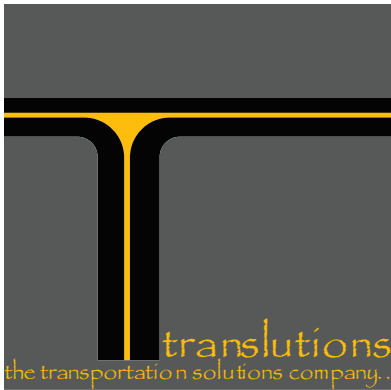




memorandum

DATE: January 26, 2020

TO: Casey Schooner, Kimley-Horn

FROM: Sandipan Bhattacharjee, P.E., T.E., AICP, ENV-SP

SUBJECT: Evaluation of Additional Intersections

The intersections in the study area for the Traffic Impact Analysis (TIA) prepared for the Bridge Point Upland project was determined in accordance to the requirements of the San Bernardino County Transportation Authority (SBCTA) Congestion Management Plan (CMP) Guidelines which are followed by the City of Upland. The Guidelines state that the analysis should include intersections where the project is anticipated to add 50 or more project trips during the a.m. or p.m. peak hour. During initial discussions, City staff requested that additional intersections that do not meet the 50-trip threshold be also included in the analysis. In fact, 8 of the 17 study intersections do not meet the 50-trip threshold. Therefore, the TIA included in the Draft IS/MND was conservative in analyzing more intersections than required under adopted guidelines. The trip distribution and study area were approved by the Cities of Upland, Montclair, and Claremont.

At the joint City Council and Planning Commission workshop held on January 9, 2020, comments were raised about the traffic patterns included in the TIA, and analysis was requested of intersections along 16th Street and Foothill Boulevard east of the Project site. This memorandum analyzes a scenario in which 25% of project trips are assumed to travel to and from the east on 16th Street and 25% of project trips travel to and from the east on Foothill Boulevard. In sum, this memorandum very conservatively analyzes half of the project trips traveling on these two roadways to the east; this is conservative since a much lower percentage of trips are actually expected to travel on 16th Street and Foothill Boulevard based on the location of residential and business uses in the area.

The following intersections have been analyzed in this memo:

1. Mountain Avenue/16th Street;
2. Mountain Avenue/Foothill Boulevard;
3. Euclid Avenue/Foothill Boulevard; and
4. Campus Avenue/16th Street.

The analysis was conducted by adding project trips to the future traffic volumes from the City's General Plan. It should be noted that since the General Plan already assumes development on the project site, adding project trips to the General Plan volumes results in higher traffic volumes than are anticipated to actually occur because development from the project is counted twice. The results of this analysis are included in Table A.

Table A: General Plan Build Out Intersection Levels of Service

Intersection	Control	Without Project				With Project				Project Impact
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	
18 . Mountain Avenue/16th Street	Signal	35.0	C	39.7	D	35.2	D	39.9	D	NO
19 . Mountain Avenue/Foothill Boulevard	Signal	33.1	C	46.2	D	33.4	C	46.6	D	NO
20 . Euclid Avenue/Foothill Boulevard	Signal	37.5	D	36.3	D	37.7	D	36.3	D	NO
21 . Campus Avenue/16th Street	Signal	31.7	C	37.2	D	31.9	C	38.5	D	NO

Notes:

LOS = Level of Service

As shown on Table A, under General Plan Buildout conditions, these four intersections are anticipated to operate at acceptable levels of service (LOS D or better) under both without project and with project conditions. The highest additional delay caused by the project at any intersection, even with the assumption of 25% of project trips traveling through each intersection, is anticipated to be less than half a second. Therefore, the project is not anticipated to create a significant impact at any of the above intersections.

Further, the traffic volumes on 13th Street and 15th Street are much lower than those on 16th Street and Foothill Boulevard. Since the project does not have a significant impact at the intersections evaluated above, it is anticipated that there will be a less than significant impact at the intersections of Mountain Avenue/13th Street and Mountain Avenue/15th Street as well.

HCM 6th Signalized Intersection Summary

18: Mountain Avenue & 16th St

01/20/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	280	150	120	600	50	110	530	40	170	1030	80
Future Volume (veh/h)	70	280	150	120	600	50	110	530	40	170	1030	80
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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	74	295	158	126	632	53	116	558	42	179	1084	84
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	239	518	270	269	817	68	266	1264	95	279	1286	100
Arrive On Green	0.13	0.23	0.23	0.15	0.24	0.24	0.15	0.37	0.37	0.15	0.38	0.38
Sat Flow, veh/h	1810	2293	1197	1810	3372	282	1810	3403	256	1810	3395	263
Grp Volume(v), veh/h	74	231	222	126	338	347	116	295	305	179	576	592
Grp Sat Flow(s),veh/h/ln	1810	1805	1685	1810	1805	1849	1810	1805	1854	1810	1805	1853
Q Serve(g_s), s	3.0	9.1	9.4	5.1	14.0	14.0	4.7	9.8	9.9	7.4	23.3	23.3
Cycle Q Clear(g_c), s	3.0	9.1	9.4	5.1	14.0	14.0	4.7	9.8	9.9	7.4	23.3	23.3
Prop In Lane	1.00		0.71	1.00		0.15	1.00		0.14	1.00		0.14
Lane Grp Cap(c), veh/h	239	408	381	269	438	448	266	671	689	279	684	702
V/C Ratio(X)	0.31	0.57	0.58	0.47	0.77	0.77	0.44	0.44	0.44	0.64	0.84	0.84
Avail Cap(c_a), veh/h	285	465	434	285	465	476	285	671	689	348	684	702
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	0.58	0.58	0.58	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.4	27.5	27.6	31.2	28.2	28.3	31.1	18.9	18.9	31.8	22.7	22.7
Incr Delay (d2), s/veh	0.7	1.2	1.6	0.7	4.4	4.4	1.1	2.1	2.1	2.7	12.1	11.8
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	1.3	3.9	3.8	2.2	6.3	6.5	2.1	4.3	4.4	3.4	11.5	11.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.1	28.7	29.2	31.9	32.7	32.7	32.2	21.0	21.0	34.5	34.7	34.5
LnGrp LOS	C	C	C	C	C	C	C	C	C	C	C	C
Approach Vol, veh/h	527			811			716			1347		
Approach Delay, s/veh	29.4			32.5			22.8			34.6		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.3	31.7	13.9	20.1	13.7	32.3	12.6	21.4				
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	12.9	20.9	10.1	18.1	10.1	23.7	10.1	18.1				
Max Q Clear Time (g_c+I1), s	9.4	11.9	7.1	11.4	6.7	25.3	5.0	16.0				
Green Ext Time (p_c), s	0.1	2.5	0.1	1.5	0.1	0.0	0.1	0.9				
Intersection Summary												
HCM 6th Ctrl Delay	30.8											
HCM 6th LOS	C											

HCM 6th Signalized Intersection Summary

19: Mountain Avenue & Foothill Blvd

01/20/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	420	120	260	690	140	230	550	190	310	1010	150
Future Volume (veh/h)	120	420	120	260	690	140	230	550	190	310	1010	150
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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	126	442	126	274	726	147	242	579	200	326	1063	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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	522	701	198	548	937	418	546	1212	540	548	1533	228
Arrive On Green	0.15	0.25	0.25	0.16	0.26	0.26	0.16	0.34	0.34	0.16	0.34	0.34
Sat Flow, veh/h	3510	2778	785	3510	3610	1610	3510	3610	1610	3510	4559	677
Grp Volume(v), veh/h	126	286	282	274	726	147	242	579	200	326	806	415
Grp Sat Flow(s),veh/h/ln	1755	1805	1759	1755	1805	1610	1755	1805	1610	1755	1729	1778
Q Serve(g_s), s	2.5	11.3	11.4	5.7	14.9	6.0	5.0	10.2	7.5	6.9	16.1	16.2
Cycle Q Clear(g_c), s	2.5	11.3	11.4	5.7	14.9	6.0	5.0	10.2	7.5	6.9	16.1	16.2
Prop In Lane	1.00		0.45	1.00		1.00	1.00		1.00	1.00		0.38
Lane Grp Cap(c), veh/h	522	455	444	548	937	418	546	1212	540	548	1162	598
V/C Ratio(X)	0.24	0.63	0.64	0.50	0.77	0.35	0.44	0.48	0.37	0.59	0.69	0.69
Avail Cap(c_a), veh/h	549	496	484	549	993	443	549	1212	540	562	1162	598
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	0.45	0.45	0.45	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.1	26.6	26.6	30.9	27.5	24.1	30.6	21.0	20.2	31.4	23.0	23.0
Incr Delay (d2), s/veh	0.2	2.2	2.4	0.3	1.7	0.2	0.6	1.4	1.9	1.6	3.4	6.5
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	1.1	4.9	4.9	2.4	6.4	2.2	2.1	4.3	3.0	3.0	6.8	7.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.3	28.8	29.1	31.2	29.1	24.4	31.2	22.4	22.1	33.0	26.4	29.5
LnGrp LOS	C	C	C	C	C	C	C	C	C	C	C	C
Approach Vol, veh/h		694			1147			1021			1547	
Approach Delay, s/veh		29.2			29.0			24.4			28.6	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.5	28.9	14.5	22.2	14.5	28.9	13.9	22.8				
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	10.3	22.2	10.0	19.5	10.0	22.5	10.0	19.5				
Max Q Clear Time (g_c+I1), s	8.9	12.2	7.7	13.4	7.0	18.2	4.5	16.9				
Green Ext Time (p_c), s	0.2	3.3	0.2	1.8	0.2	2.9	0.2	1.3				
Intersection Summary												
HCM 6th Ctrl Delay				27.8								
HCM 6th LOS				C								

HCM 6th Signalized Intersection Summary

20: Euclid Avenue & Foothill Blvd

01/20/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	250	520	170	340	820	60	260	660	150	150	1270	150
Future Volume (veh/h)	250	520	170	340	820	60	260	660	150	150	1270	150
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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	263	547	179	358	863	63	274	695	158	158	1337	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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	547	1001	446	548	947	69	548	1134	506	276	1461	173
Arrive On Green	0.16	0.28	0.28	0.16	0.28	0.28	0.16	0.31	0.31	0.15	0.31	0.31
Sat Flow, veh/h	3510	3610	1610	3510	3411	249	3510	3610	1610	1810	4702	556
Grp Volume(v), veh/h	263	547	179	358	457	469	274	695	158	158	983	512
Grp Sat Flow(s),veh/h/ln	1755	1805	1610	1755	1805	1855	1755	1805	1610	1810	1729	1800
Q Serve(g_s), s	5.5	10.3	7.2	7.7	19.6	19.6	5.7	13.1	6.0	6.5	21.9	21.9
Cycle Q Clear(g_c), s	5.5	10.3	7.2	7.7	19.6	19.6	5.7	13.1	6.0	6.5	21.9	21.9
Prop In Lane	1.00		1.00	1.00		0.13	1.00		1.00	1.00		0.31
Lane Grp Cap(c), veh/h	547	1001	446	548	501	515	548	1134	506	276	1074	559
V/C Ratio(X)	0.48	0.55	0.40	0.65	0.91	0.91	0.50	0.61	0.31	0.57	0.92	0.92
Avail Cap(c_a), veh/h	549	1001	446	606	501	515	549	1134	506	285	1074	559
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.82	0.82	0.82	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.8	24.6	23.5	31.7	28.0	28.0	30.9	23.3	20.9	31.5	26.6	26.6
Incr Delay (d2), s/veh	0.5	0.5	0.5	2.2	20.9	20.5	0.7	2.5	1.6	2.6	13.4	22.0
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	2.3	4.3	2.7	3.3	11.0	11.2	2.4	5.7	2.4	3.0	10.5	12.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.3	25.1	24.0	33.9	48.9	48.5	31.6	25.8	22.5	34.1	40.0	48.6
LnGrp LOS	C	C	C	C	D	D	C	C	C	C	D	D
Approach Vol, veh/h	989			1284			1127			1653		
Approach Delay, s/veh	26.6			44.6			26.7			42.1		
Approach LOS	C			D			C			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.2	27.1	14.5	24.2	14.5	26.9	14.5	24.2				
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	10.1	22.2	11.3	18.4	10.0	22.3	10.0	19.7				
Max Q Clear Time (g_c+l1), s	8.5	15.1	9.7	12.3	7.7	23.9	7.5	21.6				
Green Ext Time (p_c), s	0.1	3.0	0.2	2.2	0.2	0.0	0.2	0.0				
Intersection Summary												
HCM 6th Ctrl Delay	36.3											
HCM 6th LOS	D											

HCM 6th Signalized Intersection Summary

21: Campus Avenue & 16th St

01/20/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	250	390	100	240	630	70	60	460	170	80	630	300
Future Volume (veh/h)	250	390	100	240	630	70	60	460	170	80	630	300
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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	263	411	105	253	663	74	63	484	179	84	663	316
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	419	723	183	485	828	92	386	915	336	498	866	413
Arrive On Green	0.16	0.25	0.25	0.16	0.25	0.25	0.13	0.35	0.35	0.14	0.37	0.37
Sat Flow, veh/h	1810	2853	722	1810	3274	365	1810	2584	950	1810	2371	1130
Grp Volume(v), veh/h	263	259	257	253	365	372	63	337	326	84	505	474
Grp Sat Flow(s),veh/h/ln	1810	1805	1770	1810	1805	1834	1810	1805	1729	1810	1805	1697
Q Serve(g_s), s	8.0	10.0	10.2	7.7	15.2	15.2	1.5	11.9	12.0	1.9	19.7	19.7
Cycle Q Clear(g_c), s	8.0	10.0	10.2	7.7	15.2	15.2	1.5	11.9	12.0	1.9	19.7	19.7
Prop In Lane	1.00		0.41	1.00		0.20	1.00		0.55	1.00		0.67
Lane Grp Cap(c), veh/h	419	457	449	485	456	464	386	639	612	498	660	620
V/C Ratio(X)	0.63	0.57	0.57	0.52	0.80	0.80	0.16	0.53	0.53	0.17	0.77	0.77
Avail Cap(c_a), veh/h	421	469	460	489	469	477	445	639	612	535	660	620
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.86	0.86	0.86	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.4	26.0	26.1	17.2	28.0	28.0	13.7	20.5	20.6	11.6	22.4	22.4
Incr Delay (d2), s/veh	2.5	1.3	1.4	1.0	9.3	9.3	0.2	3.1	3.3	0.2	8.2	8.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	4.3	4.3	3.1	7.5	7.6	0.6	5.3	5.2	0.7	9.4	8.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.0	27.3	27.5	18.1	37.3	37.3	13.9	23.6	23.9	11.7	30.6	31.1
LnGrp LOS	C	C	C	B	D	D	B	C	C	B	C	C
Approach Vol, veh/h	779			990			726			1063		
Approach Delay, s/veh	25.2			32.4			22.9			29.3		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	30.3	14.5	22.3	12.0	31.2	14.5	22.2				
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	10.1	23.5	10.1	18.3	10.1	23.5	10.1	18.3				
Max Q Clear Time (g_c+I1), s	3.9	14.0	9.7	12.2	3.5	21.7	10.0	17.2				
Green Ext Time (p_c), s	0.1	2.9	0.0	1.6	0.1	1.1	0.0	0.5				
Intersection Summary												
HCM 6th Ctrl Delay	28.0											
HCM 6th LOS	C											

HCM 6th Signalized Intersection Summary

18: Mountain Avenue & 16th St

01/20/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	170	650	140	80	330	50	180	990	130	140	740	100
Future Volume (veh/h)	170	650	140	80	330	50	180	990	130	140	740	100
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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	179	684	147	84	347	53	189	1042	137	147	779	105
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	279	761	163	248	756	114	279	1136	149	274	1123	151
Arrive On Green	0.15	0.26	0.26	0.14	0.24	0.24	0.15	0.35	0.35	0.15	0.35	0.35
Sat Flow, veh/h	1810	2956	635	1810	3144	476	1810	3208	421	1810	3197	431
Grp Volume(v), veh/h	179	417	414	84	198	202	189	586	593	147	440	444
Grp Sat Flow(s),veh/h/ln	1810	1805	1786	1810	1805	1814	1810	1805	1824	1810	1805	1822
Q Serve(g_s), s	7.4	17.9	17.9	3.4	7.5	7.6	7.9	24.8	24.9	6.0	16.7	16.7
Cycle Q Clear(g_c), s	7.4	17.9	17.9	3.4	7.5	7.6	7.9	24.8	24.9	6.0	16.7	16.7
Prop In Lane	1.00		0.36	1.00		0.26	1.00		0.23	1.00		0.24
Lane Grp Cap(c), veh/h	279	465	460	248	434	436	279	639	646	274	634	640
V/C Ratio(X)	0.64	0.90	0.90	0.34	0.46	0.46	0.68	0.92	0.92	0.54	0.69	0.69
Avail Cap(c_a), veh/h	285	465	460	283	463	465	285	639	646	285	634	640
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	0.84	0.84	0.84	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.8	28.7	28.7	31.2	25.9	26.0	31.9	24.7	24.7	31.3	22.3	22.3
Incr Delay (d2), s/veh	4.7	20.0	20.3	0.7	0.6	0.6	6.1	20.1	20.2	1.8	6.2	6.1
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	3.5	10.0	9.9	1.5	3.2	3.3	3.8	13.5	13.7	2.7	7.8	7.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.5	48.7	49.0	31.9	26.5	26.6	38.0	44.9	44.9	33.2	28.4	28.4
LnGrp LOS	D	D	D	C	C	C	D	D	D	C	C	C
Approach Vol, veh/h	1010			484			1368			1031		
Approach Delay, s/veh	46.7			27.5			43.9			29.1		
Approach LOS	D			C			D			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.1	30.3	13.0	22.6	14.4	30.1	14.3	21.2				
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	10.1	23.8	10.0	18.1	10.1	23.8	10.1	18.0				
Max Q Clear Time (g_c+I1), s	8.0	26.9	5.4	19.9	9.9	18.7	9.4	9.6				
Green Ext Time (p_c), s	0.1	0.0	0.1	0.0	0.0	2.5	0.0	1.5				
Intersection Summary												
HCM 6th Ctrl Delay	38.7											
HCM 6th LOS	D											

HCM 6th Signalized Intersection Summary

19: Mountain Avenue & Foothill Blvd

01/20/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	370	970	150	430	710	180	280	1060	240	260	740	140
Future Volume (veh/h)	370	970	150	430	710	180	280	1060	240	260	740	140
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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	389	1021	158	453	747	189	295	1116	253	274	779	147
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	549	901	139	549	1038	463	548	1084	484	548	1317	247
Arrive On Green	0.16	0.29	0.29	0.16	0.29	0.29	0.16	0.30	0.30	0.16	0.30	0.30
Sat Flow, veh/h	3510	3133	484	3510	3610	1610	3510	3610	1610	3510	4389	821
Grp Volume(v), veh/h	389	588	591	453	747	189	295	1116	253	274	612	314
Grp Sat Flow(s),veh/h/ln	1755	1805	1813	1755	1805	1610	1755	1805	1610	1755	1729	1752
Q Serve(g_s), s	8.4	23.0	23.0	10.0	14.9	7.6	6.2	24.0	10.4	5.7	12.0	12.2
Cycle Q Clear(g_c), s	8.4	23.0	23.0	10.0	14.9	7.6	6.2	24.0	10.4	5.7	12.0	12.2
Prop In Lane	1.00		0.27	1.00		1.00	1.00		1.00	1.00		0.47
Lane Grp Cap(c), veh/h	549	519	521	549	1038	463	548	1084	484	548	1038	526
V/C Ratio(X)	0.71	1.13	1.13	0.83	0.72	0.41	0.54	1.03	0.52	0.50	0.59	0.60
Avail Cap(c_a), veh/h	549	519	521	549	1038	463	549	1084	484	549	1038	526
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	0.51	0.51	0.51	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.0	28.5	28.5	32.7	25.6	23.0	31.1	28.0	23.2	30.9	23.8	23.9
Incr Delay (d2), s/veh	4.2	81.3	82.1	5.4	1.3	0.3	1.0	35.2	4.0	0.7	2.5	4.9
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	3.8	21.1	21.4	4.5	6.3	2.8	2.6	15.1	4.3	2.4	5.1	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.2	109.8	110.6	38.1	26.9	23.3	32.2	63.1	27.2	31.6	26.3	28.8
LnGrp LOS	D	F	F	D	C	C	C	F	C	C	C	C
Approach Vol, veh/h	1568			1389			1664			1200		
Approach Delay, s/veh	91.8			30.0			52.2			28.1		
Approach LOS	F			C			D			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.5	26.0	14.5	25.0	14.5	26.0	14.5	25.0				
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	10.0	21.5	10.0	20.5	10.0	21.5	10.0	20.5				
Max Q Clear Time (g_c+I1), s	7.7	26.0	12.0	25.0	8.2	14.2	10.4	16.9				
Green Ext Time (p_c), s	0.2	0.0	0.0	0.0	0.2	3.5	0.0	1.9				
Intersection Summary												
HCM 6th Ctrl Delay	52.6											
HCM 6th LOS	D											

HCM 6th Signalized Intersection Summary

20: Euclid Avenue & Foothill Blvd

01/20/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	240	880	220	290	670	80	510	830	260	170	710	40
Future Volume (veh/h)	240	880	220	290	670	80	510	830	260	170	710	40
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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	253	926	232	305	705	84	537	874	274	179	747	42
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	547	1081	482	548	974	116	614	1049	468	279	1354	76
Arrive On Green	0.16	0.30	0.30	0.16	0.30	0.30	0.17	0.29	0.29	0.15	0.27	0.27
Sat Flow, veh/h	3510	3610	1610	3510	3249	387	3510	3610	1610	1810	5026	281
Grp Volume(v), veh/h	253	926	232	305	391	398	537	874	274	179	513	276
Grp Sat Flow(s),veh/h/ln	1755	1805	1610	1755	1805	1830	1755	1805	1610	1810	1729	1849
Q Serve(g_s), s	5.2	19.3	9.4	6.4	15.5	15.5	11.9	18.1	11.6	7.4	10.2	10.2
Cycle Q Clear(g_c), s	5.2	19.3	9.4	6.4	15.5	15.5	11.9	18.1	11.6	7.4	10.2	10.2
Prop In Lane	1.00		1.00	1.00		0.21	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	547	1081	482	548	541	549	614	1049	468	279	932	498
V/C Ratio(X)	0.46	0.86	0.48	0.56	0.72	0.72	0.87	0.83	0.59	0.64	0.55	0.55
Avail Cap(c_a), veh/h	549	1083	483	549	542	549	614	1049	468	283	932	498
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.26	0.26	0.26	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.7	26.4	22.9	31.2	25.0	25.1	32.1	26.6	24.3	31.8	25.1	25.1
Incr Delay (d2), s/veh	0.2	1.9	0.2	1.2	4.7	4.7	13.2	7.8	5.3	4.8	2.3	4.4
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	2.2	8.2	3.5	2.7	7.1	7.2	6.0	8.6	4.9	3.5	4.3	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.9	28.3	23.1	32.4	29.8	29.8	45.4	34.3	29.5	36.6	27.4	29.5
LnGrp LOS	C	C	C	C	C	C	D	C	C	D	C	C
Approach Vol, veh/h	1411					1094		1685		968		
Approach Delay, s/veh	27.9					30.5		37.1		29.7		
Approach LOS	C					C		D		C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.3	25.2	14.5	26.0	16.0	23.6	14.5	26.0				
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	10.0	20.5	10.0	21.5	11.5	19.0	10.0	21.5				
Max Q Clear Time (g_c+I1), s	9.4	20.1	8.4	21.3	13.9	12.2	7.2	17.5				
Green Ext Time (p_c), s	0.0	0.3	0.2	0.1	0.0	2.8	0.2	1.8				
Intersection Summary												
HCM 6th Ctrl Delay			31.8									
HCM 6th LOS			C									

HCM 6th Signalized Intersection Summary

21: Campus Avenue & 16th St

01/20/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	400	890	90	120	390	90	90	720	280	150	530	210
Future Volume (veh/h)	400	890	90	120	390	90	90	720	280	150	530	210
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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	421	937	95	126	411	95	95	758	295	158	558	221
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	546	964	98	365	736	169	434	781	304	373	806	318
Arrive On Green	0.19	0.29	0.29	0.15	0.25	0.25	0.14	0.31	0.31	0.15	0.32	0.32
Sat Flow, veh/h	1810	3309	335	1810	2917	668	1810	2539	988	1810	2527	998
Grp Volume(v), veh/h	421	511	521	126	253	253	95	539	514	158	398	381
Grp Sat Flow(s),veh/h/ln	1810	1805	1840	1810	1805	1780	1810	1805	1722	1810	1805	1720
Q Serve(g_s), s	13.0	22.4	22.4	3.6	9.7	9.9	2.4	23.6	23.6	4.0	15.4	15.5
Cycle Q Clear(g_c), s	13.0	22.4	22.4	3.6	9.7	9.9	2.4	23.6	23.6	4.0	15.4	15.5
Prop In Lane	1.00		0.18	1.00		0.38	1.00		0.57	1.00		0.58
Lane Grp Cap(c), veh/h	546	526	536	365	456	449	434	555	530	373	576	549
V/C Ratio(X)	0.77	0.97	0.97	0.34	0.56	0.56	0.22	0.97	0.97	0.42	0.69	0.69
Avail Cap(c_a), veh/h	546	526	536	379	469	463	461	555	530	380	576	549
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.51	0.51	0.51	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.6	28.0	28.0	17.9	26.0	26.1	14.4	27.3	27.3	16.3	23.8	23.8
Incr Delay (d2), s/veh	3.5	21.5	21.3	0.6	1.4	1.5	0.3	31.5	32.5	0.8	6.7	7.1
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	5.4	12.3	12.5	1.5	4.2	4.2	1.0	14.5	13.9	1.6	7.3	7.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.1	49.5	49.3	18.5	27.4	27.5	14.6	58.9	59.9	17.1	30.5	30.9
LnGrp LOS	C	D	D	B	C	C	B	E	E	B	C	C
Approach Vol, veh/h	1453			632			1148			937		
Approach Delay, s/veh	40.9			25.7			55.7			28.4		
Approach LOS	D			C			E			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.2	26.6	13.9	25.3	13.3	27.5	17.0	22.2				
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	10.0	21.2	10.0	20.8	10.0	21.2	12.5	18.3				
Max Q Clear Time (g_c+I1), s	6.0	25.6	5.6	24.4	4.4	17.5	15.0	11.9				
Green Ext Time (p_c), s	0.1	0.0	0.1	0.0	0.1	1.7	0.0	1.6				
Intersection Summary												
HCM 6th Ctrl Delay	39.8											
HCM 6th LOS	D											

HCM 6th Signalized Intersection Summary

18: Mountain Avenue & 16th St

01/20/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	304	150	120	625	50	110	530	40	170	1030	80
Future Volume (veh/h)	70	304	150	120	625	50	110	530	40	170	1030	80
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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	74	320	158	126	658	53	116	558	42	179	1084	84
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	239	544	263	269	836	67	266	1249	94	279	1270	98
Arrive On Green	0.13	0.23	0.23	0.15	0.25	0.25	0.15	0.37	0.37	0.15	0.37	0.37
Sat Flow, veh/h	1810	2360	1140	1810	3384	272	1810	3403	256	1810	3395	263
Grp Volume(v), veh/h	74	243	235	126	351	360	116	295	305	179	576	592
Grp Sat Flow(s),veh/h/ln	1810	1805	1695	1810	1805	1851	1810	1805	1854	1810	1805	1853
Q Serve(g_s), s	3.0	9.6	9.9	5.1	14.5	14.6	4.7	9.9	10.0	7.4	23.5	23.5
Cycle Q Clear(g_c), s	3.0	9.6	9.9	5.1	14.5	14.6	4.7	9.9	10.0	7.4	23.5	23.5
Prop In Lane	1.00		0.67	1.00		0.15	1.00		0.14	1.00		0.14
Lane Grp Cap(c), veh/h	239	416	391	269	446	457	266	662	680	279	675	693
V/C Ratio(X)	0.31	0.58	0.60	0.47	0.79	0.79	0.44	0.45	0.45	0.64	0.85	0.85
Avail Cap(c_a), veh/h	285	465	436	285	465	477	285	662	680	348	675	693
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	0.55	0.55	0.55	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.4	27.4	27.5	31.2	28.2	28.2	31.1	19.2	19.2	31.8	23.0	23.0
Incr Delay (d2), s/veh	0.7	1.5	1.9	0.7	4.8	4.7	1.1	2.2	2.1	2.7	12.9	12.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	4.2	4.1	2.2	6.6	6.8	2.1	4.3	4.5	3.4	11.8	12.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.1	28.9	29.4	31.9	32.9	32.9	32.2	21.3	21.3	34.5	36.0	35.7
LnGrp LOS	C	C	C	C	C	C	C	C	C	C	D	D
Approach Vol, veh/h	552			837			716			1347		
Approach Delay, s/veh	29.5			32.8			23.1			35.7		
Approach LOS	C			C			C			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.3	31.4	13.9	20.4	13.7	31.9	12.6	21.8				
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	12.9	20.9	10.1	18.1	10.1	23.7	10.1	18.1				
Max Q Clear Time (g_c+I1), s	9.4	12.0	7.1	11.9	6.7	25.5	5.0	16.6				
Green Ext Time (p_c), s	0.1	2.4	0.1	1.5	0.1	0.0	0.1	0.7				
Intersection Summary												
HCM 6th Ctrl Delay	31.4											
HCM 6th LOS	C											

HCM 6th Signalized Intersection Summary

19: Mountain Avenue & Foothill Blvd

01/20/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	444	120	260	715	140	230	550	190	310	1010	150
Future Volume (veh/h)	120	444	120	260	715	140	230	550	190	310	1010	150
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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	126	467	126	274	753	147	242	579	200	326	1063	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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	522	722	194	548	953	425	546	1196	533	548	1513	225
Arrive On Green	0.15	0.26	0.26	0.16	0.26	0.26	0.16	0.33	0.33	0.16	0.33	0.33
Sat Flow, veh/h	3510	2815	754	3510	3610	1610	3510	3610	1610	3510	4559	677
Grp Volume(v), veh/h	126	298	295	274	753	147	242	579	200	326	806	415
Grp Sat Flow(s),veh/h/ln	1755	1805	1764	1755	1805	1610	1755	1805	1610	1755	1729	1778
Q Serve(g_s), s	2.5	11.8	11.9	5.7	15.5	5.9	5.0	10.2	7.6	6.9	16.2	16.3
Cycle Q Clear(g_c), s	2.5	11.8	11.9	5.7	15.5	5.9	5.0	10.2	7.6	6.9	16.2	16.3
Prop In Lane	1.00		0.43	1.00		1.00	1.00		1.00	1.00		0.38
Lane Grp Cap(c), veh/h	522	463	453	548	953	425	546	1196	533	548	1147	590
V/C Ratio(X)	0.24	0.64	0.65	0.50	0.79	0.35	0.44	0.48	0.37	0.59	0.70	0.70
Avail Cap(c_a), veh/h	549	496	485	549	993	443	549	1196	533	562	1147	590
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	0.41	0.41	0.41	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.1	26.5	26.5	30.9	27.4	23.9	30.6	21.3	20.4	31.4	23.3	23.3
Incr Delay (d2), s/veh	0.2	2.6	2.8	0.3	1.8	0.2	0.6	1.4	2.0	1.6	3.6	6.9
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	1.1	5.2	5.2	2.4	6.6	2.2	2.1	4.4	3.0	3.0	6.9	7.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.3	29.1	29.3	31.2	29.2	24.1	31.2	22.7	22.4	33.0	26.9	30.2
LnGrp LOS	C	C	C	C	C	C	C	C	C	C	C	C
Approach Vol, veh/h		719			1174			1021			1547	
Approach Delay, s/veh		29.4			29.0			24.7			29.1	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.5	28.5	14.5	22.5	14.5	28.5	13.9	23.1				
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	10.3	22.2	10.0	19.5	10.0	22.5	10.0	19.5				
Max Q Clear Time (g_c+I1), s	8.9	12.2	7.7	13.9	7.0	18.3	4.5	17.5				
Green Ext Time (p_c), s	0.2	3.3	0.2	1.8	0.2	2.8	0.2	1.1				
Intersection Summary												
HCM 6th Ctrl Delay			28.1									
HCM 6th LOS			C									

HCM 6th Signalized Intersection Summary

20: Euclid Avenue & Foothill Blvd

01/20/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	250	544	170	340	845	60	260	660	150	150	1270	150
Future Volume (veh/h)	250	544	170	340	845	60	260	660	150	150	1270	150
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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	263	573	179	358	889	63	274	695	158	158	1337	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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	547	1001	446	548	949	67	548	1134	506	276	1461	173
Arrive On Green	0.16	0.28	0.28	0.16	0.28	0.28	0.16	0.31	0.31	0.15	0.31	0.31
Sat Flow, veh/h	3510	3610	1610	3510	3419	242	3510	3610	1610	1810	4702	556
Grp Volume(v), veh/h	263	573	179	358	469	483	274	695	158	158	983	512
Grp Sat Flow(s),veh/h/ln	1755	1805	1610	1755	1805	1856	1755	1805	1610	1810	1729	1800
Q Serve(g_s), s	5.5	10.9	7.2	7.7	20.3	20.3	5.7	13.1	6.0	6.5	21.9	21.9
Cycle Q Clear(g_c), s	5.5	10.9	7.2	7.7	20.3	20.3	5.7	13.1	6.0	6.5	21.9	21.9
Prop In Lane	1.00		1.00	1.00		0.13	1.00		1.00	1.00		0.31
Lane Grp Cap(c), veh/h	547	1001	446	548	501	515	548	1134	506	276	1074	559
V/C Ratio(X)	0.48	0.57	0.40	0.65	0.94	0.94	0.50	0.61	0.31	0.57	0.92	0.92
Avail Cap(c_a), veh/h	549	1001	446	606	501	515	549	1134	506	285	1074	559
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.81	0.81	0.81	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.8	24.8	23.5	31.7	28.2	28.2	30.9	23.3	20.9	31.5	26.6	26.6
Incr Delay (d2), s/veh	0.5	0.6	0.5	2.2	25.4	24.9	0.7	2.5	1.6	2.6	13.4	22.0
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	2.3	4.6	2.7	3.3	11.9	12.1	2.4	5.7	2.4	3.0	10.5	12.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.3	25.5	24.0	33.9	53.6	53.1	31.6	25.8	22.5	34.1	40.0	48.6
LnGrp LOS	C	C	C	C	D	D	C	C	C	C	D	D
Approach Vol, veh/h	1015		1310			1127			1653			
Approach Delay, s/veh	26.7		48.1			26.7			42.1			
Approach LOS	C		D			C			D			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.2	27.1	14.5	24.2	14.5	26.9	14.5	24.2				
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	10.1	22.2	11.3	18.4	10.0	22.3	10.0	19.7				
Max Q Clear Time (g_c+I1), s	8.5	15.1	9.7	12.9	7.7	23.9	7.5	22.3				
Green Ext Time (p_c), s	0.1	3.0	0.2	2.1	0.2	0.0	0.2	0.0				
Intersection Summary												
HCM 6th Ctrl Delay	37.2											
HCM 6th LOS	D											

HCM 6th Signalized Intersection Summary

21: Campus Avenue & 16th St

01/20/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	250	414	100	240	655	70	60	460	170	80	630	300
Future Volume (veh/h)	250	414	100	240	655	70	60	460	170	80	630	300
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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	263	436	105	253	689	74	63	484	179	84	663	316
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	415	742	177	480	844	91	384	906	333	494	858	409
Arrive On Green	0.16	0.26	0.26	0.16	0.26	0.26	0.13	0.35	0.35	0.14	0.36	0.36
Sat Flow, veh/h	1810	2890	690	1810	3289	353	1810	2584	950	1810	2371	1130
Grp Volume(v), veh/h	263	271	270	253	378	385	63	337	326	84	505	474
Grp Sat Flow(s),veh/h/ln	1810	1805	1776	1810	1805	1836	1810	1805	1729	1810	1805	1697
Q Serve(g_s), s	8.0	10.5	10.7	7.6	15.7	15.8	1.5	11.9	12.1	2.0	19.8	19.8
Cycle Q Clear(g_c), s	8.0	10.5	10.7	7.6	15.7	15.8	1.5	11.9	12.1	2.0	19.8	19.8
Prop In Lane	1.00		0.39	1.00		0.19	1.00		0.55	1.00		0.67
Lane Grp Cap(c), veh/h	415	464	456	480	463	472	384	632	606	494	653	614
V/C Ratio(X)	0.63	0.58	0.59	0.53	0.82	0.82	0.16	0.53	0.54	0.17	0.77	0.77
Avail Cap(c_a), veh/h	418	469	462	484	469	477	442	632	606	532	653	614
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.84	0.84	0.84	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.4	26.0	26.1	17.0	27.9	28.0	13.9	20.8	20.8	11.7	22.6	22.6
Incr Delay (d2), s/veh	2.6	1.5	1.7	1.0	10.6	10.5	0.2	3.2	3.4	0.2	8.6	9.1
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	3.4	4.5	4.6	3.1	7.9	8.0	0.6	5.3	5.2	0.7	9.5	9.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.0	27.5	27.7	18.1	38.5	38.5	14.1	24.0	24.2	11.9	31.2	31.7
LnGrp LOS	C	C	C	B	D	D	B	C	C	B	C	C
Approach Vol, veh/h	804		1016				726		1063			
Approach Delay, s/veh	25.5		33.4				23.2		29.9			
Approach LOS	C		C				C		C			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	30.0	14.5	22.5	12.0	31.0	14.5	22.5				
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	10.1	23.5	10.1	18.3	10.1	23.5	10.1	18.3				
Max Q Clear Time (g_c+I1), s	4.0	14.1	9.6	12.7	3.5	21.8	10.0	17.8				
Green Ext Time (p_c), s	0.1	2.9	0.0	1.6	0.1	1.0	0.0	0.3				
Intersection Summary												
HCM 6th Ctrl Delay			28.6									
HCM 6th LOS			C									

HCM 6th Signalized Intersection Summary

18: Mountain Avenue & 16th St

01/20/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	170	667	140	80	362	50	180	990	130	140	740	100
Future Volume (veh/h)	170	667	140	80	362	50	180	990	130	140	740	100
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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	179	702	147	84	381	53	189	1042	137	147	779	105
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	279	765	160	248	766	106	279	1136	149	274	1123	151
Arrive On Green	0.15	0.26	0.26	0.14	0.24	0.24	0.15	0.35	0.35	0.15	0.35	0.35
Sat Flow, veh/h	1810	2971	622	1810	3186	440	1810	3208	421	1810	3197	431
Grp Volume(v), veh/h	179	426	423	84	215	219	189	586	593	147	440	444
Grp Sat Flow(s),veh/h/ln	1810	1805	1788	1810	1805	1821	1810	1805	1824	1810	1805	1822
Q Serve(g_s), s	7.4	18.4	18.4	3.4	8.2	8.3	7.9	24.8	24.9	6.0	16.7	16.7
Cycle Q Clear(g_c), s	7.4	18.4	18.4	3.4	8.2	8.3	7.9	24.8	24.9	6.0	16.7	16.7
Prop In Lane	1.00		0.35	1.00		0.24	1.00		0.23	1.00		0.24
Lane Grp Cap(c), veh/h	279	465	460	248	434	438	279	639	646	274	634	640
V/C Ratio(X)	0.64	0.92	0.92	0.34	0.49	0.50	0.68	0.92	0.92	0.54	0.69	0.69
Avail Cap(c_a), veh/h	285	465	460	283	463	467	285	639	646	285	634	640
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	0.81	0.81	0.81	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.8	28.9	28.9	31.2	26.2	26.2	31.9	24.7	24.7	31.3	22.3	22.3
Incr Delay (d2), s/veh	4.7	23.1	23.4	0.7	0.7	0.7	6.1	20.1	20.2	1.8	6.2	6.1
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	3.5	10.6	10.5	1.5	3.5	3.6	3.8	13.5	13.7	2.7	7.8	7.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.5	51.9	52.2	31.9	26.9	27.0	38.0	44.9	44.9	33.2	28.4	28.4
LnGrp LOS	D	D	D	C	C	C	D	D	D	C	C	C
Approach Vol, veh/h	1028			518			1368			1031		
Approach Delay, s/veh	49.4			27.7			43.9			29.1		
Approach LOS	D			C			D			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.1	30.3	13.0	22.6	14.4	30.1	14.3	21.2				
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	10.1	23.8	10.0	18.1	10.1	23.8	10.1	18.0				
Max Q Clear Time (g_c+I1), s	8.0	26.9	5.4	20.4	9.9	18.7	9.4	10.3				
Green Ext Time (p_c), s	0.1	0.0	0.1	0.0	0.0	2.5	0.0	1.5				
Intersection Summary												
HCM 6th Ctrl Delay	39.3											
HCM 6th LOS	D											

HCM 6th Signalized Intersection Summary

19: Mountain Avenue & Foothill Blvd

01/20/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	 		 	  	
Traffic Volume (veh/h)	370	987	150	430	742	180	280	1060	240	260	740	140
Future Volume (veh/h)	370	987	150	430	742	180	280	1060	240	260	740	140
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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	389	1039	158	453	781	189	295	1116	253	274	779	147
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	549	903	137	549	1038	463	548	1084	484	548	1317	247
Arrive On Green	0.16	0.29	0.29	0.16	0.29	0.29	0.16	0.30	0.30	0.16	0.30	0.30
Sat Flow, veh/h	3510	3142	477	3510	3610	1610	3510	3610	1610	3510	4389	821
Grp Volume(v), veh/h	389	596	601	453	781	189	295	1116	253	274	612	314
Grp Sat Flow(s),veh/h/ln	1755	1805	1814	1755	1805	1610	1755	1805	1610	1755	1729	1752
Q Serve(g_s), s	8.4	23.0	23.0	10.0	15.7	7.6	6.2	24.0	10.4	5.7	12.0	12.2
Cycle Q Clear(g_c), s	8.4	23.0	23.0	10.0	15.7	7.6	6.2	24.0	10.4	5.7	12.0	12.2
Prop In Lane	1.00		0.26	1.00		1.00	1.00		1.00	1.00		0.47
Lane Grp Cap(c), veh/h	549	519	522	549	1038	463	548	1084	484	548	1038	526
V/C Ratio(X)	0.71	1.15	1.15	0.83	0.75	0.41	0.54	1.03	0.52	0.50	0.59	0.60
Avail Cap(c_a), veh/h	549	519	522	549	1038	463	549	1084	484	549	1038	526
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	0.48	0.48	0.48	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.0	28.5	28.5	32.7	25.9	23.0	31.1	28.0	23.2	30.9	23.8	23.9
Incr Delay (d2), s/veh	4.2	87.5	88.5	5.1	1.5	0.3	1.0	35.2	4.0	0.7	2.5	4.9
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	3.8	22.0	22.3	4.5	6.7	2.8	2.6	15.1	4.3	2.4	5.1	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.2	116.0	117.0	37.8	27.4	23.3	32.2	63.1	27.2	31.6	26.3	28.8
LnGrp LOS	D	F	F	D	C	C	C	F	C	C	C	C
Approach Vol, veh/h	1586			1423			1664			1200		
Approach Delay, s/veh	96.8			30.2			52.2			28.1		
Approach LOS	F			C			D			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.5	26.0	14.5	25.0	14.5	26.0	14.5	25.0				
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	10.0	21.5	10.0	20.5	10.0	21.5	10.0	20.5				
Max Q Clear Time (g_c+I1), s	7.7	26.0	12.0	25.0	8.2	14.2	10.4	17.7				
Green Ext Time (p_c), s	0.2	0.0	0.0	0.0	0.2	3.5	0.0	1.6				
Intersection Summary												
HCM 6th Ctrl Delay	54.0											
HCM 6th LOS	D											

HCM 6th Signalized Intersection Summary

20: Euclid Avenue & Foothill Blvd

01/20/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	240	897	220	290	702	80	510	830	260	170	710	40
Future Volume (veh/h)	240	897	220	290	702	80	510	830	260	170	710	40
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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	253	944	232	305	739	84	537	874	274	179	747	42
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	547	1083	483	548	981	111	614	1047	467	279	1351	76
Arrive On Green	0.16	0.30	0.30	0.16	0.30	0.30	0.17	0.29	0.29	0.15	0.27	0.27
Sat Flow, veh/h	3510	3610	1610	3510	3267	371	3510	3610	1610	1810	5026	281
Grp Volume(v), veh/h	253	944	232	305	408	415	537	874	274	179	513	276
Grp Sat Flow(s),veh/h/ln	1755	1805	1610	1755	1805	1833	1755	1805	1610	1810	1729	1849
Q Serve(g_s), s	5.2	19.8	9.4	6.4	16.4	16.4	11.9	18.1	11.6	7.4	10.2	10.3
Cycle Q Clear(g_c), s	5.2	19.8	9.4	6.4	16.4	16.4	11.9	18.1	11.6	7.4	10.2	10.3
Prop In Lane	1.00		1.00	1.00		0.20	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	547	1083	483	548	542	551	614	1047	467	279	930	497
V/C Ratio(X)	0.46	0.87	0.48	0.56	0.75	0.75	0.87	0.83	0.59	0.64	0.55	0.55
Avail Cap(c_a), veh/h	549	1083	483	549	542	551	614	1047	467	283	930	497
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.23	0.23	0.23	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.7	26.5	22.9	31.2	25.3	25.3	32.1	26.6	24.3	31.8	25.1	25.1
Incr Delay (d2), s/veh	0.1	2.0	0.2	1.2	5.9	5.8	13.2	7.9	5.3	4.8	2.4	4.4
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	2.2	8.4	3.5	2.7	7.6	7.7	6.0	8.6	4.9	3.5	4.3	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.9	28.5	23.1	32.4	31.2	31.1	45.4	34.5	29.6	36.6	27.5	29.5
LnGrp LOS	C	C	C	C	C	C	D	C	C	D	C	C
Approach Vol, veh/h	1429		1128				1685				968	
Approach Delay, s/veh	28.1		31.5				37.2				29.7	
Approach LOS	C		C				D				C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.3	25.2	14.5	26.0	16.0	23.5	14.5	26.0				
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	10.0	20.5	10.0	21.5	11.5	19.0	10.0	21.5				
Max Q Clear Time (g_c+I1), s	9.4	20.1	8.4	21.8	13.9	12.3	7.2	18.4				
Green Ext Time (p_c), s	0.0	0.2	0.2	0.0	0.0	2.8	0.2	1.5				
Intersection Summary												
HCM 6th Ctrl Delay			32.1									
HCM 6th LOS			C									

HCM 6th Signalized Intersection Summary

21: Campus Avenue & 16th St

01/20/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	400	907	90	120	422	90	90	720	280	150	530	210
Future Volume (veh/h)	400	907	90	120	422	90	90	720	280	150	530	210
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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	421	955	95	126	444	95	95	758	295	158	558	221
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	534	966	96	361	748	159	434	781	304	373	806	318
Arrive On Green	0.19	0.29	0.29	0.15	0.25	0.25	0.14	0.31	0.31	0.15	0.32	0.32
Sat Flow, veh/h	1810	3316	330	1810	2962	629	1810	2539	988	1810	2527	998
Grp Volume(v), veh/h	421	520	530	126	269	270	95	539	514	158	398	381
Grp Sat Flow(s),veh/h/ln	1810	1805	1841	1810	1805	1787	1810	1805	1722	1810	1805	1720
Q Serve(g_s), s	13.0	22.9	22.9	3.6	10.5	10.6	2.4	23.6	23.6	4.0	15.4	15.5
Cycle Q Clear(g_c), s	13.0	22.9	22.9	3.6	10.5	10.6	2.4	23.6	23.6	4.0	15.4	15.5
Prop In Lane	1.00		0.18	1.00		0.35	1.00		0.57	1.00		0.58
Lane Grp Cap(c), veh/h	534	526	536	361	456	451	434	555	530	373	576	549
V/C Ratio(X)	0.79	0.99	0.99	0.35	0.59	0.60	0.22	0.97	0.97	0.42	0.69	0.69
Avail Cap(c_a), veh/h	534	526	536	375	469	465	461	555	530	380	576	549
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.49	0.49	0.49	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.8	28.2	28.2	18.0	26.3	26.3	14.4	27.3	27.3	16.3	23.8	23.8
Incr Delay (d2), s/veh	3.9	24.7	24.5	0.6	1.9	2.0	0.3	31.5	32.5	0.8	6.7	7.1
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	5.5	13.0	13.2	1.5	4.6	4.6	1.0	14.5	13.9	1.6	7.3	7.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.7	52.9	52.7	18.5	28.2	28.3	14.6	58.9	59.9	17.1	30.5	30.9
LnGrp LOS	C	D	D	B	C	C	B	E	E	B	C	C
Approach Vol, veh/h	1471		665			1148			937			
Approach Delay, s/veh	43.6		26.4			55.7			28.4			
Approach LOS	D		C			E			C			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.2	26.6	13.9	25.3	13.3	27.5	17.0	22.2				
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	10.0	21.2	10.0	20.8	10.0	21.2	12.5	18.3				
Max Q Clear Time (g_c+I1), s	6.0	25.6	5.6	24.9	4.4	17.5	15.0	12.6				
Green Ext Time (p_c), s	0.1	0.0	0.1	0.0	0.1	1.7	0.0	1.6				
Intersection Summary												
HCM 6th Ctrl Delay	40.8											
HCM 6th LOS	D											