
Appendix B3

Intersection Operations Worksheets

Queues

3: West Hills Pkwy/Sycamore Landfill Rd & Mast Blvd

Carlton Oaks

04/12/2022

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	126	561	214	2002	21	1263	16	484	11	11	237
v/c Ratio	0.89	0.36	0.54	1.03	0.03	1.05	0.03	0.62	0.11	0.06	0.83
Control Delay	129.7	43.9	77.6	79.8	0.1	90.5	31.3	18.8	80.9	66.3	56.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	129.7	43.9	77.6	79.8	0.1	90.5	31.3	18.8	80.9	66.3	56.7
Queue Length 50th (ft)	73	168	115	~864	0	~775	9	109	12	11	122
Queue Length 95th (ft)	#153	223	174	#1063	0	#1012	28	236	37	33	227
Internal Link Dist (ft)		510		426			1307			239	
Turn Bay Length (ft)	230		195					850			
Base Capacity (vph)	142	1550	434	1938	667	1208	873	802	104	319	378
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.36	0.49	1.03	0.03	1.05	0.02	0.60	0.11	0.03	0.63

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

3: West Hills Pkwy/Sycamore Landfill Rd & Mast Blvd

Carlton Oaks

04/12/2022

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑↑	↑↑↑		↑↑↑	↑↑↑	↑	↑↑↑	↑	↑	↑	↑	↑
Traffic Volume (veh/h)	120	423	110	203	1902	20	1200	15	460	10	10	225
Future Volume (veh/h)	120	423	110	203	1902	20	1200	15	460	10	10	225
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	126	445	97	214	2002	21	1263	16	390	11	11	184
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	139	1424	302	256	1896	588	1185	842	831	42	239	203
Arrive On Green	0.04	0.34	0.34	0.07	0.37	0.37	0.34	0.45	0.45	0.02	0.13	0.13
Sat Flow, veh/h	3456	4219	894	3456	5106	1585	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	126	357	185	214	2002	21	1263	16	390	11	11	184
Grp Sat Flow(s), veh/h/ln	1728	1702	1709	1728	1702	1585	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	6.3	13.5	14.0	10.6	64.5	1.5	59.6	0.8	27.0	1.1	0.9	19.9
Cycle Q Clear(g_c), s	6.3	13.5	14.0	10.6	64.5	1.5	59.6	0.8	27.0	1.1	0.9	19.9
Prop In Lane	1.00		0.52	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	139	1149	577	256	1896	588	1185	842	831	42	239	203
V/C Ratio(X)	0.91	0.31	0.32	0.84	1.06	0.04	1.07	0.02	0.47	0.26	0.05	0.91
Avail Cap(c_a), veh/h	139	1149	577	426	1896	588	1185	846	834	103	312	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)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	83.0	42.6	42.8	79.4	54.6	34.8	57.1	26.5	26.1	83.3	66.4	74.7
Incr Delay (d2), s/veh	47.9	0.2	0.4	3.0	37.4	0.1	45.5	0.0	0.6	3.2	0.1	27.3
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	3.7	5.7	6.0	4.8	33.7	0.6	32.9	0.4	10.2	0.5	0.4	9.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	131.0	42.8	43.2	82.4	92.0	34.9	102.5	26.5	26.7	86.5	66.5	102.0
LnGrp LOS	F	D	D	F	F	C	F	C	C	F	E	F
Approach Vol, veh/h		668			2237			1669			206	
Approach Delay, s/veh		59.5			90.5			84.1			99.3	
Approach LOS		E			F			F			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.3	63.8	65.0	27.6	11.4	69.7	9.0	83.6				
Change Period (Y+Rc), s	4.4	* 5.2	5.4	* 5.4	4.4	5.2	4.9	5.4				
Max Green Setting (Gmax), s	21.4	* 50	59.6	* 29	7.0	64.5	10.0	78.6				
Max Q Clear Time (g_c+I1), s	12.6	16.0	61.6	21.9	8.3	66.5	3.1	29.0				
Green Ext Time (p_c), s	0.2	4.6	0.0	0.4	0.0	0.0	0.0	2.5				

Intersection Summary

HCM 6th Ctrl Delay

84.3

HCM 6th LOS

F

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Queues
3: West Hills Pkwy/Sycamore Landfill Rd & Mast Blvd

Carlton Oaks
04/12/2022

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	158	2350	229	743	84	295	47	536	79	11	211
v/c Ratio	0.55	0.91	1.03	0.29	0.10	0.62	0.17	1.00	0.46	0.05	0.58
Control Delay	60.7	32.8	123.3	19.7	1.4	54.8	44.2	65.2	60.9	46.9	12.9
Queue Delay	0.0	26.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.7	59.0	123.3	19.7	1.4	54.8	44.2	65.2	60.9	46.9	12.9
Queue Length 50th (ft)	58	523	88	109	0	106	31	249	56	8	0
Queue Length 95th (ft)	108	#949	#219	213	11	177	67	425	122	26	68
Internal Link Dist (ft)		510		426			1307			239	
Turn Bay Length (ft)	230		195					850			
Base Capacity (vph)	555	2572	222	2525	848	818	464	535	437	460	550
Starvation Cap Reductn	0	342	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	1.05	1.03	0.29	0.10	0.36	0.10	1.00	0.18	0.02	0.38

Intersection Summary

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

HCM 6th Signalized Intersection Summary
3: West Hills Pkwy/Sycamore Landfill Rd & Mast Blvd

Carlton Oaks
04/12/2022

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	150	1713	520	218	706	80	280	45	509	75	10	200
Future Volume (veh/h)	150	1713	520	218	706	80	280	45	509	75	10	200
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	158	1803	528	229	743	84	295	47	442	79	11	208
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	215	1912	541	209	2462	764	379	417	449	133	344	291
Arrive On Green	0.06	0.48	0.48	0.06	0.48	0.48	0.11	0.22	0.22	0.07	0.18	0.18
Sat Flow, veh/h	3456	3953	1119	3456	5106	1585	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	158	1544	787	229	743	84	295	47	442	79	11	208
Grp Sat Flow(s),veh/h/ln	1728	1702	1669	1728	1702	1585	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	5.6	53.8	57.9	7.6	11.1	3.6	10.4	2.5	28.0	5.4	0.6	15.5
Cycle Q Clear(g_c), s	5.6	53.8	57.9	7.6	11.1	3.6	10.4	2.5	28.0	5.4	0.6	15.5
Prop In Lane	1.00		0.67	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	215	1647	807	209	2462	764	379	417	449	133	344	291
V/C Ratio(X)	0.74	0.94	0.98	1.10	0.30	0.11	0.78	0.11	0.98	0.59	0.03	0.71
Avail Cap(c_a), veh/h	523	1647	808	209	2462	764	770	417	449	411	432	366
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.9	30.6	31.7	59.0	19.7	17.8	54.5	38.9	44.7	56.3	42.1	48.2
Incr Delay (d2), s/veh	1.9	10.8	25.6	90.1	0.1	0.1	4.9	0.2	38.2	4.2	0.0	4.8
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	2.5	23.2	27.6	5.9	4.3	1.3	4.7	1.2	17.9	2.6	0.3	6.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.8	41.4	57.3	149.1	19.9	17.9	59.4	39.1	83.0	60.5	42.1	53.0
LnGrp LOS	E	D	E	F	B	B	E	D	F	E	D	D
Approach Vol, veh/h	2489			1056			784				298	
Approach Delay, s/veh	47.6			47.7			71.5				54.6	
Approach LOS	D			D			E				D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	66.0	19.2	28.5	12.2	65.8	14.3	33.4				
Change Period (Y+Rc), s	4.4	* 5.2	5.4	* 5.4	4.4	5.2	4.9	5.4				
Max Green Setting (Gmax), s	7.6	* 61	28.0	* 29	19.0	49.1	29.0	28.0				
Max Q Clear Time (g_c+I1), s	9.6	59.9	12.4	17.5	7.6	13.1	7.4	30.0				
Green Ext Time (p_c), s	0.0	0.9	1.3	0.6	0.2	11.4	0.2	0.0				

Intersection Summary

HCM 6th Ctrl Delay 52.1
HCM 6th LOS D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Queues
7: Carlton Hills Blvd & Carlton Oaks Dr

Carlton Oaks
04/12/2022

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	11	179	734	305	237	735	654	21	681	95
v/c Ratio	0.16	0.63	1.05	0.84	0.18	0.81	0.40	0.26	0.82	0.21
Control Delay	71.0	60.9	81.1	70.9	28.1	53.4	19.5	72.2	56.4	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.0	60.9	81.1	70.9	28.1	53.4	19.5	72.2	56.4	2.4
Queue Length 50th (ft)	9	142	~642	242	65	293	151	17	277	0
Queue Length 95th (ft)	34	223	#921	#494	109	#496	255	51	414	12
Internal Link Dist (ft)		1551			2465		2663		1032	
Turn Bay Length (ft)	131		126	104		174		140		86
Base Capacity (vph)	70	545	696	373	1625	909	1670	83	974	507
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.33	1.05	0.82	0.15	0.81	0.39	0.25	0.70	0.19

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary
7: Carlton Hills Blvd & Carlton Oaks Dr

Carlton Oaks
04/12/2022

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Volume (veh/h)	10	170	697	290	210	15	698	381	240	20	647	90
Future Volume (veh/h)	10	170	697	290	210	15	698	381	240	20	647	90
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		0.97	1.00		0.95	1.00		0.93
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	11	179	638	305	221	14	735	401	240	21	681	86
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	22	472	741	324	1430	90	777	893	526	35	775	320
Arrive On Green	0.01	0.25	0.25	0.18	0.42	0.42	0.22	0.42	0.42	0.02	0.22	0.22
Sat Flow, veh/h	1781	1870	1522	1781	3388	213	3456	2108	1242	1781	3554	1469
Grp Volume(v), veh/h	11	179	638	305	115	120	735	337	304	21	681	86
Grp Sat Flow(s), veh/h/ln	1781	1870	1522	1781	1777	1825	1728	1777	1574	1781	1777	1469
Q Serve(g_s), s	0.9	11.6	37.0	24.8	5.9	6.0	30.7	19.8	20.3	1.7	27.2	7.1
Cycle Q Clear(g_c), s	0.9	11.6	37.0	24.8	5.9	6.0	30.7	19.8	20.3	1.7	27.2	7.1
Prop In Lane	1.00		1.00	1.00		0.12	1.00		0.79	1.00		1.00
Lane Grp Cap(c), veh/h	22	472	741	324	750	770	777	752	666	35	775	320
V/C Ratio(X)	0.50	0.38	0.86	0.94	0.15	0.16	0.95	0.45	0.46	0.60	0.88	0.27
Avail Cap(c_a), veh/h	61	472	741	324	750	770	789	755	668	73	843	349
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	72.0	45.4	34.4	59.2	26.2	26.2	56.0	30.1	30.2	71.3	55.5	47.6
Incr Delay (d2), s/veh	16.6	0.5	10.2	34.7	0.1	0.1	19.8	0.4	0.5	15.5	9.9	0.4
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	0.5	5.5	22.2	14.3	2.6	2.7	15.4	8.6	7.8	0.9	13.2	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	88.6	45.9	44.6	93.9	26.3	26.3	75.8	30.5	30.7	86.8	65.4	48.1
LnGrp LOS	F	D	D	F	C	C	E	C	C	F	E	D
Approach Vol, veh/h		828			540			1376			788	
Approach Delay, s/veh		45.4			64.5			54.7			64.1	
Approach LOS		D			E			D			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.4	66.6	31.2	41.5	37.5	36.5	6.3	66.4				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	6.0	62.3	26.7	37.0	33.5	34.8	5.0	58.7				
Max Q Clear Time (g_c+I1), s	3.7	22.3	26.8	39.0	32.7	29.2	2.9	8.0				
Green Ext Time (p_c), s	0.0	4.5	0.0	0.0	0.3	2.3	0.0	1.5				
Intersection Summary												
HCM 6th Ctrl Delay					56.1							
HCM 6th LOS					E							

Queues
7: Carlton Hills Blvd & Carlton Oaks Dr

Carlton Oaks
04/12/2022

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	32	263	408	263	147	613	1065	32	422	21
v/c Ratio	0.23	0.66	0.59	0.96	0.12	0.97	0.76	0.23	0.48	0.04
Control Delay	51.3	42.8	18.2	89.8	22.3	71.3	28.7	51.3	31.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.3	42.8	18.2	89.8	22.3	71.3	28.7	51.3	31.9	0.1
Queue Length 50th (ft)	19	151	131	~173	31	~210	278	19	107	0
Queue Length 95th (ft)	57	245	236	#428	60	#428	#494	57	187	0
Internal Link Dist (ft)		1551			2465		2663		1032	
Turn Bay Length (ft)	131		126	104		174		140		86
Base Capacity (vph)	179	766	687	273	1612	630	1582	179	1362	680
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.34	0.59	0.96	0.09	0.97	0.67	0.18	0.31	0.03

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary
7: Carlton Hills Blvd & Carlton Oaks Dr

Carlton Oaks
04/12/2022

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Volume (veh/h)	30	250	388	250	120	20	582	692	320	30	401	20
Future Volume (veh/h)	30	250	388	250	120	20	582	692	320	30	401	20
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		0.97	1.00		0.95	1.00		0.93
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	32	263	312	263	126	19	613	728	324	32	422	12
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	54	460	663	273	1141	168	629	872	388	54	781	323
Arrive On Green	0.03	0.25	0.25	0.15	0.37	0.37	0.18	0.37	0.37	0.03	0.22	0.22
Sat Flow, veh/h	1781	1870	1521	1781	3092	456	3456	2348	1044	1781	3554	1470
Grp Volume(v), veh/h	32	263	312	263	71	74	613	551	501	32	422	12
Grp Sat Flow(s), veh/h/ln	1781	1870	1521	1781	1777	1771	1728	1777	1616	1781	1777	1470
Q Serve(g_s), s	1.6	11.2	13.4	13.3	2.4	2.5	16.0	25.6	25.6	1.6	9.5	0.6
Cycle Q Clear(g_c), s	1.6	11.2	13.4	13.3	2.4	2.5	16.0	25.6	25.6	1.6	9.5	0.6
Prop In Lane	1.00		1.00	1.00		0.26	1.00		0.65	1.00		1.00
Lane Grp Cap(c), veh/h	54	460	663	273	655	653	629	660	600	54	781	323
V/C Ratio(X)	0.59	0.57	0.47	0.96	0.11	0.11	0.97	0.83	0.84	0.59	0.54	0.04
Avail Cap(c_a), veh/h	179	764	910	273	820	817	629	824	749	179	1357	561
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(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.4	30.0	18.6	38.1	18.8	18.8	36.8	25.9	26.0	43.4	31.3	27.8
Incr Delay (d2), s/veh	9.7	1.1	0.5	44.0	0.1	0.1	29.3	6.1	6.7	9.7	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	5.0	4.6	9.0	1.0	1.0	9.1	11.3	10.4	0.8	4.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.1	31.1	19.2	82.1	18.9	18.9	66.1	32.1	32.7	53.1	31.9	27.8
LnGrp LOS	D	C	B	F	B	B	E	C	C	D	C	C
Approach Vol, veh/h		607			408			1665			466	
Approach Delay, s/veh		26.1			59.6			44.8			33.2	
Approach LOS		C			E			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.3	38.1	18.4	26.8	21.0	24.4	7.3	37.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	9.1	42.0	13.9	37.0	16.5	34.6	9.1	41.8				
Max Q Clear Time (g_c+I1), s	3.6	27.6	15.3	15.4	18.0	11.5	3.6	4.5				
Green Ext Time (p_c), s	0.0	6.0	0.0	2.6	0.0	2.7	0.0	0.8				

Intersection Summary

HCM 6th Ctrl Delay	41.4
HCM 6th LOS	D

Queues
9: Carlton Hills Blvd & Mission Gorge Rd

Carlton Oaks
04/12/2022

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	847	956	26	1473	457	42	42	11	464	642	629
v/c Ratio	1.02	0.37	0.37	0.99	0.49	0.79	0.13	0.03	0.74	1.00	0.81
Control Delay	90.6	21.4	81.9	72.6	8.6	141.1	48.1	0.1	65.3	66.2	22.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	90.6	21.4	81.9	72.6	8.6	141.1	48.1	0.1	65.3	66.2	22.7
Queue Length 50th (ft)	~437	200	24	510	66	40	33	0	228	~502	189
Queue Length 95th (ft)	#568	236	58	#622	160	#116	68	0	#345	#758	393
Internal Link Dist (ft)	681		572			687			2663		
Turn Bay Length (ft)	371		130		200	25		25	137		140
Base Capacity (vph)	828	2592	78	1483	931	53	385	435	630	643	773
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.02	0.37	0.33	0.99	0.49	0.79	0.11	0.03	0.74	1.00	0.81

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary
9: Carlton Hills Blvd & Mission Gorge Rd

Carlton Oaks
04/12/2022

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑↑	↑↑↑	↑	↑	↑↑↑	↑	↑	↑	↑	↑↑↑	↑↑	↑
Traffic Volume (veh/h)	805	818	90	25	1399	434	40	40	10	441	80	1128
Future Volume (veh/h)	805	818	90	25	1399	434	40	40	10	441	80	1128
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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
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	847	861	92	26	1473	377	42	42	11	464	0	822
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	834	2530	269	33	1620	719	54	324	272	486	0	885
Arrive On Green	0.24	0.54	0.54	0.02	0.32	0.32	0.03	0.17	0.17	0.14	0.00	0.28
Sat Flow, veh/h	3456	4683	498	1781	5106	1584	1781	1870	1569	3563	0	3167
Grp Volume(v), veh/h	847	625	328	26	1473	377	42	42	11	464	0	822
Grp Sat Flow(s), veh/h/ln	1728	1702	1777	1781	1702	1584	1781	1870	1569	1781	0	1583
Q Serve(g_s), s	35.0	15.0	15.1	2.1	40.1	24.7	3.4	2.8	0.8	18.7	0.0	36.6
Cycle Q Clear(g_c), s	35.0	15.0	15.1	2.1	40.1	24.7	3.4	2.8	0.8	18.7	0.0	36.6
Prop In Lane	1.00		0.28	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	834	1839	960	33	1620	719	54	324	272	486	0	885
V/C Ratio(X)	1.02	0.34	0.34	0.79	0.91	0.52	0.78	0.13	0.04	0.95	0.00	0.93
Avail Cap(c_a), veh/h	834	1839	960	79	1620	719	54	387	325	486	0	965
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	1.00	1.00	1.00	1.00	1.00	0.26	0.00	0.26
Uniform Delay (d), s/veh	55.0	18.8	18.8	70.9	47.5	28.4	69.8	50.7	49.9	62.1	0.0	50.8
Incr Delay (d2), s/veh	35.1	0.5	1.0	14.6	9.1	2.7	46.7	0.1	0.0	11.6	0.0	4.6
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	19.1	6.0	6.5	1.1	18.2	10.1	2.3	1.3	0.3	9.2	0.0	15.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	90.1	19.3	19.8	85.5	56.6	31.1	116.5	50.8	49.9	73.8	0.0	55.5
LnGrp LOS	F	B	B	F	E	C	F	D	D	E	A	E
Approach Vol, veh/h	1800			1876			95				1286	
Approach Delay, s/veh	52.7			51.9			79.7				62.1	
Approach LOS	D			D			E				E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.9	83.6	8.6	45.9	39.2	51.3	24.0	30.5				
Change Period (Y+Rc), s	* 4.2	5.3	* 4.2	5.4	* 4.2	5.3	* 4.2	* 5.4				
Max Green Setting (Gmax), s	* 6.4	70.9	* 4.4	44.2	* 35	42.3	* 20	* 30				
Max Q Clear Time (g_c+I1), s	4.1	17.1	5.4	38.6	37.0	42.1	20.7	4.8				
Green Ext Time (p_c), s	0.0	15.2	0.0	1.9	0.0	0.2	0.0	0.1				

Intersection Summary

HCM 6th Ctrl Delay 55.3
HCM 6th LOS E

Notes

- User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Queues
9: Carlton Hills Blvd & Mission Gorge Rd

Carlton Oaks
04/12/2022

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	981	1590	158	1083	671	63	95	26	465	428	405
v/c Ratio	0.96	0.70	0.82	0.82	0.84	0.66	0.31	0.07	0.90	0.90	0.58
Control Delay	69.0	35.8	94.3	57.2	33.2	98.5	53.5	0.4	81.3	65.8	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.0	35.8	94.3	57.2	33.2	98.5	53.5	0.4	81.3	65.8	7.1
Queue Length 50th (ft)	470	477	146	373	382	59	77	0	223	346	0
Queue Length 95th (ft)	#622	544	#255	#467	#666	#125	131	0	#311	#524	88
Internal Link Dist (ft)	681		572			687			2663		
Turn Bay Length (ft)	371		130		200	25		25	137		140
Base Capacity (vph)	1026	2259	211	1327	811	102	385	435	539	519	726
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.70	0.75	0.82	0.83	0.62	0.25	0.06	0.86	0.82	0.56

Intersection Summary

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

HCM 6th Signalized Intersection Summary
9: Carlton Hills Blvd & Mission Gorge Rd

Carlton Oaks
04/12/2022

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	932	1360	150	150	1029	637	60	90	25	442	140	652
Future Volume (veh/h)	932	1360	150	150	1029	637	60	90	25	442	140	652
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.98	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	981	1432	155	158	1083	591	63	95	26	465	235	206
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	1001	2531	274	181	1804	788	80	152	126	513	337	285
Arrive On Green	0.29	0.54	0.54	0.10	0.35	0.35	0.04	0.08	0.08	0.14	0.18	0.18
Sat Flow, veh/h	3456	4674	506	1781	5106	1584	1781	1870	1550	3563	1870	1582
Grp Volume(v), veh/h	981	1043	544	158	1083	591	63	95	26	465	235	206
Grp Sat Flow(s),veh/h/ln	1728	1702	1776	1781	1702	1584	1781	1870	1550	1781	1870	1582
Q Serve(g_s), s	40.8	29.4	29.4	12.7	25.2	43.4	5.1	7.1	2.3	18.6	17.1	17.8
Cycle Q Clear(g_c), s	40.8	29.4	29.4	12.7	25.2	43.4	5.1	7.1	2.3	18.6	17.1	17.8
Prop In Lane	1.00		0.28	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1001	1843	962	181	1804	788	80	152	126	513	337	285
V/C Ratio(X)	0.98	0.57	0.57	0.87	0.60	0.75	0.79	0.63	0.21	0.91	0.70	0.72
Avail Cap(c_a), veh/h	1001	1843	962	211	1804	788	103	387	321	560	557	471
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	1.00	1.00	1.00	1.00	1.00	0.73	0.73	0.73
Uniform Delay (d), s/veh	51.1	22.0	22.0	64.2	38.5	29.2	68.5	64.5	62.2	61.1	55.7	56.0
Incr Delay (d2), s/veh	23.5	1.3	2.4	25.6	1.5	6.5	19.5	1.6	0.3	13.0	1.9	2.5
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	20.7	11.9	12.7	7.0	10.8	18.0	2.8	3.5	0.9	9.3	8.2	7.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	74.6	23.2	24.4	89.9	40.0	35.7	88.0	66.0	62.5	74.1	57.6	58.5
LnGrp LOS	E	C	C	F	D	D	F	E	E	E	E	E
Approach Vol, veh/h	2568			1832			184				906	
Approach Delay, s/veh	43.1			42.9			73.1				66.3	
Approach LOS	D			D			E				E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.9	83.8	10.7	31.5	46.2	56.5	25.1	17.2				
Change Period (Y+Rc), s	* 4.2	5.3	* 4.2	5.4	* 4.2	5.3	* 4.2	* 5.4				
Max Green Setting (Gmax), s	* 17	57.1	* 8.4	43.2	* 42	32.3	* 23	* 30				
Max Q Clear Time (g_c+I1), s	14.7	31.4	7.1	19.8	42.8	45.4	20.6	9.1				
Green Ext Time (p_c), s	0.0	19.1	0.0	2.0	0.0	0.0	0.3	0.3				

Intersection Summary

HCM 6th Ctrl Delay 47.9
HCM 6th LOS D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Queues
3: West Hills Pkwy/Sycamore Landfill Rd & Mast Blvd

Carlton Oaks
04/12/2022

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	126	576	214	2002	21	1302	16	484	11	11	237
v/c Ratio	0.89	0.38	0.53	1.04	0.03	1.06	0.03	0.63	0.21	0.05	0.84
Control Delay	130.9	44.4	77.0	81.3	0.1	95.5	29.1	23.6	92.6	66.1	61.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	130.9	44.4	77.0	81.3	0.1	95.5	29.1	23.6	92.6	66.1	61.0
Queue Length 50th (ft)	73	173	116	~874	0	~818	9	149	12	11	133
Queue Length 95th (ft)	#153	228	174	#1063	0	#1048	26	268	38	33	239
Internal Link Dist (ft)		510	426			1307			239		
Turn Bay Length (ft)	230		195				850				
Base Capacity (vph)	141	1523	428	1930	660	1224	918	779	56	318	369
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.38	0.50	1.04	0.03	1.06	0.02	0.62	0.20	0.03	0.64

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary
3: West Hills Pkwy/Sycamore Landfill Rd & Mast Blvd

Carlton Oaks
04/12/2022

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑↑	↑↑↑	↑	↑↑↑	↑↑↑	↑	↑↑↑	↑	↑	↑	↑	↑
Traffic Volume (veh/h)	120	423	124	203	1902	20	1237	15	460	10	10	225
Future Volume (veh/h)	120	423	124	203	1902	20	1237	15	460	10	10	225
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	126	445	112	214	2002	21	1302	16	390	11	11	184
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	139	1382	337	256	1896	588	1205	874	858	17	239	203
Arrive On Green	0.04	0.34	0.34	0.07	0.37	0.37	0.35	0.47	0.47	0.01	0.13	0.13
Sat Flow, veh/h	3456	4095	999	3456	5106	1585	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	126	368	189	214	2002	21	1302	16	390	11	11	184
Grp Sat Flow(s), veh/h/ln	1728	1702	1690	1728	1702	1585	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	6.3	13.9	14.5	10.6	64.5	1.5	60.6	0.8	26.0	1.1	0.9	19.9
Cycle Q Clear(g_c), s	6.3	13.9	14.5	10.6	64.5	1.5	60.6	0.8	26.0	1.1	0.9	19.9
Prop In Lane	1.00		0.59	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	139	1149	571	256	1896	588	1205	874	858	17	239	203
V/C Ratio(X)	0.91	0.32	0.33	0.84	1.06	0.04	1.08	0.02	0.45	0.65	0.05	0.91
Avail Cap(c_a), veh/h	139	1149	571	422	1896	588	1205	901	881	55	312	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)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	83.0	42.7	42.9	79.4	54.6	34.8	56.6	24.9	24.2	85.8	66.4	74.7
Incr Delay (d2), s/veh	47.9	0.2	0.4	3.2	37.4	0.1	50.5	0.0	0.5	14.6	0.1	27.3
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	3.7	5.9	6.2	4.8	33.7	0.6	34.2	0.4	9.7	0.6	0.4	9.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	131.0	42.9	43.4	82.7	92.0	34.9	107.1	24.9	24.8	100.4	66.5	102.0
LnGrp LOS	F	D	D	F	F	C	F	C	C	F	E	F
Approach Vol, veh/h	683			2237			1708				206	
Approach Delay, s/veh	59.3			90.6			87.5				100.0	
Approach LOS	E			F			F				F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.3	63.8	65.0	27.6	11.4	69.7	6.0	86.6				
Change Period (Y+Rc), s	4.4	* 5.2	4.4	* 5.4	4.4	5.2	4.4	5.4				
Max Green Setting (Gmax), s	21.2	* 51		* 29	7.0	64.5	5.4	83.7				
Max Q Clear Time (g_c+I1), s	12.6	16.5	62.6	21.9	8.3	66.5	3.1	28.0				
Green Ext Time (p_c), s	0.2	4.8	0.0	0.4	0.0	0.0	0.0	2.5				

Intersection Summary

HCM 6th Ctrl Delay 85.5
HCM 6th LOS F

Notes

- User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Queues

3: West Hills Pkwy/Sycamore Landfill Rd & Mast Blvd

Carlton Oaks

04/12/2022

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	158	2401	229	743	84	319	47	536	79	11	211
v/c Ratio	0.55	0.94	1.04	0.30	0.10	0.64	0.16	0.99	0.46	0.05	0.58
Control Delay	61.2	35.9	125.6	20.1	1.4	55.1	43.8	62.4	61.4	47.4	12.9
Queue Delay	0.0	35.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.2	71.7	125.6	20.1	1.4	55.1	43.8	62.4	61.4	47.4	12.9
Queue Length 50th (ft)	58	555	~89	111	0	115	31	249	56	8	0
Queue Length 95th (ft)	109	#997	#222	216	11	190	68	424	123	26	69
Internal Link Dist (ft)		510		426			1307			239	
Turn Bay Length (ft)	230		195					850			
Base Capacity (vph)	551	2552	220	2504	843	812	463	541	433	456	547
Starvation Cap Reductn	0	328	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	1.08	1.04	0.30	0.10	0.39	0.10	0.99	0.18	0.02	0.39

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

3: West Hills Pkwy/Sycamore Landfill Rd & Mast Blvd

Carlton Oaks

04/12/2022

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	150	1713	568	218	706	80	303	45	509	75	10	200
Future Volume (veh/h)	150	1713	568	218	706	80	303	45	509	75	10	200
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	158	1803	579	229	743	84	319	47	442	79	11	158
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	215	1871	577	209	2462	764	404	417	449	133	330	280
Arrive On Green	0.06	0.48	0.48	0.06	0.48	0.48	0.12	0.22	0.22	0.07	0.18	0.18
Sat Flow, veh/h	3456	3868	1192	3456	5106	1585	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	158	1578	804	229	743	84	319	47	442	79	11	158
Grp Sat Flow(s), veh/h/ln	1728	1702	1656	1728	1702	1585	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	5.6	56.0	60.8	7.6	11.1	3.6	11.3	2.5	28.0	5.4	0.6	11.5
Cycle Q Clear(g_c), s	5.6	56.0	60.8	7.6	11.1	3.6	11.3	2.5	28.0	5.4	0.6	11.5
Prop In Lane	1.00		0.72	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	215	1647	801	209	2462	764	404	417	449	133	330	280
V/C Ratio(X)	0.74	0.96	1.00	1.10	0.30	0.11	0.79	0.11	0.98	0.60	0.03	0.57
Avail Cap(c_a), veh/h	522	1647	801	209	2462	764	770	417	449	411	432	366
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.9	31.2	32.4	59.0	19.7	17.8	54.0	38.9	44.8	56.3	42.9	47.3
Incr Delay (d2), s/veh	1.9	13.6	32.8	90.2	0.1	0.1	4.9	0.2	38.3	4.2	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(50%),veh/ln	2.5	24.7	30.1	5.9	4.3	1.3	5.1	1.2	17.9	2.6	0.3	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.8	44.8	65.2	149.2	19.9	17.9	58.8	39.1	83.1	60.5	42.9	49.1
LnGrp LOS	E	D	F	F	B	B	E	D	F	E	D	D
Approach Vol, veh/h		2540			1056			808			248	
Approach Delay, s/veh		52.2			47.8			70.9			52.5	
Approach LOS		D			D			E			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	66.0	20.1	27.6	12.2	65.8	14.3	33.4				
Change Period (Y+Rc), s	4.4	* 5.2	5.4	* 5.4	4.4	5.2	4.9	5.4				
Max Green Setting (Gmax), s	7.6	* 61	28.0	* 29	19.0	49.1	29.0	28.0				
Max Q Clear Time (g_c+I1), s	9.6	62.8	13.3	13.5	7.6	13.1	7.4	30.0				
Green Ext Time (p_c), s	0.0	0.0	1.4	0.5	0.2	11.4	0.2	0.0				

Intersection Summary

HCM 6th Ctrl Delay

HCM 6th LOS

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Queues
7: Carlton Hills Blvd & Carlton Oaks Dr

Carlton Oaks
04/12/2022

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	14	188	766	305	241	746	654	21	681	96
v/c Ratio	0.19	0.65	1.08	0.86	0.19	0.80	0.40	0.26	0.83	0.21
Control Delay	71.2	61.7	89.0	75.0	28.9	52.9	19.0	72.6	57.1	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.2	61.7	89.0	75.0	28.9	52.9	19.0	72.6	57.1	2.6
Queue Length 50th (ft)	11	150	~687	246	67	297	148	17	278	0
Queue Length 95th (ft)	39	233	#979	#508	113	#495	251	51	413	12
Internal Link Dist (ft)		1551			2465		2663		1032	
Turn Bay Length (ft)	131		126	104		174		140		86
Base Capacity (vph)	74	539	709	353	1567	927	1685	83	970	505
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.35	1.08	0.86	0.15	0.80	0.39	0.25	0.70	0.19

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary
7: Carlton Hills Blvd & Carlton Oaks Dr

Carlton Oaks
04/12/2022

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Volume (veh/h)	13	179	728	290	214	15	709	381	240	20	647	91
Future Volume (veh/h)	13	179	728	290	214	15	709	381	240	20	647	91
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		0.97	1.00		0.95	1.00		0.93
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	14	188	670	305	225	14	746	401	240	21	681	87
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	26	474	750	311	1402	87	793	904	533	35	778	322
Arrive On Green	0.01	0.25	0.25	0.17	0.41	0.41	0.23	0.43	0.43	0.02	0.22	0.22
Sat Flow, veh/h	1781	1870	1523	1781	1777	1825	1728	1777	1574	1781	1777	1470
Grp Volume(v), veh/h	14	188	670	305	117	122	746	337	304	21	681	87
Grp Sat Flow(s), veh/h/ln	1781	1870	1523	1781	1777	1825	1728	1777	1574	1781	1777	1470
Q Serve(g_s), s	1.1	12.2	37.0	24.9	6.0	6.1	31.0	19.5	20.0	1.7	27.0	7.2
Cycle Q Clear(g_c), s	1.1	12.2	37.0	24.9	6.0	6.1	31.0	19.5	20.0	1.7	27.0	7.2
Prop In Lane	1.00		1.00	1.00		0.11	1.00		0.79	1.00		1.00
Lane Grp Cap(c), veh/h	26	474	750	311	734	754	793	762	675	35	778	322
V/C Ratio(X)	0.53	0.40	0.89	0.98	0.16	0.16	0.94	0.44	0.45	0.60	0.88	0.27
Avail Cap(c_a), veh/h	66	474	750	311	734	754	817	773	685	73	852	352
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	71.4	45.2	34.7	60.0	26.9	26.9	55.3	29.4	29.5	71.0	55.1	47.3
Incr Delay (d2), s/veh	15.4	0.5	13.2	45.4	0.1	0.1	18.4	0.4	0.5	15.4	9.5	0.4
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	0.6	5.7	24.2	15.2	2.6	2.8	15.4	8.4	7.6	0.9	13.1	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	86.8	45.8	47.9	105.4	27.0	27.0	73.6	29.8	30.0	86.4	64.6	47.8
LnGrp LOS	F	D	D	F	C	C	E	C	C	F	E	D
Approach Vol, veh/h		872			544			1387			789	
Approach Delay, s/veh		48.0			71.0			53.4			63.3	
Approach LOS		D			E			D			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.4	67.1	30.0	41.5	38.0	36.5	6.7	64.8				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	6.0	63.5	25.5	37.0	34.5	35.0	5.4	57.1				
Max Q Clear Time (g_c+I1), s	3.7	22.0	26.9	39.0	33.0	29.0	3.1	8.1				
Green Ext Time (p_c), s	0.0	4.5	0.0	0.0	0.5	2.4	0.0	1.5				

Intersection Summary

HCM 6th Ctrl Delay	56.9
HCM 6th LOS	E

Queues
7: Carlton Hills Blvd & Carlton Oaks Dr

Carlton Oaks
04/12/2022

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	34	268	428	263	159	656	1065	32	422	25
v/c Ratio	0.25	0.67	0.62	0.97	0.13	1.04	0.76	0.23	0.48	0.05
Control Delay	51.6	43.0	19.2	90.6	22.8	88.5	28.8	51.4	32.0	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.6	43.0	19.2	90.6	22.8	88.5	28.8	51.4	32.0	0.2
Queue Length 50th (ft)	20	155	143	~175	35	~241	280	19	108	0
Queue Length 95th (ft)	59	250	255	#428	65	#467	#494	57	187	0
Internal Link Dist (ft)		1551			2465		2663		1032	
Turn Bay Length (ft)	131		126	104		174		140		86
Base Capacity (vph)	178	764	689	272	1608	628	1577	178	1358	678
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.35	0.62	0.97	0.10	1.04	0.68	0.18	0.31	0.04

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary
7: Carlton Hills Blvd & Carlton Oaks Dr

Carlton Oaks
04/12/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	255	407	250	131	20	623	692	320	30	401	24
Future Volume (veh/h)	32	255	407	250	131	20	623	692	320	30	401	24
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		0.97	1.00		0.95	1.00		0.93
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	34	268	332	263	138	19	656	728	324	32	422	16
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	56	474	670	269	1168	158	620	868	386	54	784	324
Arrive On Green	0.03	0.25	0.25	0.15	0.37	0.37	0.18	0.37	0.37	0.03	0.22	0.22
Sat Flow, veh/h	1781	1870	1523	1781	3132	423	3456	2348	1044	1781	3554	1470
Grp Volume(v), veh/h	34	268	332	263	77	80	656	551	501	32	422	16
Grp Sat Flow(s),veh/h/ln	1781	1870	1523	1781	1777	1778	1728	1777	1616	1781	1777	1470
Q Serve(g_s), s	1.7	11.5	14.6	13.5	2.6	2.7	16.5	26.1	26.1	1.6	9.7	0.8
Cycle Q Clear(g_c), s	1.7	11.5	14.6	13.5	2.6	2.7	16.5	26.1	26.1	1.6	9.7	0.8
Prop In Lane	1.00		1.00	1.00		0.24	1.00		0.65	1.00		1.00
Lane Grp Cap(c), veh/h	56	474	670	269	663	663	620	657	597	54	784	324
V/C Ratio(X)	0.60	0.57	0.50	0.98	0.12	0.12	1.06	0.84	0.84	0.59	0.54	0.05
Avail Cap(c_a), veh/h	176	752	896	269	807	808	620	811	737	176	1336	553
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.0	29.9	18.9	38.9	18.9	18.9	37.8	26.5	26.5	44.1	31.7	28.3
Incr Delay (d2), s/veh	10.0	1.1	0.6	48.5	0.1	0.1	52.7	6.5	7.1	9.9	0.6	0.1
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	0.9	5.1	5.0	9.4	1.1	1.1	11.3	11.6	10.6	0.9	4.1	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.0	31.0	19.5	87.4	19.0	19.0	90.5	33.0	33.7	54.0	32.3	28.3
LnGrp LOS	D	C	B	F	B	B	F	C	C	D	C	C
Approach Vol, veh/h		634			420			1708			470	
Approach Delay, s/veh		26.2			61.8			55.3			33.6	
Approach LOS		C			E			E			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.3	38.5	18.4	27.8	21.0	24.8	7.4	38.8				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	9.1	42.0	13.9	37.0	16.5	34.6	9.1	41.8				
Max Q Clear Time (g_c+I1), s	3.6	28.1	15.5	16.6	18.5	11.7	3.7	4.7				
Green Ext Time (p_c), s	0.0	5.9	0.0	2.7	0.0	2.7	0.0	0.9				

Intersection Summary

HCM 6th Ctrl Delay	47.3
HCM 6th LOS	D

Queues
9: Carlton Hills Blvd & Mission Gorge Rd

Carlton Oaks
04/12/2022

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	854	956	26	1473	462	42	42	11	478	651	639
v/c Ratio	1.03	0.37	0.37	1.01	0.50	0.79	0.13	0.03	0.75	1.00	0.82
Control Delay	90.9	21.7	81.9	76.3	8.7	141.1	48.1	0.1	65.4	66.6	23.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	90.9	21.7	81.9	76.3	8.7	141.1	48.1	0.1	65.4	66.6	23.1
Queue Length 50th (ft)	~441	201	24	~518	68	40	33	0	236	~510	195
Queue Length 95th (ft)	#573	238	58	#630	162	#116	68	0	#355	#767	402
Internal Link Dist (ft)	681		572			687			2663		
Turn Bay Length (ft)	371		130		200	25		25	137		140
Base Capacity (vph)	833	2579	78	1462	931	53	385	435	640	650	779
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.03	0.37	0.33	1.01	0.50	0.79	0.11	0.03	0.75	1.00	0.82

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary
9: Carlton Hills Blvd & Mission Gorge Rd

Carlton Oaks
04/12/2022

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑↑	↑↑↑		↑	↑↑↑	↑	↑	↑	↑	↑↑	↑↑	↑
Traffic Volume (veh/h)	811	818	90	25	1399	439	40	40	10	454	80	1146
Future Volume (veh/h)	811	818	90	25	1399	439	40	40	10	454	80	1146
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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
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	854	861	92	26	1473	382	42	42	11	478	0	841
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	839	2504	266	33	1585	712	54	329	276	496	0	902
Arrive On Green	0.24	0.53	0.53	0.02	0.31	0.31	0.03	0.18	0.18	0.14	0.00	0.28
Sat Flow, veh/h	3456	4683	498	1781	5106	1584	1781	1870	1569	3563	0	3167
Grp Volume(v), veh/h	854	625	328	26	1473	382	42	42	11	478	0	841
Grp Sat Flow(s), veh/h/ln	1728	1702	1777	1781	1702	1584	1781	1870	1569	1781	0	1583
Q Serve(g_s), s	35.2	15.2	15.3	2.1	40.5	25.4	3.4	2.7	0.8	19.3	0.0	37.5
Cycle Q Clear(g_c), s	35.2	15.2	15.3	2.1	40.5	25.4	3.4	2.7	0.8	19.3	0.0	37.5
Prop In Lane	1.00		0.28	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	839	1820	950	33	1585	712	54	329	276	496	0	902
V/C Ratio(X)	1.02	0.34	0.35	0.79	0.93	0.54	0.78	0.13	0.04	0.96	0.00	0.93
Avail Cap(c_a), veh/h	839	1820	950	79	1585	712	54	387	325	496	0	974
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	1.00	1.00	1.00	1.00	1.00	0.22	0.00	0.22
Uniform Delay (d), s/veh	54.9	19.2	19.3	70.9	48.5	28.9	69.8	50.4	49.6	62.0	0.0	50.5
Incr Delay (d2), s/veh	35.7	0.5	1.0	14.6	11.1	2.9	46.7	0.1	0.0	11.5	0.0	4.2
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	19.3	6.1	6.6	1.1	18.7	10.4	2.3	1.3	0.3	9.5	0.0	15.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	90.6	19.7	20.2	85.5	59.6	31.8	116.5	50.4	49.6	73.5	0.0	54.7
LnGrp LOS	F	B	C	F	E	C	F	D	D	E	A	D
Approach Vol, veh/h	1807			1881			95				1319	
Approach Delay, s/veh	53.3			54.3			79.6				61.5	
Approach LOS	D			D			E				E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.9	82.8	8.6	46.7	39.4	50.3	24.4	30.9				
Change Period (Y+Rc), s	* 4.2	5.3	* 4.2	5.4	* 4.2	5.3	* 4.2	* 5.4				
Max Green Setting (Gmax), s	* 6.4	70.5	* 4.4	44.6	* 35	41.7	* 20	* 30				
Max Q Clear Time (g_c+I1), s	4.1	17.3	5.4	39.5	37.2	42.5	21.3	4.7				
Green Ext Time (p_c), s	0.0	15.2	0.0	1.8	0.0	0.0	0.0	0.1				

Intersection Summary

HCM 6th Ctrl Delay
HCM 6th LOS

Notes

- User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Queues
9: Carlton Hills Blvd & Mission Gorge Rd

Carlton Oaks
04/12/2022

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1006	1590	158	1083	688	63	95	26	474	433	412
v/c Ratio	0.95	0.73	0.82	0.90	0.89	0.73	0.29	0.07	0.91	0.90	0.58
Control Delay	67.1	37.0	94.3	64.6	39.1	109.3	52.5	0.3	82.1	64.2	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.1	37.0	94.3	64.6	39.1	109.3	52.5	0.3	82.1	64.2	7.0
Queue Length 50th (ft)	488	477	146	372	405	60	77	0	228	348	0
Queue Length 95th (ft)	#650	544	#255	#465	#701	#137	131	0	#320	#525	87
Internal Link Dist (ft)		681		572			687			2663	
Turn Bay Length (ft)	371		130		200	25		25	137		140
Base Capacity (vph)	1058	2187	211	1206	780	90	385	435	539	529	738
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.95	0.73	0.75	0.90	0.88	0.70	0.25	0.06	0.88	0.82	0.56

Intersection Summary

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

HCM 6th Signalized Intersection Summary
9: Carlton Hills Blvd & Mission Gorge Rd

Carlton Oaks
04/12/2022

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔↔	↔↔↔		↔	↔↔↔	↔	↔	↔	↔	↔↔↔	↔↔	↔
Traffic Volume (veh/h)	956	1360	150	150	1029	654	60	90	25	450	140	663
Future Volume (veh/h)	956	1360	150	150	1029	654	60	90	25	450	140	663
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.98	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	1006	1432	155	158	1083	608	63	95	26	474	244	212
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	996	2521	273	181	1799	790	80	152	126	521	342	289
Arrive On Green	0.29	0.54	0.54	0.10	0.35	0.35	0.04	0.08	0.08	0.15	0.18	0.18
Sat Flow, veh/h	3456	4674	506	1781	5106	1584	1781	1870	1550	3563	1870	1582
Grp Volume(v), veh/h	1006	1043	544	158	1083	608	63	95	26	474	244	212
Grp Sat Flow(s),veh/h/ln	1728	1702	1776	1781	1702	1584	1781	1870	1550	1781	1870	1582
Q Serve(g_s), s	41.8	29.5	29.5	12.7	25.3	45.3	5.1	7.1	2.3	19.0	17.8	18.3
Cycle Q Clear(g_c), s	41.8	29.5	29.5	12.7	25.3	45.3	5.1	7.1	2.3	19.0	17.8	18.3
Prop In Lane	1.00		0.28	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	996	1836	958	181	1799	790	80	152	126	521	342	289
V/C Ratio(X)	1.01	0.57	0.57	0.87	0.60	0.77	0.79	0.63	0.21	0.91	0.71	0.73
Avail Cap(c_a), veh/h	996	1836	958	211	1799	790	91	387	321	560	570	482
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	1.00	1.00	1.00	1.00	1.00	0.71	0.71	0.71
Uniform Delay (d), s/veh	51.6	22.2	22.2	64.2	38.6	29.6	68.6	64.5	62.2	60.9	55.7	55.9
Incr Delay (d2), s/veh	31.0	1.3	2.4	25.6	1.5	7.1	27.9	1.6	0.3	13.3	2.0	2.6
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	22.2	11.9	12.8	7.0	10.8	18.9	3.0	3.5	0.9	9.5	8.6	7.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	82.6	23.5	24.6	89.9	40.1	36.7	96.5	66.0	62.5	74.2	57.7	58.5
LnGrp LOS	F	C	C	F	D	D	F	E	E	E	E	E
Approach Vol, veh/h		2593			1849			184			930	
Approach Delay, s/veh		46.6			43.2			76.0			66.3	
Approach LOS		D			D			E			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.9	83.5	10.7	31.9	46.0	56.4	25.4	17.2				
Change Period (Y+Rc), s	* 4.2	5.3	* 4.2	5.4	* 4.2	5.3	* 4.2	* 5.4				
Max Green Setting (Gmax), s	* 17	57.1	* 7.4	44.2	* 42	32.5	* 23	* 30				
Max Q Clear Time (g_c+I1), s	14.7	31.5	7.1	20.3	43.8	47.3	21.0	9.1				
Green Ext Time (p_c), s	0.0	19.0	0.0	2.1	0.0	0.0	0.2	0.3				

Intersection Summary

HCM 6th Ctrl Delay 49.8
HCM 6th LOS D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.