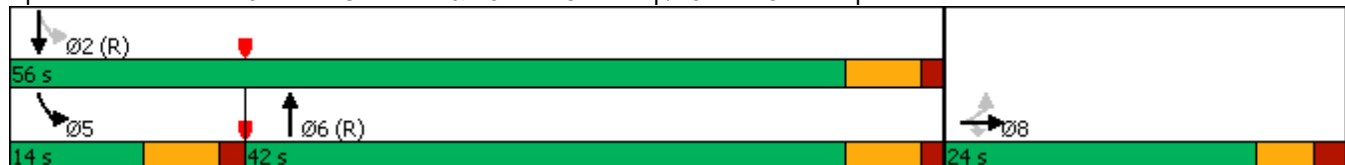
Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Green, Master Intersection


















Natural Cycle: 60

Control Type: Actuated-Coordinated

Splits and Phases: 31: Bow Creek Rd & I-81 NB Off Ramp/I-81 NB On Ramp



HCM 2010 Signalized Intersection Summary Existing AM Route 0743 (Rt 22 to Mountain Road).syn  
 31: Bow Creek Rd & I-81 NB Off Ramp/I-81 NB On Ramp 04/29/2020

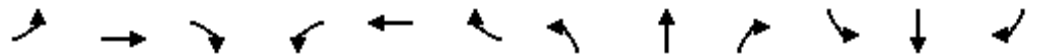
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	1	87	0	0	0	0	417	119	27	285	0
Future Volume (veh/h)	89	1	87	0	0	0	0	417	119	27	285	0
Number	3	8	18				1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1835	1782	1715				0	1655	1800	1557	1643	0
Adj Flow Rate, veh/h	101	1	0				0	474	0	31	324	0
Adj No. of Lanes	0	1	1				0	1	0	1	1	0
Peak Hour Factor	0.88	0.88	0.88				0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	7	100	7				0	5	5	15	9	0
Cap, veh/h	171	2	149				0	1135	0	589	1281	0
Arrive On Green	0.10	0.10	0.00				0.00	0.69	0.00	0.06	1.00	0.00
Sat Flow, veh/h	1681	17	1457				0	1655	0	1483	1643	0
Grp Volume(v), veh/h	102	0	0				0	474	0	31	324	0
Grp Sat Flow(s),veh/h/ln	1698	0	1457				0	1655	0	1483	1643	0
Q Serve(g_s), s	4.6	0.0	0.0				0.0	10.1	0.0	0.4	0.0	0.0
Cycle Q Clear(g_c), s	4.6	0.0	0.0				0.0	10.1	0.0	0.4	0.0	0.0
Prop In Lane	0.99		1.00				0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	173	0	149				0	1135	0	589	1281	0
V/C Ratio(X)	0.59	0.00	0.00				0.00	0.42	0.00	0.05	0.25	0.00
Avail Cap(c_a), veh/h	414	0	355				0	1135	0	709	1281	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.95	0.95	0.00
Uniform Delay (d), s/veh	34.3	0.0	0.0				0.0	5.5	0.0	3.5	0.0	0.0
Incr Delay (d2), s/veh	3.2	0.0	0.0				0.0	1.1	0.0	0.0	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.0	0.0				0.0	4.8	0.0	0.2	0.2	0.0
LnGrp Delay(d),s/veh	37.5	0.0	0.0				0.0	6.7	0.0	3.5	0.5	0.0
LnGrp LOS	D						A			A	A	
Approach Vol, veh/h		102						474			355	
Approach Delay, s/veh		37.5						6.7			0.7	
Approach LOS		D					A				A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		67.3			7.5	59.9		12.7				
Change Period (Y+Rc), s		6.0			6.0	6.0		5.5				
Max Green Setting (Gmax), s		50.0			8.0	36.0		18.5				
Max Q Clear Time (g_c+I1), s		2.5			2.9	12.6		6.6				
Green Ext Time (p_c), s		11.0			0.0	11.7		1.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			7.8									
HCM 2010 LOS			A									

Lanes, Volumes, Timings

Existing AM Route 0743 (Rt 22 to Mountain Road).syn

32: Bow Creek Rd & I-81 SB On Ramp/I-81 SB Off Ramp

04/29/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	166	5	47	250	237	0	0	139	97
Future Volume (vph)	0	0	0	166	5	47	250	237	0	0	139	97
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	14	14	14	14	14	10	12	12	12	12	14
Grade (%)		0%			0%			-2%			2%	
Storage Length (ft)	0		0	265		0	100		0	0		0
Storage Lanes	0		0	1		1	1		0	0		0
Taper Length (ft)	25			200			100			25		
Right Turn on Red			No			Yes			No			Yes
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		919			876			840			1317	
Travel Time (s)		15.7			14.9			14.3			22.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	9%	60%	13%	6%	6%	0%	0%	12%	7%
Shared Lane Traffic (%)												
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					4		1	6				2
Permitted Phases				4		4	6					
Detector Phase				4	4	4	1	6				2
Switch Phase												
Minimum Initial (s)				6.0	6.0	6.0	3.0	15.0				15.0
Minimum Split (s)				13.0	13.0	13.0	13.0	21.0				21.0
Total Split (s)				21.0	21.0	21.0	26.0	59.0				33.0
Total Split (%)				26.3%	26.3%	26.3%	32.5%	73.8%				41.3%
Yellow Time (s)				4.0	4.0	4.0	4.5	4.5				4.5
All-Red Time (s)				2.0	2.0	2.0	1.5	1.5				1.5
Lost Time Adjust (s)					-1.0	-1.0	-1.0	-1.0				-1.0
Total Lost Time (s)					5.0	5.0	5.0	5.0				5.0
Lead/Lag							Lead					Lag
Lead-Lag Optimize?							Yes					Yes
Recall Mode				None	None	None	None	C-Max				C-Max

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 15 (19%), Referenced to phase 2:SBT and 6:NBTL, Start of Green


















Natural Cycle: 50

Control Type: Actuated-Coordinated

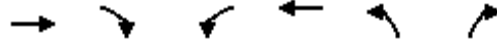
Splits and Phases: 32: Bow Creek Rd & I-81 SB On Ramp/I-81 SB Off Ramp



HCM 2010 Signalized Intersection Summary Existing AM Route 0743 (Rt 22 to Mountain Road).syn  
 32: Bow Creek Rd & I-81 SB On Ramp/I-81 SB Off Ramp 04/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	166	5	47	250	237	0	0	139	97
Future Volume (veh/h)	0	0	0	166	5	47	250	237	0	0	139	97
Number				7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1872	1692	1657	1715	1715	0	0	1621	1853
Adj Flow Rate, veh/h				184	6	0	278	263	0	0	154	0
Adj No. of Lanes				0	1	1	1	1	0	0	1	0
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				13	60	13	6	6	0	0	12	12
Cap, veh/h				253	8	228	860	1223	0	0	863	0
Arrive On Green				0.16	0.16	0.00	0.12	0.71	0.00	0.00	0.53	0.00
Sat Flow, veh/h				1563	51	1408	1633	1715	0	0	1621	0
Grp Volume(v), veh/h				190	0	0	278	263	0	0	154	0
Grp Sat Flow(s),veh/h/ln				1614	0	1408	1633	1715	0	0	1621	0
Q Serve(g_s), s				8.9	0.0	0.0	5.2	4.2	0.0	0.0	3.9	0.0
Cycle Q Clear(g_c), s				8.9	0.0	0.0	5.2	4.2	0.0	0.0	3.9	0.0
Prop In Lane				0.97		1.00	1.00		0.00	0.00		0.00
Lane Grp Cap(c), veh/h				261	0	228	860	1223	0	0	863	0
V/C Ratio(X)				0.73	0.00	0.00	0.32	0.21	0.00	0.00	0.18	0.00
Avail Cap(c_a), veh/h				323	0	282	1096	1223	0	0	863	0
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.83	0.83	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				31.9	0.0	0.0	5.2	3.9	0.0	0.0	9.7	0.0
Incr Delay (d2), s/veh				6.2	0.0	0.0	0.2	0.3	0.0	0.0	0.5	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.4	0.0	0.0	2.3	2.0	0.0	0.0	1.9	0.0
LnGrp Delay(d),s/veh				38.1	0.0	0.0	5.4	4.2	0.0	0.0	10.1	0.0
LnGrp LOS				D			A	A			B	
Approach Vol, veh/h						190		541			154	
Approach Delay, s/veh						38.1		4.8			10.1	
Approach LOS						D		A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	14.5	47.6		17.9		62.1						
Change Period (Y+Rc), s	6.0	6.0		6.0		6.0						
Max Green Setting (Gmax), s	27.0	27.0		15.0		53.0						
Max Q Clear Time (g_c+I1), s	7.7	6.4		10.9		6.7						
Green Ext Time (p_c), s	0.8	3.1		1.2		8.5						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay						12.9						
HCM 2010 LOS						B						

Lanes, Volumes, Timings  
 33: Bow Creek Rd & Mountain Rd



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	27	19	39	23	39	45
Future Volume (vph)	27	19	39	23	39	45
Ideal Flow (vphpl)	1650	1650	1650	1650	1650	1650
Lane Width (ft)	10	10	10	10	11	11
Grade (%)	-2%			3%	2%	
Link Speed (mph)	45			45	40	
Link Distance (ft)	1661			899	786	
Travel Time (s)	25.2			13.6	13.4	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	4%	0%	23%	0%	15%	13%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection						
Int Delay, s/veh	6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Vol, veh/h	27	19	39	23	39	45
Future Vol, veh/h	27	19	39	23	39	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	-	-	0	0	-
Grade, %	-2	-	-	3	2	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	4	0	23	0	15	13
Mvmt Flow	31	22	45	27	45	52

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	53	0	159
Stage 1	-	-	-	-	42
Stage 2	-	-	-	-	117
Critical Hdwy	-	-	5.1	-	8
Critical Hdwy Stg 1	-	-	-	-	5.95
Critical Hdwy Stg 2	-	-	-	-	5.95
Follow-up Hdwy	-	-	3.7	-	3.1
Pot Cap-1 Maneuver	-	-	927	-	873
Stage 1	-	-	-	-	1103
Stage 2	-	-	-	-	1006
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	927	-	830
Mov Cap-2 Maneuver	-	-	-	-	830
Stage 1	-	-	-	-	1103
Stage 2	-	-	-	-	957

Approach	EB	WB	NB
HCM Control Delay, s	0	5.7	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	900	-	-	927	-
HCM Lane V/C Ratio	0.109	-	-	0.049	-
HCM Control Delay (s)	9.5	-	-	9.1	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.2	-

Lanes, Volumes, Timings  
1: Front St & Route 0039

Existing Route 0039 (Front to Patton) PM.syn  
04/29/2020

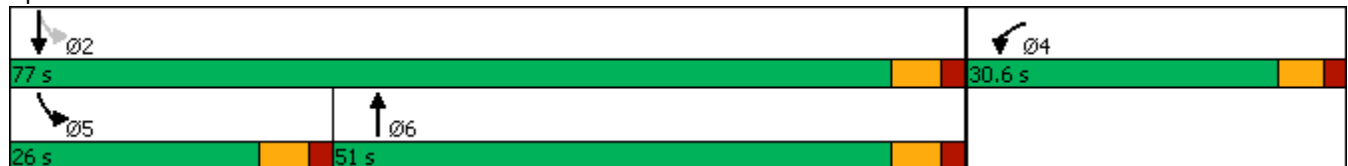


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	←←←		↑↑		←	↑↑
Traffic Volume (vph)	517	59	819	462	124	316
Future Volume (vph)	517	59	819	462	124	316
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	12	13	12	12
Storage Length (ft)	0	0		0	300	
Storage Lanes	2	0		0	1	
Taper Length (ft)	25				100	
Right Turn on Red		Yes		Yes		
Link Speed (mph)	35		40			40
Link Distance (ft)	510		827			982
Travel Time (s)	9.9		14.1			16.7
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	1%	2%	1%	1%	0%	1%
Shared Lane Traffic (%)						
Turn Type	Prot		NA		pm+pt	NA
Protected Phases	4		6		5	2
Permitted Phases					2	
Detector Phase	4		6		5	2
Switch Phase						
Minimum Initial (s)	2.0		12.0		2.0	12.0
Minimum Split (s)	14.6		18.0		16.0	18.0
Total Split (s)	30.6		51.0		26.0	77.0
Total Split (%)	28.4%		47.4%		24.2%	71.6%
Yellow Time (s)	3.6		4.0		4.0	4.0
All-Red Time (s)	2.0		2.0		2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0		-1.0	-1.0
Total Lost Time (s)	4.6		5.0		5.0	5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		Min		None	Min

Intersection Summary

Area Type: Other  
 Cycle Length: 107.6  
 Actuated Cycle Length: 96.6  
 Natural Cycle: 75  
 Control Type: Actuated-Uncoordinated

Splits and Phases: 1: Front St & Route 0039





HCM 2010 Signalized Intersection Summary  
1: Front St & Route 0039

Existing Route 0039 (Front to Patton) PM.syn  
04/29/2020

Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations	↑↑		↑↑		↑	↑↑		
Traffic Volume (veh/h)	517	59	819	462	124	316		
Future Volume (veh/h)	517	59	819	462	124	316		
Number	7	14	6	16	5	2		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1780	1872	1782	1872	1800	1782		
Adj Flow Rate, veh/h	615	0	881	497	133	340		
Adj No. of Lanes	2	1	2	0	1	2		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93		
Percent Heavy Veh, %	1	0	1	1	0	1		
Cap, veh/h	789	370	1096	608	280	2215		
Arrive On Green	0.23	0.00	0.52	0.52	0.07	0.65		
Sat Flow, veh/h	3391	1591	2192	1167	1714	3475		
Grp Volume(v), veh/h	615	0	707	671	133	340		
Grp Sat Flow(s),veh/h/ln	1696	1591	1693	1576	1714	1693		
Q Serve(g_s), s	14.4	0.0	29.1	30.1	2.7	3.3		
Cycle Q Clear(g_c), s	14.4	0.0	29.1	30.1	2.7	3.3		
Prop In Lane	1.00	1.00		0.74	1.00			
Lane Grp Cap(c), veh/h	789	370	883	822	280	2215		
V/C Ratio(X)	0.78	0.00	0.80	0.82	0.47	0.15		
Avail Cap(c_a), veh/h	1040	488	919	856	579	2877		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(l)	1.00	0.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	30.5	0.0	16.7	16.9	15.6	5.6		
Incr Delay (d2), s/veh	2.8	0.0	5.8	6.9	1.2	0.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/ln	11.4	0.0	21.1	20.7	3.2	2.8		
LnGrp Delay(d),s/veh	33.3	0.0	22.4	23.8	16.8	5.7		
LnGrp LOS	C		C	C	B	A		
Approach Vol, veh/h	615		1378			473		
Approach Delay, s/veh	33.3		23.1			8.8		
Approach LOS	C		C			A		
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		60.4		24.3	11.3	49.2		
Change Period (Y+Rc), s		6.0		5.6	6.0	6.0		
Max Green Setting (Gmax), s		71.0		25.0	20.0	45.0		
Max Q Clear Time (g_c+I1), s		5.8		16.9	5.2	32.1		
Green Ext Time (p_c), s		5.9		1.8	0.3	11.1		

Intersection Summary

HCM 2010 Ctrl Delay	22.9
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings  
2: 6th St & Route 0039

Existing Route 0039 (Front to Patton) PM.syn  
04/29/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	687	37	161	571	6	16	1	382	4	3	5
Future Volume (vph)	4	687	37	161	571	6	16	1	382	4	3	5
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	14	14	12	12	12	11	11	12	16	16	16
Grade (%)		1%			-4%			2%			1%	
Link Speed (mph)		35			35			35			15	
Link Distance (ft)		410			516			883			598	
Travel Time (s)		8.0			10.1			17.2			27.2	
Confl. Peds. (#/hr)			2	2								
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	25%	1%	5%	3%	1%	0%	6%	0%	1%	0%	0%	0%
Shared Lane Traffic (%)												
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other  
Control Type: Unsignalized

**Intersection**

Int Delay, s/veh 37.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	
Traffic Vol, veh/h	4	687	37	161	571	6	16	1	382	4	3	5
Future Vol, veh/h	4	687	37	161	571	6	16	1	382	4	3	5
Conflicting Peds, #/hr	0	0	2	2	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #-	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	1	-	-	-4	-	-	2	-	-	1	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	25	1	5	3	1	0	6	0	1	0	0	0
Mvmt Flow	4	716	39	168	595	6	17	1	398	4	3	5

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	601	0	0	757
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.4	-	-	4.3
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.7	-	-	3
Pot Cap-1 Maneuver	795	-	-	655
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	795	-	-	654
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	3.9	62.7	\$ 3578.1
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	69	422	795	-	-	654	-	-	3
HCM Lane V/C Ratio	0.257	0.943	0.005	-	-	0.256	-	-	4.167
HCM Control Delay (s)	74.3	62.2	9.6	0	-	12.4	1.5	\$-3578.1	
HCM Lane LOS	F	F	A	A	-	B	A	-	F
HCM 95th %tile Q(veh)	0.9	10.8	0	-	-	1	-	-	2.8

**Notes**  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

Lanes, Volumes, Timings  
 3: Industrial Dr/322 EB Ramp & Route 0039

Existing Route 0039 (Front to Patton) PM.syn  
 04/29/2020

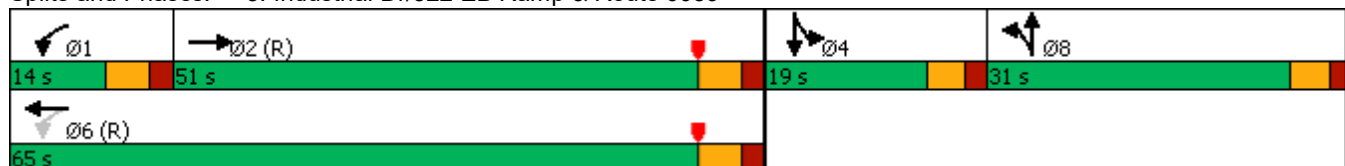


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑	↑↑			↑↓			↑↓	
Traffic Volume (vph)	0	1040	56	60	627	0	96	0	174	112	22	26
Future Volume (vph)	0	1040	56	60	627	0	96	0	174	112	22	26
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	12	12	15	15	15
Grade (%)		2%			-2%			3%			4%	
Storage Length (ft)	0		0	350		0	0		0	0		0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (ft)	25			100			25			25		
Right Turn on Red			Yes			No			No			Yes
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		536			746			1213			1063	
Travel Time (s)		10.4			14.5			23.6			20.7	
Confl. Peds. (#/hr)			9	9			1					1
Confl. Bikes (#/hr)			9	9			1					1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	5%	12%	1%	0%	1%	0%	6%	3%	32%	4%
Shared Lane Traffic (%)												
Turn Type		NA		pm+pt	NA		Split	NA		Split	NA	
Protected Phases		2		1	6		8	8		4	4	
Permitted Phases				6								
Detector Phase		2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Split (s)		15.8		12.8	15.8		15.1	15.1		15.1	15.1	
Total Split (s)		51.0		14.0	65.0		31.0	31.0		19.0	19.0	
Total Split (%)		44.3%		12.2%	56.5%		27.0%	27.0%		16.5%	16.5%	
Yellow Time (s)		3.8		3.8	3.8		3.4	3.4		3.3	3.3	
All-Red Time (s)		2.0		2.0	2.0		1.6	1.6		1.8	1.8	
Lost Time Adjust (s)		-1.0		-1.0	-1.0			-1.0			-1.0	
Total Lost Time (s)		4.8		4.8	4.8			4.0			4.1	
Lead/Lag		Lag		Lead								
Lead-Lag Optimize?		Yes		Yes								
Recall Mode		C-Max		None	C-Max		None	None		None	None	

Intersection Summary













Area Type: Other  
 Cycle Length: 115  
 Actuated Cycle Length: 115  
 Offset: 37 (32%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated

Splits and Phases: 3: Industrial Dr/322 EB Ramp & Route 0039



HCM 2010 Signalized Intersection Summary  
 3: Industrial Dr/322 EB Ramp & Route 0039

Existing Route 0039 (Front to Patton) PM.syn  
 04/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑	↑↑			↑↓			↑↓	
Traffic Volume (veh/h)	0	1040	56	60	627	0	96	0	174	112	22	26
Future Volume (veh/h)	0	1040	56	60	627	0	96	0	174	112	22	26
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1761	1782	1623	1800	0	1773	1701	1773	1835	1712	1835
Adj Flow Rate, veh/h	0	1130	61	65	682	0	104	0	189	122	24	0
Adj No. of Lanes	0	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	1	1	12	1	0	0	0	0	32	32	32
Cap, veh/h	0	1507	81	211	1899	0	116	0	211	154	30	0
Arrive On Green	0.00	0.47	0.47	0.09	1.00	0.00	0.22	0.00	0.22	0.11	0.11	0.00
Sat Flow, veh/h	0	3309	174	1546	3510	0	528	0	960	1373	270	0
Grp Volume(v), veh/h	0	586	605	65	682	0	293	0	0	146	0	0
Grp Sat Flow(s),veh/h/ln	0	1673	1722	1546	1710	0	1489	0	0	1643	0	0
Q Serve(g_s), s	0.0	33.0	33.1	2.3	0.0	0.0	22.0	0.0	0.0	10.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	33.0	33.1	2.3	0.0	0.0	22.0	0.0	0.0	10.0	0.0	0.0
Prop In Lane	0.00		0.10	1.00		0.00	0.35		0.65	0.84		0.00
Lane Grp Cap(c), veh/h	0	783	806	211	1899	0	328	0	0	185	0	0
V/C Ratio(X)	0.00	0.75	0.75	0.31	0.36	0.00	0.89	0.00	0.00	0.79	0.00	0.00
Avail Cap(c_a), veh/h	0	783	806	264	1899	0	350	0	0	213	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.94	0.94	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	25.1	25.1	18.4	0.0	0.0	43.5	0.0	0.0	49.7	0.0	0.0
Incr Delay (d2), s/veh	0.0	6.5	6.3	0.8	0.5	0.0	24.0	0.0	0.0	16.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	23.2	23.8	1.9	0.2	0.0	16.7	0.0	0.0	9.1	0.0	0.0
LnGrp Delay(d),s/veh	0.0	31.6	31.4	19.2	0.5	0.0	67.5	0.0	0.0	65.7	0.0	0.0
LnGrp LOS		C	C	B	A		E			E		
Approach Vol, veh/h		1191			747			293				146
Approach Delay, s/veh		31.5			2.1			67.5				65.7
Approach LOS		C			A			E				E
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	10.1	58.6		17.0		68.7		29.3				
Change Period (Y+Rc), s	* 5.8	* 5.8		5.1		* 5.8		5.0				
Max Green Setting (Gmax), s	8.2	* 45		13.9		* 59		26.0				
Max Q Clear Time (g_c+I1), s	4.8	35.5		12.0		2.5		24.0				
Green Ext Time (p_c), s	0.0	5.2		0.1		5.3		0.3				

Intersection Summary		
HCM 2010 Ctrl Delay		28.8
HCM 2010 LOS		C

Notes  
 User approved pedestrian interval to be less than phase max green.  
 \* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings

Existing Route 0039 (Front to Patton) PM.syn

4: 322 WB Ramp/Mountain View Rd & Route 0039

04/29/2020

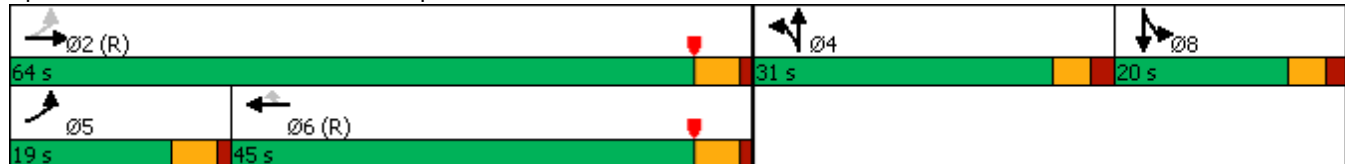


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↕			↕	↘		↕			↕	
Traffic Volume (vph)	237	986	0	0	733	341	62	5	231	0	0	10
Future Volume (vph)	237	986	0	0	733	341	62	5	231	0	0	10
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	15	15	15	15	15	15
Grade (%)		5%			-4%			5%			4%	
Storage Length (ft)	190		0	0		175	0		0	0		0
Storage Lanes	1		0	0		1	0		0	0		0
Taper Length (ft)	100			25			25			25		
Right Turn on Red			No			Yes			Yes			Yes
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		746			1059			774			1069	
Travel Time (s)		14.5			20.6			15.1			20.8	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	0%	0%	1%	0%	19%	0%	1%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA			NA	Perm	Split	NA			NA	
Protected Phases	5	2			6		4	4		8	8	
Permitted Phases	2					6						
Detector Phase	5	2			6	6	4	4		8	8	
Switch Phase												
Minimum Initial (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	12.2	15.2			15.2	15.2	15.2	15.2		15.2	15.2	
Total Split (s)	19.0	64.0			45.0	45.0	31.0	31.0		20.0	20.0	
Total Split (%)	16.5%	55.7%			39.1%	39.1%	27.0%	27.0%		17.4%	17.4%	
Yellow Time (s)	4.0	4.0			4.0	4.0	3.3	3.3		3.3	3.3	
All-Red Time (s)	1.2	1.2			1.2	1.2	2.0	2.0		1.8	1.8	
Lost Time Adjust (s)	-1.0	-1.0			-1.0	-1.0		-1.0			-1.0	
Total Lost Time (s)	4.2	4.2			4.2	4.2		4.3			4.1	
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Recall Mode	None	C-Max			C-Max	C-Max	None	None		None	None	



















Intersection Summary

Area Type: Other  
 Cycle Length: 115  
 Actuated Cycle Length: 115  
 Offset: 41 (36%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated

Splits and Phases: 4: 322 WB Ramp/Mountain View Rd & Route 0039



HCM 2010 Signalized Intersection Summary Existing Route 0039 (Front to Patton) PM.syn  
 4: 322 WB Ramp/Mountain View Rd & Route 0039 04/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	237	986	0	0	733	341	62	5	231	0	0	10
Future Volume (veh/h)	237	986	0	0	733	341	62	5	231	0	0	10
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1738	1738	0	0	1818	1836	1825	1743	1825	1835	1835	1835
Adj Flow Rate, veh/h	244	1016	0	0	756	0	64	5	0	0	0	0
Adj No. of Lanes	1	2	0	0	2	1	0	1	0	0	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	0	0	1	0	0	0	0	0	0	0
Cap, veh/h	653	2855	0	0	2638	1192	95	7	0	0	2	0
Arrive On Green	0.13	1.00	0.00	0.00	0.76	0.00	0.06	0.06	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1655	3388	0	0	3545	1561	1545	121	0	0	1835	0
Grp Volume(v), veh/h	244	1016	0	0	756	0	69	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	1655	1651	0	0	1727	1561	1665	0	0	0	1835	0
Q Serve(g_s), s	3.4	0.0	0.0	0.0	7.6	0.0	4.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.4	0.0	0.0	0.0	7.6	0.0	4.7	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		0.00	0.00		1.00	0.93		0.00	0.00		0.00
Lane Grp Cap(c), veh/h	653	2855	0	0	2638	1192	102	0	0	0	2	0
V/C Ratio(X)	0.37	0.36	0.00	0.00	0.29	0.00	0.67	0.00	0.00	0.00	0.00	0.00
Avail Cap(c_a), veh/h	760	2855	0	0	2638	1192	387	0	0	0	254	0
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.49	0.49	0.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	2.1	0.0	0.0	0.0	4.1	0.0	52.8	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.2	0.0	0.0	0.3	0.0	7.5	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.5	0.1	0.0	0.0	6.6	0.0	4.2	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	2.2	0.2	0.0	0.0	4.4	0.0	60.3	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	A	A			A		E					
Approach Vol, veh/h		1260			756			69				0
Approach Delay, s/veh		0.6			4.4			60.3				0.0
Approach LOS		A			A			E				
<b>Timer</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>				
Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		103.6		11.4	11.6	92.0		0.0				
Change Period (Y+Rc), s		* 5.2		* 5.3	* 5.2	* 5.2		5.1				
Max Green Setting (Gmax), s		* 59		* 26	* 14	* 40		14.9				
Max Q Clear Time (g_c+I1), s		2.5		6.7	5.9	10.1		0.0				
Green Ext Time (p_c), s		9.2		0.2	0.5	5.6		0.0				

Intersection Summary		
HCM 2010 Ctrl Delay		3.9
HCM 2010 LOS		A

**Notes**  
 \* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings  
5: Fargreen Rd & Route 0039

Existing Route 0039 (Front to Patton) PM.syn  
04/29/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	1101	54	4	1054	14	39	5	2	39	3	15
Future Volume (vph)	37	1101	54	4	1054	14	39	5	2	39	3	15
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	12	12	14	14	14
Grade (%)		-2%			3%			4%			-6%	
Storage Length (ft)	125		0	125		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	50			50			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		1858			1350			1002			1162	
Travel Time (s)		28.2			20.5			27.3			31.7	
Confl. Peds. (#/hr)	1		4	4		1			1	1		
Confl. Bikes (#/hr)	1		4	4		1			1	1		
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	0%	1%	2%	0%	1%	0%	8%	0%	50%	0%	33%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	13.0	13.0		13.0	13.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	19.2	19.2		19.2	19.2		15.6	15.6		15.6	15.6	
Total Split (s)	76.0	76.0		76.0	76.0		24.0	24.0		24.0	24.0	
Total Split (%)	76.0%	76.0%		76.0%	76.0%		24.0%	24.0%		24.0%	24.0%	
Yellow Time (s)	4.6	4.6		4.6	4.6		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.6	1.6		1.6	1.6		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			-1.0			-1.0	
Total Lost Time (s)	5.2	5.2		5.2	5.2			4.6			4.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 18 (18%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated




















Splits and Phases: 5: Fargreen Rd & Route 0039





HCM 2010 Signalized Intersection Summary  
5: Fargreen Rd & Route 0039

Existing Route 0039 (Front to Patton) PM.syn  
04/29/2020

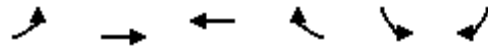
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	1101	54	4	1054	14	39	5	2	39	3	15
Future Volume (veh/h)	37	1101	54	4	1054	14	39	5	2	39	3	15
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	0.99		0.97	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1818	1799	1818	1773	1756	1773	1764	1619	1764	1928	1895	1928
Adj Flow Rate, veh/h	37	1112	55	4	1065	14	39	5	2	39	3	15
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	0	1	1	0	1	1	0	0	0	33	33	33
Cap, veh/h	524	1432	71	337	1457	19	138	9	4	128	5	26
Arrive On Green	0.84	0.84	0.84	1.00	1.00	1.00	0.06	0.06	0.06	0.06	0.06	0.06
Sat Flow, veh/h	536	1698	84	481	1728	23	1211	155	62	1146	88	441
Grp Volume(v), veh/h	37	0	1167	4	0	1079	46	0	0	57	0	0
Grp Sat Flow(s),veh/h/ln	536	0	1782	481	0	1751	1428	0	0	1674	0	0
Q Serve(g_s), s	1.2	0.0	29.7	0.3	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Cycle Q Clear(g_c), s	1.2	0.0	29.7	29.5	0.0	0.0	2.9	0.0	0.0	3.1	0.0	0.0
Prop In Lane	1.00		0.05	1.00		0.01	0.85		0.04	0.68		0.26
Lane Grp Cap(c), veh/h	524	0	1503	337	0	1477	150	0	0	159	0	0
V/C Ratio(X)	0.07	0.00	0.78	0.01	0.00	0.73	0.31	0.00	0.00	0.36	0.00	0.00
Avail Cap(c_a), veh/h	524	0	1503	337	0	1477	326	0	0	366	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.66	0.00	0.66	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	1.3	0.0	3.6	5.1	0.0	0.0	45.7	0.0	0.0	45.7	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	4.0	0.0	0.0	2.2	1.1	0.0	0.0	1.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.4	0.0	22.1	0.1	0.0	1.6	2.3	0.0	0.0	2.9	0.0	0.0
LnGrp Delay(d),s/veh	1.6	0.0	7.6	5.2	0.0	2.2	46.8	0.0	0.0	47.1	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		1204			1083			46				57
Approach Delay, s/veh		7.4			2.2			46.8				47.1
Approach LOS		A			A			D				D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		89.5		10.5		89.5		10.5				
Change Period (Y+Rc), s		* 6.2		5.6		* 6.2		5.6				
Max Green Setting (Gmax), s		* 70		18.4		* 70		18.4				
Max Q Clear Time (g_c+I1), s		31.7		5.1		32.0		4.9				
Green Ext Time (p_c), s		36.1		0.1		34.3		0.1				

Intersection Summary		
HCM 2010 Ctrl Delay		6.7
HCM 2010 LOS		A

Notes  
\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings  
6: Route 0039 & Deer Path Rd

Existing Route 0039 (Front to Patton) PM.syn  
04/29/2020



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗	↘		↖	↗
Traffic Volume (vph)	125	895	884	13	85	190
Future Volume (vph)	125	895	884	13	85	190
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	13	12	12	12	14	14
Grade (%)		5%	-5%		5%	
Storage Length (ft)	75			0	160	160
Storage Lanes	1			0	0	0
Taper Length (ft)	50				25	
Right Turn on Red				Yes		Yes
Link Speed (mph)		45	45		25	
Link Distance (ft)		1350	893		841	
Travel Time (s)		20.5	13.5		22.9	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	1%	8%	0%	1%
Shared Lane Traffic (%)						
Turn Type	pm+pt	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases	2					4
Detector Phase	5	2	6		4	5
Switch Phase						
Minimum Initial (s)	3.0	13.0	13.0		3.0	3.0
Minimum Split (s)	12.2	20.0	20.0		12.2	12.2
Total Split (s)	13.0	78.0	65.0		22.0	13.0
Total Split (%)	13.0%	78.0%	65.0%		22.0%	13.0%
Yellow Time (s)	3.0	5.0	5.0		3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		2.2	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0	-1.0
Total Lost Time (s)	4.0	6.0	6.0		4.2	4.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	None	C-Max	C-Max		None	None

Intersection Summary

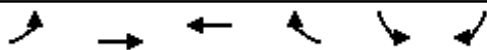
Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 9 (9%), Referenced to phase 2:EBTL and 6:WBT, Start of Green  
 Natural Cycle: 70  
 Control Type: Actuated-Coordinated

Splits and Phases: 6: Route 0039 & Deer Path Rd



HCM 2010 Signalized Intersection Summary  
6: Route 0039 & Deer Path Rd

Existing Route 0039 (Front to Patton) PM.syn  
04/29/2020



Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations	↖	↑	↗		↖	↗		
Traffic Volume (veh/h)	125	895	884	13	85	190		
Future Volume (veh/h)	125	895	884	13	85	190		
Number	5	2	6	16	7	14		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1807	1738	1825	1845	1825	1807		
Adj Flow Rate, veh/h	129	923	911	13	88	196		
Adj No. of Lanes	1	1	1	0	1	1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97		
Percent Heavy Veh, %	1	1	1	1	0	1		
Cap, veh/h	348	1293	1162	17	267	323		
Arrive On Green	0.08	0.99	0.65	0.65	0.15	0.15		
Sat Flow, veh/h	1721	1738	1795	26	1738	1536		
Grp Volume(v), veh/h	129	923	0	924	88	196		
Grp Sat Flow(s),veh/h/ln	1721	1738	0	1820	1738	1536		
Q Serve(g_s), s	2.2	1.8	0.0	36.3	4.5	11.5		
Cycle Q Clear(g_c), s	2.2	1.8	0.0	36.3	4.5	11.5		
Prop In Lane	1.00			0.01	1.00	1.00		
Lane Grp Cap(c), veh/h	348	1293	0	1179	267	323		
V/C Ratio(X)	0.37	0.71	0.00	0.78	0.33	0.61		
Avail Cap(c_a), veh/h	406	1293	0	1179	309	361		
HCM Platoon Ratio	1.33	1.33	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.52	0.52	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	12.9	0.1	0.0	12.6	37.7	35.7		
Incr Delay (d2), s/veh	0.3	1.8	0.0	5.2	0.7	2.4		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/ln	3.1	1.9	0.0	27.0	4.0	15.1		
LnGrp Delay(d),s/veh	13.3	1.9	0.0	17.9	38.4	38.1		
LnGrp LOS	B	A		B	D	D		
Approach Vol, veh/h		1052	924		284			
Approach Delay, s/veh		3.3	17.9		38.2			
Approach LOS		A	B		D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		80.4		19.6	9.7	70.8		
Change Period (Y+Rc), s		7.0		* 5.2	5.0	7.0		
Max Green Setting (Gmax), s		71.0		* 17	8.0	58.0		
Max Q Clear Time (g_c+I1), s		4.3		14.0	4.7	38.3		
Green Ext Time (p_c), s		48.4		0.3	0.1	17.2		

Intersection Summary

HCM 2010 Ctrl Delay	13.6
HCM 2010 LOS	B

Notes

\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings  
7: Crooked Hill Rd & Route 0039

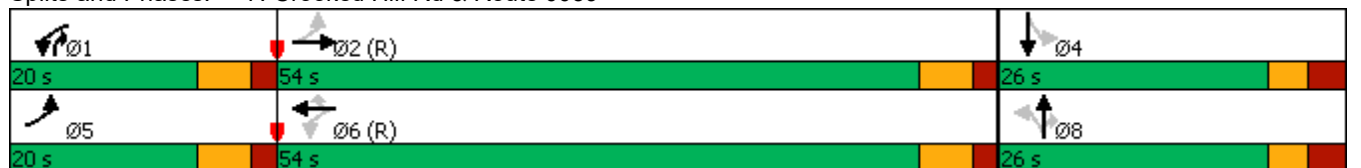
Existing Route 0039 (Front to Patton) PM.syn  
04/29/2020

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	943	39	99	790	144	50	44	122	119	22	72
Future Volume (vph)	61	943	39	99	790	144	50	44	122	119	22	72
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	13	11	11	11	11	11	13	11	11	11
Grade (%)		-2%			1%			1%			-3%	
Storage Length (ft)	200		200	160		670	85		140	230		0
Storage Lanes	1		1	1		0	1		1	0		0
Taper Length (ft)	100			75			75			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		773			1659			716			762	
Travel Time (s)		11.7			25.1			19.5			20.8	
Confl. Peds. (#/hr)	1		1	1		1	3					3
Confl. Bikes (#/hr)			1	1			3					3
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	1%	3%	0%	1%	0%	2%	2%	1%	3%	0%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA	pm+ov	Perm	NA	
Protected Phases	5	2		1	6			8	1		4	
Permitted Phases	2			6		6	8		8	4		
Detector Phase	5	2		1	6	6	8	8	1	4	4	
Switch Phase												
Minimum Initial (s)	3.0	13.0		3.0	13.0	13.0	3.0	3.0	3.0	3.0	3.0	
Minimum Split (s)	11.0	19.0		11.0	19.0	19.0	13.0	13.0	11.0	13.0	13.0	
Total Split (s)	20.0	54.0		20.0	54.0	54.0	26.0	26.0	20.0	26.0	26.0	
Total Split (%)	20.0%	54.0%		20.0%	54.0%	54.0%	26.0%	26.0%	20.0%	26.0%	26.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	3.0	4.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	3.0	3.0	2.0	3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag			Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes			Yes			
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	

Intersection Summary
























Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 97 (97%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated

Splits and Phases: 7: Crooked Hill Rd & Route 0039



HCM 2010 Signalized Intersection Summary  
7: Crooked Hill Rd & Route 0039

Existing Route 0039 (Front to Patton) PM.syn  
04/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	61	943	39	99	790	144	50	44	122	119	22	72
Future Volume (veh/h)	61	943	39	99	790	144	50	44	122	119	22	72
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	0.99		0.98	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1782	1799	1891	1791	1773	1791	1756	1756	1844	1774	1827	1827
Adj Flow Rate, veh/h	65	1003	41	105	840	153	53	47	130	127	23	77
Adj No. of Lanes	1	2	0	1	1	1	1	1	1	1	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	1	1	0	1	0	2	2	1	3	0	0
Cap, veh/h	407	2113	86	424	1143	960	213	287	336	241	59	196
Arrive On Green	0.04	0.63	0.63	0.07	0.86	0.86	0.16	0.16	0.16	0.16	0.16	0.16
Sat Flow, veh/h	1697	3343	137	1706	1773	1490	1275	1756	1534	1204	359	1203
Grp Volume(v), veh/h	65	513	531	105	840	153	53	47	130	127	0	100
Grp Sat Flow(s),veh/h/ln	1697	1709	1771	1706	1773	1490	1275	1756	1534	1204	0	1562
Q Serve(g_s), s	1.3	15.8	15.8	2.1	18.3	1.7	3.9	2.3	7.2	10.1	0.0	5.7
Cycle Q Clear(g_c), s	1.3	15.8	15.8	2.1	18.3	1.7	9.1	2.3	7.2	12.4	0.0	5.7
Prop In Lane	1.00		0.08	1.00		1.00	1.00		1.00	1.00		0.77
Lane Grp Cap(c), veh/h	407	1080	1120	424	1143	960	213	287	336	241	0	255
V/C Ratio(X)	0.16	0.47	0.47	0.25	0.74	0.16	0.25	0.16	0.39	0.53	0.00	0.39
Avail Cap(c_a), veh/h	590	1080	1120	587	1143	960	273	369	408	297	0	328
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.66	0.66	0.66	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.2	9.7	9.7	6.6	3.9	2.7	41.2	36.0	33.4	41.3	0.0	37.4
Incr Delay (d2), s/veh	0.2	1.5	1.4	0.2	2.8	0.2	0.6	0.3	0.7	1.8	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.1	12.4	12.8	1.7	13.4	1.3	2.5	2.0	5.7	6.3	0.0	4.6
LnGrp Delay(d),s/veh	7.3	11.2	11.1	6.8	6.6	2.9	41.8	36.2	34.1	43.1	0.0	38.4
LnGrp LOS	A	B	B	A	A	A	D	D	C	D		D
Approach Vol, veh/h		1109			1098			230				227
Approach Delay, s/veh		10.9			6.1			36.3				41.0
Approach LOS		B			A			D				D
<b>Timer</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.5	68.2		21.3	9.2	69.4		21.3				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	4.0	48.0		20.0	14.0	48.0		20.0				
Max Q Clear Time (g_c+I1), s	4.6	18.3		14.9	3.8	20.8		11.6				
Green Ext Time (p_c), s	0.2	24.5		0.4	0.1	23.2		0.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				13.7								
HCM 2010 LOS				B								

Lanes, Volumes, Timings

Existing Route 0039 (Front to Patton) PM.syn

8: Private Dwy/Blue Mountain Commons Dwy & Route 0039

04/29/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	304	1021	41	33	821	26	24	4	48	260	3	208
Future Volume (vph)	304	1021	41	33	821	26	24	4	48	260	3	208
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	13	13	13	13	12	12	12
Grade (%)		-2%			3%			3%			-2%	
Storage Length (ft)	200		0	110		200	0		75	250		300
Storage Lanes	1		0	1		1	1		1	0		2
Taper Length (ft)	50			50			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		1659			1606			416			814	
Travel Time (s)		25.1			24.3			11.3			22.2	
Confl. Peds. (#/hr)	5		3	3		5						
Confl. Bikes (#/hr)			1	1								
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	1%	1%	0%	0%	1%	8%	0%	0%	0%	0%	0%	1%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA	pm+ov	Perm	NA		Prot	NA	
Protected Phases	5	2		1	6	7		8		7	4	
Permitted Phases	2			6		6	8					
Detector Phase	5	2		1	6	7	8	8		7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0	3.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	13.9	22.9		13.9	22.9	13.4	13.4	13.4		13.4	13.4	
Total Split (s)	25.0	48.0		14.0	37.0	20.0	18.0	18.0		20.0	38.0	
Total Split (%)	25.0%	48.0%		14.0%	37.0%	20.0%	18.0%	18.0%		20.0%	38.0%	
Yellow Time (s)	4.5	4.5		4.5	4.5	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.4	2.4		2.4	2.4	3.4	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.9	5.9		5.9	5.9	5.4	5.4	5.4		5.4	5.4	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes		
Recall Mode	None	C-Max		None	C-Max	None	None	None		None	None	

Intersection Summary

Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 64 (64%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated























Splits and Phases: 8: Private Dwy/Blue Mountain Commons Dwy & Route 0039



Done By: JBL  
 Checked By:

P:\0065\006524\_0426\Admin\Traffic\Synchro\Existing Route 0039 (Front to Patton) PM.syn  
 Synchro 10 Report

HCM 2010 Signalized Intersection Summary Existing Route 0039 (Front to Patton) PM.syn  
 8: Private Dwy/Blue Mountain Commons Dwy & Route 0039 04/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	304	1021	41	33	821	26	24	4	48	260	3	208
Future Volume (veh/h)	304	1021	41	33	821	26	24	4	48	260	3	208
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1800	1801	1818	1773	1755	1707	1844	1844	1844	1818	1800	1818
Adj Flow Rate, veh/h	327	1098	44	35	883	28	26	4	52	280	3	224
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	2	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	0	1	8	0	0	0	0	0	0
Cap, veh/h	552	1868	75	253	1542	833	150	7	96	399	5	360
Arrive On Green	0.04	0.18	0.18	0.06	0.92	0.92	0.07	0.07	0.07	0.12	0.24	0.24
Sat Flow, veh/h	1714	3349	134	1689	3335	1429	1201	113	1471	3359	20	1513
Grp Volume(v), veh/h	327	561	581	35	883	28	26	0	56	280	0	227
Grp Sat Flow(s),veh/h/ln	1714	1711	1773	1689	1668	1429	1201	0	1584	1679	0	1533
Q Serve(g_s), s	8.6	30.0	30.0	1.1	4.2	0.1	2.1	0.0	3.4	8.0	0.0	13.2
Cycle Q Clear(g_c), s	8.6	30.0	30.0	1.1	4.2	0.1	2.1	0.0	3.4	8.0	0.0	13.2
Prop In Lane	1.00		0.08	1.00		1.00	1.00		0.93	1.00		0.99
Lane Grp Cap(c), veh/h	552	954	989	253	1542	833	150	0	103	399	0	365
V/C Ratio(X)	0.59	0.59	0.59	0.14	0.57	0.03	0.17	0.00	0.54	0.70	0.00	0.62
Avail Cap(c_a), veh/h	660	954	989	336	1542	833	223	0	200	490	0	500
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.85	0.85	0.85	0.71	0.71	0.71	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.6	30.3	30.3	14.8	2.2	1.2	44.6	0.0	45.3	42.4	0.0	34.1
Incr Delay (d2), s/veh	0.9	2.3	2.2	0.2	1.1	0.1	0.5	0.0	4.3	3.4	0.0	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.3	20.7	21.3	0.9	3.1	0.1	1.3	0.0	2.9	7.1	0.0	9.7
LnGrp Delay(d),s/veh	11.4	32.5	32.5	15.0	3.3	1.3	45.2	0.0	49.6	45.8	0.0	35.8
LnGrp LOS	B	C	C	B	A	A	D		D	D		D
Approach Vol, veh/h		1469			946			82				507
Approach Delay, s/veh		27.8			3.7			48.2				41.3
Approach LOS		C			A			D				D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.1	61.7		29.2	18.7	52.1	17.3	11.9				
Change Period (Y+Rc), s	6.9	6.9		6.4	6.9	6.9	6.4	6.4				
Max Green Setting (Gmax), s	7.1	41.1		31.6	18.1	30.1	13.6	11.6				
Max Q Clear Time (g_c+I1), s	3.6	32.5		15.2	11.1	6.7	10.5	5.4				
Green Ext Time (p_c), s	0.0	8.1		0.9	0.7	18.4	0.4	0.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				23.0								
HCM 2010 LOS				C								

Lanes, Volumes, Timings  
9: Progress Ave & Route 0039

Existing Route 0039 (Front to Patton) PM.syn  
04/29/2020

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	757	352	243	641	22	339	115	249	40	58	73
Future Volume (vph)	151	757	352	243	641	22	339	115	249	40	58	73
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	13	11	11	13	12	12	12	12	13	13
Grade (%)		3%			2%			-4%			4%	
Storage Length (ft)	210		250	290		250	385		0	140		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	100			50			50			90		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			45			25	
Link Distance (ft)		1606			631			987			941	
Travel Time (s)		24.3			9.6			15.0			25.7	
Confl. Peds. (#/hr)			1	1			1					1
Confl. Bikes (#/hr)			1	1								
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	1%	0%	1%	0%	1%	2%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases	2		2	6			8			4		
Detector Phase	5	2	3	1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	3.0	13.0	3.0	3.0	13.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	13.0	19.0	15.0	13.0	19.0		15.0	15.0		15.0	15.0	
Total Split (s)	17.0	36.0	21.0	20.0	39.0		21.0	29.0		15.0	23.0	
Total Split (%)	17.0%	36.0%	21.0%	20.0%	39.0%		21.0%	29.0%		15.0%	23.0%	
Yellow Time (s)	4.0	4.0	5.0	4.0	4.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0	3.0	2.0	2.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	7.0	5.0	5.0		7.0	7.0		7.0	7.0	
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	None	None	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 56 (56%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated

Splits and Phases: 9: Progress Ave & Route 0039
























Done By: JBL  
 Checked By:

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 Synchro 10 Report



HCM 2010 Signalized Intersection Summary  
 9: Progress Ave & Route 0039

Existing Route 0039 (Front to Patton) PM.syn  
 04/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	151	757	352	243	641	22	339	115	249	40	58	73
Future Volume (veh/h)	151	757	352	243	641	22	339	115	249	40	58	73
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1773	1755	1826	1782	1765	1853	1818	1824	1836	1764	1818	1835
Adj Flow Rate, veh/h	154	772	359	248	654	22	346	117	254	41	59	74
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	1	1	0	1	1	1	2	2	0	2	2
Cap, veh/h	424	1258	789	373	1356	46	378	113	245	146	89	112
Arrive On Green	0.09	0.38	0.38	0.12	0.41	0.41	0.14	0.22	0.22	0.04	0.12	0.12
Sat Flow, veh/h	1689	3335	1517	1697	3308	111	1731	513	1113	1680	733	920
Grp Volume(v), veh/h	154	772	359	248	331	345	346	0	371	41	0	133
Grp Sat Flow(s),veh/h/ln	1689	1668	1517	1697	1677	1742	1731	0	1626	1680	0	1653
Q Serve(g_s), s	5.4	18.8	15.0	8.4	14.5	14.5	14.0	0.0	22.0	2.1	0.0	7.7
Cycle Q Clear(g_c), s	5.4	18.8	15.0	8.4	14.5	14.5	14.0	0.0	22.0	2.1	0.0	7.7
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.68	1.00		0.56
Lane Grp Cap(c), veh/h	424	1258	789	373	688	714	378	0	358	146	0	201
V/C Ratio(X)	0.36	0.61	0.45	0.66	0.48	0.48	0.92	0.00	1.04	0.28	0.00	0.66
Avail Cap(c_a), veh/h	477	1258	789	421	688	714	378	0	358	211	0	265
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.73	0.73	0.73	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.5	25.2	15.3	18.0	21.7	21.7	34.4	0.0	39.0	36.6	0.0	42.0
Incr Delay (d2), s/veh	0.4	1.7	1.4	3.3	2.4	2.3	26.3	0.0	57.5	1.0	0.0	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.5	13.1	10.1	7.7	11.6	11.9	9.5	0.0	28.0	1.8	0.0	6.7
LnGrp Delay(d),s/veh	16.9	26.9	16.7	21.4	24.1	24.0	60.7	0.0	96.5	37.7	0.0	45.8
LnGrp LOS	B	C	B	C	C	C	E		F	D		D
Approach Vol, veh/h	1285		924				717			174		
Approach Delay, s/veh	22.8		23.3				79.2			43.9		
Approach LOS	C		C				E			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.2	42.7	21.0	19.1	13.9	46.0	11.1	29.0				
Change Period (Y+Rc), s	6.0	6.0	8.0	8.0	6.0	6.0	8.0	8.0				
Max Green Setting (Gmax), s	4.0	30.0	13.0	15.0	11.0	33.0	7.0	21.0				
Max Q Clear Time (g_c+I1), s	0.9	21.3	16.5	9.7	7.9	17.0	4.6	24.0				
Green Ext Time (p_c), s	0.2	8.1	0.0	0.2	0.1	10.9	0.0	0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			37.2									
HCM 2010 LOS			D									

Lanes, Volumes, Timings  
10: Sturbridge Dr/Private Dwy & Route 0039

Existing Route 0039 (Front to Patton) PM.syn  
04/29/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕			↕	↗		↕	
Traffic Volume (vph)	0	991	62	24	826	0	149	0	82	0	0	0
Future Volume (vph)	0	991	62	24	826	0	149	0	82	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	13	12	12	12	14	14	14	10	10	10
Grade (%)		0%			1%			-1%			0%	
Storage Length (ft)	0		250	80		0	250		250	0		0
Storage Lanes	0		1	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		862			1072			870			145	
Travel Time (s)		13.1			16.2			23.7			4.0	
Confl. Peds. (#/hr)			7	7			4					4
Confl. Bikes (#/hr)			6	6								
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type		NA	Perm	Perm	NA		Perm	NA	Perm			
Protected Phases		6			2			4				8
Permitted Phases	6		6	2			4		4	8		
Detector Phase	6	6	6	2	2		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		3.0	3.0	3.0	3.0	3.0	
Minimum Split (s)	16.5	16.5	16.5	16.5	16.5		12.5	12.5	12.5	12.5	12.5	
Total Split (s)	78.0	78.0	78.0	78.0	78.0		22.0	22.0	22.0	22.0	22.0	
Total Split (%)	78.0%	78.0%	78.0%	78.0%	78.0%		22.0%	22.0%	22.0%	22.0%	22.0%	
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.5	2.5	2.5	2.5	2.5	
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0			-1.0	-1.0		-1.0	
Total Lost Time (s)		5.5	5.5	5.5	5.5			4.5	4.5		4.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None	None	None	None	

Intersection Summary




















Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 77 (77%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated

Splits and Phases: 10: Sturbridge Dr/Private Dwy & Route 0039



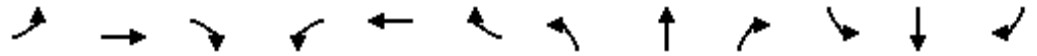
HCM 2010 Signalized Intersection Summary  
 10: Sturbridge Dr/Private Dwy & Route 0039

Existing Route 0039 (Front to Patton) PM.syn  
 04/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	991	62	24	826	0	149	0	82	0	0	0
Future Volume (veh/h)	0	991	62	24	826	0	149	0	82	0	0	0
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	0.99		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1800	1782	1872	1791	1791	1791	1881	1881	1881	1800	1800	1800
Adj Flow Rate, veh/h	0	1054	66	26	879	0	159	0	87	0	0	0
Adj No. of Lanes	0	1	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	0	1352	1174	280	1359	0	281	0	223	0	254	0
Arrive On Green	0.00	0.76	0.76	1.00	1.00	0.00	0.14	0.00	0.14	0.00	0.00	0.00
Sat Flow, veh/h	0	1782	1548	508	1791	0	1478	0	1577	0	1800	0
Grp Volume(v), veh/h	0	1054	66	26	879	0	159	0	87	0	0	0
Grp Sat Flow(s),veh/h/ln	0	1782	1548	508	1791	0	1478	0	1577	0	1800	0
Q Serve(g_s), s	0.0	34.9	1.1	2.5	0.0	0.0	10.4	0.0	5.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	34.9	1.1	37.5	0.0	0.0	10.4	0.0	5.0	0.0	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	0	1352	1174	280	1359	0	281	0	223	0	254	0
V/C Ratio(X)	0.00	0.78	0.06	0.09	0.65	0.00	0.57	0.00	0.39	0.00	0.00	0.00
Avail Cap(c_a), veh/h	0	1352	1174	280	1359	0	331	0	276	0	315	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.37	0.37	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	7.1	3.0	8.6	0.0	0.0	41.3	0.0	39.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	4.5	0.1	0.2	0.9	0.0	1.8	0.0	1.1	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	25.4	0.9	0.7	0.6	0.0	7.8	0.0	4.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	11.6	3.1	8.9	0.9	0.0	43.1	0.0	40.1	0.0	0.0	0.0
LnGrp LOS		B	A	A	A		D		D			
Approach Vol, veh/h		1120			905			246				0
Approach Delay, s/veh		11.1			1.1			42.0				0.0
Approach LOS		B			A			D				
<b>Timer</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		81.4		18.6		81.4		18.6				
Change Period (Y+Rc), s		6.5		5.5		6.5		5.5				
Max Green Setting (Gmax), s		71.5		16.5		71.5		16.5				
Max Q Clear Time (g_c+I1), s		40.0		12.9		37.4		0.0				
Green Ext Time (p_c), s		25.7		0.3		31.2		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				10.5								
HCM 2010 LOS				B								

Lanes, Volumes, Timings  
 11: Private Dwy/Oakhurst Blvd & Route 0039

Existing Route 0039 (Front to Patton) PM.syn  
 04/29/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗		↖	↗	
Traffic Volume (vph)	69	981	0	0	775	118	0	0	0	115	0	67
Future Volume (vph)	69	981	0	0	775	118	0	0	0	115	0	67
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	11	12	12	12	12	15	15	15	15	15
Grade (%)		-2%			1%			-1%			-1%	
Storage Length (ft)	180		150	150		0	40		40	0		60
Storage Lanes	1		1	1		0	0		1	1		1
Taper Length (ft)	50			75			3			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		1072			1119			285			941	
Travel Time (s)		16.2			17.0			7.8			25.7	
Confl. Peds. (#/hr)	2		2	2		2	1		1	1		1
Confl. Bikes (#/hr)	1		2	2		1						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm			Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	5	2	2	1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	12.0	12.0	7.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	12.0	18.6	18.6	12.0	18.6		12.0	12.0		12.0	12.0	
Total Split (s)	14.0	62.0	62.0	12.0	60.0		26.0	26.0		26.0	26.0	
Total Split (%)	14.0%	62.0%	62.0%	12.0%	60.0%		26.0%	26.0%		26.0%	26.0%	
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	4.0	5.6	5.6	4.0	5.6		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Recall Mode	None	C-Max	C-Max	None	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green, Master Intersection  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated

Splits and Phases: 11: Private Dwy/Oakhurst Blvd & Route 0039
























Done By: JBL  
 Checked By:

P:\0065\006524\_0426\Admin\Traffic\Synchro\Existing Route 0039 (Front to Patton) PM.syn  
 Synchro 10 Report

HCM 2010 Signalized Intersection Summary  
 11: Private Dwy/Oakhurst Blvd & Route 0039

Existing Route 0039 (Front to Patton) PM.syn  
 04/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	981	0	0	775	118	0	0	0	115	0	67
Future Volume (veh/h)	69	981	0	0	775	118	0	0	0	115	0	67
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1818	1818	1818	1791	1776	1791	1809	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	77	1090	0	0	861	131	0	0	0	128	0	74
Adj No. of Lanes	1	1	1	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	0	1	1	0	0	0	0	0	0
Cap, veh/h	349	1446	1229	431	1026	156	72	205	0	266	0	173
Arrive On Green	0.14	1.00	0.00	0.00	0.68	0.68	0.00	0.00	0.00	0.11	0.00	0.11
Sat Flow, veh/h	1731	1818	1545	1706	1501	228	1354	1881	0	1784	0	1592
Grp Volume(v), veh/h	77	1090	0	0	0	992	0	0	0	128	0	74
Grp Sat Flow(s),veh/h/ln	1731	1818	1545	1706	0	1729	1354	1881	0	1784	0	1592
Q Serve(g_s), s	1.0	0.0	0.0	0.0	0.0	42.6	0.0	0.0	0.0	6.9	0.0	4.3
Cycle Q Clear(g_c), s	1.0	0.0	0.0	0.0	0.0	42.6	0.0	0.0	0.0	6.9	0.0	4.3
Prop In Lane	1.00		1.00	1.00		0.13	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	349	1446	1229	431	0	1182	72	205	0	266	0	173
V/C Ratio(X)	0.22	0.75	0.00	0.00	0.00	0.84	0.00	0.00	0.00	0.48	0.00	0.43
Avail Cap(c_a), veh/h	398	1446	1229	566	0	1182	222	414	0	464	0	350
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.57	0.57	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.8	0.0	0.0	0.0	0.0	11.8	0.0	0.0	0.0	42.8	0.0	41.6
Incr Delay (d2), s/veh	0.2	2.1	0.0	0.0	0.0	7.2	0.0	0.0	0.0	1.3	0.0	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.8	1.5	0.0	0.0	0.0	30.3	0.0	0.0	0.0	6.3	0.0	3.6
LnGrp Delay(d),s/veh	13.0	2.1	0.0	0.0	0.0	19.0	0.0	0.0	0.0	44.1	0.0	43.3
LnGrp LOS	B	A				B				D		D
Approach Vol, veh/h		1167			992			0				202
Approach Delay, s/veh		2.9			19.0			0.0				43.8
Approach LOS		A			B							D
<b>Timer</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	85.1		14.9	11.2	73.9		14.9				
Change Period (Y+Rc), s	5.0	6.6		5.0	5.0	6.6		5.0				
Max Green Setting (Gmax), s	7.0	55.4		21.0	9.0	53.4		21.0				
Max Q Clear Time (g_c+I1), s	0.0	2.5		9.4	3.5	44.6		0.0				
Green Ext Time (p_c), s	0.0	46.8		0.5	0.1	8.3		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				13.1								
HCM 2010 LOS				B								

Lanes, Volumes, Timings  
 12: Crums Mill Rd & Route 0039

Existing Route 0039 (Front to Patton) PM.syn  
 04/29/2020



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↘	↙
Traffic Volume (vph)	983	66	66	812	35	97
Future Volume (vph)	983	66	66	812	35	97
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	14	12	11	11	11
Grade (%)	0%			0%	7%	
Storage Length (ft)		150	80		0	0
Storage Lanes		1	1		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	45			45	25	
Link Distance (ft)	1073			1023	1149	
Travel Time (s)	16.3			15.5	31.3	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	2%	2%	1%	0%	0%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other  
 Control Type: Unsignalized

**Intersection**

Int Delay, s/veh 4.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Vol, veh/h	983	66	66	812	35	97
Future Vol, veh/h	983	66	66	812	35	97
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	80	-	0	-
Veh in Median Storage, #	-	-	-	0	0	-
Grade, %	0	-	-	0	7	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	2	2	1	0	0
Mvmt Flow	1035	69	69	855	37	102

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1105
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.3
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	3
Pot Cap-1 Maneuver	-	-	491
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	491
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	61.4
HCM LOS			F

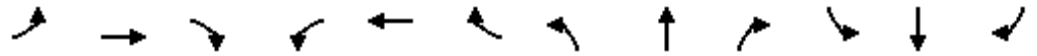
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	192	-	-	491	-
HCM Lane V/C Ratio	0.724	-	-	0.141	-
HCM Control Delay (s)	61.4	-	-	13.5	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	4.6	-	-	0.5	-

**Notes**

~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

Lanes, Volumes, Timings  
13: Versailles Dr/Dover Rd & Route 0039

Existing Route 0039 (Front to Patton) PM.syn  
04/29/2020

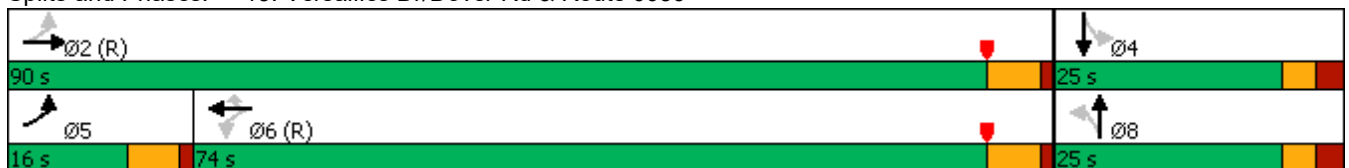


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔		↕		↔	↔	
Traffic Volume (vph)	125	952	11	18	796	19	7	2	12	28	0	49
Future Volume (vph)	125	952	11	18	796	19	7	2	12	28	0	49
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	13	12	12	12	11	13	13
Grade (%)		3%			-2%			0%			0%	
Storage Length (ft)	105		0	105		210	0		0	0		90
Storage Lanes	1		0	1		1	0		0	1		1
Taper Length (ft)	50			80			25			115		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			25				25
Link Distance (ft)		1023			1167			634				962
Travel Time (s)		15.5			17.7			17.3				26.2
Confl. Peds. (#/hr)	1		2	2		1						
Confl. Bikes (#/hr)	1		1	1		1						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		6	6	6	8	8		4		4
Switch Phase												
Minimum Initial (s)	3.0	10.0		10.0	10.0	10.0	3.0	3.0		3.0		3.0
Minimum Split (s)	12.8	15.8		15.8	15.8	15.8	12.5	12.5		12.5		12.5
Total Split (s)	16.0	90.0		74.0	74.0	74.0	25.0	25.0		25.0		25.0
Total Split (%)	13.9%	78.3%		64.3%	64.3%	64.3%	21.7%	21.7%		21.7%		21.7%
Yellow Time (s)	4.6	4.6		4.6	4.6	4.6	3.0	3.0		3.0		3.0
All-Red Time (s)	1.2	1.2		1.2	1.2	1.2	2.5	2.5		2.5		2.5
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0		-1.0		-1.0
Total Lost Time (s)	4.8	4.8		4.8	4.8	4.8		4.5		4.5		4.5
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None		None

Intersection Summary

Area Type: Other  
 Cycle Length: 115  
 Actuated Cycle Length: 115  
 Offset: 12 (10%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated





















Splits and Phases: 13: Versailles Dr/Dover Rd & Route 0039





HCM 2010 Signalized Intersection Summary  
 13: Versailles Dr/Dover Rd & Route 0039

Existing Route 0039 (Front to Patton) PM.syn  
 04/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	952	11	18	796	19	7	2	12	28	0	49
Future Volume (veh/h)	125	952	11	18	796	19	7	2	12	28	0	49
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1773	1773	1773	1818	1800	1891	1800	1800	1800	1800	1835	1872
Adj Flow Rate, veh/h	136	1035	12	20	865	21	8	2	13	30	0	53
Adj No. of Lanes	1	1	0	1	1	1	0	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	1	0	0	0	0	0	0	0
Cap, veh/h	624	1504	17	429	1392	1215	56	16	38	155	0	92
Arrive On Green	0.05	0.86	0.86	1.00	1.00	1.00	0.06	0.06	0.06	0.06	0.00	0.06
Sat Flow, veh/h	1689	1749	20	553	1800	1572	227	268	643	1421	0	1560
Grp Volume(v), veh/h	136	0	1047	20	865	21	23	0	0	30	0	53
Grp Sat Flow(s),veh/h/ln	1689	0	1769	553	1800	1572	1137	0	0	1421	0	1560
Q Serve(g_s), s	1.6	0.0	23.3	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8
Cycle Q Clear(g_c), s	1.6	0.0	23.3	13.4	0.0	0.0	3.8	0.0	0.0	1.9	0.0	3.8
Prop In Lane	1.00		0.01	1.00		1.00	0.35		0.57	1.00		1.00
Lane Grp Cap(c), veh/h	624	0	1522	429	1392	1215	109	0	0	155	0	92
V/C Ratio(X)	0.22	0.00	0.69	0.05	0.62	0.02	0.21	0.00	0.00	0.19	0.00	0.58
Avail Cap(c_a), veh/h	712	0	1522	429	1392	1215	287	0	0	324	0	278
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.84	0.84	0.84	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	1.6	0.0	2.8	1.0	0.0	0.0	51.7	0.0	0.0	51.8	0.0	52.7
Incr Delay (d2), s/veh	0.2	0.0	2.6	0.2	1.8	0.0	0.9	0.0	0.0	0.6	0.0	5.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.3	0.0	17.8	0.2	1.2	0.0	1.3	0.0	0.0	1.7	0.0	3.2
LnGrp Delay(d),s/veh	1.8	0.0	5.3	1.1	1.8	0.0	52.6	0.0	0.0	52.4	0.0	58.3
LnGrp LOS	A		A	A	A	A	D			D		E
Approach Vol, veh/h		1183			906			23				83
Approach Delay, s/veh		4.9			1.7			52.6				56.2
Approach LOS		A			A			D				E
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		103.7		11.3	10.0	93.7		11.3				
Change Period (Y+Rc), s		* 5.8		5.5	* 5.8	* 5.8		5.5				
Max Green Setting (Gmax), s		* 84		19.5	* 10	* 68		19.5				
Max Q Clear Time (g_c+I1), s		25.3		5.8	4.1	15.9		5.8				
Green Ext Time (p_c), s		49.9		0.2	0.2	38.5		0.0				

Intersection Summary

HCM 2010 Ctrl Delay	6.0
HCM 2010 LOS	A

Notes

\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings  
 14: Ringneck Dr/Forest Hills Dr & Route 0039

Existing Route 0039 (Front to Patton) PM.syn  
 04/29/2020

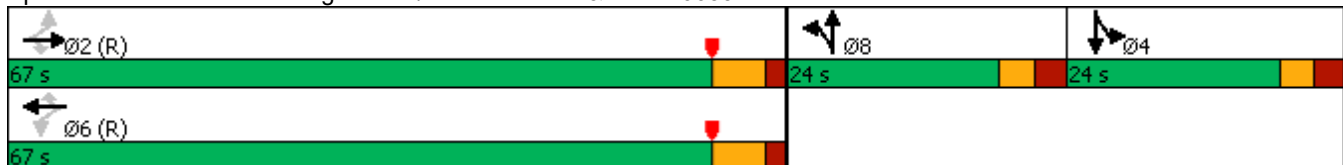


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	923	41	30	702	45	18	0	25	59	1	52
Future Volume (vph)	32	923	41	30	702	45	18	0	25	59	1	52
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	12	12	14	12	12	12	12	12	12
Grade (%)		-3%			4%			0%			0%	
Storage Length (ft)	110		120	105		160	170		0	90		90
Storage Lanes	1		1	1		1	0		0	0		1
Taper Length (ft)	60			60			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		1167			2161			627			730	
Travel Time (s)		17.7			32.7			17.1			19.9	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	0%	3%	0%	0%	6%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Split	NA		Split	NA	
Protected Phases		2			6		8	8		4	4	
Permitted Phases	2		2	6		6						
Detector Phase	2	2	2	6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	16.5	16.5	16.5	16.5	16.5	16.5	12.7	12.7		12.7	12.7	
Total Split (s)	67.0	67.0	67.0	67.0	67.0	67.0	24.0	24.0		24.0	24.0	
Total Split (%)	58.3%	58.3%	58.3%	58.3%	58.3%	58.3%	20.9%	20.9%		20.9%	20.9%	
Yellow Time (s)	4.7	4.7	4.7	4.7	4.7	4.7	3.0	3.0		3.0	3.0	
All-Red Time (s)	1.8	1.8	1.8	1.8	1.8	1.8	2.7	2.7		2.7	2.7	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	4.7	4.7		4.7	4.7	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None		None	None	

Intersection Summary

























Area Type: Other  
 Cycle Length: 115  
 Actuated Cycle Length: 115  
 Offset: 12 (10%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated

Splits and Phases: 14: Ringneck Dr/Forest Hills Dr & Route 0039



HCM 2010 Signalized Intersection Summary  
 14: Ringneck Dr/Forest Hills Dr & Route 0039

Existing Route 0039 (Front to Patton) PM.syn  
 04/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	923	41	30	702	45	18	0	25	59	1	52
Future Volume (veh/h)	32	923	41	30	702	45	18	0	25	59	1	52
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1809	1900	1713	1764	1835	1698	1800	1800	1800	1800	1800
Adj Flow Rate, veh/h	33	961	43	31	731	47	19	0	26	61	1	54
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	1	0	3	0	0	6	0	0	0	0	0
Cap, veh/h	613	1392	1243	480	1358	1200	57	0	54	113	2	99
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.04	0.00	0.04	0.07	0.07	0.07
Sat Flow, veh/h	715	1809	1615	542	1764	1559	1617	0	1530	1714	28	1506
Grp Volume(v), veh/h	33	961	43	31	731	47	19	0	26	61	0	55
Grp Sat Flow(s),veh/h/ln	715	1809	1615	542	1764	1559	1617	0	1530	1714	0	1534
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	1.9	4.0	0.0	4.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	1.9	4.0	0.0	4.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Lane Grp Cap(c), veh/h	613	1392	1243	480	1358	1200	57	0	54	113	0	101
V/C Ratio(X)	0.05	0.69	0.03	0.06	0.54	0.04	0.33	0.00	0.48	0.54	0.00	0.55
Avail Cap(c_a), veh/h	613	1392	1243	480	1358	1200	271	0	257	288	0	257
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.68	0.68	0.68	0.75	0.75	0.75	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	54.2	0.0	54.5	52.1	0.0	52.1
Incr Delay (d2), s/veh	0.1	1.9	0.0	0.2	1.1	0.0	3.4	0.0	6.6	4.0	0.0	4.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	1.4	0.0	0.0	0.8	0.0	1.2	0.0	1.6	3.6	0.0	3.3
LnGrp Delay(d),s/veh	0.1	1.9	0.0	0.2	1.1	0.0	57.6	0.0	61.0	56.1	0.0	56.6
LnGrp LOS	A	A	A	A	A	A	E		E	E		E
Approach Vol, veh/h		1037			809			45				116
Approach Delay, s/veh		1.8			1.0			59.6				56.3
Approach LOS		A			A			E				E
<b>Timer</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		94.0		12.2		94.0		8.7				
Change Period (Y+Rc), s		* 6.5		* 5.7		* 6.5		5.7				
Max Green Setting (Gmax), s		* 61		* 18		* 61		18.3				
Max Q Clear Time (g_c+I1), s		2.5		6.5		2.5		3.9				
Green Ext Time (p_c), s		47.0		0.2		35.4		0.1				

Intersection Summary		
HCM 2010 Ctrl Delay		5.9
HCM 2010 LOS		A

**Notes**  
 \* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings  
15: Colonial Rd & Route 0039

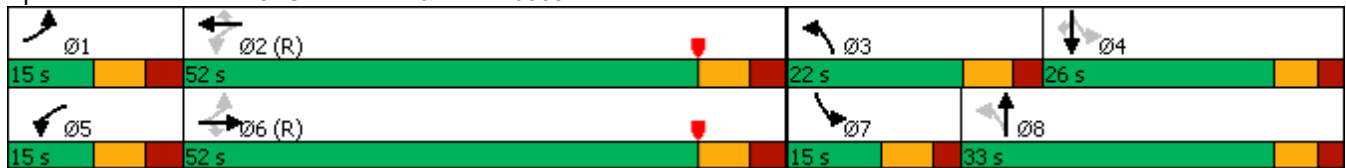
Existing Route 0039 (Front to Patton) PM.syn  
04/29/2020

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	154	675	202	109	520	186	237	203	169	135	96	74
Future Volume (vph)	154	675	202	109	520	186	237	203	169	135	96	74
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	12	12	14	12	14	14	11	11	14
Grade (%)		1%			-1%			-2%			1%	
Storage Length (ft)	330		420	135		445	225		0	205		175
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	100			50			50			65		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		2161			1595			636			810	
Travel Time (s)		32.7			24.2			12.4			15.8	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	0%	0%	0%	1%	1%	2%	0%	0%	1%	1%	1%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6		6	2		2	8			4		4
Detector Phase	1	6	6	5	2	2	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	3.0	10.0	10.0	3.0	10.0	10.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	14.0	17.7	17.7	14.7	17.7	17.7	13.8	13.2		13.8	13.2	13.2
Total Split (s)	15.0	52.0	52.0	15.0	52.0	52.0	22.0	33.0		15.0	26.0	26.0
Total Split (%)	13.0%	45.2%	45.2%	13.0%	45.2%	45.2%	19.1%	28.7%		13.0%	22.6%	22.6%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.3	3.8		4.3	3.8	3.8
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2	3.2	2.5	2.4		2.5	2.4	2.4
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	5.8	5.2		5.8	5.2	5.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	None

Intersection Summary

























Area Type: Other  
 Cycle Length: 115  
 Actuated Cycle Length: 115  
 Offset: 68 (59%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated

Splits and Phases: 15: Colonial Rd & Route 0039



HCM 2010 Signalized Intersection Summary  
 15: Colonial Rd & Route 0039

Existing Route 0039 (Front to Patton) PM.syn  
 04/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	154	675	202	109	520	186	237	203	169	135	96	74
Future Volume (veh/h)	154	675	202	109	520	186	237	203	169	135	96	74
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1791	1791	1863	1791	1791	1844	1818	1882	1891	1773	1773	1863
Adj Flow Rate, veh/h	156	682	204	110	525	188	239	205	171	136	97	75
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	0	0	0	1	1	2	0	0	0	1	1	0
Cap, veh/h	375	725	641	192	714	625	465	225	188	230	320	286
Arrive On Green	0.02	0.13	0.13	0.13	0.80	0.80	0.14	0.24	0.24	0.08	0.18	0.18
Sat Flow, veh/h	1706	1791	1583	1706	1791	1568	1731	950	792	1689	1773	1583
Grp Volume(v), veh/h	156	682	204	110	525	188	239	0	376	136	97	75
Grp Sat Flow(s),veh/h/ln	1706	1791	1583	1706	1791	1568	1731	0	1742	1689	1773	1583
Q Serve(g_s), s	6.0	43.4	13.4	4.2	16.5	3.7	12.2	0.0	24.1	7.4	5.5	4.7
Cycle Q Clear(g_c), s	6.0	43.4	13.4	4.2	16.5	3.7	12.2	0.0	24.1	7.4	5.5	4.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.45	1.00		1.00
Lane Grp Cap(c), veh/h	375	725	641	192	714	625	465	0	413	230	320	286
V/C Ratio(X)	0.42	0.94	0.32	0.57	0.74	0.30	0.51	0.00	0.91	0.59	0.30	0.26
Avail Cap(c_a), veh/h	375	725	641	203	714	625	472	0	421	230	321	286
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.69	0.69	0.69	0.70	0.70	0.70	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.2	48.4	35.5	24.6	8.7	7.4	29.5	0.0	42.7	35.7	40.8	40.5
Incr Delay (d2), s/veh	0.5	16.7	0.9	2.4	4.7	0.9	0.9	0.0	23.2	4.0	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.2	31.7	9.4	3.8	12.7	3.0	9.9	0.0	20.5	6.7	4.9	3.7
LnGrp Delay(d),s/veh	20.8	65.2	36.4	27.1	13.4	8.3	30.4	0.0	65.9	39.7	41.4	41.0
LnGrp LOS	C	E	D	C	B	A	C		E	D	D	D
Approach Vol, veh/h		1042			823			615			308	
Approach Delay, s/veh		52.9			14.1			52.1			40.5	
Approach LOS		D			B			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	52.5	21.5	26.0	14.3	53.3	15.0	32.5				
Change Period (Y+Rc), s	* 7.7	* 7.7	6.8	* 6.2	* 7.7	* 7.7	6.8	* 6.2				
Max Green Setting (Gmax), s	7.3	* 44	15.2	* 20	* 7.3	* 44	8.2	* 27				
Max Q Clear Time (g_c+I1), s	8.5	19.0	14.7	8.0	6.7	45.9	9.9	26.1				
Green Ext Time (p_c), s	0.0	17.9	0.0	0.6	0.0	0.0	0.0	0.1				

Intersection Summary		
HCM 2010 Ctrl Delay		39.9
HCM 2010 LOS		D

Notes  
 \* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings  
 16: Woodview Rd/Patton Rd & Route 0039

Existing Route 0039 (Front to Patton) PM.syn  
 04/29/2020

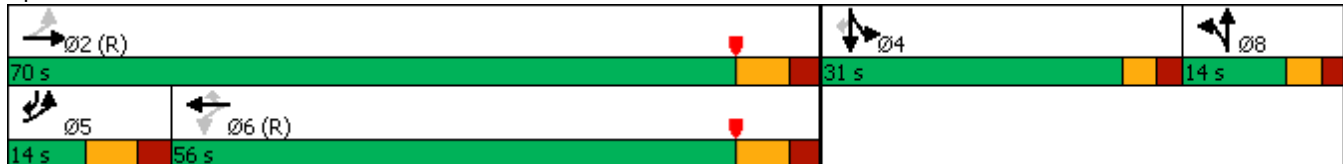


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	136	722	18	6	737	44	18	8	4	67	3	80
Future Volume (vph)	136	722	18	6	737	44	18	8	4	67	3	80
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	14	14	14	14	12	12	14
Grade (%)		1%			-1%			5%			7%	
Storage Length (ft)	135		200	100		115	0		0	0		285
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (ft)	50			50			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1595			1628			695			1038	
Travel Time (s)		24.2			24.7			15.8			23.6	
Confl. Peds. (#/hr)	2					2			1	1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	0%	0%	17%	1%	0%	6%	0%	0%	0%	0%	1%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		Perm	NA	Perm	Split	NA		Split	NA	pm+ov
Protected Phases	5	2			6		8	8		4	4	5
Permitted Phases	2			6		6						4
Detector Phase	5	2		6	6	6	8	8		4	4	5
Switch Phase												
Minimum Initial (s)	3.0	10.0		10.0	10.0	10.0	3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	14.0	23.3		17.3	17.3	17.3	12.0	12.0		12.2	12.2	14.0
Total Split (s)	14.0	70.0		56.0	56.0	56.0	14.0	14.0		31.0	31.0	14.0
Total Split (%)	12.2%	60.9%		48.7%	48.7%	48.7%	12.2%	12.2%		27.0%	27.0%	12.2%
Yellow Time (s)	4.5	4.5		4.5	4.5	4.5	3.0	3.0		3.0	3.0	4.5
All-Red Time (s)	2.8	2.8		2.8	2.8	2.8	2.1	2.1		2.2	2.2	2.8
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)	6.3	6.3		6.3	6.3	6.3		4.1			4.2	6.3
Lead/Lag	Lead			Lag	Lag	Lag						Lead
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						Yes
Recall Mode	None	C-Min		C-Min	C-Min	C-Min	None	None		None	None	None

Intersection Summary





















Area Type: Other  
 Cycle Length: 115  
 Actuated Cycle Length: 115  
 Offset: 72 (63%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated

Splits and Phases: 16: Woodview Rd/Patton Rd & Route 0039



HCM 2010 Signalized Intersection Summary  
 16: Woodview Rd/Patton Rd & Route 0039

Existing Route 0039 (Front to Patton) PM.syn  
 04/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	136	722	18	6	737	44	18	8	4	67	3	80
Future Volume (veh/h)	136	722	18	6	737	44	18	8	4	67	3	80
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1773	1791	1791	1546	1791	1881	1825	1760	1825	1737	1737	1789
Adj Flow Rate, veh/h	140	744	19	6	760	45	19	8	4	69	3	82
Adj No. of Lanes	1	1	0	1	1	1	0	1	0	0	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	0	0	17	1	0	0	0	0	0	0	1
Cap, veh/h	419	1318	34	460	1160	1034	32	13	7	133	6	211
Arrive On Green	0.11	1.00	1.00	0.65	0.65	0.65	0.03	0.03	0.03	0.08	0.08	0.08
Sat Flow, veh/h	1689	1739	44	614	1791	1597	1022	430	215	1589	69	1511
Grp Volume(v), veh/h	140	0	763	6	760	45	31	0	0	72	0	82
Grp Sat Flow(s),veh/h/ln	1689	0	1783	614	1791	1597	1667	0	0	1658	0	1511
Q Serve(g_s), s	3.0	0.0	0.0	0.4	29.9	1.2	2.1	0.0	0.0	4.8	0.0	5.7
Cycle Q Clear(g_c), s	3.0	0.0	0.0	0.4	29.9	1.2	2.1	0.0	0.0	4.8	0.0	5.7
Prop In Lane	1.00		0.02	1.00		1.00	0.61		0.13	0.96		1.00
Lane Grp Cap(c), veh/h	419	0	1352	460	1160	1034	52	0	0	138	0	211
V/C Ratio(X)	0.33	0.00	0.56	0.01	0.66	0.04	0.60	0.00	0.00	0.52	0.00	0.39
Avail Cap(c_a), veh/h	438	0	1352	460	1160	1034	144	0	0	386	0	437
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.33	0.00	0.33	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.8	0.0	0.0	7.2	12.4	7.4	55.0	0.0	0.0	50.5	0.0	45.0
Incr Delay (d2), s/veh	0.2	0.0	0.6	0.1	2.9	0.1	10.4	0.0	0.0	3.0	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.6	0.0	0.4	0.1	22.0	1.0	2.0	0.0	0.0	4.2	0.0	4.4
LnGrp Delay(d),s/veh	9.9	0.0	0.6	7.3	15.3	7.4	65.4	0.0	0.0	53.5	0.0	46.2
LnGrp LOS	A		A	A	B	A	E			D		D
Approach Vol, veh/h		903			811			31				154
Approach Delay, s/veh		2.0			14.8			65.4				49.6
Approach LOS		A			B			E				D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		93.5		13.8	12.7	80.8		7.7				
Change Period (Y+Rc), s		* 7.3		* 5.2	* 7.3	* 7.3		5.1				
Max Green Setting (Gmax), s		* 63		* 26	* 6.7	* 49		8.9				
Max Q Clear Time (g_c+I1), s		2.5		8.2	5.5	32.4		4.1				
Green Ext Time (p_c), s		30.4		0.5	0.0	12.5		0.0				

Intersection Summary		
HCM 2010 Ctrl Delay		12.4
HCM 2010 LOS		B

Notes  
 \* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

17: Pennsylvania Ave/Blue Mountain Pkwy & Route 0039 Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.1	0.0
Total Del/Veh (s)	7.9	3.4	3.4	3.7	5.8

18: Mountain Rd & Route 0039 Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.4	0.1	0.1
Total Del/Veh (s)	6.9	7.7	10.1	3.6	7.9

19: Balthaser St & Route 0039 Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.0
Total Del/Veh (s)	1.0	2.8	8.9	2.0

20: Piketown Rd & Route 0039 Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.0	1.3	2.7	0.5
Total Del/Veh (s)	7.0	7.6	19.3	11.7	9.5

21: Manor Dr & Route 0039 Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.0
Total Del/Veh (s)	2.7	1.3	5.1	2.2

22: Route 0039 & Manor Dr Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	0.1	0.0	0.6	0.3
Total Del/Veh (s)	5.3	6.3	1.7	4.2

23: Route 0039 & Green Hill Rd Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	0.2	0.1	0.1	0.1
Total Del/Veh (s)	17.3	10.3	3.0	7.4

24: Route 0039 & Devonshire Heights Rd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.1	0.2	0.0	0.1	0.0
Total Del/Veh (s)	15.9	27.0	3.6	4.4	4.6



25: Route 0039 & Red Top Rd Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.0
Total Del/Veh (s)	24.2	5.7	3.7	5.6

26: Route 0039 & Grandview Dr Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	0.3	0.2	0.1	0.2
Total Del/Veh (s)	50.7	15.0	21.6	22.3

27: Route 0039 & N. Hanover St Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	0.5	0.0	0.0	0.1
Total Del/Veh (s)	33.2	7.5	4.7	8.9

28: Route 0039 & E Canal St Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.1	0.2	0.9	0.0	0.5
Total Del/Veh (s)	17.5	13.6	2.4	3.3	3.7

Total Network Performance

Denied Del/Veh (s)	0.7
Total Del/Veh (s)	39.8

Lanes, Volumes, Timings

Existing Route 0039 ( Blue Mountain to Canal) PM.syn

17: Pennsylvania Ave/Blue Mountain Pkwy & Route 0039

04/29/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	698	2	0	438	29	2	4	1	105	3	35
Future Volume (vph)	88	698	2	0	438	29	2	4	1	105	3	35
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	14	14	14	14	14	11	11	11	14	14	14
Grade (%)		4%			-1%			5%			1%	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		661			705			577			818	
Travel Time (s)		18.0			19.2			15.7			22.3	
Confl. Peds. (#/hr)	3					3	1					1
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	0%	1%	0%	0%	1%	7%	0%	0%	0%	0%	0%	3%
Shared Lane Traffic (%)												
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type: Other

















Control Type: Roundabout

Intersection				
Intersection Delay, s/veh	14.8			
Intersection LOS	B			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	796	471	7	144
Demand Flow Rate, veh/h	803	477	7	145
Vehicles Circulating, veh/h	109	95	907	448
Vehicles Exiting, veh/h	484	819	5	124
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	1	0	0	3
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	19.7	8.9	8.1	7.3
Approach LOS	C	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	803	477	7	145
Cap Entry Lane, veh/h	1013	1028	456	722
Entry HV Adj Factor	0.991	0.987	1.000	0.993
Flow Entry, veh/h	796	471	7	144
Cap Entry, veh/h	1004	1014	456	717
V/C Ratio	0.793	0.464	0.015	0.201
Control Delay, s/veh	19.7	8.9	8.1	7.3
LOS	C	A	A	A
95th %tile Queue, veh	9	3	0	1

Intersection				
Intersection Delay, s/veh	11.3			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	796	471	7	144
Demand Flow Rate, veh/h	803	477	7	145
Vehicles Circulating, veh/h	109	95	907	448
Vehicles Exiting, veh/h	484	819	5	124
Ped Vol Crossing Leg, #/h	1	0	0	3
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	11.5	6.6	6.7	5.8
Approach LOS	B	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	803	477	7	145
Cap Entry Lane, veh/h	1235	1252	547	874
Entry HV Adj Factor	0.991	0.987	1.000	0.993
Flow Entry, veh/h	796	471	7	144
Cap Entry, veh/h	1224	1236	547	867
V/C Ratio	0.650	0.381	0.013	0.166
Control Delay, s/veh	11.5	6.6	6.7	5.8
LOS	B	A	A	A
95th %tile Queue, veh	5	2	0	1

**Lanes, Volumes, Timings**  
**18: Mountain Rd & Route 0039**

**Existing Route 0039 ( Blue Mountain to Canal) PM.syn**  
 04/29/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	382	378	94	256	9	306	16	152	10	27	9
Future Volume (vph)	10	382	378	94	256	9	306	16	152	10	27	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	14	14	14	14	14	14	14	14	12	12	12
Grade (%)		1%			0%			1%			-2%	
Link Speed (mph)		25			25			35			25	
Link Distance (ft)		721			745			1289			506	
Travel Time (s)		19.7			20.3			25.1			13.8	
Confl. Peds. (#/hr)	2		1	1		2	1		1	1		1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	4%	0%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Sign Control		Yield			Yield			Yield			Yield	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Roundabout											

Done BY: JBL  
 Checked By:

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 Synchro 10 Report

**HCM 2010 Roundabout**  
**18: Mountain Rd & Route 0039**

**Existing Route 0039 ( Blue Mountain to Canal) PM.syn**  
04/29/2020

Intersection				
Intersection Delay, s/veh	18.3			
Intersection LOS	C			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	811	377	499	48
Demand Flow Rate, veh/h	811	381	499	48
Vehicles Circulating, veh/h	142	350	424	694
Vehicles Exiting, veh/h	600	573	529	37
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	1	1	1	2
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	22.6	11.1	17.7	7.4
Approach LOS	C	B	C	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	811	381	499	48
Cap Entry Lane, veh/h	980	796	739	564
Entry HV Adj Factor	1.000	0.990	1.000	1.000
Flow Entry, veh/h	811	377	499	48
Cap Entry, veh/h	980	788	739	564
V/C Ratio	0.827	0.479	0.675	0.085
Control Delay, s/veh	22.6	11.1	17.7	7.4
LOS	C	B	C	A
95th %tile Queue, veh	10	3	5	0

Done BY: JBL  
Checked By:

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Synchro 10 Report

**HCM 6th Roundabout**  
**18: Mountain Rd & Route 0039**

**Existing Route 0039 ( Blue Mountain to Canal) PM.syn**  
04/29/2020

Intersection				
Intersection Delay, s/veh <sup>2</sup>				
Intersection LOS B				
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	811	377	499	48
Demand Flow Rate, veh/h	811	381	499	48
Vehicles Circulating, veh/h	142	350	424	694
Vehicles Exiting, veh/h	600	573	529	37
Ped Vol Crossing Leg, #/h	1	1	1	2
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	12.5	8.2	11.7	6.1
Approach LOS	B	A	B	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	811	381	499	48
Cap Entry Lane, veh/h	1194	966	895	680
Entry HV Adj Factor	1.000	0.990	1.000	1.000
Flow Entry, veh/h	811	377	499	48
Cap Entry, veh/h	1194	955	895	680
V/C Ratio	0.679	0.395	0.557	0.071
Control Delay, s/veh	12.5	8.2	11.7	6.1
LOS	B	A	B	A
95th %tile Queue, veh	6	2	4	0

Done BY: JBL  
Checked By:

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Synchro 10 Report

**Lanes, Volumes, Timings**  
**19: Balthaser St & Route 0039**

**Existing Route 0039 ( Blue Mountain to Canal) PM.syn**  
 04/29/2020

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕			↕	↕	
Traffic Volume (vph)	467	56	19	354	32	15
Future Volume (vph)	467	56	19	354	32	15
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	14	14	14	12	12
Grade (%)	-1%			1%	-1%	
Link Speed (mph)	25			25	25	
Link Distance (ft)	761			858	1674	
Travel Time (s)	20.8			23.4	45.7	
Confl. Peds. (#/hr)		1	1			1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	0%	0%	1%	6%	0%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					



Intersection						
Int Delay, s/veh	1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	467	56	19	354	32	15
Future Vol, veh/h	467	56	19	354	32	15
Conflicting Peds, #/hr	0	1	1	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	-	-	0	0	-
Grade, %	-1	-	-	1	-1	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	1	0	0	1	6	0
Mvmt Flow	513	62	21	389	35	16

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	576	0	976
Stage 1	-	-	-	-	545
Stage 2	-	-	-	-	431
Critical Hdwy	-	-	4.3	-	6.3
Critical Hdwy Stg 1	-	-	-	-	5.26
Critical Hdwy Stg 2	-	-	-	-	5.26
Follow-up Hdwy	-	-	3	-	3.1
Pot Cap-1 Maneuver	-	-	759	-	311
Stage 1	-	-	-	-	656
Stage 2	-	-	-	-	741
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	758	-	300
Mov Cap-2 Maneuver	-	-	-	-	300
Stage 1	-	-	-	-	655
Stage 2	-	-	-	-	715

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	16.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	354	-	-	758	-
HCM Lane V/C Ratio	0.146	-	-	0.028	-
HCM Control Delay (s)	16.9	-	-	9.9	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-

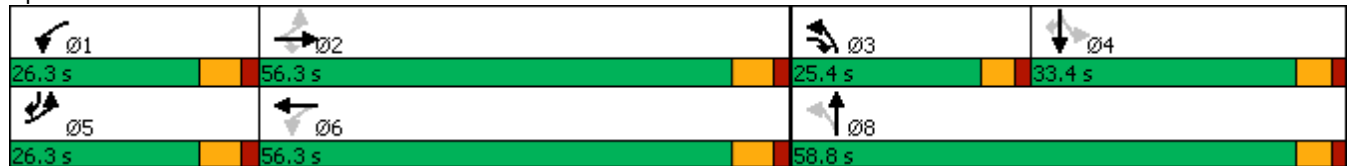
**Lanes, Volumes, Timings**  
**20: Piketown Rd & Route 0039**

**Existing Route 0039 ( Blue Mountain to Canal) PM.syn**  
 04/29/2020

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	286	74	32	221	14	54	88	32	3	41	68
Future Volume (vph)	78	286	74	32	221	14	54	88	32	3	41	68
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	11	12	14	14	12	12	12
Grade (%)		1%			-4%			0%			-1%	
Storage Length (ft)	220		105	190		0	240		0	130		130
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	50			50			75			100		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		1970			859			913			1214	
Travel Time (s)		33.6			14.6			17.8			23.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	2%	0%	3%	0%	0%	4%	2%	3%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA		Perm	NA	pm+ov
Protected Phases	5	2	3	1	6		3	8			4	5
Permitted Phases	2		2	6			8			4		4
Detector Phase	5	2	3	1	6		3	8		4	4	5
Switch Phase												
Minimum Initial (s)	3.0	15.0	3.0	3.0	15.0		3.0	3.0		3.0	3.0	3.0
Minimum Split (s)	9.3	21.3	9.3	9.3	21.3		9.3	20.0		20.0	20.0	9.3
Total Split (s)	26.3	56.3	25.4	26.3	56.3		25.4	58.8		33.4	33.4	26.3
Total Split (%)	18.6%	39.8%	18.0%	18.6%	39.8%		18.0%	41.6%		23.6%	23.6%	18.6%
Yellow Time (s)	4.4	4.4	3.7	4.4	4.4		3.7	3.7		3.7	3.7	4.4
All-Red Time (s)	1.9	1.9	1.7	1.9	1.9		1.7	1.7		1.7	1.7	1.9
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.3	5.3	4.4	5.3	5.3		4.4	4.4		4.4	4.4	5.3
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead			Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes			Yes	Yes	Yes
Recall Mode	None	Min	None	None	Min		None	None		None	None	None

























**Intersection Summary**  
 Area Type: Other  
 Cycle Length: 141.4  
 Actuated Cycle Length: 60.1  
 Natural Cycle: 60  
 Control Type: Actuated-Uncoordinated

Splits and Phases: 20: Piketown Rd & Route 0039



**HCM 2010 Signalized Intersection Summary**  
**20: Piketown Rd & Route 0039**

**Existing Route 0039 ( Blue Mountain to Canal) PM.syn**  
 04/29/2020

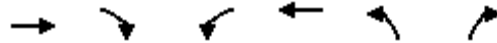
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	286	74	32	221	14	54	88	32	3	41	68
Future Volume (veh/h)	78	286	74	32	221	14	54	88	32	3	41	68
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1739	1756	1791	1783	1836	1836	1731	1830	1872	1809	1809	1809
Adj Flow Rate, veh/h	87	318	82	36	246	16	60	98	36	3	46	76
Adj No. of Lanes	1	1	1	1	1	0	1	1	0	1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	2	0	3	0	0	4	2	2	0	0	0
Cap, veh/h	570	716	719	486	638	41	357	336	123	283	206	294
Arrive On Green	0.08	0.41	0.41	0.04	0.37	0.37	0.07	0.26	0.26	0.11	0.11	0.11
Sat Flow, veh/h	1656	1756	1522	1698	1705	111	1648	1278	470	1282	1809	1538
Grp Volume(v), veh/h	87	318	82	36	0	262	60	0	134	3	46	76
Grp Sat Flow(s),veh/h/ln	1656	1756	1522	1698	0	1816	1648	0	1748	1282	1809	1538
Q Serve(g_s), s	1.6	6.9	1.6	0.7	0.0	5.5	1.5	0.0	3.2	0.1	1.2	2.2
Cycle Q Clear(g_c), s	1.6	6.9	1.6	0.7	0.0	5.5	1.5	0.0	3.2	0.1	1.2	2.2
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.27	1.00		1.00
Lane Grp Cap(c), veh/h	570	716	719	486	0	679	357	0	459	283	206	294
V/C Ratio(X)	0.15	0.44	0.11	0.07	0.00	0.39	0.17	0.00	0.29	0.01	0.22	0.26
Avail Cap(c_a), veh/h	1104	1706	1578	1090	0	1764	909	0	1811	845	999	969
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.6	11.3	7.7	9.3	0.0	12.0	16.4	0.0	15.5	20.7	21.2	18.1
Incr Delay (d2), s/veh	0.1	1.6	0.3	0.1	0.0	1.3	0.2	0.0	0.3	0.0	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.3	6.4	1.3	0.6	0.0	5.4	1.3	0.0	2.8	0.1	1.1	1.8
LnGrp Delay(d),s/veh	8.7	12.8	8.0	9.4	0.0	13.3	16.7	0.0	15.8	20.7	21.7	18.5
LnGrp LOS	A	B	A	A		B	B		B	C	C	B
Approach Vol, veh/h		487			298			194			125	
Approach Delay, s/veh		11.3			12.9			16.1			19.7	
Approach LOS		B			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	7.6	26.7	7.8	10.4	9.4	24.9		18.2				
Change Period (Y+Rc), s	* 6.3	* 6.3	5.4	5.4	* 6.3	* 6.3		5.4				
Max Green Setting (Gmax), s*	20	* 50	20.0	28.0	* 20	* 50		53.4				
Max Q Clear Time (g_c+I1), s	3.2	9.4	4.0	4.7	4.1	7.5		5.2				
Green Ext Time (p_c), s	0.1	11.0	0.1	0.4	0.2	7.0		0.5				

Intersection Summary												
HCM 2010 Ctrl Delay				13.5								
HCM 2010 LOS				B								

**Notes**  
 \* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

**Lanes, Volumes, Timings**  
**21: Manor Dr & Route 0039**

**Existing Route 0039 ( Blue Mountain to Canal) PM.syn**  
 04/29/2020



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (vph)	317	32	13	256	28	11
Future Volume (vph)	317	32	13	256	28	11
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	11	11
Grade (%)	5%			-4%	0%	
Link Speed (mph)	40			40	35	
Link Distance (ft)	1534			1257	778	
Travel Time (s)	26.1			21.4	15.2	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	1%	0%	0%	2%	0%	0%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

**Intersection Summary**

Area Type: Other  
 Control Type: Unsignalized

Intersection						
Int Delay, s/veh	0.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶			↷		↷
Traffic Vol, veh/h	317	32	13	256	28	11
Future Vol, veh/h	317	32	13	256	28	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	-	-	0	0	-
Grade, %	5	-	-	-4	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	356	36	15	288	31	12

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	392	0	692
Stage 1	-	-	-	-	374
Stage 2	-	-	-	-	318
Critical Hdwy	-	-	4.3	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	3	-	3
Pot Cap-1 Maneuver	-	-	881	-	461
Stage 1	-	-	-	-	797
Stage 2	-	-	-	-	848
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	881	-	452
Mov Cap-2 Maneuver	-	-	-	-	452
Stage 1	-	-	-	-	797
Stage 2	-	-	-	-	831

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	12.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	504	-	-	881	-
HCM Lane V/C Ratio	0.087	-	-	0.017	-
HCM Control Delay (s)	12.8	-	-	9.2	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

**Lanes, Volumes, Timings**  
**22: Route 0039 & Manor Dr**

**Existing Route 0039 ( Blue Mountain to Canal) PM.syn**  
 04/29/2020



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↕			↕	↕	
Traffic Volume (vph)	1	69	113	549	576	10
Future Volume (vph)	1	69	113	549	576	10
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	11	11	11	11
Grade (%)	-4%			-1%	2%	
Link Speed (mph)	35			45	45	
Link Distance (ft)	794			2237	1182	
Travel Time (s)	15.5			33.9	17.9	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	0%	1%	2%	0%
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection						
Int Delay, s/veh	1.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	1	69	113	549	576	10
Future Vol, veh/h	1	69	113	549	576	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	-	-	-	0	0	-
Grade, %	-4	-	-	-1	2	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	1	2	0
Mvmt Flow	1	74	122	590	619	11

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1459	625	630	0	-	0
Stage 1	625	-	-	-	-	-
Stage 2	834	-	-	-	-	-
Critical Hdwy	5.6	5.8	4.3	-	-	-
Critical Hdwy Stg 1	4.6	-	-	-	-	-
Critical Hdwy Stg 2	4.6	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	214	549	727	-	-	-
Stage 1	693	-	-	-	-	-
Stage 2	574	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	161	549	727	-	-	-
Mov Cap-2 Maneuver	161	-	-	-	-	-
Stage 1	520	-	-	-	-	-
Stage 2	574	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	2.9	1.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBTEBLn1	SBT	SBR
Capacity (veh/h)	727	-	531	-
HCM Lane V/C Ratio	0.167	-	0.142	-
HCM Control Delay (s)	10.9	0	12.9	-
HCM Lane LOS	B	A	B	-
HCM 95th %tile Q(veh)	0.6	-	0.5	-

**Lanes, Volumes, Timings**  
**23: Route 0039 & Green Hill Rd**

**Existing Route 0039 ( Blue Mountain to Canal) PM.syn**  
 04/29/2020



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	3	75	90	765	669	12
Future Volume (vph)	3	75	90	765	669	12
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	11	11	11	11
Grade (%)	3%			-1%	7%	
Link Speed (mph)	35			45	45	
Link Distance (ft)	1373			790	753	
Travel Time (s)	26.7			12.0	11.4	
Confl. Peds. (#/hr)		1	1			1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	2%	3%	0%
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

**Intersection Summary**

Area Type: Other  
 Control Type: Unsignalized



Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑	↑	
Traffic Vol, veh/h	3	75	90	765	669	12
Future Vol, veh/h	3	75	90	765	669	12
Conflicting Peds, #/hr	0	1	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	-	-	0	0	-	-
Grade, %	3	-	-	-1	7	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	2	3	0
Mvmt Flow	3	77	92	781	683	12

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1655	691	696	0	-	0
Stage 1	690	-	-	-	-	-
Stage 2	965	-	-	-	-	-
Critical Hdwy	7	6.5	4.3	-	-	-
Critical Hdwy Stg 1	6	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	89	443	689	-	-	-
Stage 1	500	-	-	-	-	-
Stage 2	350	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	68	442	689	-	-	-
Mov Cap-2 Maneuver	68	-	-	-	-	-
Stage 1	382	-	-	-	-	-
Stage 2	350	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.6	1.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBTEBLn1	SBT	SBR
Capacity (veh/h)	689	-	365	-
HCM Lane V/C Ratio	0.133	-	0.218	-
HCM Control Delay (s)	11	0	17.6	-
HCM Lane LOS	B	A	C	-
HCM 95th %tile Q(veh)	0.5	-	0.8	-

Lanes, Volumes, Timings

Existing Route 0039 ( Blue Mountain to Canal) PM.syn

24: Route 0039 & Devonshire Heights Rd

04/29/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↗		↕	
Traffic Volume (vph)	1	2	18	15	4	15	25	815	41	12	773	4
Future Volume (vph)	1	2	18	15	4	15	25	815	41	12	773	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	9	9	9	12	12	12	12	12	12	11	11	11
Grade (%)		5%			1%			-2%			-2%	
Storage Length (ft)	0		0	0		0	0		80	0		0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		35			30			40			40	
Link Distance (ft)		676			529			923			1379	
Travel Time (s)		13.2			12.0			15.7			23.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	7%	25%	7%	0%	2%	3%	0%	3%	0%
Shared Lane Traffic (%)												
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↗		↕	
Traffic Vol, veh/h	1	2	18	15	4	15	25	815	41	12	773	4
Future Vol, veh/h	1	2	18	15	4	15	25	815	41	12	773	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	80	-	-	-
Veh in Median Storage, #-	0	-	-	0	-	-	0	-	-	0	-	-
Grade, %	-	5	-	-	1	-	-	-2	-	-	-2	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	7	25	7	0	2	3	0	3	0
Mvmt Flow	1	2	20	17	4	17	28	906	46	13	859	4

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1883	1895	861	1860	1851	906	863	0	0	952	0	0
Stage 1	887	887	-	962	962	-	-	-	-	-	-	-
Stage 2	996	1008	-	898	889	-	-	-	-	-	-	-
Critical Hdwy	8.1	7.5	6.7	7.4	7	6.4	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	7.1	6.5	-	6.37	5.95	-	-	-	-	-	-	-
Critical Hdwy Stg 2	7.1	6.5	-	6.37	5.95	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3.1	4.2	3.2	3	-	-	3	-	-
Pot Cap-1 Maneuver	34	42	331	51	57	327	600	-	-	558	-	-
Stage 1	295	285	-	311	291	-	-	-	-	-	-	-
Stage 2	248	242	-	340	317	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	27	36	331	41	49	327	600	-	-	558	-	-
Mov Cap-2 Maneuver	27	36	-	41	49	-	-	-	-	-	-	-
Stage 1	266	272	-	280	262	-	-	-	-	-	-	-
Stage 2	208	218	-	303	303	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	35	107.7	0.3	0.2
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBREBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	600	-	-	143	69	558	-
HCM Lane V/C Ratio	0.046	-	-	0.163	0.548	0.024	-
HCM Control Delay (s)	11.3	0	-	35	107.7	11.6	0
HCM Lane LOS	B	A	-	E	F	B	A
HCM 95th %tile Q(veh)	0.1	-	-	0.6	2.3	0.1	-

**Lanes, Volumes, Timings**  
**25: Route 0039 & Red Top Rd**

**Existing Route 0039 ( Blue Mountain to Canal) PM.syn**  
 04/29/2020



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	40	39	35	850	656	79
Future Volume (vph)	40	39	35	850	656	79
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	11	11	11	11
Grade (%)	2%			-2%	0%	
Link Speed (mph)	35			40	40	
Link Distance (ft)	941			1808	923	
Travel Time (s)	18.3			30.8	15.7	
Confl. Peds. (#/hr)	1					
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	10%	0%	0%	1%	3%	6%
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

**Intersection Summary**

Area Type: Other  
 Control Type: Unsignalized

Intersection						
Int Delay, s/veh	3.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑		↑
Traffic Vol, veh/h	40	39	35	850	656	79
Future Vol, veh/h	40	39	35	850	656	79
Conflicting Peds, #/hr	1	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	-	-	-	0	0	-
Grade, %	2	-	-	-2	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	10	0	0	1	3	6
Mvmt Flow	42	41	36	885	683	82

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1682	724	765	0	-	0
Stage 1	724	-	-	-	-	-
Stage 2	958	-	-	-	-	-
Critical Hdwy	6.9	6.4	4.3	-	-	-
Critical Hdwy Stg 1	5.9	-	-	-	-	-
Critical Hdwy Stg 2	5.9	-	-	-	-	-
Follow-up Hdwy	3.1	3.1	3	-	-	-
Pot Cap-1 Maneuver	88	431	651	-	-	-
Stage 1	476	-	-	-	-	-
Stage 2	355	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	78	431	651	-	-	-
Mov Cap-2 Maneuver	78	-	-	-	-	-
Stage 1	424	-	-	-	-	-
Stage 2	355	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	70.3	0.4	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBTEBLn1	SBT	SBR
Capacity (veh/h)	651	-	131	-
HCM Lane V/C Ratio	0.056	-	0.628	-
HCM Control Delay (s)	10.9	0	70.3	-
HCM Lane LOS	B	A	F	-
HCM 95th %tile Q(veh)	0.2	-	3.3	-

**Lanes, Volumes, Timings**  
**26: Route 0039 & Grandview Dr**

**Existing Route 0039 ( Blue Mountain to Canal) PM.syn**  
 04/29/2020



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	172	83	115	819	583	154
Future Volume (vph)	172	83	115	819	583	154
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	13	13	12	11	11	11
Grade (%)	-2%			2%	-2%	
Storage Length (ft)	0	0	100			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		50			
Right Turn on Red		Yes				Yes
Link Speed (mph)	35			45	45	
Link Distance (ft)	853			1505	929	
Travel Time (s)	16.6			22.8	14.1	
Confl. Peds. (#/hr)	1					
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	0%	2%	2%	1%
Shared Lane Traffic (%)						
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	4		1	6	2	
Permitted Phases			6			
Detector Phase	4		1	6	2	
Switch Phase						
Minimum Initial (s)	3.0		3.0	10.0	10.0	
Minimum Split (s)	19.0		10.6	20.0	20.0	
Total Split (s)	19.0		13.0	61.0	48.0	
Total Split (%)	23.8%		16.3%	76.3%	60.0%	
Yellow Time (s)	3.8		4.6	4.6	4.6	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	
Total Lost Time (s)	4.8		5.6	5.6	5.6	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	C-Max	C-Max	

**Intersection Summary**












Area Type: Other  
 Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 32 (40%), Referenced to phase 2:SBT and 6:NBTL, Start of Green  
 Natural Cycle: 70  
 Control Type: Actuated-Coordinated

Splits and Phases: 26: Route 0039 & Grandview Dr



**HCM 2010 Signalized Intersection Summary**  
**26: Route 0039 & Grandview Dr**

**Existing Route 0039 ( Blue Mountain to Canal) PM.syn**  
 04/29/2020

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	172	83	115	819	583	154		
Future Volume (veh/h)	172	83	115	819	583	154		
Number	7	14	1	6	2	12		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00				1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1891	1891	1782	1747	1786	1818		
Adj Flow Rate, veh/h	183	88	122	871	620	164		
Adj No. of Lanes	0	0	1	1	1	0		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94		
Percent Heavy Veh, %	0	0	0	2	2	2		
Cap, veh/h	207	99	329	1210	763	202		
Arrive On Green	0.18	0.18	0.06	0.69	0.56	0.56		
Sat Flow, veh/h	1165	560	1697	1747	1362	360		
Grp Volume(v), veh/h	272	0	122	871	0	784		
Grp Sat Flow(s),veh/h/ln	1732	0	1697	1747	0	1722		
Q Serve(g_s), s	12.3	0.0	2.2	24.5	0.0	29.4		
Cycle Q Clear(g_c), s	12.3	0.0	2.2	24.5	0.0	29.4		
Prop In Lane	0.67	0.32	1.00				0.21	
Lane Grp Cap(c), veh/h	307	0	329	1210	0	965		
V/C Ratio(X)	0.88	0.00	0.37	0.72	0.00	0.81		
Avail Cap(c_a), veh/h	307	0	381	1210	0	965		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	32.1	0.0	12.8	7.5	0.0	14.2		
Incr Delay (d2), s/veh	24.9	0.0	0.7	3.7	0.0	7.4		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/ln	12.6	0.0	2.4	18.7	0.0	22.2		
LnGrp Delay(d),s/veh	57.0	0.0	13.5	11.3	0.0	21.6		
LnGrp LOS	E		B	B		C		
Approach Vol, veh/h	272			993	784			
Approach Delay, s/veh	57.0			11.5	21.6			
Approach LOS	E			B	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	10.6	50.4		19.0		61.0		
Change Period (Y+Rc), s	6.6	6.6		* 5.8		6.6		
Max Green Setting (Gmax), s	6.4	41.4		* 13		54.4		
Max Q Clear Time (g_c+I1), s	4.2	31.4		14.8		27.0		
Green Ext Time (p_c), s	0.1	8.5		0.0		22.4		

Intersection Summary		
HCM 2010 Ctrl Delay		21.4
HCM 2010 LOS		C

**Notes**  
 User approved volume balancing among the lanes for turning movement.  
 \* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

**Lanes, Volumes, Timings**  
**27: Route 0039 & N. Hanover St**

**Existing Route 0039 ( Blue Mountain to Canal) PM.syn**  
 04/29/2020



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	133	4	2	748	578	89
Future Volume (vph)	133	4	2	748	578	89
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	11	11	16
Grade (%)	1%			1%	-3%	
Storage Length (ft)	0	40	0			100
Storage Lanes	1	1	0			1
Taper Length (ft)	25		25			
Right Turn on Red		Yes				Yes
Link Speed (mph)	25			45	45	
Link Distance (ft)	930			1622	663	
Travel Time (s)	25.4			24.6	10.0	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	0%	0%	1%	1%	1%
Shared Lane Traffic (%)						
Turn Type	Prot	Prot	Perm	NA	NA	Perm
Protected Phases	4	4		6	2	
Permitted Phases			6			2
Detector Phase	4	4	6	6	2	2
Switch Phase						
Minimum Initial (s)	3.0	3.0	10.0	10.0	10.0	10.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	24.0	24.0	56.0	56.0	56.0	56.0
Total Split (%)	30.0%	30.0%	70.0%	70.0%	70.0%	70.0%
Yellow Time (s)	3.0	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.2	2.2	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	4.2	4.2		6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max

**Intersection Summary**

Area Type: Other  
 Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 13 (16%), Referenced to phase 2:SBT and 6:NBTL, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated












Splits and Phases: 27: Route 0039 & N. Hanover St

 Ø2 (R) 56 s	 Ø4 24 s
 Ø6 (R) 56 s	



**HCM 2010 Signalized Intersection Summary**  
**27: Route 0039 & N. Hanover St**

**Existing Route 0039 ( Blue Mountain to Canal) PM.syn**  
 04/29/2020




















								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	133	4	2	748	578	89		
Future Volume (veh/h)	133	4	2	748	578	89		
Number	7	14	1	6	2	12		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1773	1863	1791	1773	1809	1881		
Adj Flow Rate, veh/h	141	4	2	796	615	0		
Adj No. of Lanes	1	1	0	1	1	1		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94		
Percent Heavy Veh, %	1	0	1	1	1	1		
Cap, veh/h	207	194	46	1328	1356	1199		
Arrive On Green	0.12	0.12	0.75	0.75	0.75	0.00		
Sat Flow, veh/h	1689	1583	1	1772	1809	1599		
Grp Volume(v), veh/h	141	4	798	0	615	0		
Grp Sat Flow(s),veh/h/ln	1689	1583	1772	0	1809	1599		
Q Serve(g_s), s	6.4	0.2	0.0	0.0	10.3	0.0		
Cycle Q Clear(g_c), s	6.4	0.2	16.4	0.0	10.3	0.0		
Prop In Lane	1.00	1.00	0.00			1.00		
Lane Grp Cap(c), veh/h	207	194	1374	0	1356	1199		
V/C Ratio(X)	0.68	0.02	0.58	0.00	0.45	0.00		
Avail Cap(c_a), veh/h	418	392	1374	0	1356	1199		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(l)	1.00	1.00	1.00	0.00	1.00	0.00		
Uniform Delay (d), s/veh	33.6	30.9	4.6	0.0	3.8	0.0		
Incr Delay (d2), s/veh	3.9	0.0	1.8	0.0	1.1	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/ln	5.8	0.1	13.2	0.0	9.2	0.0		
LnGrp Delay(d),s/veh	37.5	30.9	6.4	0.0	4.9	0.0		
LnGrp LOS	D	C	A		A			
Approach Vol, veh/h	145			798	615			
Approach Delay, s/veh	37.3			6.4	4.9			
Approach LOS	D			A	A			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		66.0		14.0		66.0		
Change Period (Y+Rc), s		7.0		* 5.2		7.0		
Max Green Setting (Gmax), s		49.0		* 19		49.0		
Max Q Clear Time (g_c+I1), s		12.8		8.9		18.4		
Green Ext Time (p_c), s		19.8		0.3		22.8		

Intersection Summary		
HCM 2010 Ctrl Delay		8.7
HCM 2010 LOS		A

**Notes**  
 \* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

**Lanes, Volumes, Timings**  
**28: Route 0039 & E Canal St**

**Existing Route 0039 ( Blue Mountain to Canal) PM.syn**  
 04/29/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	15	22	19	27	21	18	718	24	12	524	1
Future Volume (vph)	3	15	22	19	27	21	18	718	24	12	524	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	11	11	11	11	12	12	11	12	12
Grade (%)		2%			-2%			5%			-5%	
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1049			869			1467			1622	
Travel Time (s)		20.4			16.9			22.2			24.6	
Confl. Peds. (#/hr)	1		1	1		1						
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	0%	0%	11%	0%	0%	0%	2%	13%	8%	2%	0%
Shared Lane Traffic (%)												
Sign Control		Stop			Stop			Free			Free	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											

Done BY: JBL  
 Checked By:

























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 Synchro 10 Report

Intersection												
Int Delay, s/veh	4.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↖		↗	↖	
Traffic Vol, veh/h	3	15	22	19	27	21	18	718	24	12	524	1
Future Vol, veh/h	3	15	22	19	27	21	18	718	24	12	524	1
Conflicting Peds, #/hr	1	0	1	1	0	1	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	85	-	-	85	-	-
Veh in Median Storage, #-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	-2	-	-	5	-	-	-5	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	11	0	0	0	2	13	8	2	0
Mvmt Flow	4	18	26	23	32	25	21	855	29	14	624	1

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1594	1579	626	1588	1565	871	625	0	0	884	0	0
Stage 1	653	653	-	912	912	-	-	-	-	-	-	-
Stage 2	941	926	-	676	653	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.9	6.4	6.8	6.1	6	4.3	-	-	4.4	-	-
Critical Hdwy Stg 1	6.5	5.9	-	5.81	5.1	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.9	-	5.81	5.1	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3.1	4	3.1	3	-	-	3.1	-	-
Pot Cap-1 Maneuver	78	93	494	106	134	387	730	-	-	563	-	-
Stage 1	479	434	-	385	393	-	-	-	-	-	-	-
Stage 2	317	316	-	515	502	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	56	88	494	81	127	387	730	-	-	563	-	-
Mov Cap-2 Maneuver	56	88	-	81	127	-	-	-	-	-	-	-
Stage 1	465	423	-	374	382	-	-	-	-	-	-	-
Stage 2	264	307	-	455	489	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	40.1		65.3		0.2		0.3	
HCM LOS	E		F					







Minor Lane/Major Mvmt	NBL	NBT	NBREBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	730	-	-	149	134	563	-
HCM Lane V/C Ratio	0.029	-	-	0.32	0.595	0.025	-
HCM Control Delay (s)	10.1	-	-	40.1	65.3	11.6	-
HCM Lane LOS	B	-	-	E	F	B	-
HCM 95th %tile Q(veh)	0.1	-	-	1.3	3	0.1	-

























												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	471	80	132	343	72	58	306	178	110	269	61
Future Volume (vph)	88	471	80	132	343	72	58	306	178	110	269	61
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	11	14	11	11	11	11	11	11	11	11
Grade (%)		2%			-2%			3%			-8%	
Storage Length (ft)	305		225	610		450	160		0	220		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	150			150			140			60		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		50			50			45			40	
Link Distance (ft)		2250			2478			1283			624	
Travel Time (s)		30.7			33.8			19.4			10.6	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	4%	3%	1%	6%	3%	8%	6%	0%	7%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	5	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	16.0	16.0	3.0	16.0	16.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	14.0	23.0	23.0	14.0	23.0	23.0	14.0	14.0		14.0	14.0	
Total Split (s)	22.0	49.0	49.0	22.0	49.0	49.0	59.0	59.0		59.0	59.0	
Total Split (%)	16.9%	37.7%	37.7%	16.9%	37.7%	37.7%	45.4%	45.4%		45.4%	45.4%	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	Min	Min	None	Min	Min	None	None		None	None	

Intersection Summary

Area Type: Other  
 Cycle Length: 130  
 Actuated Cycle Length: 89.1  
 Natural Cycle: 65  
 Control Type: Actuated-Uncoordinated

Splits and Phases: 29: Laudermilch Rd & Route 22

 Ø1	 Ø2	 Ø4
22 s	49 s	59 s
 Ø5	 Ø6	 Ø8
22 s	49 s	59 s

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	471	80	132	343	72	58	306	178	110	269	61
Future Volume (veh/h)	88	471	80	132	343	72	58	306	178	110	269	61
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1782	1764	1713	1836	1800	1715	1721	1653	1773	1872	1765	1872
Adj Flow Rate, veh/h	94	501	0	140	365	0	62	326	0	117	286	65
Adj No. of Lanes	1	2	1	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	1	4	3	1	6	3	8	8	0	7	7
Cap, veh/h	462	922	400	426	1023	436	300	581	0	322	489	111
Arrive On Green	0.08	0.27	0.00	0.10	0.30	0.00	0.35	0.35	0.00	0.35	0.35	0.35
Sat Flow, veh/h	1697	3352	1456	1748	3420	1458	1001	1653	0	1113	1392	316
Grp Volume(v), veh/h	94	501	0	140	365	0	62	326	0	117	0	351
Grp Sat Flow(s),veh/h/ln	1697	1676	1456	1748	1710	1458	1001	1653	0	1113	0	1709
Q Serve(g_s), s	2.5	8.5	0.0	3.6	5.6	0.0	3.6	10.6	0.0	6.3	0.0	11.2
Cycle Q Clear(g_c), s	2.5	8.5	0.0	3.6	5.6	0.0	14.2	10.6	0.0	16.9	0.0	11.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		0.19
Lane Grp Cap(c), veh/h	462	922	400	426	1023	436	300	581	0	322	0	600
V/C Ratio(X)	0.20	0.54	0.00	0.33	0.36	0.00	0.21	0.56	0.00	0.36	0.00	0.58
Avail Cap(c_a), veh/h	737	2167	942	666	2211	943	745	1317	0	818	0	1362
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.8	20.6	0.0	14.6	18.3	0.0	23.2	17.4	0.0	24.3	0.0	17.6
Incr Delay (d2), s/veh	0.2	0.2	0.0	0.4	0.1	0.0	0.5	1.2	0.0	1.0	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	3.9	0.0	1.8	2.6	0.0	1.0	5.0	0.0	2.0	0.0	5.5
LnGrp Delay(d),s/veh	15.0	20.7	0.0	15.1	18.4	0.0	23.7	18.6	0.0	25.2	0.0	18.9
LnGrp LOS	B	C		B	B		C	B		C		B
Approach Vol, veh/h		595			505			388				468
Approach Delay, s/veh		19.8			17.5			19.4				20.5
Approach LOS		B			B			B				C
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.9	24.3		29.4	11.3	25.9		29.4				
Change Period (Y+Rc), s	7.0	7.0		7.0	7.0	7.0		7.0				
Max Green Setting (Gmax), s	5.0	42.0		52.0	15.0	42.0		52.0				
Max Q Clear Time (g_c+I1), s	6.1	11.0		19.4	5.0	8.1		16.7				
Green Ext Time (p_c), s	0.2	6.3		3.0	0.1	4.5		2.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			19.3									
HCM 2010 LOS			B									



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	10	52	22	10	25	19	25	408	8	54	598	50
Future Volume (vph)	10	52	22	10	25	19	25	408	8	54	598	50
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	11	11	11	11	11	11
Grade (%)		2%			-1%			-3%			1%	
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			45			40	
Link Distance (ft)		1419			1831			963			1154	
Travel Time (s)		27.6			35.7			14.6			19.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	9%	10%	4%	11%	4%	5%	13%	2%	9%	2%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Detector Phase	8	8		4	4		6	6		2	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		22.0	22.0		22.0	22.0	
Total Split (s)	26.0	26.0		26.0	26.0		55.0	55.0		55.0	55.0	
Total Split (%)	32.1%	32.1%		32.1%	32.1%		67.9%	67.9%		67.9%	67.9%	
Yellow Time (s)	4.0	4.0		4.0	4.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	

Intersection Summary

Area Type: Other

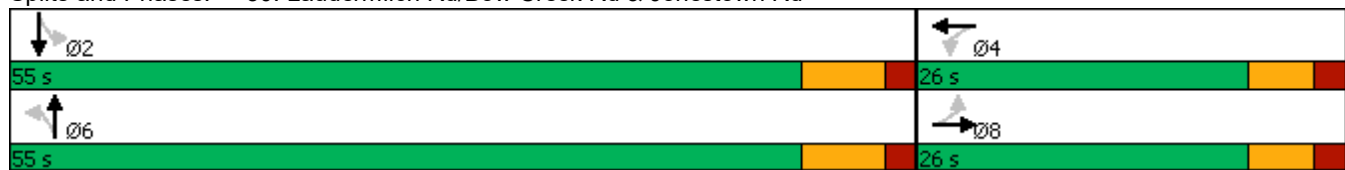
Cycle Length: 81













Actuated Cycle Length: 66.6

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Splits and Phases: 30: Laudermilch Rd/Bow Creek Rd & Jonestown Rd



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	10	52	22	10	25	19	25	408	8	54	598	50
Future Volume (veh/h)	10	52	22	10	25	19	25	408	8	54	598	50
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1782	1720	1782	1809	1681	1809	1827	1738	1827	1791	1659	1791
Adj Flow Rate, veh/h	11	57	24	11	27	21	27	443	9	59	650	54
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	4	4	4	5	5	5	9	9	9
Cap, veh/h	82	105	42	93	80	56	94	1145	22	119	992	80
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.71	0.71	0.71	0.71	0.71	0.71
Sat Flow, veh/h	137	1055	421	208	798	556	42	1601	31	75	1387	111
Grp Volume(v), veh/h	92	0	0	59	0	0	479	0	0	763	0	0
Grp Sat Flow(s),veh/h/ln	1612	0	0	1561	0	0	1675	0	0	1573	0	0
Q Serve(g_s), s	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.2	0.0	0.0	2.1	0.0	0.0	6.5	0.0	0.0	14.8	0.0	0.0
Prop In Lane	0.12		0.26	0.19		0.36	0.06		0.02	0.08		0.07
Lane Grp Cap(c), veh/h	229	0	0	228	0	0	1261	0	0	1190	0	0
V/C Ratio(X)	0.40	0.00	0.00	0.26	0.00	0.00	0.38	0.00	0.00	0.64	0.00	0.00
Avail Cap(c_a), veh/h	632	0	0	606	0	0	1437	0	0	1358	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	25.5	0.0	0.0	25.0	0.0	0.0	3.3	0.0	0.0	4.5	0.0	0.0
Incr Delay (d2), s/veh	1.1	0.0	0.0	0.6	0.0	0.0	0.9	0.0	0.0	2.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	0.0	0.9	0.0	0.0	3.4	0.0	0.0	7.2	0.0	0.0
LnGrp Delay(d),s/veh	26.6	0.0	0.0	25.6	0.0	0.0	4.2	0.0	0.0	7.2	0.0	0.0
LnGrp LOS	C			C			A			A		
Approach Vol, veh/h		92			59			479				763
Approach Delay, s/veh		26.6			25.6			4.2				7.2
Approach LOS		C			C			A				A
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		48.5		10.9		48.5		10.9				
Change Period (Y+Rc), s		7.0		6.0		7.0		6.0				
Max Green Setting (Gmax), s		48.0		20.0		48.0		20.0				
Max Q Clear Time (g_c+I1), s		16.8		4.1		8.5		5.2				
Green Ext Time (p_c), s		24.7		0.1		18.1		0.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				8.2								
HCM 2010 LOS				A								



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↕		↗	↕	
Traffic Volume (vph)	177	0	208	0	0	0	0	320	202	81	306	0
Future Volume (vph)	177	0	208	0	0	0	0	320	202	81	306	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	14	14	14	14	14	12	12	12	10	12	12
Grade (%)		4%			4%			0%			1%	
Storage Length (ft)	0		620	0		0	0		0	100		0
Storage Lanes	0		1	0		0	0		0	1		0
Taper Length (ft)	25			25			25			75		
Right Turn on Red			Yes			No			Yes			No
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		905			1063			1183			840	
Travel Time (s)		15.4			18.1			20.2			14.3	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	5%	0%	5%	0%	0%	0%	0%	3%	5%	5%	4%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm					NA		pm+pt	NA	
Protected Phases		8						6		5	2	
Permitted Phases	8		8							2		
Detector Phase	8	8	8					6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0					15.0		3.0	15.0	
Minimum Split (s)	11.5	11.5	11.5					21.0		13.0	21.0	
Total Split (s)	34.0	34.0	34.0					32.0		14.0	46.0	
Total Split (%)	42.5%	42.5%	42.5%					40.0%		17.5%	57.5%	
Yellow Time (s)	3.5	3.5	3.5					4.5		4.5	4.5	
All-Red Time (s)	2.0	2.0	2.0					1.5		1.5	1.5	
Lost Time Adjust (s)		-1.0	-1.0					-1.0		-1.0	-1.0	
Total Lost Time (s)		4.5	4.5					5.0		5.0	5.0	
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Recall Mode	None	None	None					C-Max		None	C-Max	

Intersection Summary

Area Type: Other  
 Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Green, Master Intersection  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated

Splits and Phases: 31: Bow Creek Rd & I-81 NB Off Ramp/I-81 NB On Ramp





HCM 2010 Signalized Intersection Summary Existing PM Route 0743 (Rt 22 to Mountain Road).syn  
 31: Bow Creek Rd & I-81 NB Off Ramp/I-81 NB On Ramp 04/29/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	177	0	208	0	0	0	0	320	202	81	306	0
Future Volume (veh/h)	177	0	208	0	0	0	0	320	202	81	306	0
Number	3	8	18				1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1835	1747	1747				0	1735	1800	1706	1722	0
Adj Flow Rate, veh/h	184	0	0				0	333	0	84	319	0
Adj No. of Lanes	0	1	1				0	1	0	1	1	0
Peak Hour Factor	0.96	0.96	0.96				0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	5	0	5				0	3	3	5	4	0
Cap, veh/h	305	0	273				0	1007	0	664	1202	0
Arrive On Green	0.18	0.00	0.00				0.00	0.58	0.00	0.11	1.00	0.00
Sat Flow, veh/h	1664	0	1485				0	1735	0	1624	1722	0
Grp Volume(v), veh/h	184	0	0				0	333	0	84	319	0
Grp Sat Flow(s),veh/h/ln	1664	0	1485				0	1735	0	1624	1722	0
Q Serve(g_s), s	8.1	0.0	0.0				0.0	8.0	0.0	1.4	0.0	0.0
Cycle Q Clear(g_c), s	8.1	0.0	0.0				0.0	8.0	0.0	1.4	0.0	0.0
Prop In Lane	1.00		1.00				0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	305	0	273				0	1007	0	664	1202	0
V/C Ratio(X)	0.60	0.00	0.00				0.00	0.33	0.00	0.13	0.27	0.00
Avail Cap(c_a), veh/h	614	0	548				0	1007	0	757	1202	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.89	0.89	0.00
Uniform Delay (d), s/veh	30.0	0.0	0.0				0.0	8.7	0.0	5.1	0.0	0.0
Incr Delay (d2), s/veh	1.9	0.0	0.0				0.0	0.9	0.0	0.1	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	0.0	0.0				0.0	4.0	0.0	0.6	0.2	0.0
LnGrp Delay(d),s/veh	31.9	0.0	0.0				0.0	9.6	0.0	5.2	0.5	0.0
LnGrp LOS	C							A		A	A	
Approach Vol, veh/h		184						333			403	
Approach Delay, s/veh		31.9						9.6			1.5	
Approach LOS		C						A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		60.8			9.4	51.4		19.2				
Change Period (Y+Rc), s		6.0			6.0	6.0		5.5				
Max Green Setting (Gmax), s		40.0			8.0	26.0		28.5				
Max Q Clear Time (g_c+I1), s		2.5			3.9	10.5		10.1				
Green Ext Time (p_c), s		9.8			0.1	6.1		3.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			10.5									
HCM 2010 LOS			B									

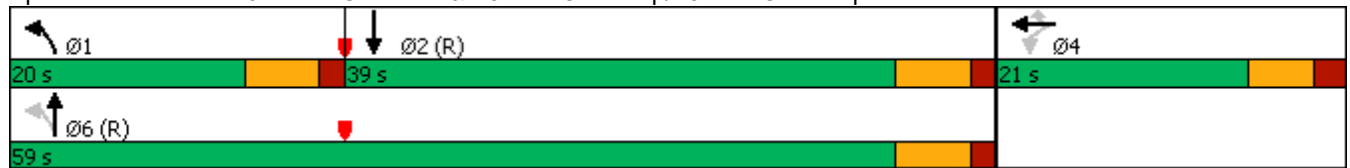


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations						↕	↗	↘	↕		↗	↘
Traffic Volume (vph)	0	0	0	123	1	104	94	407	0	0	275	144
Future Volume (vph)	0	0	0	123	1	104	94	407	0	0	275	144
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	14	14	14	14	14	10	12	12	12	12	14
Grade (%)		0%			0%			-2%			2%	
Storage Length (ft)	0		0	265		0	100		0	0		0
Storage Lanes	0		0	1		1	1		0	0		0
Taper Length (ft)	25			200			100			25		
Right Turn on Red			No			Yes			No			Yes
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		919			876			840			1317	
Travel Time (s)		15.7			14.9			14.3			22.4	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	11%	0%	7%	14%	3%	0%	0%	2%	5%
Shared Lane Traffic (%)												
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					4		1	6				2
Permitted Phases				4		4	6					
Detector Phase				4	4	4	1	6				2
Switch Phase												
Minimum Initial (s)				6.0	6.0	6.0	3.0	15.0				15.0
Minimum Split (s)				13.0	13.0	13.0	13.0	21.0				21.0
Total Split (s)				21.0	21.0	21.0	20.0	59.0				39.0
Total Split (%)				26.3%	26.3%	26.3%	25.0%	73.8%				48.8%
Yellow Time (s)				4.0	4.0	4.0	4.5	4.5				4.5
All-Red Time (s)				2.0	2.0	2.0	1.5	1.5				1.5
Lost Time Adjust (s)					-1.0	-1.0	-1.0	-1.0				-1.0
Total Lost Time (s)					5.0	5.0	5.0	5.0				5.0
Lead/Lag							Lead					Lag
Lead-Lag Optimize?							Yes					Yes
Recall Mode				None	None	None	None	C-Max				C-Max


















Intersection Summary

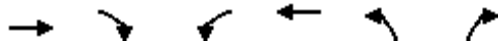
Area Type: Other  
 Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 4 (5%), Referenced to phase 2:SBT and 6:NBTL, Start of Green  
 Natural Cycle: 50  
 Control Type: Actuated-Coordinated

Splits and Phases: 32: Bow Creek Rd & I-81 SB On Ramp/I-81 SB Off Ramp



HCM 2010 Signalized Intersection Summary Existing PM Route 0743 (Rt 22 to Mountain Road).syn  
 32: Bow Creek Rd & I-81 SB On Ramp/I-81 SB Off Ramp 04/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	123	1	104	94	407	0	0	275	144
Future Volume (veh/h)	0	0	0	123	1	104	94	407	0	0	275	144
Number				7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1872	1688	1750	1595	1765	0	0	1730	1853
Adj Flow Rate, veh/h				128	1	0	98	424	0	0	286	0
Adj No. of Lanes				0	1	1	1	1	0	0	1	0
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				7	0	7	14	3	0	0	2	2
Cap, veh/h				194	2	181	729	1330	0	0	1093	0
Arrive On Green				0.12	0.12	0.00	0.06	0.75	0.00	0.00	0.63	0.00
Sat Flow, veh/h				1596	12	1487	1519	1765	0	0	1730	0
Grp Volume(v), veh/h				129	0	0	98	424	0	0	286	0
Grp Sat Flow(s),veh/h/ln				1608	0	1487	1519	1765	0	0	1730	0
Q Serve(g_s), s				6.1	0.0	0.0	1.5	6.2	0.0	0.0	5.8	0.0
Cycle Q Clear(g_c), s				6.1	0.0	0.0	1.5	6.2	0.0	0.0	5.8	0.0
Prop In Lane				0.99		1.00	1.00		0.00	0.00		0.00
Lane Grp Cap(c), veh/h				196	0	181	729	1330	0	0	1093	0
V/C Ratio(X)				0.66	0.00	0.00	0.13	0.32	0.00	0.00	0.26	0.00
Avail Cap(c_a), veh/h				322	0	297	925	1330	0	0	1093	0
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.73	0.73	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				33.5	0.0	0.0	3.8	3.2	0.0	0.0	6.5	0.0
Incr Delay (d2), s/veh				3.8	0.0	0.0	0.1	0.5	0.0	0.0	0.6	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.9	0.0	0.0	0.6	3.1	0.0	0.0	3.0	0.0
LnGrp Delay(d),s/veh				37.3	0.0	0.0	3.8	3.7	0.0	0.0	7.1	0.0
LnGrp LOS				D			A	A			A	
Approach Vol, veh/h					129			522			286	
Approach Delay, s/veh					37.3			3.7			7.1	
Approach LOS					D			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	9.7	55.5		14.7		65.3						
Change Period (Y+Rc), s	6.0	6.0		6.0		6.0						
Max Green Setting (Gmax), s	4.0	33.0		15.0		53.0						
Max Q Clear Time (g_c+I1), s	4.0	8.3		8.1		8.7						
Green Ext Time (p_c), s	0.2	7.0		1.1		14.8						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				9.4								
HCM 2010 LOS				A								



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (vph)	40	45	39	91	87	60
Future Volume (vph)	40	45	39	91	87	60
Ideal Flow (vphpl)	1650	1650	1650	1650	1650	1650
Lane Width (ft)	10	10	10	10	11	11
Grade (%)	-2%			3%	2%	
Link Speed (mph)	45			45	40	
Link Distance (ft)	1661			899	786	
Travel Time (s)	25.2			13.6	13.4	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles (%)	0%	2%	5%	0%	2%	5%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

**Intersection Summary**  
 Area Type: Other  
 Control Type: Unsignalized

Intersection						
Int Delay, s/veh	5.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	40	45	39	91	87	60
Future Vol, veh/h	40	45	39	91	87	60
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	3	2	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	2	5	0	2	5
Mvmt Flow	54	61	53	123	118	81

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	116	0	315
Stage 1	-	-	-	-	86
Stage 2	-	-	-	-	229
Critical Hdwy	-	-	5	-	7.8
Critical Hdwy Stg 1	-	-	-	-	5.82
Critical Hdwy Stg 2	-	-	-	-	5.82
Follow-up Hdwy	-	-	3.5	-	3
Pot Cap-1 Maneuver	-	-	926	-	689
Stage 1	-	-	-	-	1082
Stage 2	-	-	-	-	910
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	925	-	646
Mov Cap-2 Maneuver	-	-	-	-	646
Stage 1	-	-	-	-	1081
Stage 2	-	-	-	-	854

Approach	EB	WB	NB
HCM Control Delay, s	0	2.7	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	740	-	-	925	-
HCM Lane V/C Ratio	0.268	-	-	0.057	-
HCM Control Delay (s)	11.6	-	-	9.1	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.1	-	-	0.2	-