

# HCM Signalized Intersection Capacity Analysis

## 20: Norton Ln & Three Mile Ln

03/02/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗↗	↖	↖	↗↗	↖	↖↖	↖		↖	↗	
Traffic Volume (vph)	60	1025	120	120	1130	120	405	45	200	135	10	85
Future Volume (vph)	60	1025	120	120	1130	120	405	45	200	135	10	85
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	0.99		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1599	3228	1385	1614	3228	1403	3193	1459		1630	1463	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1599	3228	1385	1614	3228	1403	3193	1459		1630	1463	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	62	1068	125	125	1177	125	422	47	208	141	10	89
RTOR Reduction (vph)	0	0	64	0	0	66	0	131	0	0	81	0
Lane Group Flow (vph)	63	1068	61	125	1177	59	422	124	0	141	18	0
Confl. Peds. (#/hr)			2						1			2
Heavy Vehicles (%)	4%	3%	5%	3%	3%	6%	1%	5%	4%	2%	0%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						
Actuated Green, G (s)	7.8	43.0	43.0	12.1	47.3	47.3	18.9	13.4		13.8	8.3	
Effective Green, g (s)	9.3	45.0	45.0	13.6	49.3	49.3	20.4	14.9		15.3	9.8	
Actuated g/C Ratio	0.09	0.43	0.43	0.13	0.47	0.47	0.19	0.14		0.15	0.09	
Clearance Time (s)	5.5	6.0	6.0	5.5	6.0	6.0	5.5	5.5		5.5	5.5	
Vehicle Extension (s)	2.5	5.2	5.2	2.5	5.2	5.2	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	141	1386	594	209	1518	659	621	207		237	136	
v/s Ratio Prot	0.04	0.33		c0.08	c0.36		c0.13	0.08		c0.09	0.01	
v/s Ratio Perm			0.04			0.04						
v/c Ratio	0.45	0.77	0.10	0.60	0.78	0.09	0.68	0.60		0.59	0.13	
Uniform Delay, d1	45.3	25.5	17.8	43.0	23.1	15.3	39.2	42.1		41.9	43.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	3.2	0.2	3.8	3.0	0.1	2.7	3.8		3.3	0.3	
Delay (s)	46.9	28.7	18.0	46.8	26.2	15.5	41.9	46.0		45.2	43.9	
Level of Service	D	C	B	D	C	B	D	D		D	D	
Approach Delay (s)		28.6			27.0			43.4			44.7	
Approach LOS		C			C			D			D	

### Intersection Summary

HCM 2000 Control Delay	31.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	104.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 30: Cumulus Ave & Three Mile Ln

03/02/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	1253	2	2	1211	40	2	2	3	95	1	150
Future Volume (vph)	120	1253	2	2	1211	40	2	2	3	95	1	150
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	1.00
Satd. Flow (prot)	1568	3228		1662	3228	1488		1626		1614	1750	1430
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.95		0.75	1.00	1.00
Satd. Flow (perm)	1568	3228		1662	3228	1488		1558		1280	1750	1430
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	125	1305	2	2	1261	42	2	2	3	99	1	156
RTOR Reduction (vph)	0	0	0	0	0	17	0	3	0	0	0	135
Lane Group Flow (vph)	125	1307	0	2	1261	25	0	4	0	99	1	21
Heavy Vehicles (%)	6%	3%	0%	0%	3%	0%	0%	0%	0%	3%	0%	4%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8			4		4
Actuated Green, G (s)	11.6	60.7		0.9	50.0	50.0		10.5		10.5	10.5	10.5
Effective Green, g (s)	13.1	62.7		2.4	52.0	52.0		12.0		12.0	12.0	12.0
Actuated g/C Ratio	0.15	0.70		0.03	0.58	0.58		0.13		0.13	0.13	0.13
Clearance Time (s)	5.5	6.0		5.5	6.0	6.0		5.5		5.5	5.5	5.5
Vehicle Extension (s)	2.5	5.2		2.5	5.2	5.2		2.5		2.5	2.5	2.5
Lane Grp Cap (vph)	230	2271		44	1883	868		209		172	235	192
v/s Ratio Prot	c0.08	0.40		0.00	c0.39						0.00	
v/s Ratio Perm						0.02		0.00		c0.08		0.01
v/c Ratio	0.54	0.58		0.05	0.67	0.03		0.02		0.58	0.00	0.11
Uniform Delay, d1	35.2	6.6		42.2	12.7	7.9		33.5		36.2	33.4	33.9
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	2.1	0.6		0.3	1.3	0.0		0.0		3.8	0.0	0.2
Delay (s)	37.3	7.2		42.5	13.9	7.9		33.5		39.9	33.4	34.0
Level of Service	D	A		D	B	A		C		D	C	C
Approach Delay (s)		9.8			13.8			33.5			36.3	
Approach LOS		A			B			C			D	

### Intersection Summary

HCM 2000 Control Delay	13.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	89.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th TWSC  
10: Three Mile Ln & 1st St

03/02/2021

Intersection												
Int Delay, s/veh	55											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Traffic Vol, veh/h	5	1	320	1	1	2	350	760	5	5	875	5
Future Vol, veh/h	5	1	320	1	1	2	350	760	5	5	875	5
Conflicting Peds, #/hr	4	0	0	0	0	4	0	0	11	11	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	1	0	0	0	2	3	0	25	3	0
Mvmt Flow	5	1	344	1	1	2	376	817	5	5	941	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2531	2539	944	2709	2539	835	946	0	0	833	0	0
Stage 1	954	954	-	1583	1583	-	-	-	-	-	-	-
Stage 2	1577	1585	-	1126	956	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.21	7.1	6.5	6.2	4.12	-	-	4.35	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.309	3.5	4	3.3	2.218	-	-	2.425	-	-
Pot Cap-1 Maneuver	19	28	~ 319	14	28	371	725	-	-	709	-	-
Stage 1	313	340	-	138	170	-	-	-	-	-	-	-
Stage 2	139	170	-	251	339	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	10	13	~ 319	-	13	366	725	-	-	702	-	-
Mov Cap-2 Maneuver	10	13	-	-	13	-	-	-	-	-	-	-
Stage 1	151	338	-	66	81	-	-	-	-	-	-	-
Stage 2	65	81	-	-	337	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s\$	376.1		4.8	0.1
HCM LOS	F	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	725	-	-	206	-	702	-	-
HCM Lane V/C Ratio	0.519	-	-	1.702	-	0.008	-	-
HCM Control Delay (s)	15.2	-	-	\$ 376.1	-	10.2	-	-
HCM Lane LOS	C	-	-	F	-	B	-	-
HCM 95th %tile Q(veh)	3	-	-	23.6	-	0	-	-

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

HCM 6th TWSC  
11: Nehemiah Ln & Three Mile Ln

03/02/2021

Intersection												
Int Delay, s/veh	32.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	5	1	5	5	200	5	914	5	100	1091	5
Future Vol, veh/h	1	5	1	5	5	200	5	914	5	100	1091	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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	5	1	5	5	217	5	993	5	109	1186	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2524	2415	1189	2416	2415	996	1191	0	0	998	0	0
Stage 1	1407	1407	-	1006	1006	-	-	-	-	-	-	-
Stage 2	1117	1008	-	1410	1409	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	19	33	229	22	33	297	586	-	-	693	-	-
Stage 1	172	205	-	291	319	-	-	-	-	-	-	-
Stage 2	252	318	-	172	205	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	2	17	229	11	17	297	586	-	-	693	-	-
Mov Cap-2 Maneuver	2	17	-	11	17	-	-	-	-	-	-	-
Stage 1	169	109	-	285	313	-	-	-	-	-	-	-
Stage 2	65	312	-	87	109	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	\$ 761.9		\$ 329.6		0.1		0.9	
HCM LOS	F		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	586	-	-	9	148	693	-	-
HCM Lane V/C Ratio	0.009	-	-	0.845	1.542	0.157	-	-
HCM Control Delay (s)	11.2	0	-	\$ 761.9	\$ 329.6	11.2	0	-
HCM Lane LOS	B	A	-	F	F	B	A	-
HCM 95th %tile Q(veh)	0	-	-	1.6	15.5	0.6	-	-

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

Intersection						
Int Delay, s/veh	0.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1345	5	5	1245	10	15
Future Vol, veh/h	1345	5	5	1245	10	15
Conflicting Peds, #/hr	0	5	5	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	0	0	3	0	0
Mvmt Flow	1401	5	5	1297	10	16

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1411	0	2068 708
Stage 1	-	-	-	-	1409 -
Stage 2	-	-	-	-	659 -
Critical Hdwy	-	-	4.1	-	6.8 6.9
Critical Hdwy Stg 1	-	-	-	-	5.8 -
Critical Hdwy Stg 2	-	-	-	-	5.8 -
Follow-up Hdwy	-	-	2.2	-	3.5 3.3
Pot Cap-1 Maneuver	-	-	490	-	48 382
Stage 1	-	-	-	-	195 -
Stage 2	-	-	-	-	482 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	488	-	47 380
Mov Cap-2 Maneuver	-	-	-	-	47 -
Stage 1	-	-	-	-	194 -
Stage 2	-	-	-	-	477 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	53.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	99	-	-	488	-
HCM Lane V/C Ratio	0.263	-	-	0.011	-
HCM Control Delay (s)	53.9	-	-	12.5	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	1	-	-	0	-

Intersection						
Int Delay, s/veh	1.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↖	↖
Traffic Vol, veh/h	1340	20	5	1225	25	30
Future Vol, veh/h	1340	20	5	1225	25	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	0	0	3	0	0
Mvmt Flow	1396	21	5	1276	26	31

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	1417	0	2055	709
Stage 1	-	-	-	-	1407	-
Stage 2	-	-	-	-	648	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	487	-	49	381
Stage 1	-	-	-	-	196	-
Stage 2	-	-	-	-	488	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	487	-	49	381
Mov Cap-2 Maneuver	-	-	-	-	49	-
Stage 1	-	-	-	-	196	-
Stage 2	-	-	-	-	483	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	73.1
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	49	381	-	-	487	-
HCM Lane V/C Ratio	0.531	0.082	-	-	0.011	-
HCM Control Delay (s)	142.4	15.3	-	-	12.5	-
HCM Lane LOS	F	C	-	-	B	-
HCM 95th %tile Q(veh)	2	0.3	-	-	0	-

Intersection						
Int Delay, s/veh	27.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	110	1265	1080	55	45	145
Future Vol, veh/h	110	1265	1080	55	45	145
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	4	3	3	0	9	0
Mvmt Flow	115	1318	1125	57	47	151

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1182	0	0 2043 591
Stage 1	-	-	- 1154 -
Stage 2	-	-	- 889 -
Critical Hdwy	4.18	-	- 6.98 6.9
Critical Hdwy Stg 1	-	-	- 5.98 -
Critical Hdwy Stg 2	-	-	- 5.98 -
Follow-up Hdwy	2.24	-	- 3.59 3.3
Pot Cap-1 Maneuver	575	-	- ~45 455
Stage 1	-	-	- 248 -
Stage 2	-	-	- 345 -
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	575	-	- ~36 455
Mov Cap-2 Maneuver	-	-	- ~36 -
Stage 1	-	-	- 198 -
Stage 2	-	-	- 345 -

Approach	EB	WB	SB
HCM Control Delay, s	1	0	\$ 383.6
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	575	-	-	-	121
HCM Lane V/C Ratio	0.199	-	-	-	1.636
HCM Control Delay (s)	12.8	-	-	-	\$ 383.6
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	0.7	-	-	-	14.7

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

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑↑	↑↑	↗	↘	↘
Traffic Vol, veh/h	5	1305	1115	3	15	20
Future Vol, veh/h	5	1305	1115	3	15	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	75	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	14	2	3	0	27	11
Mvmt Flow	5	1374	1174	3	16	21

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1177	0	-	0	1871 587
Stage 1	-	-	-	-	1174 -
Stage 2	-	-	-	-	697 -
Critical Hdwy	4.38	-	-	-	7.34 7.12
Critical Hdwy Stg 1	-	-	-	-	6.34 -
Critical Hdwy Stg 2	-	-	-	-	6.34 -
Follow-up Hdwy	2.34	-	-	-	3.77 3.41
Pot Cap-1 Maneuver	526	-	-	-	48 431
Stage 1	-	-	-	-	210 -
Stage 2	-	-	-	-	394 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	526	-	-	-	48 431
Mov Cap-2 Maneuver	-	-	-	-	48 -
Stage 1	-	-	-	-	208 -
Stage 2	-	-	-	-	394 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	62.4
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	526	-	-	-	98
HCM Lane V/C Ratio	0.01	-	-	-	0.376
HCM Control Delay (s)	11.9	-	-	-	62.4
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	0	-	-	-	1.5



**Intersection**

Int Delay, s/veh 232.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	
Traffic Vol, veh/h	865	455	30	780	335	10
Future Vol, veh/h	865	455	30	780	335	10
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	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	3	4	0	3	3	10
Mvmt Flow	920	484	32	830	356	11

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1404	0	1814
Stage 1	-	-	-	-	920
Stage 2	-	-	-	-	894
Critical Hdwy	-	-	4.1	-	6.43
Critical Hdwy Stg 1	-	-	-	-	5.43
Critical Hdwy Stg 2	-	-	-	-	5.43
Follow-up Hdwy	-	-	2.2	-	3.527
Pot Cap-1 Maneuver	-	-	493	-	~ 86
Stage 1	-	-	-	-	387
Stage 2	-	-	-	-	398
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	493	-	~ 80
Mov Cap-2 Maneuver	-	-	-	-	~ 80
Stage 1	-	-	-	-	387
Stage 2	-	-	-	-	372

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	\$ 1667.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	82	-	-	493	-
HCM Lane V/C Ratio	4.476	-	-	0.065	-
HCM Control Delay (s)	\$ 1667.7	-	-	12.8	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	39.1	-	-	0.2	-

**Notes**

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

**Intersection**

Int Delay, s/veh 46.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	140	60	170	250	0	85	0	145	0	0	0
Future Vol, veh/h	0	140	60	170	250	0	85	0	145	0	0	0
Conflicting Peds, #/hr	0	0	1	0	0	0	4	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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	2	1	0	6	0	3	0	0	0
Mvmt Flow	0	165	71	200	294	0	100	0	171	0	0	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	438	376	6	406	291	86	5	0	0	171	0	0
Stage 1	5	5	-	286	286	-	-	-	-	-	-	-
Stage 2	433	371	-	120	5	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.12	6.51	6.2	4.16	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.12	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.12	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.518	4.009	3.3	2.254	-	-	2.2	-	-
Pot Cap-1 Maneuver	532	558	1083	555	621	978	1590	-	-	1418	-	-
Stage 1	1022	896	-	721	677	-	-	-	-	-	-	-
Stage 2	605	623	-	884	894	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	301	516	1078	370	574	978	1584	-	-	1418	-	-
Mov Cap-2 Maneuver	301	516	-	370	574	-	-	-	-	-	-	-
Stage 1	945	892	-	670	629	-	-	-	-	-	-	-
Stage 2	299	579	-	673	890	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	14.5		86.2		2.7		0	
HCM LOS	B		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1584	-	-	612	469	1418	-	-
HCM Lane V/C Ratio	0.063	-	-	0.384	1.054	-	-	-
HCM Control Delay (s)	7.4	0	-	14.5	86.2	0	-	-
HCM Lane LOS	A	A	-	B	F	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1.8	15.3	0	-	-

**Intersection**

Int Delay, s/veh 23.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	85	15	5	5	2	340	1	230	5	100	70	80
Future Vol, veh/h	85	15	5	5	2	340	1	230	5	100	70	80
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	4	0	0	0	0	1	0	2	0	0	8	2
Mvmt Flow	94	17	6	6	2	378	1	256	6	111	78	89

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	380	0	0	23
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.1
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.236	-	-	2.2
Pot Cap-1 Maneuver	1168	-	-	1605
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1168	-	-	1605
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	6.8	0.1	32.3	53.8
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	384	1168	-	-	1605	-	-	330
HCM Lane V/C Ratio	0.683	0.081	-	-	0.003	-	-	0.842
HCM Control Delay (s)	32.3	8.4	0	-	7.3	0	-	53.8
HCM Lane LOS	D	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	4.9	0.3	-	-	0	-	-	7.5

Intersection												
Int Delay, s/veh	13.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	85	15	5	5	2	340	1	230	5	100	70	80
Future Vol, veh/h	85	15	5	5	2	340	1	230	5	100	70	80
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	4	0	0	0	0	1	0	2	0	0	8	2
Mvmt Flow	94	17	6	6	2	378	1	256	6	111	78	89

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	796	610	123	618	651	260	167	0	0	263	0	0
Stage 1	345	345	-	262	262	-	-	-	-	-	-	-
Stage 2	451	265	-	356	389	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.5	6.2	7.1	6.5	6.21	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.14	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.3	3.5	4	3.309	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	303	412	933	404	390	781	1423	-	-	1313	-	-
Stage 1	666	640	-	747	695	-	-	-	-	-	-	-
Stage 2	584	693	-	666	612	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	144	372	933	360	353	780	1423	-	-	1312	-	-
Mov Cap-2 Maneuver	144	372	-	360	353	-	-	-	-	-	-	-
Stage 1	665	580	-	746	694	-	-	-	-	-	-	-
Stage 2	300	692	-	583	554	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	67.1		14.5		0		3.2	
HCM LOS	F		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1423	-	-	165	762	1312	-
HCM Lane V/C Ratio	0.001	-	-	0.707	0.506	0.085	-
HCM Control Delay (s)	7.5	0	-	67.1	14.5	8	0
HCM Lane LOS	A	A	-	F	B	A	A
HCM 95th %tile Q(veh)	0	-	-	4.3	2.9	0.3	-

# HCM Signalized Intersection Capacity Analysis

## 20: Norton Ln & Three Mile Ln

03/19/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗↗	↖	↖	↗↗	↖	↖↖	↖		↖	↗	
Traffic Volume (vph)	105	1069	75	52	1237	171	300	45	107	154	15	140
Future Volume (vph)	105	1069	75	52	1237	171	300	45	107	154	15	140
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	0.99		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.89		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1599	3228	1385	1614	3228	1403	3193	1488		1630	1463	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1599	3228	1385	1614	3228	1403	3193	1488		1630	1463	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	109	1114	78	54	1289	178	312	47	111	160	16	146
RTOR Reduction (vph)	0	0	38	0	0	93	0	73	0	0	132	0
Lane Group Flow (vph)	109	1114	40	54	1289	85	313	85	0	160	30	0
Confl. Peds. (#/hr)			2						1			2
Heavy Vehicles (%)	4%	3%	5%	3%	3%	6%	1%	5%	4%	2%	0%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						
Actuated Green, G (s)	11.7	54.8	54.8	7.3	50.4	50.4	15.9	11.1		14.2	9.4	
Effective Green, g (s)	13.2	56.8	56.8	8.8	52.4	52.4	17.4	12.6		15.7	10.9	
Actuated g/C Ratio	0.12	0.52	0.52	0.08	0.48	0.48	0.16	0.11		0.14	0.10	
Clearance Time (s)	5.5	6.0	6.0	5.5	6.0	6.0	5.5	5.5		5.5	5.5	
Vehicle Extension (s)	2.5	5.2	5.2	2.5	5.2	5.2	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	192	1668	715	129	1539	668	505	170		232	145	
v/s Ratio Prot	c0.07	0.35		0.03	c0.40		c0.10	0.06		c0.10	0.02	
v/s Ratio Perm			0.03			0.06						
v/c Ratio	0.57	0.67	0.06	0.42	0.84	0.13	0.62	0.50		0.69	0.21	
Uniform Delay, d1	45.7	19.6	13.2	48.1	25.0	16.0	43.2	45.7		44.8	45.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.1	1.4	0.1	1.6	4.7	0.2	1.9	1.7		7.6	0.5	
Delay (s)	48.8	21.0	13.3	49.7	29.7	16.2	45.1	47.4		52.4	46.1	
Level of Service	D	C	B	D	C	B	D	D		D	D	
Approach Delay (s)		22.9			28.8			45.9			49.2	
Approach LOS		C			C			D			D	

### Intersection Summary

HCM 2000 Control Delay	30.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	109.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 30: Cumulus Ave & Three Mile Ln

03/19/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↗	↖	↗		↖	↗	↖
Traffic Volume (vph)	105	1140	85	55	1170	40	155	35	110	80	29	135
Future Volume (vph)	105	1140	85	55	1170	40	155	35	110	80	29	135
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	5.5	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	0.97	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.89		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1568	3201		1662	3228	1488	3225	1550		1614	1750	1430
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.74	1.00		0.53	1.00	1.00
Satd. Flow (perm)	1568	3201		1662	3228	1488	2504	1550		905	1750	1430
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	109	1188	89	57	1219	42	161	36	115	83	30	141
RTOR Reduction (vph)	0	3	0	0	0	19	0	97	0	0	0	119
Lane Group Flow (vph)	109	1274	0	57	1219	23	161	54	0	83	30	22
Heavy Vehicles (%)	6%	3%	0%	0%	3%	0%	0%	0%	0%	3%	0%	4%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8			4		4
Actuated Green, G (s)	10.8	49.2		6.7	45.1	45.1	11.6	11.6		11.6	11.6	11.6
Effective Green, g (s)	12.3	51.2		8.2	47.1	47.1	11.6	13.1		13.1	13.1	13.1
Actuated g/C Ratio	0.15	0.61		0.10	0.56	0.56	0.14	0.16		0.16	0.16	0.16
Clearance Time (s)	5.5	6.0		5.5	6.0	6.0	5.5	5.5		5.5	5.5	5.5
Vehicle Extension (s)	2.5	5.2		2.5	5.2	5.2	2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)	228	1939		161	1799	829	343	240		140	271	221
v/s Ratio Prot	c0.07	c0.40		0.03	0.38			0.03			0.02	
v/s Ratio Perm						0.02	0.06			c0.09		0.02
v/c Ratio	0.48	0.66		0.35	0.68	0.03	0.47	0.22		0.59	0.11	0.10
Uniform Delay, d1	33.2	10.9		35.7	13.3	8.4	33.6	31.3		33.2	30.7	30.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.2	1.1		1.0	1.4	0.0	0.7	0.3		5.5	0.1	0.1
Delay (s)	34.3	12.0		36.7	14.7	8.4	34.4	31.6		38.7	30.8	30.8
Level of Service	C	B		D	B	A	C	C		D	C	C
Approach Delay (s)		13.8			15.4			33.0			33.4	
Approach LOS		B			B			C			C	

### Intersection Summary

HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	84.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 50: Cirrus Ave & Three Mile Ln

03/19/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	241	1070	9	9	1048	18	53	7	22	15	10	164
Future Volume (vph)	241	1070	9	9	1048	18	53	7	22	15	10	164
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.97	1.00
Satd. Flow (prot)	1630	3225		1662	3220			1673	1488		1666	1458
Flt Permitted	0.95	1.00		0.95	1.00			0.73	1.00		0.78	1.00
Satd. Flow (perm)	1630	3225		1662	3220			1281	1488		1341	1458
Peak-hour factor, PHF	0.92	0.96	0.96	0.96	0.96	0.92	0.96	0.92	0.96	0.92	0.92	0.92
Adj. Flow (vph)	262	1115	9	9	1092	20	55	8	23	16	11	178
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	21	0	0	161
Lane Group Flow (vph)	262	1124	0	9	1110	0	0	63	2	0	27	17
Heavy Vehicles (%)	2%	3%	0%	0%	3%	2%	0%	2%	0%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		4
Actuated Green, G (s)	12.4	37.6		1.1	26.3			5.4	5.4		5.4	5.4
Effective Green, g (s)	12.4	37.6		1.1	26.3			5.4	5.4		5.4	5.4
Actuated g/C Ratio	0.22	0.67		0.02	0.47			0.10	0.10		0.10	0.10
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	2.5	2.5		2.5	2.5			2.5	2.5		2.5	2.5
Lane Grp Cap (vph)	360	2161		32	1509			123	143		129	140
v/s Ratio Prot	c0.16	0.35		0.01	c0.34							
v/s Ratio Perm								c0.05	0.00		0.02	0.01
v/c Ratio	0.73	0.52		0.28	0.74			0.51	0.02		0.21	0.12
Uniform Delay, d1	20.3	4.7		27.1	12.1			24.1	22.9		23.4	23.2
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	6.7	0.2		3.5	1.8			2.7	0.0		0.6	0.3
Delay (s)	27.0	4.8		30.6	13.9			26.8	23.0		24.0	23.5
Level of Service	C	A		C	B			C	C		C	C
Approach Delay (s)		9.0			14.0			25.8			23.5	
Approach LOS		A			B			C			C	

### Intersection Summary

HCM 2000 Control Delay	12.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	56.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection												
Int Delay, s/veh	4.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	81	5	15	5	1	108	1	263	1	21	76	45
Future Vol, veh/h	81	5	15	5	1	108	1	263	1	21	76	45
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	4	0	0	0	0	1	0	2	0	0	8	2
Mvmt Flow	90	6	17	6	1	120	1	292	1	23	84	50

Major/Minor	Minor2		Minor1			Major1		Major2				
Conflicting Flow All	510	451	109	463	476	294	134	0	0	294	0	0
Stage 1	155	155	-	296	296	-	-	-	-	-	-	-
Stage 2	355	296	-	167	180	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.5	6.2	7.1	6.5	6.21	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.14	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.3	3.5	4	3.309	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	471	507	950	513	491	748	1463	-	-	1279	-	-
Stage 1	843	773	-	717	672	-	-	-	-	-	-	-
Stage 2	658	672	-	840	754	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	388	496	950	491	480	747	1463	-	-	1278	-	-
Mov Cap-2 Maneuver	388	496	-	491	480	-	-	-	-	-	-	-
Stage 1	842	758	-	716	671	-	-	-	-	-	-	-
Stage 2	551	671	-	803	739	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	16.3		11		0		1.2	
HCM LOS	C		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1463	-	-	430	727	1278	-
HCM Lane V/C Ratio	0.001	-	-	0.261	0.174	0.018	-
HCM Control Delay (s)	7.5	0	-	16.3	11	7.9	0
HCM Lane LOS	A	A	-	C	B	A	A
HCM 95th %tile Q(veh)	0	-	-	1	0.6	0.1	-



HCM 6th TWSC  
10: Three Mile Ln & 1st St

03/19/2021

Intersection												
Int Delay, s/veh	60.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Traffic Vol, veh/h	5	1	335	1	1	2	350	780	5	5	880	5
Future Vol, veh/h	5	1	335	1	1	2	350	780	5	5	880	5
Conflicting Peds, #/hr	4	0	0	0	0	4	0	0	11	11	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	1	0	0	0	2	3	0	25	3	0
Mvmt Flow	5	1	360	1	1	2	376	839	5	5	946	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2558	2566	949	2744	2566	857	951	0	0	855	0	0
Stage 1	959	959	-	1605	1605	-	-	-	-	-	-	-
Stage 2	1599	1607	-	1139	961	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.21	7.1	6.5	6.2	4.12	-	-	4.35	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.309	3.5	4	3.3	2.218	-	-	2.425	-	-
Pot Cap-1 Maneuver	18	26	~ 317	13	26	360	722	-	-	695	-	-
Stage 1	311	338	-	134	166	-	-	-	-	-	-	-
Stage 2	135	166	-	247	337	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	10	12	~ 317	-	12	355	722	-	-	688	-	-
Mov Cap-2 Maneuver	10	12	-	-	12	-	-	-	-	-	-	-
Stage 1	149	336	-	64	79	-	-	-	-	-	-	-
Stage 2	63	79	-	-	335	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s\$	401.8		4.7	0.1
HCM LOS	F	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	722	-	-	208	-	688	-
HCM Lane V/C Ratio	0.521	-	-	1.763	-	0.008	-
HCM Control Delay (s)	15.3	-	-	\$ 401.8	-	10.3	-
HCM Lane LOS	C	-	-	F	-	B	-
HCM 95th %tile Q(veh)	3.1	-	-	25.3	-	0	-

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

HCM 6th TWSC  
11: Nehemiah Ln & Three Mile Ln

03/19/2021

Intersection												
Int Delay, s/veh	50											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	1	1	9	2	254	8	866	16	108	1080	11
Future Vol, veh/h	2	1	1	9	2	254	8	866	16	108	1080	11
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	1	1	10	2	276	9	941	17	117	1174	12

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2521	2390	1180	2383	2388	950	1186	0	0	958	0	0
Stage 1	1414	1414	-	968	968	-	-	-	-	-	-	-
Stage 2	1107	976	-	1415	1420	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	19	34	232	24	34	315	589	-	-	718	-	-
Stage 1	171	204	-	305	332	-	-	-	-	-	-	-
Stage 2	255	329	-	170	202	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 1	17	232	14	17	315	589	-	-	718	-	-
Mov Cap-2 Maneuver	~ 1	17	-	14	17	-	-	-	-	-	-	-
Stage 1	165	106	-	295	321	-	-	-	-	-	-	-
Stage 2	30	318	-	87	105	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, \$	3422.1		\$ 388.4		0.1		1	
HCM LOS	F		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	589	-	-	2	169	718	-
HCM Lane V/C Ratio	0.015	-	-	2.174	1.704	0.163	-
HCM Control Delay (s)	11.2	0		\$ 3422.1	\$ 388.4	11	0
HCM Lane LOS	B	A	-	F	F	B	A
HCM 95th %tile Q(veh)	0	-	-	1.4	20.2	0.6	-

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

Intersection												
Int Delay, s/veh	7.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	243	13	0	0	3	56	1	1	0	32	1	136
Future Vol, veh/h	243	13	0	0	3	56	1	1	0	32	1	136
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	264	14	0	0	3	61	1	1	0	35	1	148

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	64	0	0	14	0	0	650	606	14	577	576	34
Stage 1	-	-	-	-	-	-	542	542	-	34	34	-
Stage 2	-	-	-	-	-	-	108	64	-	543	542	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1538	-	-	1604	-	-	382	411	1066	428	428	1039
Stage 1	-	-	-	-	-	-	525	520	-	982	867	-
Stage 2	-	-	-	-	-	-	897	842	-	524	520	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1538	-	-	1604	-	-	283	340	1066	370	354	1039
Mov Cap-2 Maneuver	-	-	-	-	-	-	283	340	-	370	354	-
Stage 1	-	-	-	-	-	-	434	430	-	812	867	-
Stage 2	-	-	-	-	-	-	768	842	-	432	430	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	7.4			0			16.7			11.2		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	309	1538	-	-	1604	-	-	767
HCM Lane V/C Ratio	0.007	0.172	-	-	-	-	-	0.239
HCM Control Delay (s)	16.7	7.8	0	-	0	-	-	11.2
HCM Lane LOS	C	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0.6	-	-	0	-	-	0.9

Intersection												
Int Delay, s/veh	17.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔			↔			↔	
Traffic Vol, veh/h	95	5	114	10	56	5	162	152	7	35	185	155
Future Vol, veh/h	95	5	114	10	56	5	162	152	7	35	185	155
Conflicting Peds, #/hr	6	0	1	0	0	0	4	0	0	0	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	50	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	92	85	92	92	92	85	85	92	92	85	85
Heavy Vehicles, %	0	2	0	2	2	2	6	3	2	2	1	2
Mvmt Flow	112	5	134	11	61	5	191	179	8	38	218	182

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	993	958	205	754	1045	189	404	0	0	187	0	0
Stage 1	389	389	-	565	565	-	-	-	-	-	-	-
Stage 2	604	569	-	189	480	-	-	-	-	-	-	-
Critical Hdwy	7.3	6.53	6.9	7.33	6.53	6.23	4.19	-	-	4.13	-	-
Critical Hdwy Stg 1	6.5	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.019	3.3	3.519	4.019	3.319	2.257	-	-	2.219	-	-
Pot Cap-1 Maneuver	214	257	808	311	228	852	1128	-	-	1386	-	-
Stage 1	612	608	-	509	507	-	-	-	-	-	-	-
Stage 2	489	505	-	795	554	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	130	200	804	211	177	847	1124	-	-	1386	-	-
Mov Cap-2 Maneuver	130	200	-	211	177	-	-	-	-	-	-	-
Stage 1	494	584	-	412	411	-	-	-	-	-	-	-
Stage 2	333	409	-	632	532	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	58.9		35.8		4.5		0.7	
HCM LOS	F		E					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1124	-	-	132	804	192	1386	-	-
HCM Lane V/C Ratio	0.17	-	-	0.888	0.167	0.402	0.027	-	-
HCM Control Delay (s)	8.9	0	-	114.4	10.4	35.8	7.7	0.1	-
HCM Lane LOS	A	A	-	F	B	E	A	A	-
HCM 95th %tile Q(veh)	0.6	-	-	5.8	0.6	1.8	0.1	-	-

**Intersection**

Int Delay, s/veh 12.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	81	5	15	5	1	108	1	263	1	21	76	45
Future Vol, veh/h	81	5	15	5	1	108	1	263	1	21	76	45
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	4	0	0	0	0	1	0	2	0	0	8	2
Mvmt Flow	90	6	17	6	1	120	1	292	1	23	84	50

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	121	0	0	23
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.1
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.236	-	-	2.2
Pot Cap-1 Maneuver	1454	-	-	1605
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1454	-	-	1605
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	6.1	0.3	18.7	13.5
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	552	1454	-	-	1605	-	-	580
HCM Lane V/C Ratio	0.533	0.062	-	-	0.003	-	-	0.272
HCM Control Delay (s)	18.7	7.6	0	-	7.3	0	-	13.5
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	3.1	0.2	-	-	0	-	-	1.1



Intersection												
Int Delay, s/veh	4.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	81	5	15	5	1	108	1	263	1	21	76	45
Future Vol, veh/h	81	5	15	5	1	108	1	263	1	21	76	45
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	4	0	0	0	0	1	0	2	0	0	8	2
Mvmt Flow	90	6	17	6	1	120	1	292	1	23	84	50

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	510	451	109	463	476	294	134	0	0	294	0	0
Stage 1	155	155	-	296	296	-	-	-	-	-	-	-
Stage 2	355	296	-	167	180	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.5	6.2	7.1	6.5	6.21	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.14	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.3	3.5	4	3.309	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	471	507	950	513	491	748	1463	-	-	1279	-	-
Stage 1	843	773	-	717	672	-	-	-	-	-	-	-
Stage 2	658	672	-	840	754	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	388	496	950	491	480	747	1463	-	-	1278	-	-
Mov Cap-2 Maneuver	388	496	-	491	480	-	-	-	-	-	-	-
Stage 1	842	758	-	716	671	-	-	-	-	-	-	-
Stage 2	551	671	-	803	739	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	16.3		11		0		1.2	
HCM LOS	C		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1463	-	-	430	727	1278	-
HCM Lane V/C Ratio	0.001	-	-	0.261	0.174	0.018	-
HCM Control Delay (s)	7.5	0	-	16.3	11	7.9	0
HCM Lane LOS	A	A	-	C	B	A	A
HCM 95th %tile Q(veh)	0	-	-	1	0.6	0.1	-