

---

---

APPENDIX B

---

---

Intersection												
Int Delay, s/veh	8.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↻			↻						↻	
Traffic Vol, veh/h	0	161	81	210	214	0	0	0	0	110	2	53
Future Vol, veh/h	0	161	81	210	214	0	0	0	0	110	2	53
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	-	-	16974	-	-	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	0	175	88	228	233	0	0	0	0	120	2	58

Major/Minor	Major1			Major2			Minor2			
Conflicting Flow All	-	0	0	263	0	0		908	952	233
Stage 1	-	-	-	-	-	-		689	689	-
Stage 2	-	-	-	-	-	-		219	263	-
Critical Hdwy	-	-	-	4.12	-	-		6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-		5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-		5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-		3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1301	-	0		306	259	806
Stage 1	0	-	-	-	-	0		498	446	-
Stage 2	0	-	-	-	-	0		817	691	-
Platoon blocked, %	-	-	-	-	-	-		-	-	-
Mov Cap-1 Maneuver	-	-	-	1301	-	-		244	0	806
Mov Cap-2 Maneuver	-	-	-	-	-	-		244	0	-
Stage 1	-	-	-	-	-	-		498	0	-
Stage 2	-	-	-	-	-	-		653	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	4.1	30.3
HCM LOS			D

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	1301	-	316
HCM Lane V/C Ratio	-	-	0.175	-	0.568
HCM Control Delay (s)	-	-	8.4	0	30.3
HCM Lane LOS	-	-	A	A	D
HCM 95th %tile Q(veh)	-	-	0.6	-	3.3

HCM 6th Signalized Intersection Summary  
 2: NEWCASTLE ROAD & EB 180/INDIAN HILL ROAD

EX PM  
 10/23/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↕	↕	↕	↑	↕	↕	↕	↕
Traffic Volume (veh/h)	106	240	60	6	28	198	60	85	7	94	128	51
Future Volume (veh/h)	106	240	60	6	28	198	60	85	7	94	128	51
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	115	261	65	7	30	215	65	92	8	102	139	55
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	2	2	2	2	2	2	2	2	2
Cap, veh/h	174	414	107	61	263	278	157	165	140	281	201	79
Arrive On Green	0.19	0.19	0.19	0.18	0.18	0.18	0.09	0.09	0.09	0.16	0.16	0.16
Sat Flow, veh/h	900	2142	554	351	1502	1585	1781	1870	1585	1781	1275	505
Grp Volume(v), veh/h	233	0	208	37	0	215	65	92	8	102	0	194
Grp Sat Flow(s),veh/h/ln	1825	0	1771	1853	0	1585	1781	1870	1585	1781	0	1780
Q Serve(g_s), s	5.9	0.0	5.3	0.8	0.0	6.4	1.7	2.3	0.2	2.5	0.0	5.1
Cycle Q Clear(g_c), s	5.9	0.0	5.3	0.8	0.0	6.4	1.7	2.3	0.2	2.5	0.0	5.1
Prop In Lane	0.49		0.31	0.19		1.00	1.00		1.00	1.00		0.28
Lane Grp Cap(c), veh/h	353	0	342	324	0	278	157	165	140	281	0	280
V/C Ratio(X)	0.66	0.00	0.61	0.11	0.00	0.77	0.41	0.56	0.06	0.36	0.00	0.69
Avail Cap(c_a), veh/h	1070	0	1038	550	0	471	900	945	801	626	0	626
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.5	0.0	18.3	17.2	0.0	19.5	21.3	21.6	20.7	18.6	0.0	19.7
Incr Delay (d2), s/veh	2.1	0.0	1.7	0.2	0.0	4.6	1.7	2.9	0.2	0.8	0.0	3.1
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(50%),veh/ln	2.4	0.0	2.1	0.3	0.0	2.5	0.7	1.1	0.1	1.0	0.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.6	0.0	20.0	17.3	0.0	24.1	23.1	24.5	20.8	19.4	0.0	22.8
LnGrp LOS	C	A	B	B	A	C	C	C	C	B	A	C
Approach Vol, veh/h		441			252			165			296	
Approach Delay, s/veh		20.3			23.1			23.8			21.6	
Approach LOS		C			C			C			C	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		9.0		14.2		12.4		14.0				
Change Period (Y+Rc), s		4.6		4.6		4.6		5.3				
Max Green Setting (Gmax), s		25.0		29.0		17.4		14.7				
Max Q Clear Time (g_c+I1), s		4.3		7.9		7.1		8.4				
Green Ext Time (p_c), s		0.5		1.7		0.8		0.5				

Intersection Summary

HCM 6th Ctrl Delay	21.8
HCM 6th LOS	C

**Intersection**

Int Delay, s/veh 8.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷						↷	
Traffic Vol, veh/h	0	161	111	210	244	0	0	0	0	110	2	53
Future Vol, veh/h	0	161	111	210	244	0	0	0	0	110	2	53
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	-	-	16974	-	-	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	0	175	121	228	265	0	0	0	0	120	2	58

Major/Minor	Major1			Major2			Minor2			
Conflicting Flow All	-	0	0	296	0	0		957	1017	265
Stage 1	-	-	-	-	-	-		721	721	-
Stage 2	-	-	-	-	-	-		236	296	-
Critical Hdwy	-	-	-	4.12	-	-		6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-		5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-		5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-		3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1265	-	0		286	238	774
Stage 1	0	-	-	-	-	0		482	432	-
Stage 2	0	-	-	-	-	0		803	668	-
Platoon blocked, %		-	-	-	-	-				
Mov Cap-1 Maneuver	-	-	-	1265	-	-		226	0	774
Mov Cap-2 Maneuver	-	-	-	-	-	-		226	0	-
Stage 1	-	-	-	-	-	-		482	0	-
Stage 2	-	-	-	-	-	-		634	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	3.9	34.7
HCM LOS			D

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	1265	-	294
HCM Lane V/C Ratio	-	-	0.18	-	0.61
HCM Control Delay (s)	-	-	8.5	0	34.7
HCM Lane LOS	-	-	A	A	D
HCM 95th %tile Q(veh)	-	-	0.7	-	3.7

HCM 6th Signalized Intersection Summary  
 2: NEWCASTLE ROAD & EB 180/INDIAN HILL ROAD

Existing PM Plus Wineries

10/23/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕	↕	↕	↑	↕	↕	↕	↕
Traffic Volume (veh/h)	136	240	60	6	28	198	60	85	7	94	128	51
Future Volume (veh/h)	136	240	60	6	28	198	60	85	7	94	128	51
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	148	261	65	7	30	215	65	92	8	102	139	55
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	2	2	2	2	2	2	2	2	2
Cap, veh/h	219	407	105	61	262	276	156	164	139	279	200	79
Arrive On Green	0.20	0.20	0.20	0.17	0.17	0.17	0.09	0.09	0.09	0.16	0.16	0.16
Sat Flow, veh/h	1075	2003	516	351	1502	1585	1781	1870	1585	1781	1275	505
Grp Volume(v), veh/h	250	0	224	37	0	215	65	92	8	102	0	194
Grp Sat Flow(s),veh/h/ln	1817	0	1777	1853	0	1585	1781	1870	1585	1781	0	1780
Q Serve(g_s), s	6.4	0.0	5.8	0.9	0.0	6.6	1.7	2.4	0.2	2.6	0.0	5.2
Cycle Q Clear(g_c), s	6.4	0.0	5.8	0.9	0.0	6.6	1.7	2.4	0.2	2.6	0.0	5.2
Prop In Lane	0.59		0.29	0.19		1.00	1.00		1.00	1.00		0.28
Lane Grp Cap(c), veh/h	370	0	362	323	0	276	156	164	139	279	0	279
V/C Ratio(X)	0.68	0.00	0.62	0.11	0.00	0.78	0.42	0.56	0.06	0.37	0.00	0.70
Avail Cap(c_a), veh/h	1042	0	1020	539	0	461	881	925	784	613	0	612
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.6	0.0	18.4	17.6	0.0	19.9	21.8	22.1	21.1	19.1	0.0	20.2
Incr Delay (d2), s/veh	2.2	0.0	1.7	0.2	0.0	4.7	1.8	3.0	0.2	0.8	0.0	3.1
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(50%),veh/ln	2.6	0.0	2.3	0.3	0.0	2.5	0.7	1.1	0.1	1.0	0.0	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.8	0.0	20.1	17.7	0.0	24.6	23.6	25.1	21.3	19.9	0.0	23.3
LnGrp LOS	C	A	C	B	A	C	C	C	C	B	A	C
Approach Vol, veh/h		474			252			165			296	
Approach Delay, s/veh		20.4			23.6			24.3			22.1	
Approach LOS		C			C			C			C	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		9.0		14.9		12.5		14.1				
Change Period (Y+Rc), s		4.6		4.6		4.6		5.3				
Max Green Setting (Gmax), s		25.0		29.0		17.4		14.7				
Max Q Clear Time (g_c+I1), s		4.4		8.4		7.2		8.6				
Green Ext Time (p_c), s		0.5		1.9		0.8		0.5				

Intersection Summary

HCM 6th Ctrl Delay	22.1
HCM 6th LOS	C

**Intersection**

Int Delay, s/veh 6.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷						↷↶	
Traffic Vol, veh/h	0	123	56	206	137	0	0	0	0	92	0	41
Future Vol, veh/h	0	123	56	206	137	0	0	0	0	92	0	41
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	-	-	16974	-	-	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	0	134	61	224	149	0	0	0	0	100	0	45

Major/Minor	Major1			Major2			Minor2			
Conflicting Flow All	-	0	0	195	0	0		762	792	149
Stage 1	-	-	-	-	-	-		597	597	-
Stage 2	-	-	-	-	-	-		165	195	-
Critical Hdwy	-	-	-	4.12	-	-		6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-		5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-		5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-		3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1378	-	0		373	322	898
Stage 1	0	-	-	-	-	0		550	491	-
Stage 2	0	-	-	-	-	0		864	739	-
Platoon blocked, %	-	-	-	-	-	-		-	-	-
Mov Cap-1 Maneuver	-	-	-	1378	-	-		307	0	898
Mov Cap-2 Maneuver	-	-	-	-	-	-		307	0	-
Stage 1	-	-	-	-	-	-		550	0	-
Stage 2	-	-	-	-	-	-		711	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	4.9	19.9
HCM LOS			C

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	1378	-	385
HCM Lane V/C Ratio	-	-	0.162	-	0.375
HCM Control Delay (s)	-	-	8.1	0	19.9
HCM Lane LOS	-	-	A	A	C
HCM 95th %tile Q(veh)	-	-	0.6	-	1.7

HCM 6th Signalized Intersection Summary  
 2: NEWCASTLE ROAD & EB 180/INDIAN HILL ROAD

EX SATURDAY  
 10/23/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↕	↕	↕	↑	↕	↕	↕	↕
Traffic Volume (veh/h)	70	161	51	8	29	205	78	91	20	83	114	44
Future Volume (veh/h)	70	161	51	8	29	205	78	91	20	83	114	44
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	76	175	55	9	32	223	85	99	22	90	124	48
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	2	2	2	2	2	2	2	2	2
Cap, veh/h	128	306	100	75	265	291	181	190	161	260	188	73
Arrive On Green	0.15	0.15	0.15	0.18	0.18	0.18	0.10	0.10	0.10	0.15	0.15	0.15
Sat Flow, veh/h	857	2052	668	406	1444	1585	1781	1870	1585	1781	1284	497
Grp Volume(v), veh/h	162	0	144	41	0	223	85	99	22	90	0	172
Grp Sat Flow(s),veh/h/ln	1827	0	1750	1850	0	1585	1781	1870	1585	1781	0	1781
Q Serve(g_s), s	3.8	0.0	3.5	0.8	0.0	6.1	2.1	2.3	0.6	2.1	0.0	4.2
Cycle Q Clear(g_c), s	3.8	0.0	3.5	0.8	0.0	6.1	2.1	2.3	0.6	2.1	0.0	4.2
Prop In Lane	0.47		0.38	0.22		1.00	1.00		1.00	1.00		0.28
Lane Grp Cap(c), veh/h	273	0	261	340	0	291	181	190	161	260	0	260
V/C Ratio(X)	0.59	0.00	0.55	0.12	0.00	0.77	0.47	0.52	0.14	0.35	0.00	0.66
Avail Cap(c_a), veh/h	1163	0	1114	597	0	512	978	1027	870	680	0	680
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.1	0.0	18.0	15.5	0.0	17.7	19.3	19.4	18.6	17.5	0.0	18.4
Incr Delay (d2), s/veh	2.1	0.0	1.8	0.2	0.0	4.2	1.9	2.2	0.4	0.8	0.0	2.9
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(50%),veh/ln	1.6	0.0	1.4	0.3	0.0	2.3	0.9	1.0	0.2	0.8	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.2	0.0	19.8	15.7	0.0	21.8	21.2	21.6	19.0	18.3	0.0	21.2
LnGrp LOS	C	A	B	B	A	C	C	C	B	B	A	C
Approach Vol, veh/h		306			264			206			262	
Approach Delay, s/veh		20.0			20.9			21.2			20.2	
Approach LOS		B			C			C			C	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		9.2		11.4		11.3		13.7				
Change Period (Y+Rc), s		4.6		4.6		4.6		5.3				
Max Green Setting (Gmax), s		25.0		29.0		17.4		14.7				
Max Q Clear Time (g_c+I1), s		4.3		5.8		6.2		8.1				
Green Ext Time (p_c), s		0.7		1.2		0.7		0.6				

Intersection Summary

HCM 6th Ctrl Delay	20.5
HCM 6th LOS	C

**Intersection**

Int Delay, s/veh 6.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↻			↻						↻	
Traffic Vol, veh/h	0	123	62	206	191	0	0	0	0	92	0	41
Future Vol, veh/h	0	123	62	206	191	0	0	0	0	92	0	41
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	-	-	16974	-	-	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	0	134	67	224	208	0	0	0	0	100	0	45

Major/Minor	Major1			Major2			Minor2			
Conflicting Flow All	-	0	0	201	0	0		824	857	208
Stage 1	-	-	-	-	-	-		656	656	-
Stage 2	-	-	-	-	-	-		168	201	-
Critical Hdwy	-	-	-	4.12	-	-		6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-		5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-		5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-		3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1371	-	0		343	295	832
Stage 1	0	-	-	-	-	0		516	462	-
Stage 2	0	-	-	-	-	0		862	735	-
Platoon blocked, %		-	-	-	-	-				
Mov Cap-1 Maneuver	-	-	-	1371	-	-		280	0	832
Mov Cap-2 Maneuver	-	-	-	-	-	-		280	0	-
Stage 1	-	-	-	-	-	-		516	0	-
Stage 2	-	-	-	-	-	-		703	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	4.2	22.2
HCM LOS			C

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	1371	-	352
HCM Lane V/C Ratio	-	-	0.163	-	0.411
HCM Control Delay (s)	-	-	8.1	0	22.2
HCM Lane LOS	-	-	A	A	C
HCM 95th %tile Q(veh)	-	-	0.6	-	1.9



HCM 6th Signalized Intersection Summary  
 2: NEWCASTLE ROAD & EB 180/INDIAN HILL ROAD

EX SAT PLUS PROJ

10/23/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔	↔	↔	↑	↔	↔	↔	↔
Traffic Volume (veh/h)	124	161	51	8	29	205	78	91	20	83	114	44
Future Volume (veh/h)	124	161	51	8	29	205	78	91	20	83	114	44
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	135	175	55	9	32	223	85	99	22	90	124	48
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	2	2	2	2	2	2	2	2	2
Cap, veh/h	215	296	96	74	263	289	179	188	159	257	186	72
Arrive On Green	0.17	0.17	0.17	0.18	0.18	0.18	0.10	0.10	0.10	0.14	0.14	0.14
Sat Flow, veh/h	1269	1744	563	406	1444	1585	1781	1870	1585	1781	1284	497
Grp Volume(v), veh/h	192	0	173	41	0	223	85	99	22	90	0	172
Grp Sat Flow(s),veh/h/ln	1807	0	1769	1850	0	1585	1781	1870	1585	1781	0	1781
Q Serve(g_s), s	4.7	0.0	4.3	0.9	0.0	6.3	2.1	2.4	0.6	2.2	0.0	4.3
Cycle Q Clear(g_c), s	4.7	0.0	4.3	0.9	0.0	6.3	2.1	2.4	0.6	2.2	0.0	4.3
Prop In Lane	0.70		0.32	0.22		1.00	1.00		1.00	1.00		0.28
Lane Grp Cap(c), veh/h	307	0	300	338	0	289	179	188	159	257	0	257
V/C Ratio(X)	0.63	0.00	0.58	0.12	0.00	0.77	0.48	0.53	0.14	0.35	0.00	0.67
Avail Cap(c_a), veh/h	1106	0	1083	574	0	492	940	987	836	654	0	654
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.3	0.0	18.1	16.2	0.0	18.4	20.1	20.2	19.4	18.3	0.0	19.2
Incr Delay (d2), s/veh	2.1	0.0	1.7	0.2	0.0	4.3	2.0	2.3	0.4	0.8	0.0	3.0
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	1.9	0.0	1.7	0.3	0.0	2.4	0.9	1.1	0.2	0.9	0.0	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.4	0.0	19.8	16.4	0.0	22.8	22.1	22.5	19.8	19.1	0.0	22.2
LnGrp LOS	C	A	B	B	A	C	C	C	B	B	A	C
Approach Vol, veh/h		365			264			206			262	
Approach Delay, s/veh		20.1			21.8			22.1			21.1	
Approach LOS		C			C			C			C	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		9.4		12.6		11.4		13.9				
Change Period (Y+Rc), s		4.6		4.6		4.6		5.3				
Max Green Setting (Gmax), s		25.0		29.0		17.4		14.7				
Max Q Clear Time (g_c+I1), s		4.4		6.7		6.3		8.3				
Green Ext Time (p_c), s		0.7		1.4		0.7		0.6				

Intersection Summary

HCM 6th Ctrl Delay	21.1
HCM 6th LOS	C

HCM 6th TWSC  
1: NEWCASTLE ROAD & WB I80 RAMPS

CUM PM  
10/22/2019

Intersection												
Int Delay, s/veh	15.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↻			↻						↻	
Traffic Vol, veh/h	0	165	85	250	220	0	0	0	0	135	1	65
Future Vol, veh/h	0	165	85	250	220	0	0	0	0	135	1	65
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	-	-	16974	-	-	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	0	179	92	272	239	0	0	0	0	147	1	71

Major/Minor	Major1			Major2			Minor2			
Conflicting Flow All	-	0	0	271	0	0		1008	1054	239
Stage 1	-	-	-	-	-	-		783	783	-
Stage 2	-	-	-	-	-	-		225	271	-
Critical Hdwy	-	-	-	4.12	-	-		6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-		5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-		5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-		3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1292	-	0		267	226	800
Stage 1	0	-	-	-	-	0		450	404	-
Stage 2	0	-	-	-	-	0		812	685	-
Platoon blocked, %	-	-	-	-	-	-		-	-	-
Mov Cap-1 Maneuver	-	-	-	1292	-	-		202	0	800
Mov Cap-2 Maneuver	-	-	-	-	-	-		202	0	-
Stage 1	-	-	-	-	-	-		450	0	-
Stage 2	-	-	-	-	-	-		615	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	4.5	59.1
HCM LOS			F

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	1292	-	267
HCM Lane V/C Ratio	-	-	0.21	-	0.818
HCM Control Delay (s)	-	-	8.5	0	59.1
HCM Lane LOS	-	-	A	A	F
HCM 95th %tile Q(veh)	-	-	0.8	-	6.5

HCM 6th Signalized Intersection Summary  
 2: NEWCASTLE ROAD & EB 180/INDIAN HILL ROAD

CUM PM  
 10/22/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔	↔	↔	↑	↔	↔	↔	↔
Traffic Volume (veh/h)	115	280	70	10	40	230	70	95	10	105	140	65
Future Volume (veh/h)	115	280	70	10	40	230	70	95	10	105	140	65
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	125	304	76	11	43	250	76	103	11	114	152	71
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	2	2	2	2	2	2	2	2	2
Cap, veh/h	176	449	117	73	285	307	168	176	149	302	205	96
Arrive On Green	0.21	0.21	0.21	0.19	0.19	0.19	0.09	0.09	0.09	0.17	0.17	0.17
Sat Flow, veh/h	854	2176	566	377	1474	1585	1781	1870	1585	1781	1206	563
Grp Volume(v), veh/h	268	0	237	54	0	250	76	103	11	114	0	223
Grp Sat Flow(s),veh/h/ln	1828	0	1768	1852	0	1585	1781	1870	1585	1781	0	1769
Q Serve(g_s), s	7.7	0.0	7.0	1.4	0.0	8.6	2.3	3.0	0.4	3.2	0.0	6.8
Cycle Q Clear(g_c), s	7.7	0.0	7.0	1.4	0.0	8.6	2.3	3.0	0.4	3.2	0.0	6.8
Prop In Lane	0.47		0.32	0.20		1.00	1.00		1.00	1.00		0.32
Lane Grp Cap(c), veh/h	377	0	365	358	0	307	168	176	149	302	0	300
V/C Ratio(X)	0.71	0.00	0.65	0.15	0.00	0.82	0.45	0.58	0.07	0.38	0.00	0.74
Avail Cap(c_a), veh/h	934	0	903	479	0	410	784	824	698	546	0	542
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.0	0.0	20.7	19.0	0.0	21.9	24.3	24.6	23.4	20.9	0.0	22.4
Incr Delay (d2), s/veh	2.5	0.0	2.0	0.2	0.0	9.0	1.9	3.1	0.2	0.8	0.0	3.6
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(50%),veh/ln	3.3	0.0	2.8	0.6	0.0	3.7	1.0	1.4	0.1	1.3	0.0	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.4	0.0	22.6	19.2	0.0	31.0	26.2	27.7	23.7	21.7	0.0	26.0
LnGrp LOS	C	A	C	B	A	C	C	C	C	C	A	C
Approach Vol, veh/h		505			304			190				337
Approach Delay, s/veh		23.1			28.9			26.9				24.6
Approach LOS		C			C			C				C
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		9.9		16.3		14.2		16.3				
Change Period (Y+Rc), s		4.6		4.6		4.6		5.3				
Max Green Setting (Gmax), s		25.0		29.0		17.4		14.7				
Max Q Clear Time (g_c+I1), s		5.0		9.7		8.8		10.6				
Green Ext Time (p_c), s		0.6		2.0		0.9		0.5				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				25.3								
HCM 6th LOS				C								

Intersection												
Int Delay, s/veh	19.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔						↔	
Traffic Vol, veh/h	0	165	135	250	270	0	0	0	0	135	1	65
Future Vol, veh/h	0	165	135	250	270	0	0	0	0	135	1	65
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	-	-	16974	-	-	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	0	179	147	272	293	0	0	0	0	147	1	71

Major/Minor	Major1			Major2			Minor2			
Conflicting Flow All	-	0	0	326	0	0		1090	1163	293
Stage 1	-	-	-	-	-	-		837	837	-
Stage 2	-	-	-	-	-	-		253	326	-
Critical Hdwy	-	-	-	4.12	-	-		6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-		5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-		5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-		3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1234	-	0		238	195	746
Stage 1	0	-	-	-	-	0		425	382	-
Stage 2	0	-	-	-	-	0		789	648	-
Platoon blocked, %	-	-	-	-	-	-		-	-	-
Mov Cap-1 Maneuver	-	-	-	1234	-	-		175	0	746
Mov Cap-2 Maneuver	-	-	-	-	-	-		175	0	-
Stage 1	-	-	-	-	-	-		425	0	-
Stage 2	-	-	-	-	-	-		581	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	4.2	88.4
HCM LOS			F

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	1234	-	233
HCM Lane V/C Ratio	-	-	0.22	-	0.938
HCM Control Delay (s)	-	-	8.7	0	88.4
HCM Lane LOS	-	-	A	A	F
HCM 95th %tile Q(veh)	-	-	0.8	-	8.2

HCM 6th Signalized Intersection Summary  
 2: NEWCASTLE ROAD & EB 180/INDIAN HILL ROAD

CUM PM PLUS PROJ

10/22/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔	↔	↔	↑	↔	↔	↔	↔
Traffic Volume (veh/h)	165	280	70	10	40	230	70	95	10	105	140	65
Future Volume (veh/h)	165	280	70	10	40	230	70	95	10	105	140	65
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	179	304	76	11	43	250	76	103	11	114	152	71
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	2	2	2	2	2	2	2	2	2
Cap, veh/h	245	440	114	72	283	304	166	174	148	299	203	95
Arrive On Green	0.22	0.22	0.22	0.19	0.19	0.19	0.09	0.09	0.09	0.17	0.17	0.17
Sat Flow, veh/h	1101	1980	512	377	1474	1585	1781	1870	1585	1781	1206	563
Grp Volume(v), veh/h	295	0	264	54	0	250	76	103	11	114	0	223
Grp Sat Flow(s),veh/h/ln	1815	0	1778	1852	0	1585	1781	1870	1585	1781	0	1769
Q Serve(g_s), s	8.9	0.0	8.0	1.4	0.0	8.9	2.4	3.1	0.4	3.3	0.0	7.1
Cycle Q Clear(g_c), s	8.9	0.0	8.0	1.4	0.0	8.9	2.4	3.1	0.4	3.3	0.0	7.1
Prop In Lane	0.61		0.29	0.20		1.00	1.00		1.00	1.00		0.32
Lane Grp Cap(c), veh/h	403	0	395	355	0	304	166	174	148	299	0	297
V/C Ratio(X)	0.73	0.00	0.67	0.15	0.00	0.82	0.46	0.59	0.07	0.38	0.00	0.75
Avail Cap(c_a), veh/h	895	0	876	463	0	396	757	795	674	527	0	523
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.3	0.0	20.9	19.8	0.0	22.8	25.3	25.6	24.4	21.8	0.0	23.3
Incr Delay (d2), s/veh	2.6	0.0	2.0	0.2	0.0	10.2	2.0	3.2	0.2	0.8	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(50%),veh/ln	3.7	0.0	3.3	0.6	0.0	3.9	1.0	1.5	0.1	1.4	0.0	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.8	0.0	22.9	20.0	0.0	33.0	27.2	28.8	24.6	22.6	0.0	27.1
LnGrp LOS	C	A	C	B	A	C	C	C	C	C	A	C
Approach Vol, veh/h		559			304			190				337
Approach Delay, s/veh		23.4			30.7			27.9				25.6
Approach LOS		C			C			C				C
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		10.1		17.7		14.5		16.6				
Change Period (Y+Rc), s		4.6		4.6		4.6		5.3				
Max Green Setting (Gmax), s		25.0		29.0		17.4		14.7				
Max Q Clear Time (g_c+I1), s		5.1		10.9		9.1		10.9				
Green Ext Time (p_c), s		0.6		2.2		0.9		0.5				

Intersection Summary

HCM 6th Ctrl Delay	26.1
HCM 6th LOS	C

Intersection												
Int Delay, s/veh	8.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷						↷	
Traffic Vol, veh/h	0	130	60	240	140	0	0	0	0	115	0	50
Future Vol, veh/h	0	130	60	240	140	0	0	0	0	115	0	50
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	-	-	16974	-	-	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	0	141	65	261	152	0	0	0	0	125	0	54

Major/Minor	Major1			Major2			Minor2			
Conflicting Flow All	-	0	0	206	0	0		848	880	152
Stage 1	-	-	-	-	-	-		674	674	-
Stage 2	-	-	-	-	-	-		174	206	-
Critical Hdwy	-	-	-	4.12	-	-		6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-		5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-		5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-		3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1365	-	0		332	286	894
Stage 1	0	-	-	-	-	0		506	454	-
Stage 2	0	-	-	-	-	0		856	731	-
Platoon blocked, %		-	-	-	-	-				
Mov Cap-1 Maneuver	-	-	-	1365	-	-		263	0	894
Mov Cap-2 Maneuver	-	-	-	-	-	-		263	0	-
Stage 1	-	-	-	-	-	-		506	0	-
Stage 2	-	-	-	-	-	-		677	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	5.2	27.5
HCM LOS			D

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	1365	-	335
HCM Lane V/C Ratio	-	-	0.191	-	0.535
HCM Control Delay (s)	-	-	8.3	0	27.5
HCM Lane LOS	-	-	A	A	D
HCM 95th %tile Q(veh)	-	-	0.7	-	3

HCM 6th Signalized Intersection Summary  
 2: NEWCASTLE ROAD & EB I80/INDIAN HILL ROAD

CUM SATURDAY  
 10/22/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕	↕	↕	↑	↕	↕	↕	↕
Traffic Volume (veh/h)	80	190	60	10	40	230	95	100	25	90	125	55
Future Volume (veh/h)	80	190	60	10	40	230	95	100	25	90	125	55
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	87	207	65	11	43	250	103	109	27	98	136	60
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	2	2	2	2	2	2	2	2	2
Cap, veh/h	136	336	110	75	292	314	191	200	170	280	194	85
Arrive On Green	0.16	0.16	0.16	0.20	0.20	0.20	0.11	0.11	0.11	0.16	0.16	0.16
Sat Flow, veh/h	836	2068	674	377	1474	1585	1781	1870	1585	1781	1230	543
Grp Volume(v), veh/h	190	0	169	54	0	250	103	109	27	98	0	196
Grp Sat Flow(s),veh/h/ln	1829	0	1749	1852	0	1585	1781	1870	1585	1781	0	1773
Q Serve(g_s), s	5.0	0.0	4.6	1.2	0.0	7.7	2.8	2.8	0.8	2.5	0.0	5.3
Cycle Q Clear(g_c), s	5.0	0.0	4.6	1.2	0.0	7.7	2.8	2.8	0.8	2.5	0.0	5.3
Prop In Lane	0.46		0.39	0.20		1.00	1.00		1.00	1.00		0.31
Lane Grp Cap(c), veh/h	298	0	285	367	0	314	191	200	170	280	0	279
V/C Ratio(X)	0.64	0.00	0.59	0.15	0.00	0.80	0.54	0.54	0.16	0.35	0.00	0.70
Avail Cap(c_a), veh/h	1040	0	995	534	0	457	873	917	777	608	0	605
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.0	0.0	19.8	16.9	0.0	19.5	21.6	21.6	20.7	19.2	0.0	20.4
Incr Delay (d2), s/veh	2.3	0.0	2.0	0.2	0.0	6.1	2.4	2.3	0.4	0.7	0.0	3.2
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(50%),veh/ln	2.1	0.0	1.8	0.5	0.0	3.0	1.2	1.3	0.3	1.0	0.0	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.2	0.0	21.7	17.1	0.0	25.6	23.9	23.9	21.1	19.9	0.0	23.6
LnGrp LOS	C	A	C	B	A	C	C	C	C	B	A	C
Approach Vol, veh/h		359			304			239			294	
Approach Delay, s/veh		22.0			24.0			23.6			22.3	
Approach LOS		C			C			C			C	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		10.1		12.9		12.6		15.4				
Change Period (Y+Rc), s		4.6		4.6		4.6		5.3				
Max Green Setting (Gmax), s		25.0		29.0		17.4		14.7				
Max Q Clear Time (g_c+I1), s		4.8		7.0		7.3		9.7				
Green Ext Time (p_c), s		0.8		1.4		0.8		0.6				

Intersection Summary

HCM 6th Ctrl Delay	22.9
HCM 6th LOS	C

**Intersection**

Int Delay, s/veh 9.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷						↷↶	
Traffic Vol, veh/h	0	130	68	240	232	0	0	0	0	115	0	50
Future Vol, veh/h	0	130	68	240	232	0	0	0	0	115	0	50
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	-	-	16974	-	-	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	0	141	74	261	252	0	0	0	0	125	0	54

Major/Minor	Major1			Major2			Minor2			
Conflicting Flow All	-	0	0	215	0	0		952	989	252
Stage 1	-	-	-	-	-	-		774	774	-
Stage 2	-	-	-	-	-	-		178	215	-
Critical Hdwy	-	-	-	4.12	-	-		6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-		5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-		5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-		3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1355	-	0		288	247	787
Stage 1	0	-	-	-	-	0		455	408	-
Stage 2	0	-	-	-	-	0		853	725	-
Platoon blocked, %	-	-	-	-	-	-		-	-	-
Mov Cap-1 Maneuver	-	-	-	1355	-	-		223	0	787
Mov Cap-2 Maneuver	-	-	-	-	-	-		223	0	-
Stage 1	-	-	-	-	-	-		455	0	-
Stage 2	-	-	-	-	-	-		662	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	4.2	36.9
HCM LOS			E

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	1355	-	285
HCM Lane V/C Ratio	-	-	0.193	-	0.629
HCM Control Delay (s)	-	-	8.3	0	36.9
HCM Lane LOS	-	-	A	A	E
HCM 95th %tile Q(veh)	-	-	0.7	-	3.9



HCM 6th Signalized Intersection Summary  
 2: NEWCASTLE ROAD & EB 180/INDIAN HILL ROAD

CUM PLUS PROJ SATURDAY

10/22/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔	↔	↔	↑	↔	↔	↔	↔
Traffic Volume (veh/h)	172	190	60	10	40	230	95	100	25	90	125	55
Future Volume (veh/h)	172	190	60	10	40	230	95	100	25	90	125	55
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	187	207	65	11	43	250	103	109	27	98	136	60
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	2	2	2	2	2	2	2	2	2
Cap, veh/h	271	321	103	74	288	310	186	196	166	275	190	84
Arrive On Green	0.19	0.19	0.19	0.20	0.20	0.20	0.10	0.10	0.10	0.15	0.15	0.15
Sat Flow, veh/h	1394	1651	530	377	1474	1585	1781	1870	1585	1781	1230	543
Grp Volume(v), veh/h	242	0	217	54	0	250	103	109	27	98	0	196
Grp Sat Flow(s),veh/h/ln	1801	0	1775	1852	0	1585	1781	1870	1585	1781	0	1773
Q Serve(g_s), s	6.8	0.0	6.1	1.3	0.0	8.2	3.0	3.0	0.8	2.7	0.0	5.7
Cycle Q Clear(g_c), s	6.8	0.0	6.1	1.3	0.0	8.2	3.0	3.0	0.8	2.7	0.0	5.7
Prop In Lane	0.77		0.30	0.20		1.00	1.00		1.00	1.00		0.31
Lane Grp Cap(c), veh/h	350	0	345	362	0	310	186	196	166	275	0	274
V/C Ratio(X)	0.69	0.00	0.63	0.15	0.00	0.81	0.55	0.56	0.16	0.36	0.00	0.72
Avail Cap(c_a), veh/h	960	0	946	500	0	428	818	859	728	570	0	567
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.4	0.0	20.1	18.2	0.0	20.9	23.2	23.2	22.2	20.6	0.0	21.9
Incr Delay (d2), s/veh	2.4	0.0	1.9	0.2	0.0	7.8	2.5	2.5	0.5	0.8	0.0	3.5
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(50%),veh/ln	2.8	0.0	2.5	0.5	0.0	3.4	1.3	1.4	0.3	1.1	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.8	0.0	22.0	18.3	0.0	28.7	25.7	25.6	22.6	21.4	0.0	25.3
LnGrp LOS	C	A	C	B	A	C	C	C	C	C	A	C
Approach Vol, veh/h		459			304			239			294	
Approach Delay, s/veh		22.4			26.9			25.3			24.0	
Approach LOS		C			C			C			C	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		10.3		15.2		13.0		15.9				
Change Period (Y+Rc), s		4.6		4.6		4.6		5.3				
Max Green Setting (Gmax), s		25.0		29.0		17.4		14.7				
Max Q Clear Time (g_c+I1), s		5.0		8.8		7.7		10.2				
Green Ext Time (p_c), s		0.8		1.8		0.8		0.5				

Intersection Summary

HCM 6th Ctrl Delay	24.4
HCM 6th LOS	C